



UNIVERSAL REGISTRATION DOCUMENT 2022

INCLUDING THE ANNUAL FINANCIAL REPORT

THE “RAISON D’ÊTRE” OF EDF

To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development



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* This information is part of annual financial report, as required by Article L. 451-1-2 of the French Monetary and Financial Code.



2022



UNIVERSAL REGISTRATION DOCUMENT

INCLUDING THE ANNUAL FINANCIAL REPORT

BE THE ENERGY FOR CHANGE.



This Universal Registration Document (URD) was filed on 21 March 2023 with the French Financial Markets Authority (AMF), the competent authority under Regulation (EU) 2017/1129, without prior approval in accordance with Article 9 of that Regulation.

This Universal Registration Document may be used for the purposes of an offer of securities to the public or the admission of securities to trading on a regulated market if it is supplemented by a securities note and, if applicable, a summary and any amendments made to the Universal Registration Document. The set of documents formed thereof is approved by the AMF in accordance with EU Regulation 2017/1129. This document is a translation into English of the Universal Registration Document issued in French and it is available on the Company's website. All possible care has been taken to ensure that the translation is an accurate presentation of the original. However, the version of the URD issued in French is the only binding version.

Copies of this 2022 Universal Registration Document are available free of charge from EDF (22-30, avenue de Wagram, 75382 Paris cedex 08) and on its website (<http://www.edf.fr>), as well as on the AMF's website (<http://www.amf-france.org>).

This document should be read with the reading caveats on the last page of this document [available by clicking here].



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THE GROUP, ITS STRATEGY AND ACTIVITIES

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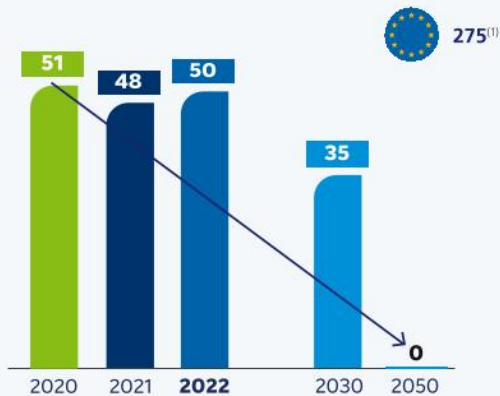
1.1 Key figures and business model

EDF Carbon trajectory

Carbon intensity trajectory

(In gCO₂/kWh)

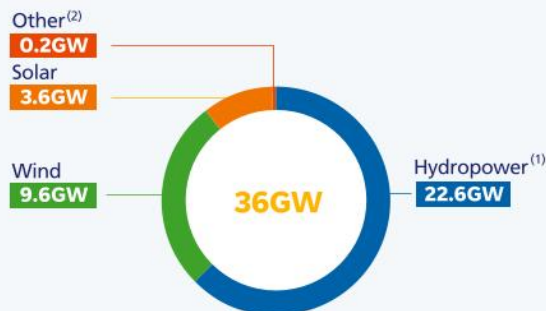
About 5 times lower than the European average.



(1) 2021 carbon intensity average of power producers in Europe according to the European Environment Agency (EEA).

EDF, the renewable energy leader in Europe

Net installed renewable capacity by sector at end-2022

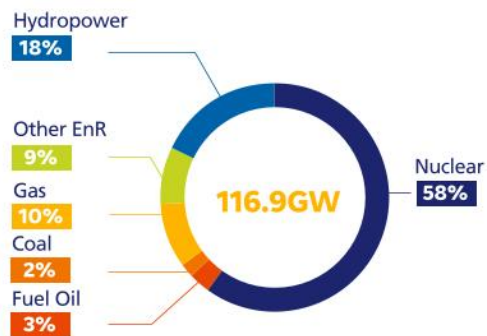


(1) Including sea energy: 0.24GW.

(2) Biomass, geothermy.

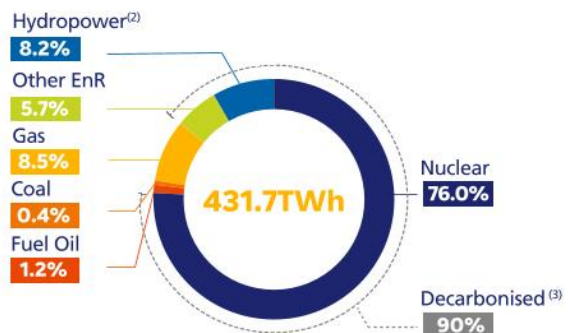
Key figures 2022

Installed capacity⁽¹⁾



(1) Consolidated data.

Electricity generation⁽¹⁾

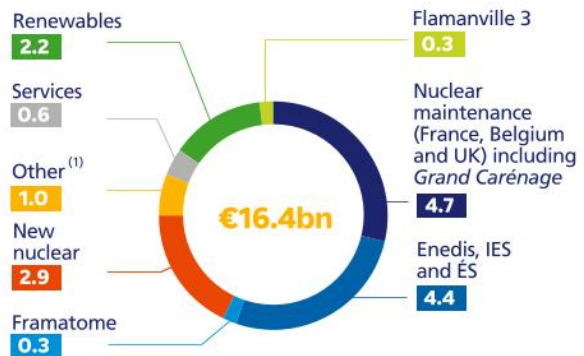


(1) Consolidated data.

(2) Hydro output including pumped storage consumption and sea energy.

(3) Direct output-related CO₂ emissions, excluding life-cycle analysis (LCA) of fuel and production means.

Net investments excluding disposal plan

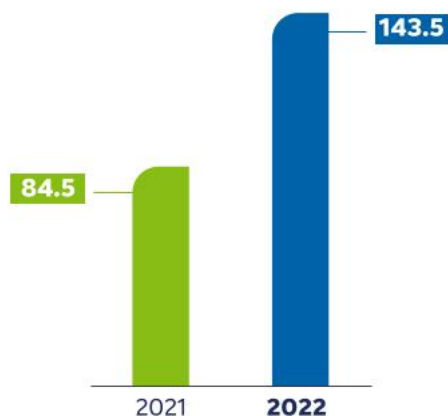


(1) Mainly thermal maintenance, gas, property, central functions.

NB : Values are rounded.

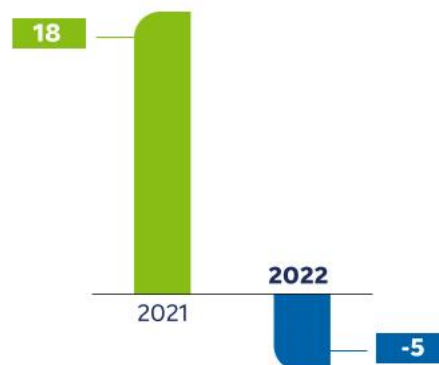
Sales

In billion of euros



EBITDA

In billion of euros

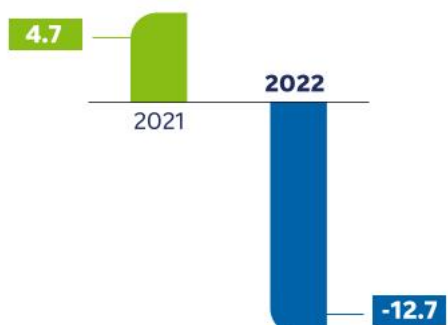


France – Generation and supply activities: -23.1
 France – Regulated activities⁽¹⁾: 6.7
 Other activities: 7.1
 Other international: 0.3
 Italy: 1.1
 United Kingdom: 1.3
 Framatome: 0.3
 Dalkia: 0.3
 EDF Renewables: 0.9

(1) Regulated activities : Enedis, ÉS and island activities ; Enedis, an independant EDF subsidiary as defined in the French energy code.

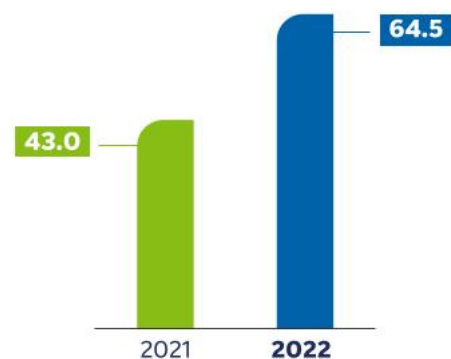
Net income excluding non-recurring items

In billion of euros



Net financial debt

In billion of euros





ASSETS AND RESOURCES

Customer proximity

- **33.9** million customers in electricity
- **6.4** million customers in gas⁽¹⁾
- **Leading brands:** EDF, Edison, Luminus, Dalkia
- **157.5** million visits on digital consumption monitoring platforms⁽²⁾

A human ambition

- **171,490** employees⁽³⁾
- **79%** of employees took part in a skills development initiative during the year⁽³⁾

An ambitious innovative ecosystem

- **2,208** R&D employees⁽⁴⁾
- R&D 2022 consolidated budget of **€649 million**
- **740** patented innovations at end-2022 by R&D (EDF & Enedis)

Major industrial assets

- **116.9GW** of electricity generation capacity⁽⁵⁾
- An integrated nuclear industry
- EPR technology
- A portfolio of wind and solar projects of circa **85GW** gross⁽⁶⁾
- **1.4** million km of distribution network⁽⁷⁾
- **40.6 million** smart meters installed⁽³⁾
- **Over 330** heating and cooling networks operated by Dalkia

A strong CSR commitment

- **A rating** **CDP** Climate Change
- **No. 4** **SUSTAINALYTICS**
- **€22.3 bn** of green & sustainable funding

(1) Consolidated scope. Counted per site.
 (2) EDF SA scope excluding French overseas departments and Corsica.
 (3) Group scope.
 (4) FTEs (full-time equivalent) at Group level.
 (5) Consolidated data at Group scope.
 (6) Group scope. Pipeline excluding capacity under construction. All the projects in prospect phase included in the pipeline, starting 2020.
 (7) Enedis distribution network under concession.



BUSINESS MODEL

The *Raison d'être* of EDF

To build a net zero energy future with electricity

and innovative solutions and services, to help save the planet and drive wellbeing and economic development.

CAP 2030

Three strategic axes

to decarbonise our societies in France, in Europe and in the world:

A creator of services and solutions to support customers and territories in the shift towards carbon neutrality

>30MtCO₂
avoided emissions⁽¹⁾

€10 bn revenue
in services⁽²⁾

>1.5
contracts/customer⁽³⁾

A global leader in the generation of CO₂-neutral electricity

↘ 50%
CO₂ eq direct emissions vs 2017

60GW net of ENR
(incl. hydro)

Grand carénage
completion

5 EPRs in operation⁽⁴⁾

Initiating new
EPRs & 1 SMR

An international key player in the energy transition

Zero
coal

Tripling
activity vs. 2015⁽⁵⁾

1.5-2GW net
hydro installed capacity⁽⁵⁾

1 million
off grid kits

Supported by an impulse of transformation, innovation, human ambition;
Corporate Social Responsibility commitments
and **the implementation of 5 plans:**



LE PLAN
stockage
électrique

LE PLAN
MOBILITÉ
ÉLECTRIQUE



LE PLAN
HYDROGÈNE

(1) Calculation of emissions avoided by products/services for renewable development in heating networks; energy efficiency; photovoltaic generation (excluding EDF facilities feeding their generation into the grid); electric mobility; residential heating pumps sold by EDF SA, Dalkia, Luminus, EDF in the UK, and Edison. See section 3.6 « Methodology ».

(2) Group. (3) Perimeter of 4 priority countries in Europe « G4 » (France, Italy, UK, Belgium) (residential)

(4) Flamanville 3, Hinkley Point C and Taishan. (5) Excluding G4 (France, Italy, UK, Belgium)

The breakdown of CSR issues into 16 commitments

- › Ambitious carbon trajectory
- › Carbon offsetting solutions
- › Adapting to climate change
- › Developing electricity use and energy services

- › Biodiversity
- › Responsible land management
- › Integrated and sustainable water management
- › Radioactive and conventional wastes, and circular economy

- › Safety, health and security for all
- › Ethics, compliance and human rights
- › Equality, diversity and inclusion
- › Energy poverty and social innovation

- › Dialogue and consultation with stakeholders
- › Responsible regional development
- › Development of industrial sectors
- › Data responsible company



VALUE CREATION - 2022



For the climate and environment

- An ambition to contribute to **carbon neutrality** by 2050
- Electricity output of **431.7TWh**, 90% decarbonised⁽¹⁾ with emissions of **50g of CO₂/kWh**⁽²⁾
- EDF, a water sharing player: water intensity of **0.83l/kWh**⁽³⁾
- A commitment to **biodiversity**: an achievement rate of **Act4nature** international of **89%**



For customers

- High customer satisfaction level
- Almost **477,000** energy advice actions for customers⁽⁴⁾



For partners and territories

- SMEs account for **23%** of EDF and Enedis procurements
- **1** direct job at EDF SA generates **4.2** on the national territory
- **100%** of projects are subject to consultation⁽⁵⁾



For employees

- An employee engagement index of **71%**⁽⁶⁾
- Women represent **30.8%** in Management Committees⁽⁷⁾
- An average salary equity ratio⁽⁸⁾ of **6.3**

Sales
€143.5 bn

EBITDA
-€5 bn

Net income excl.
Non-recurring
items **-€12.7 bn**

Sharing added
value with
our stakeholders



Suppliers

Purchases⁽⁹⁾
€9.4 bn
EDF Group Global CSR
agreement



States and Territories

Taxes⁽¹⁰⁾
€3.2 bn



Employees

Remuneration⁽¹¹⁾
€15.2 bn

(1) Direct output-related CO₂ emissions, excluding life-cycle analysis (LCA) of fuel and production means.

(2) CO₂ emissions due to heat and electricity generation. Group scope.

(3) Water consumed / electrical production of fleet. Group scope.

(4) EDF SA scope

(5) Projects over €50m in accordance with the Equator Principles - Group Scope.

(6) MyEDF Group internal survey.

(7) Group Scope.

(8) EDF SA scope - ratio established in accordance with the guidelines published by AFEP.

(9) Consolidated other external expenses.

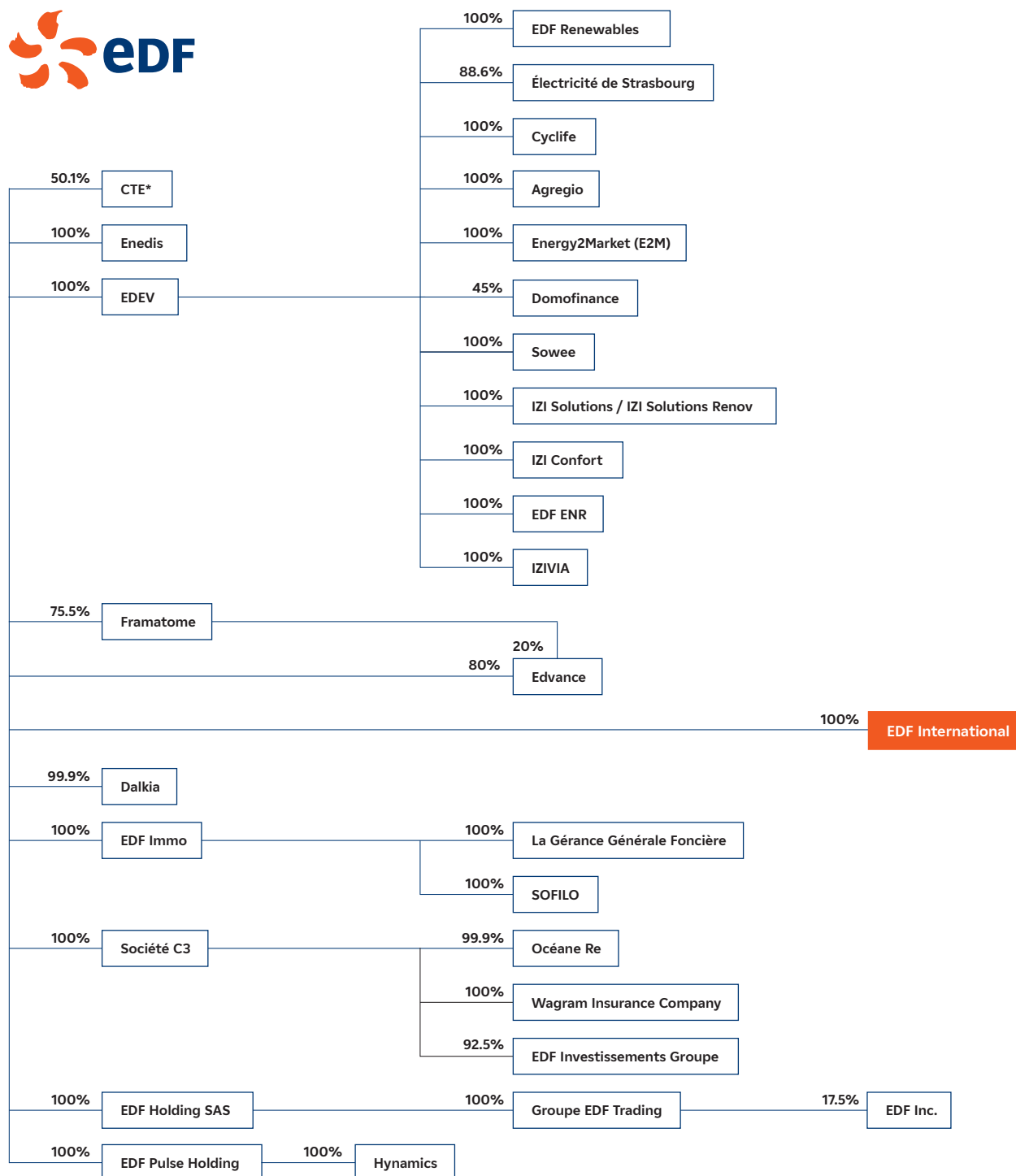
(10) Consolidated taxes, excluding income taxes.

(11) Consolidated personnel expenses.

1.2 Group presentation

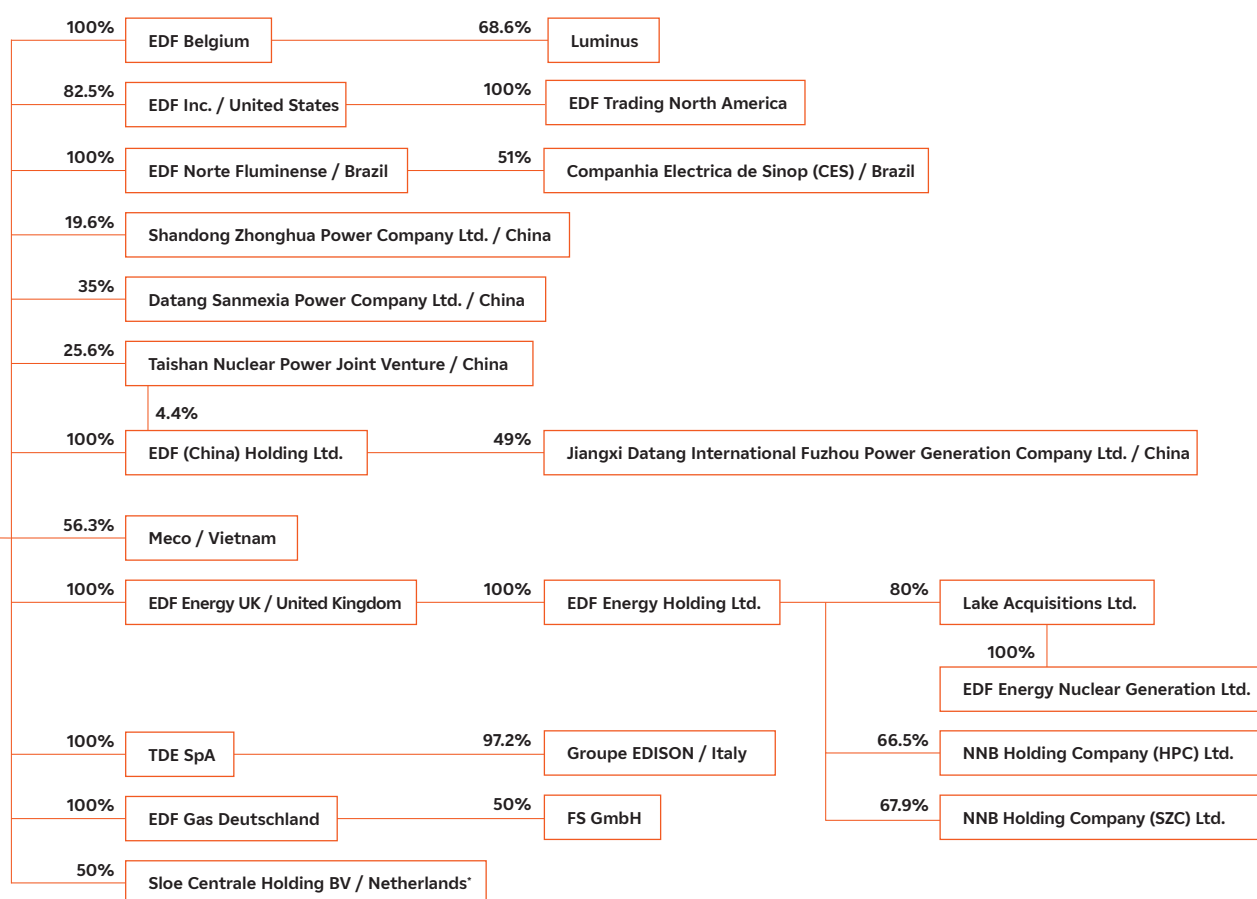
1.2.1 Organisation of the Group

A simplified organisational chart for EDF group at 31 December 2022 is shown below. The percentages for each entity correspond to the ownership interest in capital. The companies or groups of companies within EDF group's scope of consolidation are indicated in note 3.3 to the consolidated financial statements for the year ending 31 December 2022. The changes in the 2022 scope are indicated in note 3.1.1 to the consolidated financial statements for the year ending 31 December 2022.



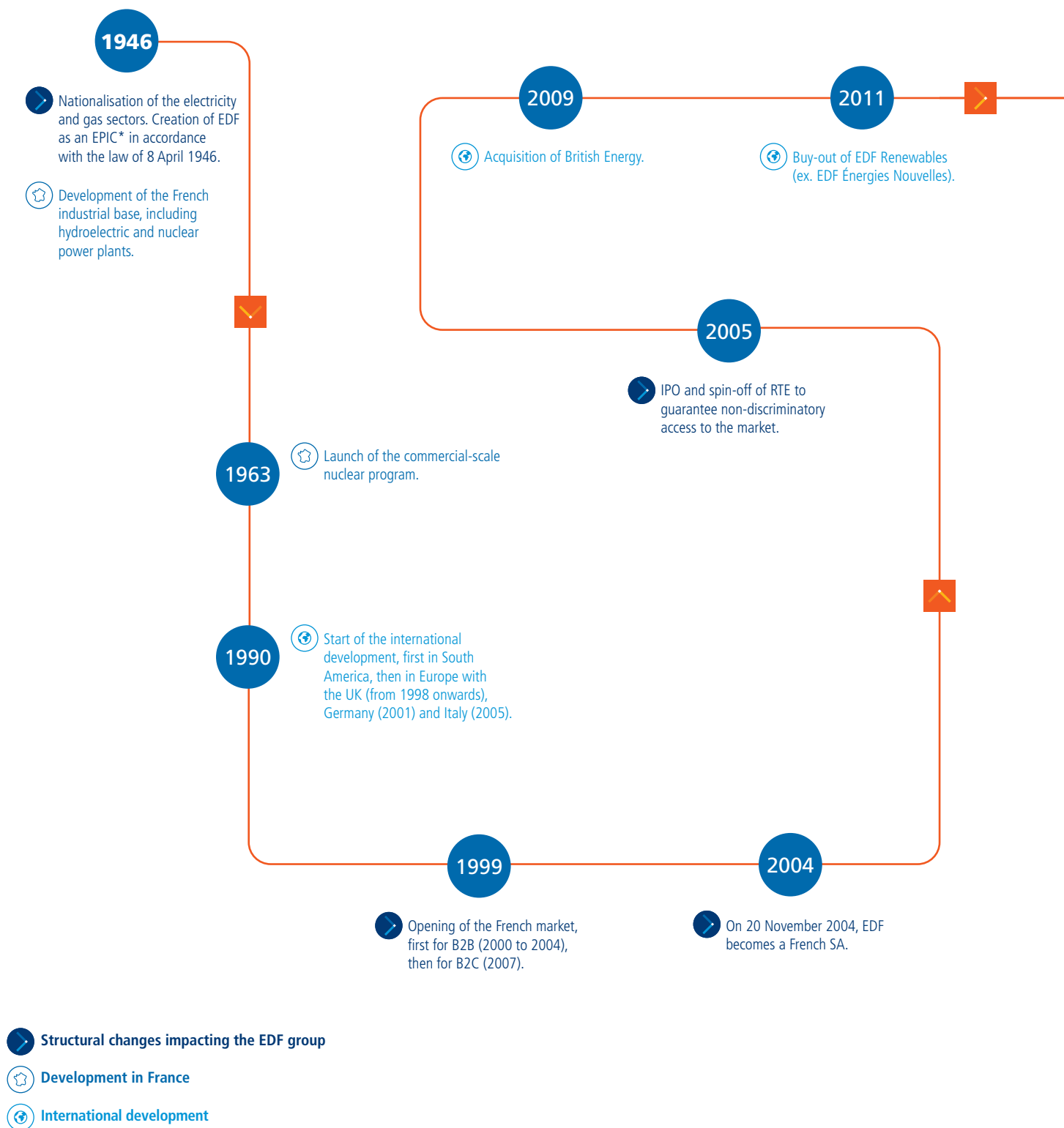
* Coentreprise de Transport d'Electricité or CTE, the company holding 100% of RTE.

EDF International

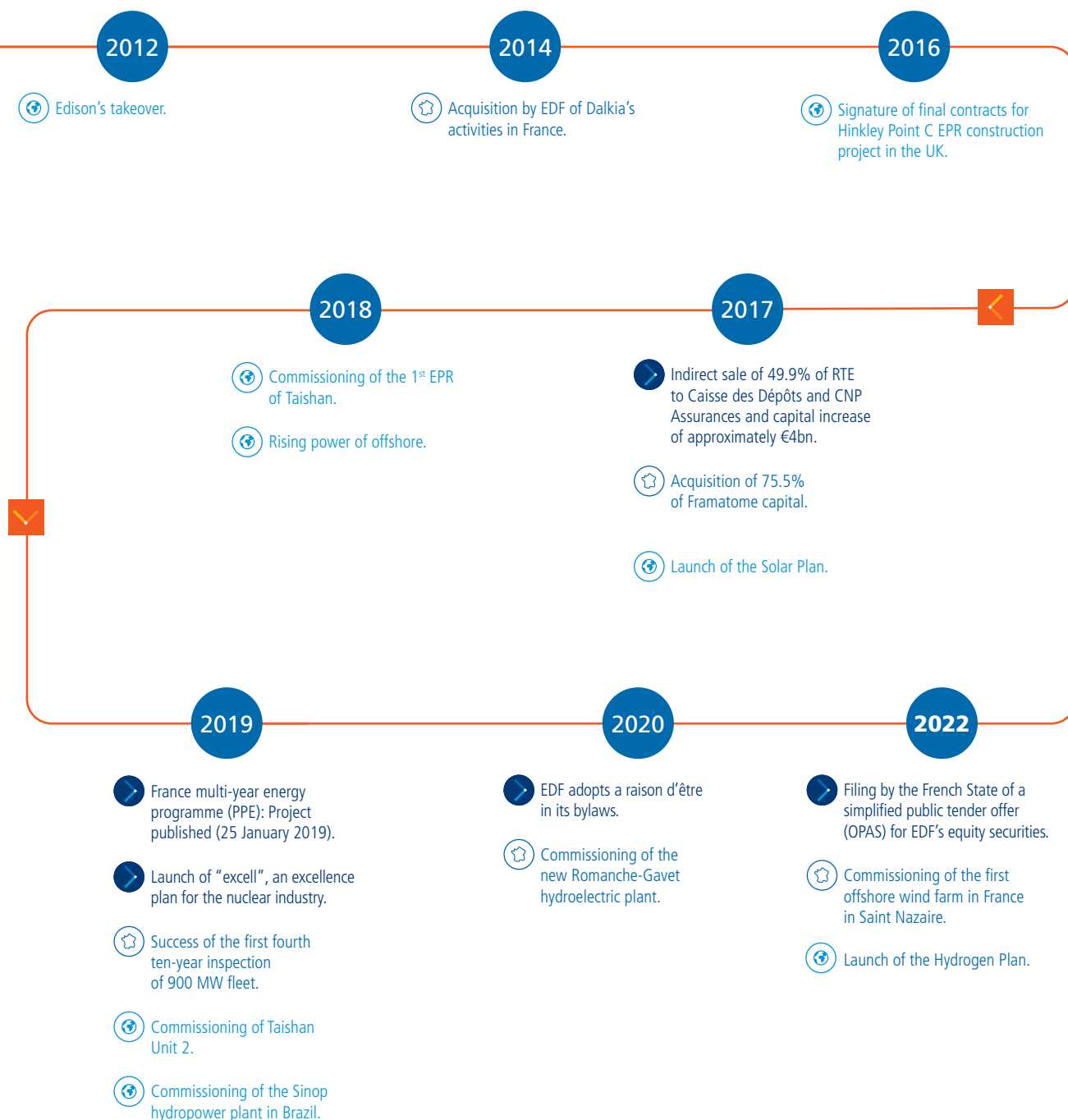


*The Group announced on 25 January 2023 that it had closed the sale of its investment in the Sloe plant.

1.2.2 Group Presentation



*EPIC: Public Industrial and Commercial Establishment.



1.2.3 Significant events of the year



Significant downturn in results in a context of french power output shortfall and high market prices

Luc Rémont appointed Chairman and Chief Executive Officer of EDF on 23 November 2022

SIMPLIFIED PUBLIC TENDER OFFER

- See in section 1.3.2 "Simplified tender offer for EDF equity securities".
- Closing of the French State tender offer on 3 February 2023 ⁽¹⁾: 95.82% of shares, 96.53% of voting rights, and 99.96% of OCEANE bonds now held by the French State.
- Decision of the Court of Appeal expected during the first half 2023 on the action for annulment of the AMF's clearance decision on the tender offer filed on 2 December 2022 by representatives of minority shareholders.

NUCLEAR

- 43 of EDF's 56 reactors are operational at 17 February 2023 (*versus* 30 reactors at 1 November 2022).
- Stress corrosion: see in section 1.4.1.1.2.1 "Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors".
- Flamanville 3: adjusted schedule, with a new nuclear fuel loading target for Q1 2024, and completion cost estimated at €13.2bn ⁽²⁾.
- Hinkley Point C: review of schedule and costs: start of power generation by unit 1 expected in June 2027, and project completion costs estimated at £25-26bn₂₀₁₅ ⁽³⁾. Unit 1 reactor vessel head completed.
- Sizewell C: UK government's decision to take a 50% stake alongside EDF by the time of the FID ⁽⁴⁾, with an investment of close to £700M. The project is eligible for the Regulated Asset Base (RAB) funding model ⁽⁵⁾.
- NUWARD™ SMR: design submitted for pre-assessment by the ASN, in collaboration with the Czech and Finnish safety authorities, for international harmonisation of safety standards.
- Phase 2 of the *Grand Carénage* industrial refurbishment programme launched (2022-2028); estimated cost around €33bn ⁽⁶⁾.
- Excell plan: perpetuation of actions taken to reach the highest industrial standards.

ARENH:

- > Decree for an additional 20TWh allocation of ARENH volumes in 2022 published on 12 March 2022 ⁽⁷⁾.
- > Appeal filed on 9 August before the Council of State, claiming an indemnity from the State of an estimated €8.34bn at that date.
- > The *Conseil d'État* rejected EDF's appeal concerning the cancellation of the allocation of 20TWh of electricity additional ARENH for 2022 ⁽⁸⁾.

- Signature of an exclusive agreement with GE to acquire part of GE Steam Power's nuclear activities ⁽⁹⁾ outside North and South America.

Nuclear activities included in the European taxonomy:

- > Recognition of the role played by nuclear power, echoing the views of the IPCC, the IEA and many countries.
- > EDF's new Green Financing Framework ⁽¹⁰⁾ includes nuclear projects, in line with the Taxonomy.

RENEWABLES

- 12% growth in the wind and solar power project portfolio, to 85GW gross including the successful bids for the New York Bight offshore wind power project developed in partnership (1.5GW), 3 solar + storage projects in New York (1GW), and signature of a PPA for a solar project in Rajasthan (450MW).
- High level of capacity under construction: 7.1GW gross.
- Commissioned capacities up by +16% at 3.6GW gross, including the Saint-Nazaire offshore wind farm (480MW); first MWh produced by the world's largest solar power plant, Al Dhafrah in the United Arab Emirates (2GW); 4 solar power plants in Israel (54MW), 2 of them floating plants.
+10% increase in net installed capacity to 13.2GW.
- Partnership agreements signed for development and construction of the Mpatamanga hydropower plant in Malawi (350MW).
- Launch of a new industrial plan for 100% low carbon hydrogen, to become a European leader in production of low carbon hydrogen and develop 3GW gross of electrolytic hydrogen projects worldwide by 2030.
- Approval by the European Union of McPhy's gigafactory at Belfort (1GW/year) as an IPCEI ⁽¹¹⁾ compatible with French State aid.

(1) On 4 October 2022 the French State filed with the French Financial Markets Authority the draft document relating to the simplified public tender offer relating to EDF shares and convertible bonds not owned by the State, at the price of €12 per share and €15.52 per bond. This offer closed on 3 February 2023 but may reopen in accordance with the undertakings of the State described in the press release of 25 January 2023, including the undertaking not to implement a squeeze-out procedure prior to the Court of Appeal's decision.

(2) Previous cost and schedule: €₂₀₁₅12.7bn and Q2 2023. Cost stated in 2015 euros, excluding interim interest during the construction period.

(3) Compared to a start in June 2026 and a cost estimate of £22-23bn (in 2015 euros) as announced on 27 January 2021. See the press release of 19 May 2022.

(4) EDF's Final Investment Decision will depend on certain conditions, particularly the ability to raise the required funding and to deconsolidate the project while retaining a stake of less than 20%.

(5) The Nuclear Energy Financing Act 2022, which took effect in late May 2022.

(6) In current euros. Some of this cost covers the end of the first phase (2014-2025).

(7) See the press release of 14 March 2022.

(8) See press release on 5 February 2023.

(9) See the press release of 10 February 2022.

(10) In line with the Green Bond Principles published by the International Capital Markets Association (ICMA), and the European Union's Green Bond Standard.

(11) Important Project of ordinary European Interest.

CUSTOMERS

- 3% growth in the customer portfolio ⁽¹⁾.
- 67% increase in residential electricity customers with market offers in France, to 2.4 million.
- 52.7% share of the business customer market and 70.8% of the residential customer market in France ⁽²⁾.
- Strong progress in electric mobility: +45% rise in charging points installed and managed (over 280,000 by end-2022).
- +15% increase in French regulated electricity sales tariff in 2023. Income shortfall recognised as a public service charge and covered by the CSPE compensation mechanism.
- Many major business customers won, for electricity (e.g., Toyota, French Armed Forces Ministry, Paprec) and gas (e.g. Tereos, Constellium).
- Dalkia: agreements signed with Arkema for an SRF ⁽³⁾ fuel recovery project to avoid 10,000t of CO₂ emissions per year.

ENEDIS

- 18% increase in renewable plants connected in 2022, i.e., an additional 3.8GW.
- Signature of a €800m loan agreement with EIB to support energy transition.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE COMMITMENTS

- Downstream avoided emissions: new target at 30Mt CO₂ in 2030 ⁽⁴⁾. End-2022 level: 11.4Mt CO₂.
- Adoption of the climate transition plan resolution at the May 2022 Shareholders' Meeting by 99.87%.
- 30.8% female members in Group entities' Management Committee, on track for the target of 33% in 2026 and 36-40% in 2030 ⁽⁵⁾.
- Issue of a €1.25bn Green Bond to fund investments in electricity distribution, bringing total Green Bond issues to c. €10bn.

WINTER PEAK AND ENERGY SUFFICIENCY PLAN

- Enedis and hydro and nuclear power generation teams' action to maximise available capacity.
- Energy sufficiency awareness-raising campaigns for customers (load-shedding, Tempo offers, consumption monitoring tools) contributed to the 10% drop in electricity consumption in France in November and December 2022.
- Above 10% reduction in energy consumption by the Group's office sites in Q4 2022 ⁽⁶⁾.

INNOVATIONS FOR CARBON NEUTRALITY

- EDF Pulse: contribution to funding of the UK start-up Carbon8 (carbon capture and recovery from industrial residues).

Mobility:

- > Partnership between IZIVIA et Q-Park to install 4,000 public charging points in France in the next 3 years.
- > Luminus signed a 3-year renewable partnership to supply and install electric vehicle charging solutions for Arval's business and residential customers in Belgium.
- > New combined solar panel/charging point service offer launched for business customers in France.
- > Innovative solution from Sowee and Mobilize ⁽⁷⁾ for Renault electric vehicle customers: costs reduced through smart home charging.
- > IZI by EDF selected by Nissan to supply and install electric vehicle charging solutions for its residential customers.

CASH CAPITAL INCREASE

Cash capital increase of over €3.15bn, maintaining shareholders' preferential subscription rights.

ANNOUNCEMENTS BY THE FRENCH PRESIDENT ON 10 FEBRUARY 2022 IN BELFORT

- Support for the French nuclear sector:
 - > Launch of a programme to build 6 EPR2 reactors and studies for potentially 8 more.
 - > Continuing operation for all reactors, except for safety issues.
 - > Development of the French SMR programs, including €500 million for NUWARDTM.
- Acceleration of renewable energy development.
- Confirmation of the growing role of low-carbon electricity in France's climate ambitions, in a context of energy consumption reduction.

WAR IN UKRAINE

- Increased market prices and volatility: extreme tensions on the electricity market in a context of lower nuclear output in 2022, requiring significant purchases on the market.
- Supply chain disruptions and inflation of component and commodity prices caused delays for some activities and major projects.
- Limited impact on supplies: one single Edison gas contract with a European subsidiary of a Russian company (accounting for 4% of the Group's supply, terminated end-2022) and low dependence on uranium imports from Russia, given current stock levels and diversified long-term (20-year) supply contracts.
- International sanctions: to date, no exposure to Russian companies, banks or individuals affected by international sanctions. Closure of the Moscow office.

(1) In millions of customers, counted by point of delivery. One customer may have two points of delivery. For France (DCO, ES and the island activities). With a negative impact in EBITDA in 2022 due to a higher number of new customers at regulated tariff, leading to purchases of volumes on the market at very high prices.

(2) On volumes sold for delivery in 2023.

(3) SRF: solid recovered fuel that cannot be recycled locally.

(4) Emissions avoided annually thanks to sales of new innovative products and services for the G4 scope. The initial target at 15Mt CO₂ concerned the scope of EDF and Dalkia.

(5) These 2026 and 2030 Group targets also apply to the proportions of female employees and executives.

(6) Percentage decrease vs Q4 2021, corrected for climate effects.

(7) A Renault application.

1.3 Group strategy and objectives

1.3.1 Environment and strategic challenges

Energy efficiency and low-carbon electricity are at the heart of the energy transition

The fight against climate change is a major challenge for the planet. The agreement reached in Paris at the 21st session of the Conference of Parties (COP 21) in 2015 has confirmed the effort being made to combat climate change and the ramping up of energy transitions beyond Europe.

In Europe, the "Clean Energy Package" finalised in 2019, the "Green Deal" developed in 2020 and the "Fit for 55" climate package proposed by the European Commission in 2021 provide the framework of measures that can enable the European Union to become carbon-neutral by 2050. Recovery programmes in the wake of the Covid-19 health crisis have made climate issues an even higher priority. Similarly, the "REPowerEU" programme announced in 2022 to respond to the disruption of the global energy market caused by the war in Ukraine adds the challenge of ensuring the resilience of the energy system.

The EU's Green Deal and the related national programmes focus on cutting CO₂ emissions as a priority, and as competitively as possible, drawing on a locally-rooted industrial vision.

The United Kingdom, which must undertake a major renewal of its electricity generation facilities, adopted the Climate Change Act in 2008 and established a market model that is consistent with that policy (comprising a Carbon Price Floor, Contracts for Difference, capacity market, and consideration of a regulated asset base model for new nuclear generation facilities).

Electricity in France accounts for just over 12% of CO₂ ⁽¹⁾ emissions (41%⁽¹⁾ at the international level). France's Climate and Energy Act of 8 November 2019 places the reduction of greenhouse gas emissions at the heart of French energy policy. The goal is now "to become carbon-neutral by 2050 by cutting greenhouse gas emissions more than sixfold".

France's Multi-Year Energy Programme (*Programmation Pluriannuelle de l'Énergie*, PPE), which lists the broad outlines of French energy policy, sets out a ten-year vision, which is vital for major industrial players.

To achieve these objectives, the two major levers of actions are:

- lowering energy consumption by developing energy efficiency solutions and encouraging reduced energy use; and
- switching from fossil fuel to carbon-free energy sources and, in particular, prioritising carbon-free electricity and renewable heat.

The transition to a carbon-free economy should also preserve households' purchasing power and the competitiveness of companies, whilst ensuring secure energy supplies and energy sovereignty.

Innovation, both upstream and downstream, will be an essential factor for successfully achieving these goals.

1.3.2 Priorities of the CAP 2030 strategy

EDF's *raison d'être* is "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development". Drawing on the contribution of employees during the "Let's Talk Energy" (*Parlons Énergies*) dialogue, the *raison d'être* was added to the Company's bylaws at the General Meeting of Shareholders held on 7 May 2020. The CAP 2030 strategy reflects EDF's *raison d'être*.

The EDF group produces some of the least carbon-intensive electricity in the world. In 2020, it made further commitments to reduce its greenhouse gas emissions by 2030, which have been validated by the Science Based Targets Initiatives as exceeding the 2°C ambition of the Paris Agreement.

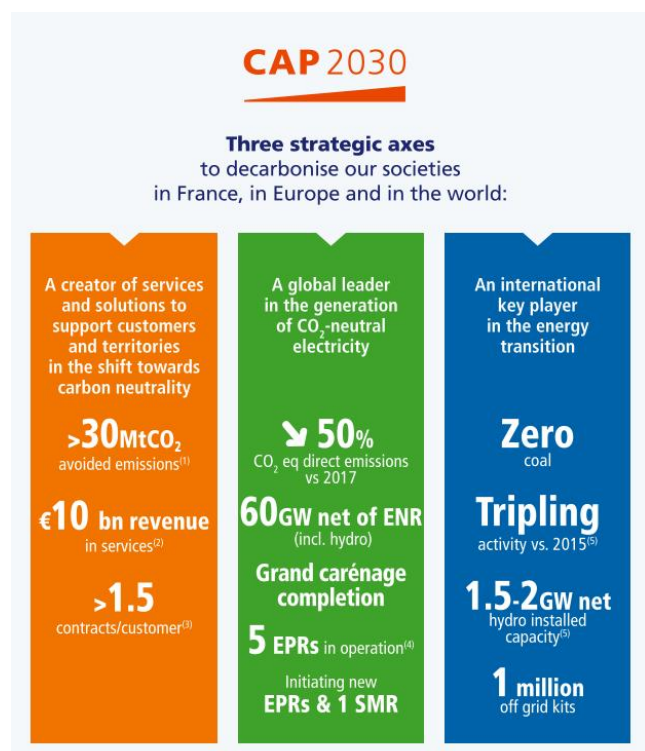
For the first time, the EDF group has set targets covering not only its direct emissions, but also its indirect emissions. The aim is to adopt a trajectory whereby the Group contributes to achieving carbon neutrality for its entire carbon footprint by 2050. By 2030, the EDF group aims to reduce its direct emissions (scope 1) by 50% compared to the 2017 level of emissions and to reduce its scope 3 emissions by 28% compared to 2019 ⁽²⁾.

For EDF, the fight against climate change is based on energy decarbonisation, energy efficiency and reduced energy consumption, as a means of lowering the carbon intensity of its customers' energy uses.

(1) Source: Ministry of Ecological Transition, Key climate figures, 2022 edition, page 38.

(2) See also section 3.1 "Carbon neutrality and the climate".

The Group's strategy is structured around three strategic priorities, which are described in the CAP 2030 strategy:



(1) Calculation of emissions avoided by products/services for renewable development in heating networks; energy efficiency; photovoltaic generation (excluding EDF facilities feeding their generation into the grid); electric mobility; residential heating pumps sold by EDF SA, Dalkia, Luminus, EDF in the UK, and Edison. See section 3.6 « Methodology ».

(2) Group.

(3) Perimeter of 4 priority countries in Europe « G4 » (France, Italy, UK, Belgium) (residential)

(4) Flamanville 3, Hinkley Point C and Taishan.

(5) Excluding G4 (France, Italy, UK, Belgium)

A creator of services and solutions to support customers and territories in the shift towards carbon neutrality

Individuals, businesses and cities increasingly want to change their methods of lighting, heating, production, consumption and travel, etc. Everyone wishes to be a stakeholder in the energy transition. This momentum, which is an aggregate of individual initiatives and public decisions, is gradually increasing everywhere. EDF's goal is to assist customers and local areas to achieve CO₂ neutrality with accessible and innovative carbon-free and energy-efficient solutions.

In addition, EDF encourages its customers to reduce their energy consumption by:

- sharing advice on everyday energy-saving actions, such as turning down heating to 19°C;
- inviting customers who are able to do so to shift consumption to off-peak hours when demand on the electric grid is lower;
- providing customers with tools to help them understand their consumption ("EDF & Me" app).

These messages were highlighted in a widespread EDF advertising campaign launched in October 2022 that urged consumers to "turn down, turn off, defer".

In addition, EDF is enhancing the value of its customer portfolio in priority European countries (France, the United Kingdom, Belgium and Italy). To do so it relies on its top-notch customer relations and a broad range of service offers and solutions, particularly in sustainable energy performance for the residential and business markets. Building on the trust of its customers, EDF is developing a range of customised services for its customer portfolio and aims to increase the number of contracts per individual customer to over 1.5 by 2030 ⁽¹⁾.

Offerings for green energy, self-consumption, energy efficiency services, local services, contracts covering energy performance and electrical or climate engineering, waste heat recovery, and biomass all address its customers' emerging needs. The EDF group targets sales of €10 billion in services by 2030 ⁽²⁾.

EDF is strengthening its positions in the electric mobility sector (in France, the United Kingdom, Italy, and Belgium), in building renovations, for example by decarbonising heating via heat pumps, in renewable heating and cooling networks in France, and also in leveraging electrical flexibility and aggregation (in Europe).

EDF's customers are increasingly aware of their environmental footprint. In response, EDF is providing affordable, innovative solutions that grant them access to smarter, lower energy use:

- **By contributing to the decarbonisation of consumption through a shift to electricity use in the sectors that produce the most CO₂:**

> Transport ⁽³⁾

To support the massive rollout of mobility electrification, EDF is making practical commitments: investing in support for customers (consumers, companies, and local authorities); leveraging electric vehicle storage capacity; and producing and marketing electrolytic hydrogen,

> Buildings

The Group is highly committed, alongside industry professionals, landlords, and local authorities, to help them improve energy efficiency and transition towards decarbonisation of heating and cooling solutions. EDF offers a range of services that cover everything from monitoring and management of energy use through to decarbonisation and energy efficiency ⁽⁴⁾ operations, in particular during renovation works. EDF also provides direct support for households ⁽⁵⁾ through IZI by EDF and IZI Confort. Finally, through its subsidiary Dalkia, the Group is actively engaged in developing heating networks and their decarbonisation (with the use of renewable energy sources and energy recovery) and the development of Energy Performance Contracts (CPE) for public buildings, companies, and residential complexes.

> Industry

EDF develops process electrification solutions, waste heat recovery, and low-carbon electrolytic hydrogen generation, leveraging its R&D expertise for the benefit of its industrial customers, assisting them as they upgrade their generation facilities (electric boilers and furnaces, etc.). EDF also proposes (through its subsidiary Agregio) flexible solutions or green supply offers.

- **by building on the development of infrastructure, data, and the creation of low-carbon solutions;**
- **by helping its residential customers, businesses, and local authorities to play a more substantial role in their energy consumption** (through self-consumption, digital consumption management solutions).

The aim of these solutions is for EDF to avoid the emission of over 30 million tonnes of CO₂ by 2030 ⁽⁶⁾.

(1) Scope of the 4 market players UK, Belgium, Italy, France.

(2) Group scope.

(3) Responsible for 24% of emissions related to energy consumption in the world – Source: Ministry of Ecological Transition, Key climate figures, 2022 edition, page 38.

(4) In particular via Energy Performance Contracts (EPC) and Energy Savings Certificates (CEE) in France.

(5) They can choose a heat pump to replace their highly CO₂-emitting boiler, whether oil or gas.

(6) Calculation of emissions avoided by the following products/services, sold by EDF, Dalkia, Luminus, EDF UK, and Edison: development of renewable energy in heating networks; energetic efficiency; photovoltaic production (installations sold to customers and self-consumption, excluding EDF installations injecting their production into the network); electric mobility; residential heat pumps. This indicator corresponds to the difference between the emissions of the product/service sold and the emissions of a reference scenario set for each product/service. It is expected to grow over the coming years, insofar as possible along with changes in the methodology aiming to remain in line with external practices. Regarding the methodology associated with this indicator, see section 3.6 "Methodology".

In addition, EDF continues to innovate by developing new business models to assist its customers with their energy transition and put into practice the Group's carbon neutrality commitments. Innovation, both downstream and upstream, will be an essential factor in covering the required ground, given the speed at which renewables technology is progressing, ranging from storage to electric vehicles and including hydrogen power and digital developments.

Building on its own R&D efforts and its innovation ecosystem developed with its partners, the EDF group selects those innovations that have the potential to accelerate energy transition, while supporting the French industrial fabric as much as possible.

Lastly, the energy transition will only be achieved if it is just, equitable and profitable. The EDF group supports its customers by helping them to use energy more wisely. EDF pays particular attention to the most vulnerable customers and implements actions to reduce energy insecurity (see section 3.3.4 "Energy poverty and social innovation").

A global leader in the generation of CO₂-neutral electricity

96% of electricity produced by EDF in France is decarbonised as a result of nuclear and renewable energies. EDF is thus playing a leading role in achieving carbon neutrality by 2050. Its actions aim to accelerate the development of renewable energies in addition to its nuclear fleet, for which it guarantees safety, performance and competitiveness.

There is no single solution for ensuring low-carbon electricity, but rather an array of technologies: nuclear power, hydropower, solar power, onshore and offshore wind power, renewable heat, grids, storage and low-carbon thermal generation means, tools for managing flexibility in uses and generation, etc.

EDF's strategy is consistent with the announcements made by the French President on 10 February 2022 in Belfort. He confirmed the growing role of low-carbon electricity in France's ambition to reduce French greenhouse gas emissions by 55% by 2030 compared to 1990 and to achieve carbon neutrality by 2050. The President of the Republic therefore announced:

- > A strong strategy to boost nuclear energy in France, including:
 - the launch of a construction programme of 6 new EPR2 reactors and feasibility studies for potentially 8 more, which will mobilise, in particular, massive funding of several tens of billions of euros, even if the precise terms of this funding remain to be defined;
 - the continued operation of all existing French reactors, except for safety reasons (this extension of the operating period is therefore done without giving up any obligations in terms of nuclear safety) and, in particular, the need for EDF to study the conditions for an extension beyond 50 years, in conjunction with the Nuclear Safety Authority;
 - The development of small modular reactors (SMR), as well as innovative reactors allowing to close the fuel cycle and produce less waste, with an additional intervention of the State up to €500 million for the NUWARD™ project currently carried out by EDF.
- > Acceleration in renewable energy development (solar, offshore and onshore wind and hydro).
- **The EDF group's aim of achieving very low-carbon production is embodied first and foremost in the accelerated profitable development of renewable energy in France and abroad.**

The EDF group is developing renewable electrical power using all types of technology (hydropower, solar power, onshore and offshore wind power, etc.). Renewable energies already account for over one-quarter of the Group's overall capacity ⁽¹⁾. The EDF group is now the leader in renewable energy in Europe

and, in particular, the leading supplier of hydropower in the European Union, with 22.6GW of net installed capacity ⁽²⁾. With regards to other renewable energies, mainly wind power and solar power, the EDF group is also one of the world leaders, with a net installed capacity of 13.2GW. EDF's goal is to rapidly increase its installed capacity in these sectors in order to achieve installed capacity for renewable energy (including hydropower) of 60GW net by 2030. This would more than double the installed capacity in 2015.

The EDF group is seeking to diversify the different technologies (onshore and offshore wind power, solar power, and hydropower), as well as their geographical distribution. EDF regularly invests in hydropower facilities in order to combine economic, energy and environmental performance, and offers solutions to strengthen hydropower generation.

Today, EDF is a European leader in the aggregation of renewable capacities and flexible solutions. It has set itself the target of tripling the Group's storage capacity by 2035 as part of its Storage Plan.

- **This aim of very-low carbon generation is also based on the performance of the nuclear industry**, by guaranteeing industrial expertise, safety, competitiveness, care for the environment, optimised operation of nuclear fleets in France and the United Kingdom, completion of works in progress (Flamanville 3, HPC), and implementation of an innovative fuel cycle strategy.

EDF's nuclear generation fleet is the only one of its kind in the world. The "Grand Carénage" of the existing fleet in France is a major industrial challenge. The related investment is designed to enable the plants in question to remain in operation beyond 40 years, guaranteeing nuclear safety, performance, and the protection of the environment.

Nuclear power operation does not emit CO₂ ⁽³⁾; it provides baseline production whilst offering strong leverage in terms of management and flexibility to adjust to electricity consumption. As such it is an essential asset for a decarbonised electricity mix by 2050.

With this in mind, EDF is building the Hinkley Point C reactor in the United Kingdom and the Flamanville reactor in France. Two EPRs are in operation in Taishan, China. In Finland, the Olkiluoto 3 EPR reactor built by the AREVA-Siemens consortium reached full power on 30 September 2022, ahead of its planned commercial commissioning in early 2023.

By 2030, the Group is seeking to be engaged in new EPR programmes in France, the United Kingdom, and elsewhere in the world, as well as in the development of a first Small Modular Reactor (SMR) demonstrator in France.

In France, following the French President's announcement in Belfort in February 2022 about the launch of a construction programme for six nuclear reactors in France, EDF, alongside the nuclear industry, is preparing to realise this ambitious and essential programme. The phase of consultations and dialogue with stakeholders will take place pursuant to a public debate process (from 27 October 2022 to 27 February 2023 for the first pair of EPR2 reactors on the Penly nuclear site in Normandy).

EDF reached an agreement with the British government ⁽⁴⁾ to continue to develop the Sizewell C nuclear power plant project. The British government announced an investment of c.£700 million and will become a 50% shareholder alongside EDF. EDF's final investment decision remains subject to the achievement of certain key milestones, in particular the ability to raise the necessary financing to complete the project and the deconsolidation of the project from the Group's balance sheet.

EDF is also preparing for redeployments following final shutdowns. It aims to become the European leader in generation asset decommissioning, and is developing the circular economy.

- **Supporting energy transition by reducing the carbon footprint requires targeted development of electricity production projects using gas to meet flexibility and energy transition requirements.**

(1) 31.8GW at the end of 2022 out of a total of 116.9GW in consolidated data.

(2) Including marine energy.

(3) No direct emissions and LCA (life cycle analysis) emissions which can be estimated at 6gCO₂/kWh (source: Ademe).

(4) See the press release of 29 November 2022 "EDF welcomes the decision of the British government to co-finance the development of the Sizewell C project".

A key international player in the energy transition

Faced with the challenges of demographics, urbanisation and air pollution, many countries are looking for solutions to reverse the trend.

- **EDF, which operates on four continents, supports this energy transition trend by exporting its expertise in the fields of nuclear power, renewable energies and energy services.**

Internationally, there is considerable scope for innovation. EDF is seeking to triple the value creation of its activities (compared to 2015) through targeted development of its renewable energy (including 1.5 to 2GW of net installed capacity in hydropower⁽¹⁾), nuclear, and services production assets, thus contributing to other countries' energy transition.

In terms of new business lines, EDF is aiming to have a portfolio of 1 million off-grid kits by 2030 and is pursuing the development of new markets such as microgrids, smart grids, storage, hydrogen, mobility, etc., as well as further strengthening its positions in energy efficiency services, grids, and engineering services.

From a geographical point of view, EDF is seeking to strengthen its position in Europe, particularly in core countries (France, the United Kingdom, Italy, and Belgium), as well as to consolidate its position in North America. EDF is aiming to become a benchmark player in a limited number of priority countries in South America, Asia, Africa, and the Middle East, through a significant business presence, thus providing coordinated support for energy transition in these target countries.

- **EDF has committed itself to ending the Group's coal-fired electricity generation by 2030.**

In France, pursuant to the SNBC⁽²⁾ national low carbon strategy, the government has committed to halting coal-based electricity production in the medium-term⁽³⁾. EDF is also conducting a sustained innovation policy by investing in bioenergy and innovative carbon capture technologies, and has made a commitment to low-carbon thermal energy.

- **The EDF group is investing massively in energy transition.**

In 2022, nearly 94% of Group investments were in line with the Group's net-zero trajectory (94% in 2021)⁽⁴⁾.

In all countries in which it operates, the EDF group implements a strategy to adapt its activities to the impacts of climate change. It aims to make its existing facilities more resilient to increasingly frequent extreme weather events, such as heat waves, droughts, storms and floods. Moreover, the EDF group incorporates long-term climate change (such as average temperatures and sea levels) into the design of its new facilities, particularly those with a lifespan of over 40 years, such as hydroelectric and nuclear plants (see section 3.1.2 "Adapting to climate change").

Conditions for the execution of the Group's strategy

To continue a very significant investment programme over the coming period, the Group must, in particular, restore its financial structure.

The magnitude and diversity of industrial, regulatory and market risks, or risks concerning the Group's ability to bring together necessary skills, that the Group faces in the current environment may have varied consequences. New risks could emerge or existing risks could worsen, which could significantly affect the Group's ability to achieve its 2023 financial targets⁽⁵⁾ and its long-term strategic objectives.

To deal with the energy price crisis, emergency measures were adopted in 2022 (EU regulation on surplus revenues, broader State aid possibilities, proposed gas price cap). In addition, a European Commission consultation was launched in late January 2023 calling for reflection on the European regulatory framework applicable to market rules. The strategic challenge for the EDF group will be to obtain a change in market rules that is favourable to investments in all decarbonisation technologies, for energy generation and uses.

In this context, and in conjunction with all the Company's stakeholders, EDF will present a new strategic, operational and financial roadmap in the course of 2023.

Simplified tender offer for EDF equity securities

The French State, the majority shareholder of EDF, announced in a press release dated 19 July 2022, its intention to launch a simplified tender offer for EDF's equity securities with the aim of delisting the Company. According to the State's draft information memorandum⁽⁶⁾, this project comes at a time of climate urgency and a geopolitical situation that requires forceful decisions to ensure France's energy independence and sovereignty, including the need to be able to plan the means of production, transport and distribution of electricity over the very long term.

On 4 October 2022, the French State filed its proposed simplified tender offer for EDF's shares and "OCEANE" convertible bonds⁽⁷⁾ with the French Financial Markets Authority (AMF). On 22 November 2022, the AMF issued a clearance decision for the simplified tender offer, which was opened on 24 November 2022. Various funds and non-profit organisations⁽⁸⁾ lodged appeals seeking the annulment of the clearance decision on the offer (see section 7.1.5 "Disputes").

On 25 January 2023, the AMF announced that the call would be closed on 3 February 2023⁽⁹⁾. This decision follows the withdrawal by the funds and non-profit organizations of their claim for a suspension of the execution of the offer. This withdrawal was prompted by the undertakings made by the French State, in particular not to implement a squeeze-out procedure prior to the Court of Appeal's decision on the merits of the claim.

In the event the Court of Appeal affirms the AMF's compliance decision, the call will be reopened for a period of 10 trading days, at the end of which the State will proceed with the squeeze-out. The State announced that it had acquired 90% of the voting rights and capital of EDF (after conversion of the OCEANE bonds it holds)⁽¹⁰⁾, the thresholds required for a squeeze-out.

In the event the Court of Appeal annuls or revises the AMF's clearance decision, the French State has undertaken to return the securities acquired to former shareholders and/or holders of OCEANE convertible bonds who so request. If the State decides to file an amended draft simplified tender offer at a more favourable price, the State has undertaken to pay an additional price to the shareholders and/or holders of OCEANES who have not requested the return of their securities, but who request the payment of the additional price.

(1) Excluding priority countries in Europe: France, Italy, the United Kingdom and Belgium.

(2) Introduced by the Energy Transition Act for Green Growth (LTECV), the National Low Carbon Strategy (SNBC) is France's roadmap for combatting climate change. It provides guidelines for implementing, in all sectors of activity, the transition to a low-carbon, circular and sustainable economy. It defines a trajectory for reducing greenhouse gas emissions by 2050 and sets short-medium term objectives: carbon budgets. It has two ambitions: to achieve carbon neutrality by 2050 and to reduce the carbon footprint of French consumption. Public decision-makers, at national and territorial level, must take it into account.

(3) However, RTE's latest forecast report shows the need to maintain the Cordermaix power plant until 2024, or even 2026, for reasons of securing the supply/demand balance.

(4) See note 20.4 in the appendix to the consolidated financial statements closed on 31 December 2022 in section 6.1 and also see section 3.8.4 "Details on the taxonomy".

(5) Described in section 5.1.5 "Outlook".

(6) Draft Offer Document prepared by the French State on 4 October 2022.

(7) Bonds that are convertible and/or exchangeable into new and/or existing EDF shares.






(8) Appeal filed by FCPE Actions EDF, Énergie En Actions and the Association for the Defense of Minority Shareholders.

(9) See EDF's press release of 26 January 2023 "Update on the timetable for the simplified public tender offer targeting EDF's equity securities".

(10) Press release from the Ministry of the Economy, Finance and Industrial and Digital Sovereignty and the State Holdings Agency of 8 February 2023 "Success of the simplified public tender offer by the State on EDF".

1.3.2.4 Strategic priorities backed by five plans

The Group's priorities are backed by the following five plans and a strategic work programme ⁽¹⁾, in line with the Group's *raison d'être* and business model:

	<p>Through the Solar Plan, which was launched in 2017, the EDF group aims to become the leader in photovoltaic solar energy in France with 30% of new capacity built ⁽²⁾ between 2020 and 2035.</p>
	<p>Through the Storage Plan, which was launched in 2018, the EDF group plans to develop 10GW of new storage facilities worldwide by 2035, in order to increase the Group's storage capacity to 15GW by that time. The EDF group is aiming to develop a portfolio of 1 million off-grid kits by 2030. Storage is a key factor in stabilising network frequency, encouraging the inclusion of renewable energy, and managing microgrids in non-interconnected areas. It will be developed by using hydro pumped energy transfer stations and batteries.</p>
	<p>Through the Electric Mobility Plan, which was launched in October 2018, the EDF group aims, by 2023, to secure a leading position in the supply of electricity for electric vehicles in the Group's four major European markets (France, the United Kingdom, Italy and Belgium). The EDF group plans to roll out 400,000 charging points and operate 20,000 smart charging points by 2023. At the end of 2022, over 280,000 charging points had been rolled out. For its own fleet of light commercial vehicles, EDF is also rolling out the EV100 programme ⁽³⁾ and gradually converting its ICE vehicles into electric vehicles; the target is to achieve a rate of 100% by 2030.</p>
	<p>With the excell Plan, which was launched in the spring of 2020, EDF is laying the required groundwork for the French nuclear industry to return to the highest standards of diligence, quality, and excellence, which are necessary for the successful completion of nuclear projects. This is a key challenge: as a low-carbon source of energy, nuclear power has a significant role to play in the fight against climate change. In 2022, 27 of the 30 commitments of the excell Plan met or exceeded their targets, due to the engagement of EDF's teams and of all the companies in the French nuclear sector ⁽⁴⁾. See also section 1.4.1.1.1 "The excell Plan".</p>
	<p>Through the Hydrogen Plan, which was launched in April 2022, EDF aims to secure a leading position in Europe in the generation of 100% low-carbon hydrogen, using low-carbon electricity from the grid, nuclear or renewable sources. EDF's ambition is to develop 3GW of electrolytic hydrogen projects worldwide by 2030 ⁽⁵⁾ in order to contribute to the decarbonisation of industry and heavy transport (including the maritime and aviation sectors via e-fuels).</p>

1.3.2.5 Group transformation

Digital technology and new work practices, responsibility and simplification, skills, the recognition model and health and safety are the five major levers of the Group's transformation.

In order to be able to face the challenge of appeal and performance and meet the new expectations of customers, employees and all stakeholders, the Group has adapted its managerial practices by making teams more accountable, and by streamlining its organisations and its operating methods. It develops the use of digital technologies and collaborative tools.

For several years, the EDF group has placed the focus of digital transformation and innovation at the strategic level and has carried out an in-depth review of its internal organisation and training. Digital transformation involves employees and internal operating methods, as well as customer relations, the management and design of industrial assets, as well as the services provided.

This managerial and digital transformation approach is based on groups and mechanisms for coordinating networks of players involved in the transformation, a number that increases each year.

More specifically:

In 2018, the Group signed a new global agreement on Corporate Social Responsibility ("CSR agreement"), which includes improvements in favour of diversity and for the benefit of Group employees.

Amongst other initiatives, 2019 saw the creation of a Digital Academy devoted to training and supporting employees in transitioning to new digital jobs. In the same year, a new management-labour dialogue approach was adopted, simplified and set up, in accordance with new legal requirements.

In 2020, the usage centre accelerated the rollout of digital resources and practices. It is continuing its action to enhance collaboration across the Company and facilitate current remote working arrangements. In the same year, the Group reviewed its support system for internal mobility and declared new aspirations for leadership in support of managerial transformation.

In 2021, the Group used the experience of the health crisis to provide a new impetus to its transformation by adapting its operating methods, undertaking simplification actions and signing the collective agreement "Work differently, Manage differently" ("TAMA") ⁽⁶⁾.

In 2022, by rolling out the "Work differently, Manage differently" agreement, the teams continued to rethink processes by seeking to make them more digital, by empowering themselves to act in order to implement simplification and improvement initiatives, and by continuing to build a framework for effective work for which employees are accountable.

The Group continues to digitise its processes, for example by the widespread rollout of the electronic signature and by automating certain tasks (RPA ⁽⁷⁾). The Group engages with technological innovations through multi-business-line teams tasked with cross-functional subjects such as Artificial Intelligence, blockchain, the Internet of Things (IoT), edge computing, quantum computing and 5G.

(1) The strategic work programme is broken down into around twenty projects, steered at the level of the Executive Committee, giving concrete expression to each of the three strategic priorities.

(2) Market shares expressed in gross installed capacity.

(3) EV100 is a global initiative born in New York during Climate Week NYC in September 2017. It aims to bring together major groups committed to the development of electric mobility and its generalisation by 2030.

(4) See EDF's press release of 11 November 2022 "The excell plan presents its annual results and its outlook for the sustainability of its standards".

(5) See the press release of 13 April 2022 "The EDF group is launching a new industrial plan focused on 100% low-carbon hydrogen".

(6) See section 3.3.1.3.5 "Well-being, organisation of work and working hours".

(7) Robotic process automation.

In 2017, the Group adopted a data management policy and set up a "data analytics" plant for nuclear, thermal and renewable electricity generation, with the pooling of expertise. A second plant has been set up for tertiary data (real estate, purchasing, etc.).

In 2020, the Group adopted an AI Ambition to speed up its progress in this field and structure a policy for responsible use of Artificial Intelligence. EDF also unveiled an open data platform at its innovation showcase event "Electric Days".

EDF's commitment was embodied by the signature of a Responsible Digital charter created by *Institut du Numérique Responsable* (the French Institute for Responsible Digital Technology). In 2021, for the first time, it obtained the Responsible Digital certification supported by the Ministry for Ecological Transition.

The EDF group is also a founder member of Gaia-X ⁽¹⁾, an initiative to promote the emergence of a European trusted cloud. In 2022, it renewed its membership on the Board of Directors of this association and actively supports the concept of the "Trust Label", as well as "DataSpace Energy", a trusted ecosystem for promoting wider availability and sharing of energy sector data.

In the nuclear sector, the years 2020 to 2022 were marked by the rollout and advancement of the "excell Plan" ⁽²⁾.

Finally, in a rapidly changing environment, the Group must be a socially responsible and committed employer and, therefore, a benchmark in terms of health and safety ⁽³⁾.

1.4 Description of the Group's activities

1.4.1 Electricity generation activity

Against a backdrop in which there will be more electricity usages, the Group has one of the largest power generation fleets in the world, with some of the lowest CO₂ emissions, thanks to the share of nuclear and renewable energy in its energy mix. The Group intends to greatly accelerate the development of renewable energy in France and worldwide, with the goal of achieving 60GW net in 2030. The Group is also preparing for the nuclear energy of the future with EPR and through the development of Small Modular Reactors (SMR).

431.7_{TWh}

POWER GENERATION

116.9_{GW}

WORLDWIDE
CONSOLIDATED INSTALLED
CAPACITY

36_{GW}

NET RENEWABLE CAPACITY

90%

DECARBONISED*
GENERATION

*Direct output-related CO₂ emissions, excluding life-cycle analysis (LCA) of fuel and production means.

The Group's generation fleet has significant strengths:

- a variety of means of generation, which enable adequate coverage of EDF's downstream portfolio needs (end users, sales to alternative suppliers, sales on the wholesale markets, etc.). The use of the different components of the assets is managed by placing the priority at any time on the resources offering the lowest variable costs;
- a standardised nuclear fleet of 56 reactors in France ⁽⁴⁾ and 9 reactors in operation in the United Kingdom;
- the construction of EPR-type reactors worldwide;
- the control of the entire life cycle of nuclear generation resources: design, operation, and decommissioning;
- the implementation of actions aimed at improving the technical performance of power stations and extending operating lifespan;
- a fleet generating at 90% without CO₂ emissions ⁽⁵⁾ due to the predominance of nuclear and hydro-power generation facilities;
- a geographical position at the junction of electricity exchanges between the continental platform and the electric peninsulas (Italy, Spain and the United Kingdom).

Composition and specifications of the EDF fleet in mainland France

With a total installed generation capacity of 86.5GW in mainland France ⁽⁶⁾ at 31 December 2022, the EDF fleet produced 322.7TWh ⁽⁷⁾ in mainland France in 2022. At 31 December 2022, the capacity of EDF's generation fleet was mainly composed of:

- 56 nuclear units based on pressurised water reactors (PWR), with electrical power capacities ranging from 900MW to 1,500MW and an average age of 37 years. Also see section 1.4.1.1.2 "Nuclear power generation in France";
- 19 functioning thermal units (see section 1.4.1.2 "Thermal generation in mainland France");
- 427 hydropower plants, with an average age of 77 years ⁽⁸⁾. See section 1.4.1.3.1 "Hydropower generation in France";
- other hydropower plants owned by the Group's subsidiaries: ÉS, SHEMA Group, CERGA and RKI (on the Rhine, owned 50%-50% with German energy company EnBW) and the Franco-Swiss entities of Chatelôt and Emossion.

(1) GAIA-X – European Association for Data and Cloud.

(2) See section 1.4.1.1.1.

(3) See section 3.3.1.3 "Health and safety of employees and subcontractors".

(4) After the permanent shutdown of the two Fessenheim units.

(5) Direct carbon emissions related to generation, excluding life cycle analysis of generation plants and fuel.

(6) Excluding Corsica and French overseas departments.

(7) Including pumped storage hydropower.

(8) Arithmetic mean.

EDF installed capacity and output in mainland France - 2022



Expressed in megawatts of maximum capacity linked to the network.

(1) Excluding Corsica and overseas departments, i.e. 439MW in 2022, including sea energy: 240MW.

(2) Excluding Corsica and overseas departments, i.e. 1,567MW in 2022.

(1) Excluding Corsica and overseas departments, i.e. 1.5TWh in 2022.

(2) Generation including pumped storage consumption.

(3) Excluding Corsica and overseas departments, i.e. 4.9TWh in 2022.

NB: figures are rounded.

1.4.1.1 Nuclear power generation

1.4.1.1.1 The excell plan

The "excell" plan, launched in the spring of 2020, aims at enabling the French nuclear industry to return to a high standard of quality and excellence so as to take on existing and future major projects in France, the United Kingdom, and elsewhere in the world. The excell plan also benefits existing the nuclear fleet programmes, in particular *Grand Carénage* and related maintenance operations.

In November 2021, the EDF group and the nuclear industry made 30 public commitments, divided into 5 major focus areas (governance, skills, manufacturing and assembly, supply chain, and standardization). As of the end of 2022, 27 of these commitments had been achieved; in some cases, the target has been exceeded ⁽¹⁾. These commitments are now being applied on the ground on a daily basis. The remaining three especially demanding commitments have been partially met and will be fully achieved during the course of 2023. The full list of commitments is available at the following address: <https://www.edf.fr/plan-excell> ⁽²⁾.

The excell plan is now entering a new phase, aimed at enduringly embedding its principles in the Company. This aims to enable EDF and its industrial environment for new nuclear projects and the existing fleet to be better served.

In 2022, achievements were seen in all five major strands:

Governance of nuclear projects

The governance of nuclear projects has been strengthened by establishing a "Large projects control" (LPC). This aims to provide an ongoing picture of project maturity, backed by comparative analysis of the project and LPC. Each project undertaken is subject to a quarterly review chaired by the Chairman of EDF. The creation in July 2022 of the management structure for the New Nuclear (France) programme comprises the last part of the response to the recommendations in the report by Jean-Martin Folz ⁽³⁾ (see also section 1.4.1.1.3.2).

Skills

In respect of skills, a Job and Skills Development Commitment (EDEC) has been put in place across the industry with the result that all data necessary to coordinate skills development was made available in 2022. The MATCH programme run by GIFEN ⁽⁴⁾ provides this annual coordination and informs the work of the Nuclear Industry University (UMN). The UMN was set up in April 2021 to provide fresh impetus for training projects. In 2022, it continued to boost training initiatives in French regions to ensure available, appropriate resources in the long term. The monavenirdanslenucleaire.fr website provides access to almost 2,000 training courses.

Manufacturing and assembly

Major work has been carried out for manufacturing and assembly, in close liaison with companies working in this sector. This has involved defining standards forming the foundations of a return to excellence and "right first time" manufacturing. The standards were rolled out in 2022 with contracts being more focused on partnership between EDF and its suppliers. At the same time, optimised, digitalised monitoring by EDF was deployed. There was a special focus on support for upskilling and capacity-building for key suppliers for the EPR2 project. This "supplier development" mission was entrusted to experienced operational personnel from the aerospace industry. Thirty-four companies in the sector are ISO 19443 certified; 50 others are in the process of being certified.

Supply chain

The quality of the relationships between EDF and its suppliers is central to the success of work on the existing fleet and for new projects. In consultation with companies in the sector, a toolbox featuring new supplier consultation and selection methods has been deployed. This encourages supplier proposals of good technical quality and places an emphasis on their expertise. It uses measures offering financial incentives and better risk-sharing in order to achieve better alignment of interests and successful contracts. An annual survey monitors feedback from suppliers and allows the progress and relevance of such measures to be evaluated.

Standardization

Standardization and replication are vital to achieve quality, which itself helps ensure safety. Mandatory practice catalogues (*catalogues d'usage obligatoire*, CADO) are now required for the technical design of systems. These aim to reduce the diversity of equipment used and improve efficiency. Another benefit of standardisation is that selected contractors will have more business. This enables them to invest in continuous quality improvement. It also simplifies and rationalises the technical documentation applicable to contracts and the documentation required from suppliers. Systematic replication of tried and tested equipment and systems, especially critical systems, is also a key factor in mitigating project risk and improving project management.

The welding plan aims to eliminate non-quality risk factors from end to end. The Higher School of Welding Training (HEFAÏS) in Cherbourg had its first intake in September 2022. Accreditation of welders and the improved quality of controls and of welding works are among the aspects co-built with industry contractors with a view to "welding right first time".

(1) See the EDF press release of 15 November 2022, "The excell plan presents its annual results and outlook for the sustainability of its standards".

(2) See also section 3.4.3.2.1 "The excell plan: being present in major nuclear power projects".

(3) Report on the construction of the Flamanville EPR delivered to the French Minister for the Economy and Finance and the Chairman and CEO of EDF in October 2019.

(4) Gifen: French Nuclear Energy Industry Group.

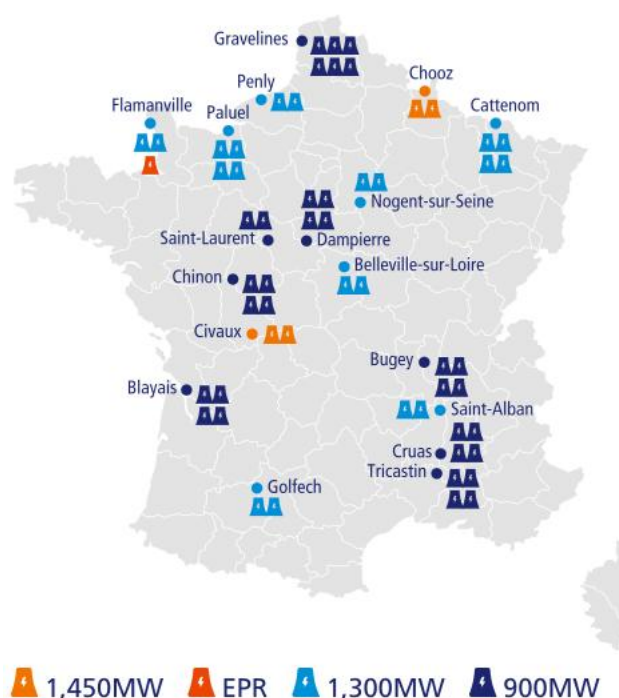
1.4.1.1.2 Nuclear power generation in France.

The electricity generated by EDF in France from its fleet of nuclear power plants represented 86.5% of its total electricity generation in 2022 ⁽¹⁾.

1.4.1.1.2.1 EDF's nuclear fleet in France and its operation

EDF's PWR fleet in operation is divided into three series of available electrical power. The French nuclear fleet consists of 56 units in operation, located on 18 sites ⁽²⁾ owned by EDF. The total authorised capacity of the fleet as of 31 December 2022 was 61,370MW. With an average age of approximately 37 years, EDF's nuclear fleet is about average compared to the fleets installed worldwide.

Series	Number of units in operation	Total Capacity	Average age
900MW	32	29,010MW	40
1,300MW	20	26,370MW	34
N4 -1,450MW	4	5,990MW	22
TOTAL	56	61,370MW	37



(1) Including pumped storage hydropower.

(2) After the permanent shutdown in 2020 of the two 900MW Fessenheim units.

The commissioning and most recent ten-year inspection (VD) dates for these units **as of end-2022** are as follows ⁽¹⁾:

Units	Year of industrial commissioning	Most recent ten-year inspection	Next ten-year inspection	Units	Year of industrial commissioning	Most recent ten-year inspection	Next ten-year inspection
Bugey 2	1979	2021	VD5	Cruas 3	1984	2014	VD4
Bugey 3	1979	2013	VD4	Cruas 4	1985	2016	VD4
Bugey 4	1979	2021	VD5	Chinon B3	1987	2020	VD4
Bugey 5	1980	2021	VD5	Chinon B4	1988	2020	VD4
Dampierre 1	1980	2021	VD5	Paluel 1	1985	2016	VD4
Gravelines 1	1980	2021	VD5	Paluel 2	1985	2018	VD4
Gravelines 2	1980	2013	VD4	Paluel 3	1986	2017	VD4
Tricastin 1	1980	2019	VD5	Paluel 4	1986	2019	VD4
Tricastin 2	1980	2021	VD5	Saint-Alban 1	1986	2017	VD4
Dampierre 2	1981	2022	VD5	Flamanville 1	1986	2018	VD4
Dampierre 3	1981	2013	VD4	Saint-Alban 2	1987	2018	VD4
Dampierre 4	1981	2014	VD4	Flamanville 2	1987	2020	VD4
Tricastin 3	1981	2022	VD5	Cattenom 1	1987	2016	VD4
Tricastin 4	1981	2014	VD4	Cattenom 2	1988	2018	VD4
Gravelines 3	1981	2022	VD5	Nogent 1	1988	2019	VD4
Gravelines 4	1981	2014	VD4	Belleville 1	1988	2021	VD4
Blayais 1	1981	2012	VD4 in progress	Belleville 2	1989	2019	VD4
Blayais 2	1983	2013	VD4	Nogent 2	1989	2020	VD4
Blayais 3	1983	2015	VD4	Penly 1	1990	2011	VD3 in progress
Blayais 4	1983	2015	VD4	Cattenom 3	1991	2021	VD4
Saint-Laurent 1	1983	2015	VD4	Golfech 1	1991	2012	VD3 in progress
Saint-Laurent 2	1983	2013	VD4	Cattenom 4	1992	2013	VD3
Chinon B1	1984	2013	VD4	Penly 2	1992	2014	VD3
Cruas 1	1984	2015	VD4	Golfech 2	1994	2014	VD3
Chinon B2	1984	2016	VD4	Chooz B1	2000	2020	VD3
Cruas 2	1984	2018	VD4	Chooz B2	2000	2019	VD3
Gravelines 5	1985	2017	VD4	Civaux 1	2002	2011	VD2 in progress
Gravelines 6	1985	2018	VD4	Civaux 2	2002	2012	VD2 in progress

At end 2022:

- **For the 900MW series**, at end 2022, all of the units in operation had undergone their third ten-year inspections. In 2019, the first fourth ten-year inspection (VD4) was successfully conducted on Tricastin 1. Other VD4 were conducted during 2020 and 2021. The programme continued in 2022 with VD4 inspections at Tricastin 3 (completed), Dampierre 2 (completed), Gravelines 3 (completed) and Blayais 1 (in progress).
- **For the 1,300MW series**, fifteen third ten-year inspections (VD3) were conducted (including Belleville 1 and Cattenom 3 in 2021). Two VD3 were underway as of the end of 2022: Penly 1 and Golfech 1.
- **For the N4 series**, two second ten-year inspections (VD2) were carried out, at Chooz 1 and Chooz 2. Those of Civaux 1 and Civaux 2 are in progress.

Regulatory notice

Regulations applicable to basic nuclear facilities (BNFs)

After completion of a procedure set out in the French Environmental Code, the construction of a BNF is authorised by a decree issued by the French Prime Minister after consulting the French Nuclear Safety Authority (ASN) and on the basis of a report produced by the Minister for Nuclear Safety. The authorisation to commission a BNF is issued by the ASN, also on completion of a procedure set out in the French Environmental Code. The general regulations applicable to basic nuclear facilities, among other issues, make the protection of public safety, health and sanitation, nature and the environment (the "protected interests") a priority.

Generation allocation contracts:

In the 1970-80's, EDF developed, industrial cooperation with European operators in the nuclear industry, in the form of generation allocation contracts backed by units of the EDF French nuclear fleet.

The principle of generation allocation contracts involves assigning a share of the capacity of the units in question to co-contracting parties in exchange for payment of the same share of the unit's overheads (construction costs, annual operating costs, decommissioning costs, local and specific nuclear taxes, etc.); these parties are sold the same share of the power generated by these units at the variable cost of the fuel (including upstream and downstream fuel costs) throughout their lifetime.

As at 31 December 2022, EDF has within its fleet ten generating units participating in the contracts (up to 1GW) with the following European energy companies:

- Cattenom 1-2: EnBW (5%);
- Bugey 2-3: Électricité de Laufenbourg ⁽²⁾ (17,5%);
- Tricastin 1 to 4: Electrabel ⁽³⁾ (12,5%);
- Chooz B1-B2: Luminus, EDF subsidiary in Belgium (3.3%).

(1) EDF first-generation design plants have been gradually shut down and are currently being decommissioned. The Fessenheim plant was also shut down in 2020 (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

(2) Axpo Group.

(3) Engie Group.

EDF has also entered into a second type of generation allocation contract for a fleet of power plants (totalling some 2GW). While the duration of the agreement and the contribution to overheads remain linked to clearly identified units within the fleet, the total amount of power sold at the variable cost of the fuel is determined by the availability of a broader baseline fleet of power plants, applied to the share of capacity assigned to the co-contracting parties for the units in question. These contracts mainly concern the following power plants:

- Chooz B1-B2 (initial series unit N4): Electrabel (21,7%);
- Cattenom 3-4: Électricité de Laufenbourg (7.8%) and the Swiss electricity group CNP (21.8%).

In these two transactions, the partners have shared with EDF the industrial risks in the development of the fleet and assume the risks linked to the current operation of the power plants. On the other hand, they have no operational role.

Operation of the nuclear fleet

Nuclear power is a means of generation whose variable cost, mainly fuel-related costs, is low since it represents less than 30% of operating costs ⁽¹⁾. The main competitive levers of the nuclear fleet in its operating phase are thus the amount of generated energy and the optimisation of fixed operating and maintenance costs. The levers relating to the fuel cycle are described in section 1.4.1.1.2.3.

Generation cycle and planned outages

EDF must reconcile the challenges linked to the strong variations in seasonal consumption in France, due to its strong temperature sensitivity, and the availability of maintenance resources together with an efficient use of reactor fuel. Therefore, EDF has adopted 12 and 18 months generation cycles for its fleet, which break down as follows at end-2022:

Series	Number of units	Generation cycle time
900MW	28	Approx. 12 months
900MW	4	
1,300MW	20	Approx. 18 months
1,450MW (N4)	4	

At the end of these operating cycles, shutdown periods are programmed in order to replace a fraction of the fuel loaded in the core and perform maintenance work. Two types of planned outages are alternated at the end of each generation cycle:

- an ordinary shutdown (ASR) for refuelling for a standard period of approximately 40 days. unloading spent fuel and reloading new fuel is the main operation performed. Some maintenance or periodic testing may also take place during this type of outage;
- the partial inspection (VP), with a normative duration ⁽²⁾ of around 85 days, devoted to refuelling and maintenance.

Every ten years, the power plant is shut down for an average period of 180 days ⁽³⁾ in average to carry out a ten-year inspection ⁽⁴⁾. This length of time varies according to the works and maintenance programme, as well as the series concerned.

The programme for a ten-year inspection includes the following:

- unloading of spent fuel and reloading of fresh fuel, as at each outage;
- hydro-power test of the primary coolant system, a leak test of the containment, and inspection work of the reactor's pressure vessel;
- modification work, associated with ten-year safety periodic review;
- other specific maintenance operations, in particular renovation or replacement of major components.

At the end of each ten-year inspection, the ASN has to agree to the restarting of the reactor and make any relevant technical recommendations.

Regulatory notice

Nuclear safety authority (ASN)

The *Autorité de sûreté nucléaire* (ASN) is an independent administrative authority which contributes to the control of nuclear safety, radiation protection in France, and informing the public about these matters.

Its activity is organised around the following missions:

- contributing to drawing up legislation, giving its opinion to the Government on draft decrees and ministerial orders, and making regulatory rulings of a technical nature;
- examining all individual authorisation applications for basic nuclear facilities (BNFs). It grants authorisations except in the case of major BNF authorisations, such as for construction and decommissioning;
- inspection of installations, which it carries out through regulatory scheduled and unannounced on-site inspections, in particular on the occasion of regular compliance checks and safety reviews; these are mandatory for a power plant to continue operating.
- informing the public about the status of nuclear safety and radiation protection in France;
- in the event of an emergency, the ASN controls the operations to secure the installation carried out by the operator. It informs the public of the situation and assists the Government. In particular, it provides the competent authorities with recommendations on the measures to be taken in respect of civil security.

Operation of EDF's nuclear fleet

Nuclear generation resources, owing to their low variable cost are first used for base-load generation, immediately after run-of-river hydro-power and other unavoidable renewable energies, as well as the energy purchased under buying obligations from decentralised energy producers. Variations in energy consumption over one year (summer-winter, day-night) and the currently restricted fluidity of wholesale markets due to limited interconnections on the borders lead nuclear energy to be used also for mid-merit generation. High variations in seasonal consumption in France and its major variation during winter months require that planned nuclear fleet outages be concentrated between April and October.

2022 generation

Nuclear output stood at 279TWh in 2022, a decrease of 81.7TWh from 2021. This decrease is due mainly to the nuclear fleet being less available as a result of the phenomenon of stress corrosion. Following the discovery of this phenomenon in late 2021, several unscheduled outages and extensions of maintenance outages were required to understand it, define a treatment strategy, and commence repair works.

2022 technical performance

In respect of unit outages, generation losses due to extensions of unit outages for reasons other than CSC amounted to 5TWh less in 2022 than in the previous year.

Among the completed shutdowns, the following were on schedule or shorter than forecast: Chinon B4 (Partial Inspection, VP), Tricastin 2 (Simple Reload Shutdown, SRS), Cruas 1 (SRS), Nogent 1 (VP), Saint-Laurent B1 (SRS), Tricastin 4 (VP), Belleville 2 (VP) and Tricastin 1 (SRS). Of particular note is the performance at Tricastin 4 (32.8 days ahead of schedule), Nogent 1 (27.4 days ahead of schedule) and Chinon B4 (12.7 days ahead of schedule).

The Saint-Laurent B1 shutdown recorded the site's best performance in 10 years; the Partial Inspection (VP) of Belleville 2 was the shortest in 6 years. Performance on these two sites illustrates the effects of the START 2025 plan currently being rolled out across the nuclear fleet. The plan focuses on improving performance of unit shutdowns and enables sites suffering from long-term difficulties to improve their performance.

(1) Operating costs are defined as follows: fuel costs (including downstream expenses in the fuel cycle), operating expenses (purchases and external services, employee expenses) and maintenance costs (expenses and investments). They do not include investments related to construction or decommissioning expenses.

(2) Standard durations represent optimised and realistic reference durations by outage types. They take into account the feedback from past.

(3) "Normal" duration excluding particular and/or extreme cases.

(4) Pursuant to Article 593-18 of the Environmental Code.

Reactors for which the provisional shutdown times were significantly exceeded (by over 50 days) included Bugey 5 (ten-year inspection, VD), Gravelines 1 (VD), Cattenom 2 (SRS), Cruas 4 (VP), Dampierre 1 (VD) and Gravelines 5 (VP). The longest shutdown extensions therefore involved mainly sites with an especially significant industrial programme, such as Dampierre and Gravelines.

Nuclear generation expressed in annual energy is based on a generation rate for the French nuclear fleet as a whole. This is defined as the ratio of energy generated to the maximum theoretical energy (the energy generated if the installed capacity were operated year-round), also known as the load factor (Kp). This rate is obtained by multiplying two coefficients ($Kp = Kd \times Ku$):

- the availability rate, Kd, is the available energy ⁽¹⁾ as a percentage of the theoretical maximum energy (the energy generated if the installed capacity were operated year-round). The Kd depends on outage durations, and is therefore impacted by standard durations and the work programme to be performed;
- a utilisation factor, "Ku" (energy generated compared to energy available). The Ku factor reflects environmental, regulatory and social constraints, supply of system services and optimisation implemented by EDF (fuel and modulation).

In 2022, the Kp factor reached 52%, a decrease compared with that of 2021 (67%). This results from a Kd of 58.1%, lower than in 2021 (72.9%) and a Ku of 89.6%, also lower than in 2021 (92.2%).

Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors

On the occasion of the scheduled controls during the ten-year inspection of the Civaux 1 reactor in late 2021, stress corrosion was identified on parts of the pipework in the reactor's main primary circuit's auxiliary circuits. EDF immediately carried out inspections and expert appraisals of the 4 series making up the French nuclear fleet (900MW, 1,300MW-P4, 1,300MW-P'4 and N4).

In 2022, over 112 metallurgical expert appraisals were performed on pipework samples, a new inspection method using ultrasound was developed, and a strategy to repair welds affected by the phenomenon in question was implemented after instruction by the French Nuclear Safety Authority (ASN).

Out of the 56 reactors in the nuclear fleet, 40 were identified as being not vulnerable or only slightly vulnerable to the phenomenon of stress corrosion. These are the thirty-two 900MW series and the eight 1,300MW-P4 series reactors. 16 reactors were identified as being vulnerable or highly vulnerable to the phenomenon of stress corrosion: the twelve 1,300MW-P'4 series reactors and the four N4 series reactors.

In 2022, sections of pipework were replaced on 10 reactors. 6 other reactors should be treated in 2023 with the preventive replacement of the potentially impacted lines.

From 1 January 2023 onwards, EDF has included stress corrosion inspections using the improved ultrasound technology as part of its preventive maintenance plan.

For the 1300 MW-P'4 reactors, EDF has adapted its treatment strategy for the entire series. This strategy, presented to the ASN at the end of 2022, aims to address the stress corrosion issue for all 1300 MW-P'4 reactors by the end of 2023. For these reactors, EDF plans to proceed with the complete preventive replacement of safety injection line pipes whose welds could be affected by the stress corrosion phenomenon.

As part of the inspection and assessment program initiated by EDF, analyses were carried out on a particular weld in the RIS system of the Penly 1 reactor. This weld had the particularity of having been repaired twice during the initial assembly of the circuit at the time of construction, making it sensitive to the stress corrosion phenomenon. Metallurgical expertise revealed a stress corrosion defect.

On 10 March 2023, EDF proposed to the ASN an evolution in its stress corrosion control strategy and is accelerating the inspection of the concerned welds of the RIS and RRA systems, in order to include the elements identified on the weld repaired at Penly 1⁽²⁾. The ASN announced to have taken note of this evolution in the strategy and to continue the technical dialogue with EDF. This evolution aims to accelerate the inspection of repaired welds during scheduled maintenance outages of reactors in 2023, 2024 and 2025.

320 welds in the RIS and RRA systems have been identified as having been repaired at the time of reactor construction, of which 69 are identified as the most sensitive to stress corrosion. The revised strategy will result in more than 90% of these priority welds being inspected by the end of 2023, and 148 welds repaired at the time of reactor construction, being inspected by 2023.

The risks relating to the phenomenon of stress corrosion are described in section 2.2.5 under risk 5A "Failure to comply with the objectives for operation and/or for extending the operating life of nuclear power plants (France and United Kingdom)".

1.4.1.1.2.2 Environment, nuclear safety, radiation protection

The risks related to the environment, nuclear safety and radiation protection are described in section 2.2.5 under risk 5C "Nuclear safety violations during operations resulting in nuclear civil liability".

Environmental protection

EDF's environmental procedure was introduced in 2002 on a few sites, then extended to all nuclear generation units. It is based on an ISO 14001-certified SME environmental management system (see section 3.5.4.2 "Environmental management system (EMS)"). For a description of radioactive waste processing downstream of the fuel cycle as well as decommissioning, see section 1.4.1.1.2.3.

A constant nuclear safety procedure

EDF, in its capacity as a nuclear operator, takes responsibility for nuclear safety and, in a rapidly-changing context (market competition, environmental issues, European connection, etc.), reaffirms as its absolute priority the protection of the human and environmental health, among other things, through the prevention of accidents and the limiting of their consequences as regards nuclear safety. The implementation of the French nuclear power programme led EDF to establish a safety procedure that:

- takes into account, from the design stage, the risks that might arise during the operation of the power plants, whether relating to the actual operation of the facilities or to internal or external attacks;
- is based both on the application of strict rules of operation, and on the cautious and inquiring attitude of the technical teams thanks to the establishment of a true safety culture;
- is based on the cumulative experience of a standardised fleet;
- incorporates and fosters a continuous improvement approach that is notably embodied by the ongoing efforts to decrease the number of automatic reactor trips;
- benefits from integrated nuclear engineering and Research & Development within the Group in order to anticipate the occurrence of failures, maintain the facilities in good working order, develop equipment on an ongoing basis, reassess safety margins and monitor technology advances, as well as the implementation of more effective new technologies and the management of sites being decommissioned;
- relies strongly on the development of skills. With this objective in mind, each nuclear generation site is equipped with a simulator used for training to cope with any type of situation.

Regulatory notice

Nuclear transparency

Articles L. 125-10 *et seq.* of the French Environmental Code includes specific provisions on the right to information regarding the nuclear industry aimed at guaranteeing the public's right to reliable, accessible information. In particular, the operator of a BNF is required to declare any accidents and incidents occurring as a result of the operation of the facility that could potentially be detrimental to the interests referred to in Article L. 593-1 of the French Environmental Code, namely public health and safety and/or the protection of nature and the environment, and to do so speedily to the ASN and the competent administrative authority.

Other authorities also contribute to transparency for the nuclear industry. They include the High Committee for Transparency and Information on Nuclear Safety (*Haut Comité pour la transparence et l'information sur la sécurité nucléaire*, HCTISN) as well as local information Committees formed for any site housing one or more BNFs.

(1) Available energy is equal to the maximum theoretical energy less generation losses due to technical reasons inherent to power plants, such as planned outages, unplanned outages due to failure or safety requirements, and performance of regulatory tests.

(2) See EDF's press release of 16 March 2023 "Clarification on the stress corrosion phenomenon detected on parts of the auxiliary circuits of the main primary circuit of several nuclear reactors".

The control system

Nuclear safety is subject to numerous controls, both internal and external. For each nuclear unit ⁽¹⁾, EDF now carries out overall excellence evaluations jointly with WANO peer reviews ⁽²⁾ every four years. These take place over a period of three weeks and involve some 40 inspectors. The General Inspector for Nuclear Safety and Radiation Protection, reporting directly to and appointed by EDF's Chairman and CEO, holds discussions with employees in the nuclear industry, enabling an opinion to be issued each year on the overall safety of the nuclear fleet and improvement actions to be suggested to the Company's management. The related annual report is made public.

Efforts by EDF have made it possible to decrease the annual average number of automatic reactor outages in recent years by a factor of four over a period of twenty years. In 2022, there were 15 for the entire fleet.

- **In France**, safety is controlled by the ASN by means of:
 - scheduled or unannounced inspections conducted by the ASN: 513 inspections, including 34 national inspections, were conducted in 2022 at all EDF nuclear facilities (515 in 2021, including 26 national inspections);
 - a periodic (ten-year) review process designed to improve the compliance of nuclear plants with applicable rules and to update assessments of the risks and drawbacks that such facilities pose to the "protected interests" (protection of public safety, health and sanitation, as well as preservation of nature and the environment). To achieve this, the state of the facilities, the experience gained during their operation, new developments in nuclear science, and rules applying to similar facilities (safety standards) are taken into account.

At the close of the ten-year inspection, the operator sends the ASN a report containing the findings of the periodic review. In this report, the operator states its position regarding the regulatory compliance of its facility, as well as the modifications made in order to correct the discrepancies identified or improve the safety of the facility. The ASN provides the Minister in charge of nuclear safety with its analysis of the report and may define additional obligations for the operator⁽³⁾. The periodic review is an important step in continuing the operation of power plants (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity" "B - The issues at stake in preparing for the future of the nuclear fleet in France").
- **At the international level**, regular inspections are held on a regular basis. The evaluations allow experience built up worldwide to be pooled:
 - the OSART (Operational Safety Review Team) of the IAEA ⁽⁴⁾ performs reviews at the request of the French government with the objective of formulating recommendations and promoting best practices. One OSART was carried out in 2022 (Tricastin);
 - the international "peer review" inspections carried out by the WANO ⁽⁵⁾ are organised at the request of EDF to assess safety performance compared to best international working practices. In 2022, 5 follow-up missions ⁽⁶⁾ were carried out (Dampierre, Golfech, Nogent, Penly and Saint-Laurent), as well as 3 peer reviews (Belleville, Bugey, Civaux).

Whistleblowing system

In the event of an accident, a crisis plan is in place to limit impacts on the environment and people, and to ensure the safety of the facility. This crisis system is based on two closely coordinated plans, designed for both local and national use. These are:

- the Internal Emergency Plan for each nuclear site, developed by EDF;
- the Special Intervention Plan, prepared by French prefectures in collaboration with the French government and EDF.

In order to provide greater effectiveness, these plans in particular take into account external risks (flooding, etc.) and internal risks (fire, etc.). The relevance of the system for warning, informing and protecting people is regularly assessed through accident simulation exercises. Each year, approximately 100 exercises are organised for the entire French nuclear fleet, *i.e.*, approximately one every three days. Approximately ten exercises are on a national level, under the management of the ASN and involve EDF and public authorities, in particular prefectures. In 2022, 13 nationwide exercises were organised, including 1 with ESKOM (South Africa).

After its initial analyses following the Fukushima accident in March 2011, EDF supplemented its crisis management organisation with a national team capable of quickly delivering material and human assistance to a site in great difficulty. This system, called the Nuclear Rapid Action Force (FARN), has had many simulation exercises from regional bases located at Civaux, Paluel, Dampierre and Bugey and can be sent to a unit at any site in difficulty. The FARN is capable of a simultaneous response at six units on a single site.

Significant events regarding safety

The operational safety of nuclear facilities is taken into consideration from the initial design stage, and is regularly monitored, together with the implementation of an employee motivation policy and large-scale investment programmes.

Discrepancies that are particularly important according to the criteria defined by the ASN are referred to as "specific events". The detection of significant events by nuclear operators plays a key role in the prevention of incidents and accidents. The regulations require all nuclear operators to declare significant events to the ASN for the protection of the interests mentioned in Article L. 593-1 of the French Environmental Code. Each event is analysed by the plant's teams to determine whether it is significant, and the independent safety reviewer also provides an independent assessment.

Those concerning safety are referred to as "SSEs". This declaration process is part of the ongoing drive to improve nuclear safety and radiation protection and transparency. Its aim is, in particular, to enable the analysis of these events, so as to facilitate subsequent assessment of an incident or the risk of an incident, and to improve the practices of an establishment and/or of a sector of activity in the field of prevention.

Nuclear operators and transporters of nuclear material must declare all significant events to the ASN, at the latest within 48 business hours, along with the proposed classification using the INES ⁽⁷⁾ scale (a scale of one to seven, with seven being the most serious; incidents without nuclear safety significance are declared as "Level 0"). The ASN retains final authority for the classification of events. The use of the INES scale enables the ASN to select those that are sufficiently serious to warrant a communication by it.

Since the establishment of a scale of this kind in France in 1987, no INES scale level 3 event (serious incident – very low external emission, and exposure of the public representing a fraction of regulatory limits) or above has occurred in the French nuclear fleet. In 2022, EDF declared 683 significant safety events (SSEs) in France, an improvement on the 752 SSEs declared in 2021. No INES scale level 2 SSE (as in 2021) and 79 INES scale level 1 SSEs (as in 2021) were declared.

Moreover, the Group's nuclear safety policy is an integral part of the training courses that the employees of EDF and of its service providers are required to take. After initial training that lasts for several months, and even up to 24 months for key positions (Safety Engineers, Operators, etc.), each employee has to take mandatory annual, biannual and triannual refresher courses depending on the business line and field.

The 2022 detailed results on nuclear safety are published in the annual report created by the General Inspector for Nuclear Safety and are available on the Internet ⁽⁸⁾.

(1) *i.e.* nuclear power plants.

(2) World Association of Nuclear operators.

(3) See in section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation" the regulatory notice on ASN.

(4) International Atomic Energy Agency.

(5) World Association of Nuclear operators.

(6) Follow-up missions related to the recommendations issued during peer review audits (and detailed in an audit report).

(7) International Nuclear Event Scale.

(8) For example in the 2020 report: <https://www.edf.fr/sites/default/files/contrib/groupe-edf/producteur-industriel/nucleaire/notes%20d%27information/rapport-2020-fr-v08b-web.pdf>

Radiation protection

Bringing together a range of stakeholders enables the impetus for improving radiation protection and dose levels to be maintained, for instance through training and exercises for employees, cleanliness of facilities, improved materials for trainers, optimised installation of lead screens, enhanced supervision, etc.

As a result, for the past decade, the collective annual average dose now stands at 0.70 man sieverts per reactor, down 2% compared to the previous decade despite the mean number of hours worked increasing by 35%. In 2022, the average

collective dose was 0.71 man sieverts per reactor. The average individual dose (for employees of EDF and industrial partners) remains lower than 1mSv (0.96mSv). This is well below the statutory limit of 20mSv over 12 sliding months for the entire body.

EDF is proactively pursuing its ALARA ("As Low as Reasonably Achievable") policy to manage collective dose levels by continuing to reduce exposure to radiation by means of multiyear programmes to improve installations. In 2022, no employee of EDF or any of its industrial partners was exposed to an individual dose in excess of 14mSv.

Regulatory notice

Regulations on radiation protection

In France, nuclear activities that present a risk of exposing persons to ionising radiation are regulated by two separate sets of rules, depending on the category of persons to be protected.

Regulations on the basic protection of the population against such radiation, which are governed by the French Public Health Code, are primarily based on all nuclear activities being subject to a declaration, registration or authorisation. Authorisations granted to establish a Basic Nuclear Facility serve as the authorisation required under the French Public Health Code. Article R. 1333-11 of the French Public Health Code sets the maximum exposure level of the general public at 1mSv per year.

French regulations on the protection of workers against the dangers of ionising radiation, which are governed by the French Labour Code, lay down various obligations for employers of workers who are likely to be exposed.

1.4.1.1.2.3 The issues relating to the nuclear activity

A - Nuclear fuel cycle and related issues

The risks related to nuclear fuel cycle are described in chapter 2 risk 5D "Control of the fuel cycle".

The nuclear fuel cycle encompasses all industrial operations in France and abroad which enable the supply of the fuel to generate energy in a reactor, then to unload and process it.

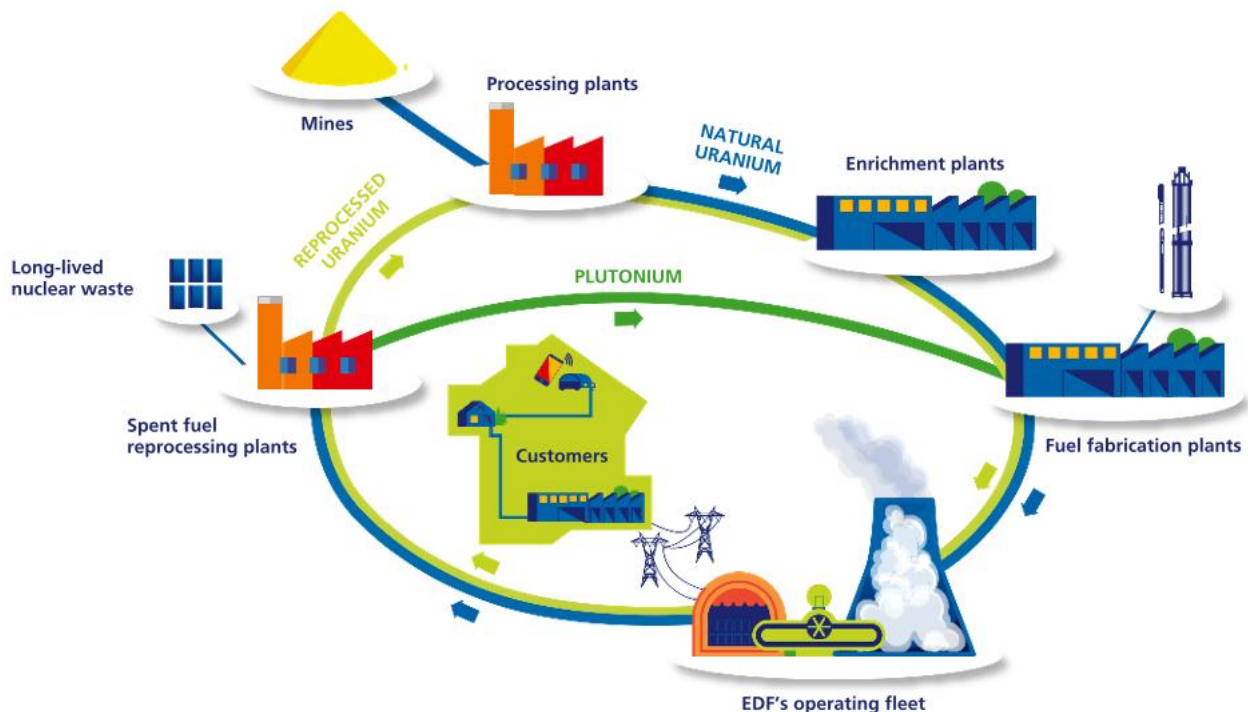
EDF coordinates the entirety of the operations in the cycle, which can be broken down into three stages:

- **upstream**, comprising the purchase by EDF of concentrates derived from uranium ore. Processing to make more sophisticated products, *i.e.* fluorination

(or conversion), enrichment, and fuel assembly manufacturing, is entrusted to industrial players for this cycle on the basis of multiyear service contracts.

- **the core cycle**, corresponding to the use of fuel in the reactor: receipt, loading, operation and unloading. the fuel stays four to five years in the reactor; EDF carries out these operations.
- **back-end (downstream)**, for the reactor fleet in France comprising interim pool storage, reprocessing of spent fuel, conditioning of radioactive waste and recycling of reusable materials, the intermediate storage of treated waste prior to storage.

EDF is the owner in most cases and is responsible for the fuel and materials it uses throughout all different stages of the cycle.



Upstream

To ensure the continuity and security of the supply of its reactors in France and the United Kingdom, EDF retains overall control of all operations at each stage of the cycle, through a portfolio of contacts and by stockpiling at different stages of the front-end stage of the fuel cycle (natural uranium, fluorinated enriched or unenriched uranium, and warehousing of new assemblies). Orano is an important supplier of this stage of the cycle.

Natural uranium supply

EDF's uranium supplies are guaranteed by long-term contracts for periods of up to 20 years with a policy of diversification in terms of sources and suppliers. Indexation formulas for supply contracts include fixed prices (baseline prices that may be inflation-adjusted) and variable prices (indexed according to market price indexes). They are generally limited by floor and ceiling prices that attenuate the effects of variations in market prices on supply costs. Where necessary, the Group implements a strategy of currency hedging.

EDF is making sure to implement best practices in mineral extraction. Since 2011, EDF has conducted mine audits (2-3 a year) based on a method drawn up in collaboration with the WNA ⁽¹⁾ (see section 3.4.2.3.4 "Responsibility in the fuel supply chain").

Fluorination (or conversion)

EDF's needs are covered by Orano in France, as well as other international producers such as Cameco in Canada and Convergyn in the United States.

Enriching natural uranium into uranium 235

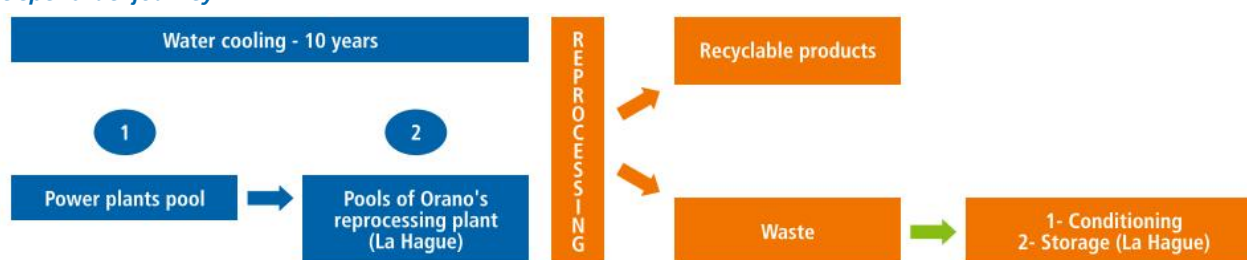
EDF meets its enrichment needs through global enrichers Orano (France), Urenco (United Kingdom, Germany, Netherlands, United States) and Tenex (Russia), primarily through fixed-price contracts.

Enriched reprocessed uranium

Since the 1990s, reprocessing has made it possible to recycle within the reactors uranium from processing spent fuel, which represents approximately 95% of the spent fuel mass. Reprocessing was suspended in 2013, pending the availability of a new industrial scheme. In 2018, the Board of Directors approved the restart of a robust, competitive and efficient sector. The first fuel assemblies are due to be loaded in 2023. The corresponding contracts were signed with the respective suppliers in 2018. Pending the effective restart of the sector, the reprocessed uranium is stored in a stable form.

Achieving significant milestones in the recovery of the sector (in particular commissioning of the TENEX residue vitrification plant in the second half of 2021 and the delivery of enriched material to manufacture a first fuel assembly) offer

The spent fuel journey



EDF and Orano: a carefully managed partnership

Relations between EDF and Orano concern the shipment, processing, and recycling of spent fuel. The two companies have entered into a series of agreements:

- > December 2008: a framework agreement covering the 2008-2040 period;
- > February 2016: an implementation agreement covering the 2016-2023 period as well as the related supply contracts for the MOx assemblies.

confirmation that all industrial, regulatory and economic conditions for the recovery of the industry have now been met.

Operating the 1,300MWe series beyond 40 years will be accompanied by industrial changes allowing the loading of enriched recycled uranium fuel into the 1,300MWe reactors, thus ensuring uranium from reprocessing is recycled over the long term.

Fuel assembly manufacturing

EDF has two sources of fuel assemblies: one is internal, *via* its Framatome subsidiary, while the other is external, the external supplier being Westinghouse.

Fuel supply of the two EDF reactors at Hinkley Point (United Kingdom)

In September 2016, EDF, Orano and Framatome entered into an agreement providing for the supply of uranium, conversion and enrichment services, and assembly manufacturing for the fuel supply of the Hinkley Point C reactors.

Downstream

Risks related to downstream fuel cycle are described in section 2.2.5 risk 5B "Control of radioactive waste treatment and decommissioning of nuclear facilities, and ability to meet related commitments" and 5D "Control of the fuel cycle".

Regulatory notice

As the producer of the waste, EDF is responsible for what happens to its spent fuel and how it is processed and for the related waste, without any possibility of transfer of responsibility or limitation in time.

Orano is responsible for processing spent fuel.

ANDRA is in charge of the management of the long-term storage of final waste, in accordance with the Article L. 542-12 of the French Environmental Code.

Management of radioactive and non-radioactive waste is governed by Articles L. 541-1 *et seq.* of the French Environmental Code.

Processing of spent fuel from EDF's nuclear power stations

EDF's current strategy in this respect, in agreement with the French government, is to process spent fuel and wherever possible recycle substances: plutonium, in the form of MOx fuel, and uranium from reprocessing (see the "upstream" section of the cycle).

Some 1,100 tonnes of spent fuel are processed every year. The quantities handled are determined by the amount of recycled plutonium in reactors allowed to load MOx fuel.

EDF Pool Project at La Hague

In anticipation of the storage needs of the nuclear generation fleet, EDF is working on the design of a large spent fuel storage pool. This will make possible the long-term storage (for around 100 years) of spent MOx and ERU fuel from PWRs and from fuel assemblies of the Superphénix fast-neutron reactors, stored in the APEC ⁽²⁾ storage pool pending multi-recycling in third-generation pressurised water reactors, or recycling in fourth-generation (Gen IV) reactors.

(1) World Nuclear Association.

(2) Spent fuel storage pool at the Creys-Malville power plant.

The need for additional storage capacity and the relevance of an underwater storage solution were confirmed at the conclusion of the public debate organised by the CNDP ⁽¹⁾ (from 17 April to 25 September 2019). The Ministry for the Ecological Transition and the ASN published their conclusions on 21 February 2020 and noted, in particular, “the continuing work in to set up additional centralised underwater storage capacities”. Following this public debate and the favourable opinion on the safety options dossier issued by the ASN on 23 July 2019, EDF now has the fundamentals required to pursue its project.

Between 18 November 2021 and 8 July 2022, EDF engaged in a preliminary consultation relating to plans to locate this pool at La Hague within the Orano site.

Main consultation stages:

- > early 2021: EDF approached France's national commission for public debate (*Commission nationale du débat public*, CNDP);
- > 3 March 2021: decision by the CNDP announcing that the project would be subject to preliminary consultation;
- > 22 November 2021: start of the consultation process;
- > 3 February 2022: the CNDP suspended the consultation following a proposal by EDF (see the debatpublic.fr website). The aim was to improve consultation procedures to provide better coverage of the La Manche area and of the issues raised by the consultation itself. This decision was intended to provide enough time for the procedures to be set up, and formed part of EDF's policy to improve open dialogue with local residents, elected officials, and non-profit bodies in respect of the project;
- > 20 June 2022-8 July 2022: the consultation process resumed;
- > 8 August 2022: publication of the guarantors' review, which noted “genuine, diversified, and productive” grassroots participation;
- > 7 October 2022: publication of “Lessons learned from the preliminary consultation and next steps taken by EDF”;
- > At this stage, EDF has announced its intention of pursuing the project; it is preparing to submit the request for permission to set up the installation by the end of 2023 with a view to a public enquiry taking place in 2025. During the consultation, stakeholders asked a large number of questions about the issues surrounding the fuel cycle. EDF plans to take into account the concerns expressed to the maximum possible extent, including by implementing a structured discussion and dialogue scheme under the aegis of guarantors appointed by the CNDP. At the same time, EDF has already commenced studies of several practical measures designed to improve the way the project is integrated into the region.

The construction cost of the facility, estimated at €₂₀₂₀ 1.25 billion, is included in the financial trajectory of the *Grand Carénage* programme.

Furthermore, to address the challenges in terms of storage capacity for spent fuel in the shorter term, Orano is developing a technique allowing it to increase occupancy in its existing pools at La Hague, at EDF's request. The safety options dossier for this project underwent an expert appraisal by the IRSN ⁽²⁾. In an opinion issued on 28 May 2021, the IRSN deemed the chosen safety options to be appropriate.

In a further additional measure, Orano is studying the possibility of dry temporary storage of spent fuel. Specific provisions have been made for the dry storage and densification scenarios.

Storing conditioned final radioactive waste

Radioactive waste, depending on its nature, level of radioactivity and the lifespan of its radionuclide components, has been classified into different categories: from High-Level Waste (HLW), to Very Low-Level Waste (VLLW) on to Low-Level Waste (LLW) and Intermediate-Level Waste (ILW). It is called Long-Lived (LL) when it remains active for more than 31 years.

High-Level and Intermediate-Level Waste (ILW-LL)

The processing of spent fuel enables the vitrification of HLW, which provides very high-quality conditioning with a reduced volume. All of the HLW stored in this way, corresponding to the operation of the early plants and to 50 years of operation of the current PWR facilities, would represent a volume of approximately 9,300m³ (the electricity consumption of one million people for one year generates approximately 3 cubic metres of HLW).

ILW-LL waste includes:

- > the structures of the assemblies (shells and nozzles, clad pieces, etc.) separated during the processing of spent fuel. They are currently compacted and conditioned in stainless steel containers;
- > waste resulting from certain operating, maintenance and dismantling activities.

The total volume of ILW-LL is about 37,000m³. This includes waste from the operation and decommissioning of shut down facilities, including Uranium Natural Graphite Gas (UNGG) reactors and the waste from the current PWR facilities, taking into account a 50-year operating life for the power plants plus decommissioning operations.

This waste generates less heat than HLW and thus is suitable for storage sooner.

● Industrial geological storage centre project (*Centre industriel de stockage géologique*, Cigéo)

Overview

The Cigéo project is the French deep geological storage facility project for ILW-LL and HLW radioactive waste produced by all French nuclear installations through to decommissioning, including waste from the processing of spent fuel used in nuclear power plants. The project is being led by France's National Agency for Radioactive Waste Management (*Agence nationale pour la gestion des déchets radioactifs*, ANDRA). The centre is to be located in the east of France at the border of the Meuse and Haute-Marne départements.

After 15 years of research, evaluation and public debate, the principle of deep geological storage was adopted by French Act No. 2006-739 of 28 June 2006 as amended on the sustainable management of radioactive materials and waste as a safe long-term solution to manage this type of waste without shifting the burden onto future generations. Cigéo will consist of surface facilities that will be used to receive and prepare waste packages as well as to excavate and build the necessary underground structures. The waste will be stored in underground facilities some 500 metres below ground in an impermeable argillaceous rock formation able to contain radioactivity over very long periods (several hundreds of thousands of years). Cigéo is designed to operate for at least 100 years and provides flexibility in order to give future generations a maximum number of possibilities to adapt it as needed.

Pending its storage in deep-level geological layers, HLW and ILW-LL waste from spent fuel processing is being stored on the Orano site in La Hague in dedicated installations.

Key stages

ANDRA's reference schedule first calls for a pilot industrial phase. Delivery of the first waste is planned to commence between 2035 and 2040.

On 11 January 2018, the ASN considered that the Cigéo project had on the whole reached a satisfactory technological maturity at the safety options dossier stage. The detailed design review was organised at the request of the DGEC (French General Directorate for Energy & Climate) by a group of independent experts. At the end of 2020, it handed down a generally favourable opinion on the dossier presented by ANDRA. It made a certain number of recommendations for finalisation of the application for authorisation to create the centre. In particular, it called for closer involvement of EDF and Orano in the preparation of the application to be submitted.

The public enquiry in connection with the declaration of public utility was held from 15 September to 23 October 2021, and also concluded with a favourable opinion (with five recommendations directed to the project owner) of the investigating commissioners, which was made public on 20 December 2021. The findings of the commission noted that the public enquiry had “resulted in a large number of contributions from the public, most of them with extensive supporting arguments” and that Cigéo was “opportune, relevant, and robust”.

Prior to the enquiry, a second expert appraisal of Cigéo's Social and Economic Evaluation by France's General Secretariat for Investment (*Secrétariat général pour l'investissement*, SGPI) had resulted in a favourable opinion “both for the overall project and its transportation aspect”. It highlighted the fact that “the Cigéo project offers high prudential and insurance value with respect to environmental and health risks”.

In an opinion issued on 13 January 2021, the French Environmental Authority emphasised the educational nature of the environmental evaluation. It made a series of recommendations, which ANDRA has taken into account in the public enquiry dossier.

(1) *Commission Nationale du Débat Public*, i.e. French national public debate committee.

(2) IRSN: *Institut de radioprotection et de sûreté nucléaire* (French Radiation protection and Nuclear Safety Institute).

At the same time, the "citizens' conference" on the subject of the pilot phase organised by ANDRA between May and July 2021 issued a "citizens' opinion". Two online public consultations were held on governance issues and the pilot phase from May to September.

French Decree No. 2022-993 of 7 July 2022 declared Cigéo to be in the public interest and compatible with the Pays Barrois (Meuse) area land use master plan, the Haute-Saulx (Meuse) local inter-municipality urban planning document, and the Gondrecourt-le-Château (Meuse) local urban planning document. French Decree No. 2022-992 of 7 July 2022 listed the Cigéo project as one of the major infrastructure projects in the public interest specified in Article R. 102-3 of the French Planning Code (*Code de l'urbanisme*).

The dossier requesting permission to create the project was filed on 16 December 2022 electronically and on 17 January 2023 in its official hardcopy version.

Special case of the treatment of bituminous waste

During its examination of the safety options dossier, the ASN requested that solutions for bituminous waste other than storage in their existing state at Cigéo be studied. In September 2018, a group of experts was appointed by the DGECC to draw up a report on current bituminous waste management practices. In September 2019, it concluded that alternative handling options (storage or neutralisation) were in theory feasible. However, it also emphasised the importance of continuing this research in order to identify the most appropriate option. A four-party research programme between producers and ANDRA is in progress on this issue.

Cigéo taxation

As regards the tax status of Cigéo, Article 127 of France's 2021 Finance Act has made a change to the taxation regime for BNFs under Article 43 of the 2000 Finance Act. In particular, it provides for a change in the method of calculation of the tax on the storage of long-lived medium and high-level waste by removing the minimum and maximum brackets (5-50) of the multiplication factor. These legislative provisions have yet to be specified by a decree of the French Council of State.

● ICEDA

The Activated Waste Conditioning and Intermediate Storage Facility (*Installation de conditionnement et d'entreposage de déchets activés*, ICEDA) located at Bugey is a facility dedicated to the processing and intermediate storage of ILW-LL from the operation (excluding fuel handling) and decommissioning of power plants. The facility was commissioned in 2020.

The ASN decision approving and supervising the conditioning of long-lived intermediate-level waste (ILW-LL) in C1PG^{SP} packages at ICEDA was received on 19 July 2021. The first C1PG^{SP} package containing activated waste from Chooz A was sealed on 21 September 2021. The third waste processing campaign was completed in late 2022, and mainly concerned waste from Chooz A.

Long-Lived Low-Level Waste (LLW-LL)

LLW-LL comes from the deconstruction of legacy NUGG reactors (graphite bricks that made up the core of these reactors and their fuel assemblies). In July 2015, ANDRA transmitted a report on the feasibility of a storage centre on a site located in the Soullaines region (Aube) in France for an opinion from the ASN. Work is ongoing, as part of the PNGMDR plan ⁽¹⁾ to identify the waste that could be taken on.

Opinion No. 2020-AV-0357 issued by the ASN on 6 August 2020 as well as the 5th PNGMDR ⁽²⁾ set ANDRA the target date of 2023 for the production of a dossier presenting the safety and technical options adopted for the storage of LLW-LL at Vanandeuve-Soullaines.

Furthermore, studies conducted by EDF to characterise the radiological inventory of this waste more precisely have led to significant gains. As a result, the possibility of storing part of the graphite from the first decommissioned reactor (Chinon A2) in the existing surface facility (the Aube Storage Centre, CSA) can be considered.

The scenario currently modelled in the provisioning for the first graphite piles from Chinon A2 extracted from the reactor in around 2044 is for them to be stored at CSA. The risks inherent in the construction of an intermediate storage facility at Chinon for this graphite were however taken into account, as were the risks entailed in the scenario of direct storage of A2 Chinon graphite in an LLW-LL repository.

For other reactors, the plans envisaged cover direct storage of graphite in an LLW-LL repository.

Short-Lived Low- and Intermediate-Level Waste (LILW-SL) and Very-Low-Level Waste (VLLW)

Short-Lived Low- and Intermediate-Level Waste (LILW-SL) and Very-Low-Level Waste (VLLW) come from:

- > the operation of nuclear facilities (gloves, filters, resins, etc.);
- > and their decommissioning (concrete, scrap, lagging, piping, etc.).

They are stored above ground in the Soullaines and Morvilliers storage facilities run by ANDRA in the Aube *département*. In order to minimise volumes, some waste is treated beforehand by melting or incineration at the Centraco plant owned by Cyclife France (part of Cyclife SAS, a subsidiary of EDF).

Following the PNGMDR public debate and in line with the joint ruling by the Ministry of Ecological Transition and the ASN (the contracting authorities for the PNGMDR) legislation allowing the reuse of metal VLLW from decommissioning in France was published on 14 February 2022. This anticipated change in legislation has allowed development of the Technocentre project, a facility dedicated to the reuse of these metals, to go ahead. The publication of a roadmap setting out the objectives and schedule for the Technocentre project is planned in early 2023.

The aim of the Technocentre project is the construction of a cutting and fusion facility to process and reuse VLLW metals, in particular from the decommissioning of nuclear installations. EDF is conducting this project in partnership with Orano. The objective is to commission the facility, which is proposed to be located at the Fessenheim site, by 2031. EDF is aiming to begin the public debate on the project in 2023.

Creation and development of Cyclife

In 2016, following the acquisition of the English and Swedish assets of Studsvik, the holding company "Cyclife" was created. The goal is:

- to group together all recently acquired assets;
- to establish the development of the Group's internal and external activities in terms of waste treatment and decommissioning.

In 2019, the subsidiaries Cyclife Engineering and Graphitech ⁽³⁾ were created to develop solutions for decommissioning light water reactors and designing waste treatment facilities (Cyclife Engineering), and for decommissioning graphite reactors (Graphitech).

In 2020, Cyclife SAS holds an 84.6% stake in Cyclife Digital Solutions, which specialises in tools and digital simulation used for decommissioning, and waste management. On 22 December 2021, Cyclife SAS signed a contract to acquire the Aquila engineering company in the United Kingdom. This new acquisition aims at strengthening Cyclife's position in the United Kingdom in the nuclear engineering sector.

Cyclife Germany was set up in December 2021 to provide a direct presence on one of the largest markets in Europe, in order to strengthen the positioning of Cyclife on waste processing and facilitate its development in the field of decommissioning.

In February 2022, EDF set up a new subsidiary operating in the field of waste management. The objective of this subsidiary, Waste2Glass, in which Cyclife SAS and Aeralis will each hold a 50% interest, is to develop new waste management processes by vitrification based on the Geomelt and MVS processes owned by Veolia.

On 31 March 2022, Cyclife SAS pursued its expansion by buying the French company Quadrica, a specialist in the development of digital tools.

By the end of 2022, the Cyclife group therefore comprised 11 subsidiaries in the field of decommissioning and waste management.

Innovation

EDF also conducts both its own R&D activities and R&D with a network of partners (nuclear operators, manufacturers, VSBs and SMEs, institutional and academic players), on the themes of the management of radioactive waste and decommissioning. EDF is a recognised leader in these fields and is taking part in seven EU projects to:

- improve the performance of waste management and decommissioning project;
- develop its expertise;
- contribute to the development and implementation of the best international practices.

(1) *Plan national de gestion des matières et des déchets radioactifs* (National plan for the management of radioactive materials and radioactive waste).

(2) Publication of French Decree No. 2022-1547 and the implementation order in the *Official Journal* of the French Republic dated 10/12/2022.

(3) Owned jointly by EDF and Veolia.

Consideration of future charges relating to the management of spent fuel and long-term management of radioactive waste

Each year, EDF makes provisions for the downstream side of the nuclear fuel cycle in France ⁽¹⁾.

B - The issues at stake in preparing for the future of the nuclear fleet in France

EDF's industrial goal for the preparation for the future of the nuclear fleet rests primarily on the following strategic areas:

- continued safety improvements, primarily by integrating lessons learned from the Fukushima accident in Japan;
- the implementation of technical conditions allowing the extension of the operational life of nuclear power plants beyond 40 years;
- implementation of a preventive policy with respect to ageing or obsolete equipment.

In addition, on 4 November 2022, EDF and GE entered into a definitive agreement covering the acquisition by EDF of GE Steam Power's nuclear business ⁽²⁾. The proposed transaction would cover GE Steam Power's conventional island equipment for new nuclear power plants, including Arabelle turbines, as well as maintenance and upgrades for existing nuclear power plants (outside the Americas).

Continued operation of units beyond 40 years

The French Environmental Code (*Code de l'environnement*) does not specify any maximum duration of operation. However, it requires the status of facilities to be assessed every ten years in view of applicable regulations, and an update of the assessment of the risks and drawbacks of the facility with respect to protected interests. To achieve this, the state of the facilities, the experience gained during their operation, new developments in nuclear science, and safety rules applying to similar facilities ("safety handbook") are taken into account.

EDF's industrial strategy is to operate the fleet beyond 40 years in the best conditions of safety and performance, considering the significant investment linked to the third ten-year inspections and the post-Fukushima improvements on the one hand, and the energy needs of France on the other.

This target is consistent with trends observed around the world for reactors using similar technologies. To this end, EDF has implemented industrial and R&D action plans. Actions have been launched to renew the major components that can be renewed. Solutions are being studied to demonstrate the capacity of non-replaceable equipment such as the containment building and reactor vessels, to ensure their operation up to 60 years.

An extension to the life of the current nuclear fleet must enable, whilst respecting the absolute priority of nuclear safety, better use of the industrial base it represents.

During his speech on 10 February 2022 in Belfort, the President of the French Republic announced that he wanted to "extend the lifespan of all reactors that can be extended" and that "no nuclear reactor in operation will be closed in the future (...), except for safety reasons". The President also stated that he had asked EDF to "study the conditions necessary for extending the life of nuclear power plants beyond fifty years", thus paving the way for the continued operation of all nuclear reactors beyond their 50-year lifespan.

900MW series

In the first half of 2016, all the technical, economic and governance conditions necessary to match the amortization period of the 900MW power plants in the French nuclear fleet with the Group's industrial strategy were met. On 28 July 2016, the Board of Directors of EDF approved the extension of the accounting amortisation periods of PWR 900MW series power plants in France (excluding Fessenheim) from 40 to 50 years from 1 January 2016 onwards, without prejudice to the ASN's position on the measures suggested by EDF for each of the nuclear units in question.

On 23 February 2021, the ASN ruled on the terms for continuing to operate 900MW reactors beyond their fourth scheduled inspection. The ASN "deems that the measures put forward by EDF, coupled with its own recommendations, open up the way for the continued operation of 900MW reactors for ten years after their fourth regular re-examination".

The rollout of changes to the first phase of works during fourth ten-year inspections (VD4) is continuing on schedule, thanks to the lessons learned from the first VD4 inspections (as of the end of 2022, 10 VD4 900 inspections had been completed). The launch of the first changes to the second phase of works is underway for an initial series unit, with the partial inspection of Tricastin 1 in 2023. The results of these VD4s are satisfactory. They show a strong capacity for industrialising operations, as well as for involving the industrial fabric necessary for the success of this project.

1,300MW series

In 2021, the process for examining the generic phase of the fourth periodic review of the 1,300MW series was initiated with the ASN. The initial series unit (TTS) is planned for Paluel in 2026.

On 28 July 2021, the Board of Directors approved extending the depreciation period of the 1,300MW PWR plants from 40 years to 50 years in the consolidated financial statements. This accounting estimate does not assume that continued operation will be authorised: such authorisation will be granted unit by unit by the Safety Authority after each ten-year inspection, as required by law.

1,450MW series

The 30-year review of the 1,450MW series has been initiated by the ASN with a TTS planned for 2029. The accounting period for the 1,450MW series currently remains at 40 years. Nevertheless, the subsequent extension of the depreciation period of these series remains an industrial objective for the Group.

Investment programme for the existing nuclear fleet in France: *Grand Carénage*

On 22 January 2015, EDF's Board of Directors approved in principle a major overhaul programme (the "*Grand Carénage*") aimed at refurbishing the French nuclear fleet, enhancing reactor safety and, if conditions allow, continuing their operation beyond a 40-year lifespan. This programme incorporates additional safety improvements identified following the Fukushima accident.

This industrial programme is being gradually implemented in compliance with:

- the objectives of the Energy transition for green growth Act;
- the multi-year energy programmes (PPE);
- the opinions and orders of the ASN; and
- specific procedures for reactors to run for more than 40 years.

On 31 March 2022, the Board of Directors of EDF approved the principle of continuing the *Grand Carénage* programme, with a new roadmap for 2022-2028 incorporating feedback from the examinations underway with the ASN, in particular for VD4 900 and 1,300 inspections and the launch of the Studies phase for the VD5 900 inspections.

Cost of the programme

At the end of 2022, €36.2 billion have been invested since 2014 of which €4.5 billion for 2022.

On the occasion of the launch of Phase 2 of the *Grand Carénage*, investments for 2022-2028 were valued at €33 billion in current euros, i.e. €31.2 billion in 2021 euros.

In addition, works relating to stress corrosion have entailed investment expenditure of an estimated €0.8 billion in current euros (€0.7 billion euros in 2021 euros) between 2022 and 2024.

Milestone report at end 2022:

- the programme for preventive replacement of the poles in the main transformers is ongoing. 159 main transformer poles out of 174 had been replaced.
- the steam generators of 28 out of the 32 units of the 900MW series were replaced.
- All 56 "Ultimate Backup" diesel generators have been put into operation.

Industrial work will continue beyond 2028. Capital expenditure will remain high beyond this date.

(1) See note 15 in the appendix to the consolidated financial statements for the year ended 31 December 2022 in section 6.1.

(2) See EDF's press release of 4 November 2022 "GE and EDF sign a binding agreement related to EDF's acquisition of GE Steam Power's nuclear activities".

C – Issues related to decommissioning of nuclear power plants

In its capacity as operator, EDF takes full regulatory, financial, and technical responsibility for the decommissioning of its plants and the other nuclear installations it operates ⁽¹⁾. EDF therefore ensures that it controls the entire life cycle of nuclear power generation resources.

Regulatory notice

Regulations applicable to the decommissioning of nuclear facilities

The decommissioning of a BNF is ordered by a decree, issued after an opinion by the ASN and completion of a public enquiry. This decree determines the characteristics of the decommissioning, the timeframe for its completion, and where applicable, the operations incumbent upon the operator after decommissioning.

The reference scenario adopted by EDF since 2001 is for decommissioning without a waiting period, consistent with French regulations, which provide for decommissioning "in as short a time as possible" after final shutdown on acceptable economic terms and in line with the principles set out in accordance with the legal provisions in force.

The regulatory process for decommissioning involves the following:

- a final shutdown declaration at least two years before the planned shutdown date, which describes the preparatory decommissioning operations planned;
- a decommissioning request filed within two years from the final shutdown declaration, which after investigation by the authorities and a public inquiry, will result in a decree ordering the decommissioning of the facility;
- key progress reviews with the ASN, included in a safety reference system relative to decommissioning;
- finally, once the work and final shutdown have been completed, the declassification of the facility to remove it from the legal regime governing basic nuclear facilities.

To date, 11 reactors using four different technologies have been permanently shut down:

- three pressurised water reactors (PWR): one at Chooz A and two at Fessenheim;
- the heavy water reactor (HWR) at Brennilis;
- the Superphénix fast neutron reactor (FNR);
- the six Natural Uranium Graphite Gas (NUGG) reactors at Bugey, Saint-Laurent and Chinon.

The sites remain the property of EDF, and they will remain under its responsibility and monitoring. Given its role as responsible operator, EDF will act as the contracting authority for the decommissioning.

EDF plans a period of fifteen years for the decommissioning of Pressurised Water Reactors.

The decommissioning of EDF's historic nine first-generation reactors in final shutdown will produce approximately one million tonnes of primary waste materials, of which 80% is standard waste material and none is High-Level Waste. The remaining 20% corresponds to ILW or VLLW. 2% of this waste is long-lived and therefore requires the availability of a storage facility for ILW-LL and LLW-LL.

Decommissioning of the two Fessenheim reactors shut down will produce 380,000 tonnes of waste, 95% of which will be non-radioactive waste.

The existing means of removal of short-lived VLLW and LILW have been supplemented by the Conditioning and Storage Facility for Activated Waste (ICEDA) for the conditioning and storage of activated waste from operations and decommissioning (ILW-LL) ⁽²⁾.

The scheme for handling waste from decommissioning still needs to include the construction of the LLW-LL repository (see the paragraph on LLW-LL in section 1.4.1.1.2.3 "The issues relating to nuclear activity"). Moreover, the new dismantling schedule of the NUGG plants provides for the construction of a storage facility for the LLW-LL liners ⁽³⁾ of the silos at Saint-Laurent, pending the availability of a definitive disposal route (first removal of graphite in 2044).

Chooz A

Chooz A is a pressurised water reactor using a technology similar to the 56 units in operation. It was commissioned in 1967 and operated until 1991. The reactor location, in a rocky cave in a hillside, means that access conditions and entry and exit of materials and effluent management are more difficult than those of the rest of the existing PWR fleet.

The work begun in 2017 to decommission the Chooz A reactor vessel and its internal components is experiencing difficulties. The health crisis had a serious impact on the work site, in particular due to the halting of filtration resulting in high turbidity levels in the water. The handling crane required to lift the reactor vessel is out of service and the repair works are more complex than anticipated. The work site has also experienced other unexpected issues (slower cutting rates than expected, etc.). The end of the reactor vessel decommissioning work site has therefore been put back to December 2025. There is still a risk of a further deferral of 14 months.

In a separate development, a partnership agreement between EDF and CNRS on a project to reuse the caverns for research on neutrinos once the installations have been decommissioned was entered into on 7 September 2022, in order to make the most of the particular configuration of the facility.

Fessenheim

Reactors 1 and 2 at the power plant were permanently shut down on 22 February 2020 and 30 June 2020 respectively. At the end of 2020, the "PREDEM Fessenheim" project was put into place to coordinate all the end-of-operation procedures (draining of circuits, evacuation of bore, permanent locking-out and removal of certain equipment and support functions, removal of fuel, decontamination of primary circuits, etc.).

All of the spent fuel was removed from the site and sent to La Hague in the space of just over 2 years, a highly satisfactory performance. As a result, 99.9% of the radioactivity has been removed from the site. Work to carry out Full System Decontamination was performed on Reactor 1 in collaboration with Framatome. The same work is also scheduled in the first half of 2023 for Reactor 2, and will allow the best possible working conditions in terms of radioactivity during decommissioning.

The decommissioning dossier was filed with the Minister of Ecological and Solidarity Transition and the ASN in December 2020. Obtaining the decree will mark the start of the decommissioning phase. In early 2022, MSNR ⁽⁴⁾ and the ASN acknowledged receipt of a fuller version of this dossier ⁽⁵⁾, marking the resumption of its examination. The current schedule foresees the Decree allowing Fessenheim facility decommissioning to be issued in early 2026. As of the end of 2022, the trajectory for decommissioning preparation activities was in line with the provisional schedule.

In addition, Decree No. 2021-1785 of 24 December 2021 authorised the collection of water from and discharge into the Grand Canal in Alsace for the cooling of various auxiliary circuits at Fessenheim.

(1) BCOT (*Base chaude opérationnelle du Tricastin*), Silos de Saint Laurent, ICEDA...

(2) See "ICEDA" paragraph in section 1.4.1.1.2.3.

(3) The "graphite liners" come from the operation of the former French natural uranium graphite gas (UNGG) reactors. These are hollow cylindrical graphite envelopes that surround the fuel.

(4) MSNR: French Nuclear Safety and Radiation Protection Mission (*Mission de la sûreté nucléaire et de la radioprotection*).

(5) Supplied on 23 December 2021 following the MSNR letter dated 4 August 2021.

Brennilis

Since 2000, EDF has become fully responsible for the decommissioning of this facility in place of the CEA ⁽¹⁾. The deconstruction works included in the scope of the Decree authorising partial decommissioning were finalised by end-2020. The safety concrete for the effluent processing station has been demolished, and the spoil removed. Following the final inspections, decommissioning works to allow this zone to be entirely relisted as a conventional zone will be completed in 2023. At the same time, examination of the decommissioning dossier ⁽²⁾ with a view to the publication of a full decommissioning decree (allowing decommissioning of the reactor block itself) is ongoing, with:

- the handing down of a satisfactory opinion with no recommendations by the standing group on the dossier submitted; and
- the public enquiry held between 15 November 2021 and 3 January 2022.

Following this public inquiry, on 17 January 2022, the Brennilis Local Information Commission (CLI) issued a favourable opinion on the proposed application. In addition, the enquiry commission appointed by the Rennes administrative court to conduct the public enquiry also issued a favourable opinion on 2 March 2022. The ASN recently indicated its aim of a decree being published during the first half of 2023, which would mean it coming into force at the end of 2023.

Creys-Malville

In 2020 and 2021, the first two caps were cut and the cutting of the last cap ended in March 2022. It was removed at the end of July and replaced by the "rotating confinement structure" (*structure de confinement tournante*, SCOT) from which the in-water cutting of the internal components of the reactor vessel will be carried out; this work is scheduled to continue through until 2026.

NUGG

the industrial strategy of the dismantling of the NUGG reactors was thoroughly reviewed at the end of 2015 with the shift from "in-water" dismantling to "in-air" dismantling. It calls for:

- mainly remote controlled decommissioning;
- the qualification of tools and the remote control platform on an "industrial demonstrator";
- the decommissioning of an "initial series" reactor, Chinon A2, and the secure configuration of the other 5 reactors.

This new strategy entails decommissioning work on the reactor caissons coming to an end between 2063 and 2093, depending on the reactors in question.

Updating the industrial decommissioning scenario for first-generation power plants, particularly NUGG plants, led to a €590 million increase in the provision at 31 December 2015.

In a cover letter accompanying the decisions of 17 March 2020 supporting the technical options chosen, the ASN took the view that EDF should aim to shorten the schedule for completing this work "in view of the legal obligation for the decommissioning of each reactor to take place as quickly as possible". EDF confirmed the implementation of a regular review of the schedule based on the results obtained on the industrial demonstrator and the first reactor. At this stage, the lack of any new developments has meant the schedule cannot as yet be improved upon.

Construction work on the Graphite Industrial Demonstrator (*Démonstrateur Industriel Graphite*, DIG) was completed in late 2021. The first tests, carried out in September 2022, concerned the development of tools allowing "the recovery of graphite bricks" from reactors and the progressive design of the robotic arms required to decommission NUGG reactors.

Following the inspection of "the maturity of coordination of complex projects" completed in November 2020 (an exploratory approach by a team bringing together the ASN, the French Radiation protection and Nuclear Safety Institute (*Institut de radioprotection protection et de sûreté nucléaire*, IRSN) and the French General Directorate for Energy & Climate (*Direction générale de l'énergie et du climat*, DGEC), EDF's answers and commitments were supplied to the ASN in May 2022.

From a regulatory point of view, the dossier for the decommissioning of the Saint-Laurent silos was submitted to the ASN in electronic format on 30 September. The decommissioning dossiers for Chinon A2 and A1 and the dossiers for substantial changes to the decrees for Chinon A3, Saint-Laurent A, and Bugey 1 were filed on 15 December 2022, in line with the rulings by the ASN in March 2020. Meanwhile decommissioning works other than in the reactor vessel are ongoing on all 3 sites.

Decommissioning costs and assets constituted to cover long-term nuclear commitments

Since the beginning of operations at its power plants, EDF has made provisions to cover decommissioning operations, engineering, monitoring and maintenance of facilities, and site security ⁽³⁾. The aim of decommissioning operations is to restore the condition of sites and enable the land to be reused for industrial purposes.

Article L. 594-2 of the French Environmental Code and its implementing regulation specified which liabilities are not associated with the operating cycle and must therefore be covered by dedicated assets ⁽⁴⁾. In addition, dedicated assets have been gradually established since 1999 ⁽⁵⁾.

The external audit mandated by the DGEC on "responsibilities in respect of decommissioning facilities currently permanently shut down and the management of radioactive waste from these facilities" was held from December 2020 to May 2021, pursuant to the letter of instruction received on 5 June 2020 from the General Directorate of the French Treasury (*DG Trésor*) and the DGEC. This audit covers historic shut down facilities excluding PWR technology, *i.e.*, Superphenix, Brennilis, and the 6 NUGG reactors. The final audit report was delivered to the audited party on 9 July 2021. The DGEC's follow-up letter was issued on 22 November 2021 and the audit report was posted on the Ministry's website.

The report notes "an organisation structurally oriented toward completing decommissioning projects," a "costing and annual review process [that] is robust, and provides proper traceability of assumptions used and original data" and "a long-term industrial approach to overcoming the few remaining technological challenges". Finally, the report confirms that "provisions are consistent with the basic scenarios of the projects and cover the full range of expenses of the audited scope" and determines they "are adequately sized" after testing the size of EDF's expenses and provisions.

In addition to the current mastery of processes and organisations, two minor deviations of little significance were reported (and were corrected during the revision of the estimates at year-end 2021). Areas for improvement were identified in connection with project planning, measuring the level of project maturity and the risks and uncertainties quantification process. They do not call into question the conservative assessment of the associated decommissioning and waste management costs. The audit report also highlights a set of good practices that are rarely implemented in decommissioning projects.

The response to this follow-up letter was sent on 21 February 2022, resulting in the establishment of an action plan in respect of the points for progress referred to above.

1.4.1.1.3 New Nuclear projects

For the risks associated with these projects, see section 2.2.4, "Risks related to operational performance", "Risk 4A – Management of large and complex industrial projects (including EPR projects)".

1.4.1.1.3.1 Flamanville 3 EPR project

EDF is both the owner and manager of the Flamanville 3 EPR ⁽⁶⁾ project, with capacity of circa 1,600MW.

Interfaces with the ASN and administrative permissions

Since being submitted to the ASN in March 2015, the commissioning request dossier has been updated several times, in 2017, 2021, and 2022. A further update is scheduled in 2023 prior to start-up, in particular to take into account the outcome of the most recent examinations and requests from the ASN.

(1) Decree No. 2000-233 of 19 September 2000.

(2) Filed in 2018.

(3) See section 6.1, note 15 of the appendix to the consolidated financial statements for the fiscal year ended 31 December 2020.

(4) See section 6.1, note 15.1.3 "Coverage of EDF's long-term nuclear commitments".

(5) See section 6.1, note 15.1.2.2 "Strategic allocation and composition of dedicated assets" in the appendix to the consolidated financial statements for the year ended 31 December 2022.

(6) European Pressurised water Reactor.

In this respect, the project must undergo an environmental evaluation. This is a new regulatory procedure required by an amendment to the French Environmental Code. The ASN referred the matter to the Environmental Authority in early September 2021, which issued its opinion on 22 December 2021. It recommends that the application, prepared on the basis of an environmental impact study be completed on several points and, in particular, that it addresses the impacts of the prior construction phases of the Flamanville EPR and the Cotentin Maine very high voltage power line. These recommendations were discussed with the ASN in 2022. A brief was drafted in response by EDF and sent to the ASN in March 2022, then expanded at the request of the ASN in November 2022.

Since the commissioning request dossier includes EDF's impact study, the opinion of the environmental authority and EDF's brief in response will be the subject of a public consultation scheduled in May-June 2023. The ASN decision to authorise commissioning is expected in December 2023.

On 8 October 2020, pursuant to the French Environmental Code, the ASN authorised the arrival of nuclear fuel at the Flamanville site, after an on-site inspection on 18 and 19 August 2020 and after public consultation on the draft authorisation from 31 August to 21 September 2020. The 245 fuel assemblies necessary for loading (241 assemblies for the first core, 4 assemblies for the reserve) were received at the end of the first half of 2021. The first regulatory fuel inspection (Euratom) was performed at the end of August 2021. See below "Lessons learned from Taishan".

The commissioning deadline specified in the Authorisation Decree was extended until 11 April 2024 ⁽¹⁾, to take into account the weld repairs in the main secondary circuit (see below).

EDF received this operating authorisation on 30 August 2021, pursuant to the Energy Code, in an order issued by the Minister for the Ecological Transition.

Progress of on-site implementation

The year 2022 was marked by the following achievements:

- continuing the work to upgrade the welds on the main secondary circuit (details below);
- full-pool tests;
- completion of the rest of the open vessel functional tests;
- sealing the vessel head after emptying, cleaning the reactor vessel, control rod tests, etc. The vessel is now ready for work to requalify the entire installation with a view to its commissioning.

Also of note:

- the audit carried out in September 2022 by ANDRA: this concluded that the site had sufficient levels of maturity with respect to the management of radioactive waste.
- the completion of the pre-start-up review (PSUR) by WANO ⁽²⁾; this highlighted 9 strengths and 4 AFI (Areas For Improvement). Of these, two concerned operation, one concerned fire protection, and one concerned the application of operating handbooks in general.

Quality equipment manufacturing

Reactor vessel

In the first half of 2017 the ASN examined "higher-than expected" carbon levels in the vessel head and bottom on the basis of documentation submitted by Framatome the supervision of EDF. Based on the opinion of a group of ASN-appointed experts, the ASN concluded that the mechanical properties of the vessel head and bottom were adequate for their uses, including in the event of an accident ⁽³⁾. On 9 October 2018, the ASN authorised the commissioning of the vessel bottom, subject to functional checks and the commissioning of the vessel head, by limiting the lifespan to end 2024.

The project is preparing the replacement of the reactor vessel head, scheduled after the installation has been commissioned. The manufacture of a new vessel head is underway in Framatome facilities, with site delivery scheduled in 2024. Therefore, the costs incurred for the manufacture of a replacement vessel head are not included in the target construction cost.

In December 2022, Framatome issued a request to postpone the date for replacement of the vessel head until the end of the first operating cycle (in the second half of 2025). The ASN will examine this request and issue a ruling on next steps.

Break preclusion and quality deviations in the welds of the main secondary circuit

On 30 November 2017, EDF declared a significant event to the Nuclear Safety Authority regarding the detection of a quality deviation in the welding in the main secondary pipes that transfer the steam from steam generators to the turbine (VVP pipework circuit).

This system was designed and manufactured according to the "break preclusion" concept. This approach consists in strengthening requirements for design, manufacture and monitoring in service. These strengthened requirements, requested by EDF, also involve a "high quality" requirement in the building of these systems ⁽⁴⁾. Although these requirements were applied during the design phase, they were not properly incorporated into the welding work. Failure to meet these requirements does not necessarily entail non-compliance with the nuclear pressure equipment regulations.

On 10 April 2018, EDF notified the ASN of a significant event relating to the detection, during the initial comprehensive inspection, of deviations in the inspection of the welding of the pipes of the main secondary circuit ⁽⁵⁾. In accordance with industrial procedures, the welds had been checked by the consortium of contractors in charge of manufacturing the system and each one had been declared compliant as the work was done. EDF began a further inspection during the second quarter of 2018 of all welds concerned in the main secondary system.

Penetration welds

On 19 June 2019 the ASN asked EDF to rework eight welds on VVP main steam circuit pipework (known as reactor containment building penetration welds), prior to commissioning.

EDF's proposal for reworking the penetration welds is the use of remotely controlled robots, designed to conduct high-precision operations within the pipework in question. The ASN approved this process on 19 March 2021. All eight of these penetration welds were upgraded in 2021. In late 2022, Stress-Relieving Heat Treatment (SRHT) and final inspection of the eight welds were completed.

Four penetration welds (on the steam generator water supply lines, "ARE") were also the subject of upgrades. As of the end of 2022, these four welds had been repaired by means of remote controlled robots ⁽⁶⁾; SRHT and final inspections had also been completed.

The penetration weld upgrading works have now been completed. Works to "re-close" the ARE and VVP lines (reinstalling the sections removed to work on the penetration welds) are now underway.

Other welds

The technical investigation into reworking the welds located on the main secondary circuit with quality shortfalls and/or not complying with the requirements of the break preclusion reference is ongoing. The upgrading works that were begun in summer 2020 and completed at the end of 2022 concerned 45 VVP welds and 41 ARE welds. Non-destructive testing and SRHT are underway.

Deviations observed in the Stress-Relieving Heat Treatment (SRHT) historic process

SRHT is a manufacturing operation that, in addition to giving the welded joint the expected mechanical properties, aims to reduce the residual stresses that develop within a material during a welding operation. SRHT is performed by heating the welded joint for a determined period of time at a temperature of about 600°C (+/-15°C).

(1) In a Decree dated 25 March 2020.

(2) World Association of Nuclear operators.

(3) Opinion dated 11 October 2017.

(4) Given that these requirements were stated, the potential for pipes rupturing did not have to be considered during the safety demonstration. This proves, with a high degree of confidence, that accidents are physically impossible or extremely unlikely and that their consequences are limited to acceptable economic conditions.

(5) The initial comprehensive inspection is a regulatory requirement prior to the plant commissioning, which consists, in particular, in examining the welds of the primary and secondary systems. It gives rise to an initial benchmark report on the state of plant before it begins operation.

(6) This process is an adaptation of the one used for VVP penetration repairs.

In late 2020, Framatome reported to the ASN a deviation in the SRHT process historically used on the welds of the main secondary circuit of Flamanville 3. Framatome then developed an "optimised" process to ensure compliance with the required temperature range.

The demonstration of the qualification of the SRHT processes must be approved by the ASN on the basis of supporting documentation. In late 2021, the ASN approved this qualification demonstration of optimised SRHT processes for VVP penetration welds, as well as for "simple geometry" non-penetration welds. The rest of the procedures were validated in 2022.

In 2022, a number of anomalies were encountered during "complex geometry" SRHT, most relating to operational requirements for implementation. New studies and tests had to be carried out; these required research and development and new iterations to validate how these SRHT would be carried out on the 15 equipments in question. As of the end of 2022, these SRHT were in progress on the work site.

Report on technical examination of the main secondary circuit (CSP)

The latest technical issues being examined by the ASN were closed in 2022; the review of the examinations carried out since 2019 was presented to the GP ESPN ⁽¹⁾ at its meeting on 30 November 2022. In conclusion, the group took the view that EDF had responded to its 2019 meeting recommendations and that the situation had been corrected. The ASN concurred, and concluded that subject to the proper completion of the final work site activities (SRHT, NDT ⁽²⁾), compliance with the break preclusion reference of VVP pipework would be demonstrated.

Other technical problems (other than the main secondary circuit) Main primary circuit

In a separate development, on 2 March 2021 EDF declared a significant event to ASN. This concerned the incomplete consideration of the 2006 study referential in respect of the implantation of three nozzles ⁽³⁾ on the main primary circuit.

On 21 June 2021, EDF submitted a dossier to the ASN stating that it had chosen the solution consisting of installing a "retaining clamp" on each of the nozzles concerned. In a letter dated 8 October 2021, the ASN indicated that it had no objection in principle to this solution. The design of the retaining clamps was also examined by IRSN, which handed down a positive opinion on 30 November 2022. The retaining clamps were manufactured between mid-2021 and mid-2022 and are currently being installed around the nozzles.

The ASN also stressed the need to demonstrate the quality of welds with respect to the requirements applicable to pressurised nuclear equipment. The X-ray inspections carried out between August and October 2021 confirmed that these welds are of good quality. They have been supplemented by ultrasound inspections in the first half of 2022; these also proved to be satisfactory. IRSN is finalising the examination of these inspections; this should be complete in the first half of 2023.

Filtration sump SIS/CHR ⁽⁴⁾

The Flamanville EPR is equipped with a recirculation system for the water in the main primary circuit in the event of a pipe breach. In the event of an accident, this system recovers water from the bottom of the reactor building and recirculates it into the tank in order to cool the fuel assemblies.

A problem was detected during a "full-loop" test in the summer of 2021. The debris contained in the recirculated water were not effectively filtered by the filters located at the bottom of the reactor building.

Following these tests, EDF replaced these filters in September 2022 and fitted them with a finer filter mesh. EDF also decided to reduce the potential quantities of debris with proven filter clogging potential. This work to reduce potential debris has been almost completed (finalisation is expected in the first quarter of 2023).

As of the end of January 2023 the full dossier, taking into account the results of the most recent tests in late 2022, has been supplied to the ASN with a view to completion of the final examination of this technical dossier. The findings of this examination are expected by the end of the first half of 2023.

Pressuriser valves

Following the discovery of corrosion on the pressuriser valves (PSRV valves) of the Olkiluoto EPR (Finland), EDF and Framatome carried out inspections on this equipment and also discovered traces of corrosion on the valves of the Flamanville EPR. EDF and Framatome have decided to take it into account and to modify the material used for certain valve pilot components. Several corrosion resistance tests were performed in order to select the best material. These components have been fabricated and are now installed in the reactor building. In addition to dealing with this difficulty, the ASN is continuing to investigate the operation and reliability of the pressuriser valves. The findings of this examination are expected before the end of the first half of 2023.

Lessons learned from Taishan

EDF has analysed the potential impact of the technical issues encountered on reactor 1 of the Taishan plant (see section 1.4.5.3.6.1 "Activities in China") on the commissioning of the Flamanville EPR ⁽⁵⁾. Inspections carried out on the relevant fuel assemblies showed mechanical wear of certain assembly components.

EDF plans to replace the potentially affected fuel assemblies at the edge of the core by 64 new fuel assemblies that have undergone heat treatment to mitigate the risk of wear to a significant degree, before start-up. The IRSN issued a favourable opinion with no reservations in respect of the dossier submitted by EDF. Examination of this solution by the ASN is underway.

Commissioning schedule and costs to completion

In its press release dated 16 December 2022 ⁽⁶⁾, EDF adjusted the project schedule and completion cost. Fuel loading was postponed from the second quarter of 2023 to the first quarter of 2024. The estimated completion cost was revised from €12.7 billion to €13.2 billion ⁽⁷⁾ excluding interim interest. This revision of the schedule is due in particular to additional studies required to determine the new procedure for implementing the SRHT process.

The costs of post-commissioning modifications are not included in the construction cost of the project.

For details of investments for the Flamanville 3 EPR, see note 10.6 in the appendices to the 2022 consolidated financial statements.

The risk relating to the schedule and the completion cost remains high, especially in the event of new technical issues arising. In addition, work site delays entail a risk of equipment and materials ageing. See section 2.2.4 "Risks related to operational performance" – "4A – Management of large and complex industrial projects (including EPR projects)".

1.4.1.1.3.2 Other "New Nuclear" projects

A – Preparation of a programme to build new nuclear EPR 2 reactors in France

The work undertaken by EDF and Framatome on the New Model EPR project led to the finalising in 2017 of the technical configuration of a model named EPR2 which could ultimately expand the French nuclear offer in France and for export. EPR2 is an optimised version of the EPR, following on from the EPR in industrial terms, whilst integrating feedback from EPR work sites and power plants currently in operation.

Following the French government's request that EDF should, together with the nuclear industry, prepare a full dossier on a renewal programme for nuclear facilities in France by mid-2021, in May 2021 EDF supplied it with a "Proposal by EDF and the nuclear industry for a programme of new reactors in France". The programme calls for building three pairs of EPR2s successively at Penly, Gravelines and a third riverside site in the Auvergne Rhône Alpes region (Bugey or Tricastin), while continuing the feasibility analysis at other nuclear sites.

(1) Permanent expert group for pressurised nuclear installations (GP ESPN).

(2) NDT = non-destructive testing.

(3) A nozzle allows to connect auxiliary circuits to the primary circuit.

(4) SIS = Safety injection circuit (used to add pressurised borated water to the reactor's primary circuit in the event of an accident that causes a major breach to this circuit). EVU = Ultimate heat removal system for the reactor building in the event of a severe accident (with core meltdown).

(5) See EDF's press release of 12 January 2022 "Update on the Flamanville EPR".

(6) See press release dated 16 December 2022 "Update on the Flamanville EPR".

(7) In 2015 euros.

In his speech about France's strategy for achieving carbon-free power by 2050 in Belfort on 10 February 2022, the President of the Republic expressed his wish to see the launch of a programme to build new nuclear reactor series. The programme aims to build three pairs of EPR2 reactors and feasibility studies for the construction of eight additional EPR2 reactors. He also stated that the objective should be to commission the first reactor by 2035, and specified that EDF will build and operate these new EPR2 reactors.

No decision has been taken in this respect to date. Appropriate financing and, where applicable, regulatory plans are currently being drafted with a view to implementation of the programme. A revised completion cost for the project is planned for summer 2023.

Pending a ruling on EPR 2, on 16 December 2020, the Board of Directors authorised EDF to continue the project until the end of 2022 with budgeted costs of around €1 billion. On 31 March 2022, the Board of Directors then authorised EDF to continue its development activities through to 31 December 2023 and commit the additional sum of approximately €0.6 billion.

Governance

Pursuant to the recommendations made by J-M Folz in 2019 ⁽¹⁾ and those of the French Court of Audit (*Cour des comptes*) in its summer 2020 report on the EPR sector, EDF has decided to strengthen the design & build governance for EPR2 reactors. In particular, EDF has set up a new organisation separating the Customer (*maîtrise d'ouvrage*, MOA), in this case the New Nuclear (France) Engineering Programme Department, from Project Management (*maîtrise d'œuvre*, MOE), in this case the EPR2 Project Department, within the New Nuclear Engineering and Projects Department (*Direction Ingénierie et Projets Nouveau nucléaire*, DIPNN).

The New Nuclear Engineering (France) Programme Department ensures the establishment of appropriate legal, economic, and financial frameworks and suitable conditions for the project to be realised. It defines cost, lead time, and performance targets for EPR2 projects and ensures they are kept to by Project Management. The Programme Department thus acts as the project's internal customer.

The EPR2 Project Department is responsible for the design of EPR2 reactors; if a final investment decision is made, it will then oversee their completion in line with the quality, cost, lead time, and safety targets set by the Programme Department.

The two departments have been working closely together ever since the implementation of this new organisation.

Status report and outlook

At the end of 2021, the general design studies carried out since 2018 were finalised. This stage was preceded by the end of the ASN's examination of the safety options dossier in 2021 (letters dated April and September 2021) and the submission to the ASN of the Preliminary Safety Report in February 2021.

Since January 2022, a new sequence has begun, focusing on 3 priorities:

- continuing engineering studies to develop the first nuclear concrete at Penly in Normandy, the site chosen for the construction of a first pair of EPR2 reactors;
- contractualisation of 3 pairs of reactors in order to have feedback from studies by suppliers and provide them with the necessary visibility to invest in skills and industrial resources, with the aim of 70% of the contracts being signed by the end of 2024;
- work site preparation, in particular administrative and regulatory permissions. On 11 February 2022, EDF approached the CNDP ⁽²⁾ in respect of the plan to build 2 EPR2 reactors at Penly. The public debate was held between the end of October 2022 and the end of February 2023, in parallel with a consultation on power held by the French State. As a result, the overall schedule aims for a request to authorise the creation of the facility (*Demande d'Autorisation de Création*, DAC), a building permit in May 2023, and a start of works on site in June 2024.

B - Small Modular reactors (SMR)

In the field of low-power reactors (SMRs), development of the NUWARDTM product, a third generation 340MW pressurised water power plant composed of two 170MW modules, continued in 2022. These are designed to be manufactured in series and to be marketed abroad. The main target is the replacement of fossil fuel

power plants in the coming decades. This marketing will be backed by a flagship power plant in France, whose construction is scheduled to begin by 2030.

The design of the NUWARDTM SMR is currently the subject of pre-evaluation carried out by the ASN in conjunction with the Czech and Finnish technical safety authorities (respectively, SUJB and STUK). The approach is designed to speed up the process of granting international licences for SMR reactors whilst also helping to provide fresh impetus for regulatory harmonisation.

In December 2022, EDF and Fortum signed a Memorandum of Understanding for the joint exploration of development opportunities for SMRs and large nuclear reactors in Finland and Sweden.

In late 2022, the Group set up a dedicated subsidiary to manage the next phase of the NUWARDTM project, known as the "basic design" phase: this will start in early 2023 and is due to be completed by the end of 2026. NUWARD is a wholly-owned subsidiary of the Group. It will continue to benefit from the support of engineering from EDF, CEA, TechnicAtome, Naval Group as well as Framatome, and Tractebel.

In December 2022, a €50 million subsidy was granted as part of the France 2030 plan by the French government, after being notified and authorised by the European Commission. EDF received this subsidy in the amount of €45 million over the year. In his speech on 10 February 2022 in Belfort, the President of the French Republic announced an additional intervention of the State up to €500 million for the NUWARDTM.

C - International developments

United Kingdom

In the United Kingdom, EDF Energy is involved in the construction project of two nuclear reactors at Hinkley Point, together with China General Nuclear Power Corporation (CGN). Nuclear New Build (NNB) is the project owner. EDF's New Nuclear Engineering and Projects Department (DIPNN) together with Edvance ⁽³⁾ are responsible for the design studies. Framatome supplies the components and the control system.

EDF is involved in the development of the Sizewell C project for the construction of 2 EPR reactors in partnership with the British government (see section 1.4.5.1.2.5).

EDF also owns a 33.5% stake in Bradwell B in partnership with CGN (see section 1.4.5.1.2.5).

China (Taishan)

In China, EDF owns a 30% stake in TNPJVC (Taishan Nuclear Power Joint Venture Company Limited). This company operates two reactors using EPR technology in Taishan in the Chinese province of Guangdong (see section 1.4.5.3.6.1 "Activities in China").

India

In March 2018, EDF signed a non-binding industrial cooperation agreement with the Indian national electricity company Nuclear Power Corp of India Ltd. (NPCIL) for the construction of 6 EPR reactors in India at the Jaitapur site. This agreement sets out the industrial plan, the roles and responsibilities of partners, and the next steps in the project. In this regard, the EDF group and its partners will be supplying all the studies and equipment for the nuclear island, the conventional island, the auxiliary systems, and the heat sinks and galleries. EDF will not be investing in this project and the NPCIL customer will be the general project manager and integrator in the execution phase.

In accordance with the schedule determined by the IWFA ⁽⁴⁾, EDF and its partners submitted a comprehensive conditional non-binding bid to NPCIL at the end of 2018, then in April 2021 a binding technical and commercial offer. Since then, EDF has been continuing discussions with NPCIL to achieve convergence on technical and commercial issues with the aim of entering into a binding agreement during 2023.

Saudi Arabia

EDF is participating in the call for tenders initiated in Saudi Arabia by K.A.CARE ⁽⁵⁾ and successfully responded for the first phases of the consultation process. This process is aimed at submitting a bid for the supply of engineering studies, equipment, and the construction of two EPR reactors.

(1) Report submitted to the French Minister for the Economy and Finance and the Chairman and CEO of EDF in October 2019.

(2) *Commission nationale du débat public*, i.e. French national public debate committee.

(3) In 2017, EDF and Framatome created Edvance, a joint engineering subsidiary for the construction of new nuclear power plants in France and in the world.

(4) Industrial Way Forward Agreement.

(5) King Abdullah City for Atomic and Renewable Energy.

Czech Republic

EDF is taking part in the competitive call for tenders process formally launched in March 2022 in the Czech Republic by electricity supplier ČEZ, its project company Elektrárna Dukovany II and the Czech government. This covers the construction of a 1,200MWe unit at Dukovany and the potential extension of the nuclear programme to three additional units. On 30 November 2022, EDF submitted its binding bid with conditions covering the engineering studies, the supply of equipment, the construction and the commissioning of an EPR1200 reactor for Dukovany (unit 5). The bid also includes indicative proposals for a fleet of 3 additional units⁽¹⁾.

At the request of the government, the ASN has also handed down an opinion on the safety options dossier for the EPR1200 project for export. The opinion of the ASN on the reactor's safety options is essentially the same as the one it handed down in July 2019 for the EPR2 reactor from which this one is derived. The ASN has noted that the safety objectives and the handbooks used for the design and architecture of the safety systems have been taken from the EPR2 reactor model⁽²⁾.

As part of the SMR process, EDF has also taken a position for the Temelin project, proposing its NUWARD™ reactor.

Poland

In October 2021, EDF submitted a preliminary non-binding offer to the Polish government, covering a contract for the supply of engineering studies and equipment and the construction of four to six EPR reactors in Poland, representing a total target installed capacity of 6.6GWe to 9.9GWe on two or three sites. Although the Polish government has chosen to pursue binding discussions with a competitor for the first site, EDF's bid remains valid for the other sites. This preliminary offer covers all the key parameters of such a programme, such as the technical configuration of the future power plants, the envisaged industrial scheme, the development strategy of the local supply chain, the estimated cost of the programme and the associated execution schedule.

1.4.1.1.3.3 The digital transformation of nuclear engineering (SWITCH programme)

Transformation of engineering feeds into EDF's CAP 2030 strategy, under sections related to managing current new nuclear projects, extending the operating life of the fleet in operation, expanding abroad and embracing digital transformation. It is a multifunctional programme involving all EDF players in the nuclear sector, including Framatome.

This programme aims to achieve significant performance gains in engineering by focusing on three areas:

- optimising and standardising products, processes, methods and tools to better grasp the complexity of large-scale industrial projects throughout their lifecycle;
- integrating the SWITCH programme (implementing an integrated, collaborative and industrial information system) and the decisions of the excell plan;
- an enterprise operation extended to partners and suppliers.

1.4.1.1.4 Activities related to nuclear generation: Framatome

Framatome is a key player in nuclear energy, owned by the EDF group (75.5%), Mitsubishi Heavy Industries (19.5%) and Assystem (5%).

Framatome is acclaimed for its innovative solutions and high added value technologies for the nuclear fleet worldwide. Benefiting from its global expertise, backed by sound references and a workforce of 17,000 employees, the company designs, maintains, and installs components and fuel, as well as instrumentation & control systems for nuclear power plants.

In 2022 as in 2021, Framatome hired over 1,500 employees to maintain and increase skills (see section 1.4.1.1.1 "The excell plan").

Framatome has a significant industrial presence in France, Germany, the United States and China. The company also has an industrial or sales presence in twenty

countries, including South Africa, Argentina, Belgium, Brazil, Bulgaria, Canada, South Korea, Spain, Finland, Hungary, Japan, Kazakhstan, Czech Republic, Romania, United Kingdom, Slovakia, Sweden, and Ukraine.

Framatome's strategy is based on its core business *i.e.* nuclear steam supply systems, and aims to offer safe and competitive solutions, industrialise them and carry out the projects as part of an industrial sector.

The company's customer base includes leading international energy players and it works on over 300 reactors in the world. With Framatome's experience in reactors of all types of technologies it can meet the specific needs of its customers worldwide.

1.4.1.1.4.1 Framatome's activities

With an experience built up over 60 years in the design and construction of nuclear plants, Framatome is present at every stage of the process. With its highly skilled engineers and operators, the company has completed more than 90 nuclear power plant projects around the world to date.

Engineering

Framatome's experts are specialised in the design of the principal items of equipment making up nuclear steam supply systems, and that includes mechanics and metallurgy, neutronics, the scientific calculation work, fluid mechanics and risk and nuclear safety analysis. Framatome's engineering services include the heart of the power plant, referred to as the "nuclear island", and the main components of the reactor's primary circuit such as steam generators, pumps, pressurisers, as well as the nuclear reactor pressure vessel itself. Its specialists and technicians are actively involved in major new nuclear power plant construction projects such as the new EPR reactors.

Equipment manufacturing

Framatome components equip more than 100 power plants in 11 countries. At its plants in Le Creusot, Saint Marcel and Jeumont, in France, Framatome's manufacturing plants produce the key equipment for nuclear steam supply systems for electrical utilities all over the world to equip new-build power plants or to replace items of equipment at power plants in operation. The company manufactures advanced technology heavy equipment (reactor pressure vessels, steam generators, etc.) and mobile components (reactor coolant pumps and control rod drive mechanisms).

In 2022, the company continued to ramp up production at its Saint-Marcel plant, specialising in the manufacture of heavy components. It supplies the main forged components for new construction projects abroad, in particular for the EPR reactor project of Hinkley Point C in the United Kingdom, as well as parts for replacement components intended for French reactors.

At the same time, Framatome has joined the EDF group's excell plan. In this respect, Framatome component factories are rolling out plans designed to guarantee "right the first time" compliance of manufacture and construction. Actions are also being conducted to this end within "the supply" chain. Framatome is also engaged in a skills maintenance programme. It aims to secure the production of primary equipment for nuclear boilers (steam generators, vessels, etc.). All stakeholders are involved with the aim of standardising activities. This industrialisation process is accompanied by the manufacture of components, sometimes in advance, in order to ensure the stability of the supply chain, control the manufacturing lead times of Framatome and its key suppliers, and maintain skills.

Instrumentation & control systems

Framatome designs, manufactures and installs safe nuclear instrumentation solutions and control systems for plants in operation and new builds. Its solutions includes in particular safety instrumentation & control (I&C) systems, I&C systems for normal operation, nuclear instrumentation, lifecycle solutions, global I&C engineering expertise simulators, human-machine interface design and human factors engineering. Framatome has installed over 300 complete instrumentation and instrumentation & control systems on reactors of all types worldwide.

(1) See EDF press release of 1 December 2022, "EDF submits to the Czech operator ČEZ and its project company Elektrárna Dukovany II its Initial Bid for one EPR1200 reactor to be constructed at the Dukovany site in the Czech Republic".

(2) Opinion No. 2022-AV-0413 issued by the French Nuclear Safety Authority on 10 November 2022 on the safety options for the EPR1200 reactor project, handed down in application of Article L. 592-28-1 of the French Environmental Code. This specifies that at the request of the government, the ASN may examine the compliance of safety options for nuclear installation models destined for export to the obligations applicable in France to the same type of installation.

Fuel

Framatome designs, develops and manufactures fuel assemblies for pressurised water reactors, boiling water reactors and research reactors. The company's know-how spans the entire process: from the design of the fuel assembly, to the production of zirconium and its alloys – zirconium being vitally important for fuel production – on to fuel fabrication and related services, right through to operations on the nuclear power plants.

The company performs all relevant calculations from general fuel management up to dedicated licensing for the highest performance and safety. Over 226,000 Framatome fuel assemblies have been loaded in more than 100 reactors in operation around the world.

Commissioning and licensing of nuclear power plants

Framatome has substantial international experience working with nuclear safety authorities on all types of reactors currently in service around the world. The company also offers support for operators through relationships with their respective safety authority and in the application of existing regulations in their country of establishment.

In France, Framatome has expertise in the application of the Order relating to nuclear pressure equipment (*Arrêté relatif aux Équipements Sous Pression Nucléaire* – ESPN).

The company also provides its international customers with technical centres where numerous tests are carried out each year to qualify their equipment. It assists them in the preparation of qualification studies and associated documentation.

Maintaining, modernising and extending operating lifetime of existing nuclear power plants

Framatome offers innovative solutions and services to maintain and modernise existing nuclear power plants, and extend the lifetime of existing installations, while guaranteeing the safety, performance and availability of operations. Framatome has over 60 years' international experience of all types of technologies and maintenance of more than 300 reactors worldwide. Its teams have expertise and knowledge in maintenance, component replacement, inspections and checks, refuelling operations, and optimised management of reactor shutdowns for maintenance. More specifically, its activities cover the management of equipment and spare parts, modernisation of I&C, and chemistry and radiochemistry services.

Management of large projects

Framatome's participation in the construction of new-build nuclear reactor projects spans across design, through procurement and supply, and on to commissioning. With recognised expertise in the management of complex projects, its teams are tasked with delivering to the most stringent security standards and fulfil the requirements of its customers. In the case of new-build construction projects, the company proposes solutions for the nuclear island scope.

Framatome is actively involved with EDF in the construction, commissioning and maintenance of 5 EPR reactors worldwide: in France (Flamanville 3), in China (Taishan 1&2), and in the United Kingdom (Hinkley Point C, reactor 1 and 2).

In 2017, EDF and Framatome created Edvance, a joint engineering subsidiary for the construction of new nuclear power plants in France and in the world.

1.4.1.1.4.2 Key achievements by Framatome in 2022

Following the discovery of stress corrosion affecting sections of the primary circuits on some EDF reactors, Framatome brought to bear all its engineering and maintenance resources to support the French nuclear fleet. A large number of calculations were performed to allow the ASN to take a view on the strategy suggested by EDF in July 2022. Repairs were also carried out by Framatome on the Bugey 4 and Chooz B1 reactors.

As part of its vertical integration strategy, in May 2022 Framatome acquired several subsidiaries of the EFINOR group, a leader in welding operations. These companies are active in nuclear energy and naval defence in France and the United Kingdom.

In July 2022, Framatome also enhanced its capacity to manage Stress-Relieving Heat Treatments (SRHT) through its acquisition of CETH, now a wholly-owned subsidiary of the Group. This has reinforced its expertise in all processes relating to welding.

Framatome has extended its offering in the field of cybersecurity by taking out a majority stake in Cyberwatch, a French information security software developer.

As part of the deployment of the business of its Framatome Healthcare™ brand, Framatome has strengthened its partnership with Bruce Power and Isotope Technologies Munich (ITM) through the joint venture ISOGEN⁽¹⁾. In the second half of 2022, ISOGEN announced the start of commercial production of lutetium-177, a medical isotope used in cancer treatment. Also in 2022, Framatome took out a stake in Global Morpho Pharma to support the development of nuclear medicine and its commitment to the fight against cancer.

Framatome Défense™ has renewed the MoUs entered into with Technicatome since 2017, reaffirming the two companies' commitment to continuing their partnership for operation of their industrial activities relating to national defence.

To ensure the long-term future and development of key skills for successful nuclear defence programmes, CEA, Framatome and Naval Group signed a framework agreement on 23 February. This covers studies and experiments on the materials used for nuclear propulsion.

Framatome has made a major contribution to the France Relance programme. Several of its innovative projects were winners during 2022.

1.4.1.1.4.3 Nuclear facilities and safety

Basic nuclear facilities (BNF)

The two basic nuclear facilities (BNF) on the Framatome site in Romans (BNF 63 and BNF 98) were combined by Decree No. 20211782 of 23 December 2021. The facility grouping these two basic nuclear facilities is called BNF 63-U: Nuclear fuel manufacturing plant.

2022 results on nuclear safety⁽²⁾

As in 2021, no major safety or radiation protection event was recorded at Framatome's Romans-sur-Isère site. In 2022, Framatome's site declared 16 significant safety events (SSE) classified at INES 0, 4 SSE at INES 1 and none at INES 2. On 21 September 2022, a fire broke out in a workshop in Romans containing uranium. There were no consequences for the workers, the public, or the environment.

The 2022 detailed results on nuclear safety are published in the annual report drawn up by the General Inspector for Nuclear Safety and in the TSN report of the Framatome site of Romans-sur-Isère⁽³⁾.

Dedicated assets

Dedicated assets have been constituted to cover long-term nuclear commitments (see in section 6.1 note 17.1 "Other provisions for decommissioning" in the appendices to the consolidated financial statements for the year ended 31 December 2022).

1.4.1.2 Thermal generation in mainland France

Thermal generation assets have a number of advantages: they are very responsive and flexible (quick to start up and power can be modulated), and they have relatively low investment costs and short construction times.

Thermal generation assets are one of the key components of the energy mix to ensure the balance of generation and consumption in real time by accommodating fluctuations in electricity consumption and renewable energy generation (sun and wind power in particular) and thereby contributing to maintaining suitable voltage and frequency levels across the grid. This role will increase with the massive inclusion of intermittent generation resources in French and EU electricity systems.

(1) Set up in partnership with KINETRICS.

(2) The objective of Framatome is to detect, report and treat in the best possible manner all deviations and anomalies occurring in connection with its activities. The purpose of this indicator is to enhance the sharing of experience, broaden analysis and the importance given to weak signals. Events declared at level 0 on the INES scale are safety deviations, considered as "weak signals". It is essential to take them into account as part of a continuous improvement process for a better management of risk prevention in the conduct of activities. In order to facilitate the reporting on "weak signals" and the sharing of experience, Framatome detects and records any deviation. The analysis of the latter, by the *Filière Indépendante de Sécurité* (independent safety reviewer), assesses the level of reporting to the safety authority.

(3) Available on the www.framatome.com website.

1.4.1.2.1 EDF's thermal generation in mainland France

At 31 December 2022, the thermal generation facilities operated by EDF were of different types, both in terms of fuel and power:

Fuel	Unit capacity (in MW)	Number of units in operation at 31/12/2022	Total capacity (in MW)	Year commissioned	Net energy output (in TWh)	
					At 31/12/2022	At 31/12/2021
Coal-fired	580	2	1,160	in 1983 and 1984	1.64	3.01
Fuel oil and dual-fuel combustion turbines (gas and fuel oil)	85	4	340	in 1980 and 1981	0.68	0.34
	203	1	203	in 1992		
	134	1	134	in 1996		
	125-129	2	254	in 1998 and 2007		
	185	2	370	in 2010		
	179-182	3	542	in 2008 and 2009		
Combined Cycle Gas Turbine	427	1	427	in 2011	8.92	7.17
	465	2	930	in 2012 and 2013		
	585	1	585	in 2016		

Power generation in 2022

EDF's electricity generation from its thermal power plants in mainland France represented 3.5% of its total electricity generation in 2022. By end 2022, this fleet had a total installed operating capacity of 4,945MW.

Thermal generation (net energy) in 2021 amounted to 11.24TWh in 2022, a higher level of operation than in 2021 (10.53TWh). In 2022, coal units supplied 1.64TWh, CCGT plants 8.92TWh and combustion turbines 0.68TWh.

The priority for these thermal means of generation required on a variable basis all year round is to ensure maximum reliability and availability. The fleet's adaptability to a sustained level of operation was demonstrated. In particular, combustion turbines were in high demand and had a very good response rate when called into operation.

and by over twenty-seven times for dust. These drastic reductions in emissions were made possible by:

- the shutdown of the oldest thermal plants;
- the renovation and installation of smoke treatment equipment using the best techniques available at the most recent plants;
- the use of low sulphur fuel;
- the commissioning of natural gas combined cycle turbines.

For example, Cordemais units are thus equipped with flue gas desulphurisation and denitrification systems (90% reduction in sulphur dioxide emissions and 80% reduction in nitrogen oxide emissions) as well as dust collectors that trap almost all dust.

1.4.1.2.2 Issues relating to thermal generation

Coal-fired fleet in transition

Between 2013 and 2015, EDF permanently shut down ten coal-fired generation units. Between 2014 and 2016, it renovated the three newer technology production units located in Le Havre (1 unit) and Cordemais (2 units) to improve their reliability and efficiency.

EDF proceeded to shut down the Le Havre power plant on 1 April 2021. However, RTE's most recent provisional review has revealed the need to maintain generation at the Cordemais power plant until 2024, or perhaps even 2026, so as to maintain balance between demand and supply in the Grand Ouest region.

In 2022, a project for the construction of a black pellet factory (known as Ecocombust 2) overseen by the industrial company Paprec was launched in response to the Call for Expressions of Interest by the French research agency ADEME under the coordination of the inter-ministerial delegate for local support of the energy transition. Without waiting for a potential decision on the part of Paprec to invest in Ecocombust 2, as part of the EDF group's decarbonisation strategy, works have been commenced to allow partial operation of Cordemais with biomass as of the winter of 2022-2023.

Emissions of the thermal fleet

In 2022, EDF's thermal power plants in mainland France emitted 5.32 million tonnes of CO₂ (5.70 million tonnes in 2021). The CO₂ content per kWh generated by EDF's thermal power plants in mainland France in 2022 is 473g/kWh net (535g/kWh net in 2021). This fall in the CO₂ component is the result of a lower proportion of coal units in EDF's thermal generation mix. These accounted for some 15% of thermal generation fleet output in 2022 (compared to 29% in 2021). It is to be noted that in 2010, the CO₂ content per kWh generated more than 900g CO₂/kWh net.

In 2022, EDF's thermal generation fleet in mainland France emitted 1.210kt of SO₂, 3.65kt of NO_x and 0.063kt of dust. Per kWh generated, polluting emissions have fallen compared with 2010 by five times for NO_x, by over twenty-five times for SO₂

Regulatory notice

Emission regulations

Several provisions of the French Energy Code (*Code de l'énergie*) in application of the French Climate and Energy Act of 8 November 2019 and the French Act of 16 August 2022 introducing emergency measures to protect purchasing power have altered the greenhouse gas emissions ceilings for some power production facilities and also set out offsetting obligations.

For facilities located in continental metropolitan France producing electricity from fossil fuels and emitting more than 0.55tCO₂e/MWh of electricity produced, Article D 311-7-2 of the French Energy Code establishes a specific, decreasing ceiling for greenhouse gas emissions for 2022, 2023 and 2024.

In addition, pursuant to Article 36 of the aforementioned Act of 16 August 2022, operators of the facilities in question are required to offset greenhouse gas emissions resulting from the increase of the emissions ceiling of which the principles are defined in Article D 311-7-3 of the French Energy Code, with sanctions applying in the event of failure to comply. This offsetting will provide funding for projects that comply with the principles established in Article L. 229-55 of the French Environmental Code (*Code de l'environnement*).

Legislation on security of supply for gas

In application of the provisions of Article 26 of the aforementioned Act of 16 August 2022 (enshrined in Article L. 143-6-1 of the French Energy Code), the Minister for Energy may:

- 1° In the event of a serious threat to the security of supply of natural gas whether locally, nationally, or throughout Europe, order electricity production facilities using natural gas to restrict or suspend the operation of their facilities;
- 2° If, in addition to the serious threat referred to in (1) above, there is a threat to the security of supply of electricity to all or part of the national territory, requisition the departments responsible for the operation of some of these facilities such that they operate solely in accordance with the directives and under the control of the operator they designate.

Thermal generation activities are also subject to other specific legislation derived from a number of EU Directives (Directive 2012/18 of 4 July 2012 (known as the Seveso 3 Directive), Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, and amended Directive 2010/75/EU of 24 November 2010 on industrial emissions (the IED Directive)). Some of these Directives are currently being reviewed.

Closure of the oil-fired fleet

In spring 2018, EDF permanently shut down its last thermal power plant running operating on heavy fuel oil, in Cordemais.

Modernising the thermal generation fleet with natural gas combined cycle turbines

EDF commissioned:

- the first Combined Cycle Gas Turbine (CCGT) plant in France at Blénod in 2011;
- two CCGT plants at Martigues in 2012 and 2013;
- a next-generation CCGT plant at Bouchain in 2016 in partnership with General Electric.

This modernisation of the thermal generation fleet reduces its atmospheric emissions of CO₂, nitrogen oxides and sulphur oxides.

The CCGTs in Martigues are the result of the repowering of former oil-fired units, a part of whose facilities, such as the steam turbine, the condenser and the water treatment facilities, were reused. The installed capacity of the Martigues site is 930MW and the return is over 50%, markedly higher than the return from coal-fired thermal units.

The innovative Bouchain CCGT delivers improved capacity (600MW achievable in under 30 minutes) and return (over 60%) and offers good environmental performance with CO₂ emissions of around 360g/KWh on average, one-third of those of the old neighbouring coal-fired plant shut down in 2015.

Decommissioning of thermal fleet shut down units

EDF has planned all of the decommissioning operations on its units which were shut down or whose shutdown is scheduled. The provisions for these operations have been made in an amount that corresponds to the cost of decommissioning all of the units being operated and the clean-up of the sites ⁽¹⁾.

In 2022, EDF continued the decommissioning work on sites that had been definitively shut down. The main work carried out was asbestos removal on the units withdrawn from operation at Cordemais and Le Havre, together with decommissioning on the Blénod site (chimneys).

EDF is careful to preserve the potential of its sites to the greatest extent possible, with precision allocation of space and the implementation of local monitoring of planning regulations so as to secure its own needs. This differentiated ground and space management has made it possible to free up EDF land from occupancy issues (freeing up new land resources, biodiversity potential, and restoring natural land), taking into account the Group's needs and assisting local authorities with the development of new types of activity (such as implementation of Cleantech Vallée on the Aramon site).

Regulatory notice

Regulations applicable to shutdowns

Fossil fuel-fired power plants are subject to legislation on facilities that are classified for the protection of the environment (ICPEs), which is organised in the French Environmental Code. Activities covered by listed facilities legislation are listed in a register which places them in a declaration, registration, or authorisation regime depending on the level of risks and drawbacks which may arise. These regulations require sites to be restored when a facility is taken out of service, depending on the expected future use of the land; for certain facilities, the constitution of financial guarantees is also required. Depending on the nature of the hazards and/or drawbacks for each category of installation, these are designed to ensure surveillance of the site, the ongoing security of the facility, interventions in the event of accidents prior to or subsequent to closure, and restoration of the site after closure.

1.4.1.3 Renewable energy generation and storage

The EDF group is now the leader in renewable energy in Europe and more specifically, the leading supplier of hydropower in the European Union.

Hydropower generation is the Group's most significant renewable energy source. The Group is also leader in developing competitive industrial sectors, primarily wind and solar. Renewable energies account for over a quarter of the Group's overall installed capacity.

The EDF group's commitments in respect of the development of renewable energy are also dealt with in section 3.1.1.4 "Roadmap for increasing the Group's decarbonised generation".

NET GROUP INSTALLED CAPACITY IN RENEWABLE ENERGY AT END 2022 ⁽¹⁾

(in MW)	Hydropower	Wind	Solar Power	Biomass	Geothermal	Marine	Total
France	20,527	1,930	534	205	1	240	23,438
Europe excl. France	1,173	1,843	129	3			3,148
America	205	4,671	1,608				6,484
Asia	432	875	498	23			1,828
Africa ⁽²⁾		256	821				
TOTAL NET INSTALLED CAPACITY	22,337	9,574	3,591	231	1	240	35,974

(1) As a proportion of the percentage held.

(2) Including Middle East countries.

(1) see in section 6.1 "Consolidated financial statements", note 17.1 "Other provisions for decommissioning".

1.4.1.3.1 Hydropower generation in France

1.4.1.3.1.1 EDF's hydropower generation fleet

Hydroelectricity is the second source of electricity generation after nuclear power and the first source of renewable electricity in France. This is an important sector for the electricity system due to its flexibility and its contribution in terms of grid security and balancing.

There were 425 plants within the scope of EDF at the end of 2022, with an average age of 77 years ⁽¹⁾.

Hydropower generation facilities	31/12/2022	31/12/2021
Total Maximum Capacity (in GW)	20.1	20.1
Total Output Including pumped-storage hydropower plants (in TWh)	32.4	41.8

Within mainland France, hydropower plants are mainly located in mountainous areas in the Pyrenees, the Alps, the Massif Central and the Jura, as well as on the Rhine. In all, they represent an installed capacity of approximately 20.1GW ⁽²⁾, or 23% of EDF fleet's installed capacity, for energy capacity of more than 40TWh.

The various hydropower facilities are designed to optimise the use of water resources in the valleys where they are situated, as part of multi-purpose water management. Given the size and variety of its fleet, EDF has facilities able to respond to all types of desired uses, from base to peak generation which also offer levers for optimisation due to their flexibility.

Facility category	Turbine capacity (GW)	Average gravity capacity over 60 years ⁽¹⁾ (TWh)
Run-of-river	3.6	16.4
Lake-supplied	8.2	14.2
Pondage	3.1	7.8
Pumped-storage ⁽²⁾	5.0	1.5
Tidal	0.2	0.5

(1) The average production over 60 years has been re-evaluated on the basis of observed climate change.

(2) Only gravity capacity is counted in the pumped-storage hydropower plants; pumped energy is not taken into account.

1.4.1.3.1.2 Performance of the hydropower generation fleet

In 2022, EDF's hydropower electricity generation in mainland France was 32.4TWh ⁽³⁾, amounting to 10.1% of EDF's total electricity generation in 2022. This historically low level of generation is due to the combined effects of extremely low levels of water availability throughout the year and prudent management of reservoir filling in order to contribute to the requirements of the electricity grid in the event of high pressures on supply and demand balancing.

In 2022, EDF spent more than €526 million in mainland France for the development and maintenance of its hydropower generation fleet to ensure optimum and safe operation.

A highly-automated and remotely-managed fleet

In order to take advantage of the flexibility of its hydropower generation facilities, for some years now EDF has been initiating ambitious programmes involving

automation, remote control of hydropower plants and centralised management for each valley. These power plants correspond to over 15.5GW, approximately 77% of installed hydro capacity. They are remote-controlled from four control centres able to make adjustments to the plants' operating programmes at any time in order to respond to the needs of the electricity system and to economic opportunities arising on the electricity market.

To improve the reliability of its largest power plants, EDF monitors physical parameters (temperature, vibration, other technical data) of machinery, from its regional operations centres. This enables any discrepancy to be speedily detected; incidents can be avoided by a better knowledge of the state and behaviour of the equipments in operation.

Technical performance of the fleet and hydropower conditions in 2022

Hydropower generation may witness substantial variations from one year to the next, depending on climatic fluctuations in water resources. 2022 was characterised by very low levels of water availability and very good output performance (record availability of production resources at the start of the winter). This was due to the mobilisation of all teams to ensure the availability and performance of hydroelectric power generation facilities during the energy crisis. Special care was taken to provide availability for the winters of 2021/2022 and 2022/2023, as well as to developing sources of leverage to provide as much power and energy as possible in the event of pressure on the electricity grid during the winter of 2022/2023.

Anticipating needs relating to the expansion of variable renewable energy (solar and wind power), the emphasis is on increasing the flexibility of hydroelectric production resources and adaptation of power plant remote operation.

EDF is also exploring other avenues of production. For instance, in June 2022, EDF Hydro announced a €2 million investment in Sweetech Energy, a start-up specialising in osmotic energy, with a view to rolling out this technology on a large scale in France and abroad. Osmotic energy is generated by the difference in salinity that occurs where fresh water from rivers and salt water from the sea meet.

1.4.1.3.1.3 Hydropower safety

EDF performs regular monitoring and maintenance of dams, contributing to hydropower safety. Hydropower safety comprises all the measures taken when designing and operating hydropower plants to reduce risks and hazards to people and property associated with water and the presence or operation of facilities. Hydropower safety is a major and permanent concern of the producer.

It involves three main activities:

- the management of operational risks, by providing information to users (communication campaigns, information of the employees operating on waterways, hiring "hydro-guides" during the summer months) about changes to water levels or flow fluctuations in downstream waterways;
- the management of facilities during periods of exceptionally high water levels in order to ensure safety at the facilities and for the surrounding communities;
- measures to address the major risk associated with dam or reservoir failures, through the regular monitoring and maintenance of facilities under the supervision of public authorities. In France ⁽⁴⁾, a danger study is on each 240 class A and B dam, conducted every ten or fifteen years for class A dam and class B dam respectively. These studies consolidate an overview of the structures and associated countermeasures forming part of a risk mitigation procedure ⁽⁵⁾. The 67 largest dams are subject to a special administrative procedure ("Special Intervention Plan").

See risk factor 4E – Hydraulic safety violations in section 2.2.4 "Risks related to operational performance".

(1) Sliding 1-year arithmetic mean of a like-for-like fleet, recalculated in 2021.

(2) Excluding French overseas territories and departments and Corsica.

(3) Excluding the power required to operate pumped-storage hydropower plants (STEP)

(4) Metropolitan France and French overseas departments, regions, and collectivities, including wholly-owned subsidiaries.

(5) For further details, see the annual report of the Inspector of Hydropower Safety, available on EDF's website.

Regulatory notice

Regulation applicable to the safety and security of facilities

Articles R. 214-112 *et seq.* of the French Environmental Code contain provisions that are applicable to the safety and security of facilities that are authorised and operated under concession contracts. Dams are divided into three classes (A, B and C) according to their characteristics, in particular their height and the volume of the floodwaters. According to this classification and the legal rules applicable to the facility, the regulations require the operator or concession contract holder to fulfil a certain number of obligations in order to guarantee the safety and security thereof.

1.4.1.3.1.4 Issues relating to hydropower generation

Hydro power is a key component in energy transition, due both to the low-carbon nature of output and to its flexibility and storage capacity, which outperforms other energy storage solutions by far. Hydropower also plays a major role in local water resource management, as was evident during the severe drought in 2022.

Concession renewals

Regulatory notice

Regulations applicable to hydropower facilities in France

In France, hydropower facilities are subject to the provisions contained in Articles L. 511-1 *et seq.* of the French Energy Code. They require concession agreements granted by the State (for facilities generating over 4.5MW), or an authorisation from the Prefecture (for facilities under 4.5MW).

Under the French Energy Code, the granting of Hydropower concession is preceded by public notice and competitive tendering in accordance with the terms and conditions set out in the French Public Procurement Code.

In accordance with Article L. 523-2 of the French Energy Code, when a hydropower concession contract is renewed or extended under the conditions provided for by Articles L. 521-16-2 or L. 521-16-3 of the French Energy Code, an annual concession fee that is proportional to the revenues generated by the concession contract is levied, which is paid in part to the French State and in part to the French *département* and municipalities through which the waterways used flow.

Hydropower concessions have an initial term of 75 years ⁽¹⁾. Most hydropower concessions that expired before 2012 were renewed for terms of 30 to 50 years.

However, the French State has not yet renewed 31 concession contracts which lapsed on 31 December 2022, corresponding to installed power of 3,260MW. Since their expiry these concessions have fallen under the "rolling delay" situation defined as when a concession that has expired but not been renewed is extended under its former conditions until such time as a new concession is granted so as to ensure the continuity of operations in the meantime ⁽²⁾.

In this situation, EDF operates facilities for which it has a concession by combining energy improvement, care for biodiversity (especially aquatic environments), payments of fees to national government and local authorities, and local development, whilst also ensuring the safety and security of operations.

France has received two formal warnings from the European Commission (EC). In the first notice dated 22 October 2015, the European Commission considers that the French State has infringed the provisions of on Article 106 section 1 of the Treaty on the Functioning of the European Union (TFEU) by awarding the majority of the hydroelectric concessions in France to EDF and renewing them with EDF as these steps strengthen EDF's dominant position on the French retail electricity markets. In addition, the EC sent a second formal warning to France on 7 March 2019 ⁽³⁾, on alleged grounds of non-compliance with EU public procurement law relating to the renewal of concession agreements.

See also section 2.2.1 "Market regulation: political and legal risks", risk factor 1B – Changes to the legal and regulatory framework for hydraulic concessions.

Development of the fleet

EDF has embarked on a hydropower development trajectory that is fully in line with the goals set by law ⁽⁴⁾. By 2030-2035, the multi-year energy programme (*Programmation pluriannuelle de l'énergie*, PPE) aims for a 1GW increase in "gravity-based" hydropower capacity and a 1.5GW in pumped-storage hydropower plant capacity.

This goal is being leveraged in a number of ways:

- increasing the capacity of infrastructures managed under concession ⁽⁵⁾. 7 power increase dossiers have been filed with the authorities and are currently being examined;
- major projects are also being developed to address energy transition requirements, as well as the growing need to compensate for very low water levels in view of climate change. EDF fully intends to enhance this hydro power asset *via* its storage plan, both in France and internationally. In particular, EDF is studying several STEP projects based on existing installations. It is continuing technical studies of these projects with geological surveys on a number of sites planned in 2023;
- development of hydro power projects in France's overseas *départements* and territories to address the needs identified in these localities' multi-year energy programs (PPE); For instance, EDF is currently developing a 50MW marine pumped-storage hydropower project on Reunion Island. It is planning to carry out the first geological surveys on the identified site in 2023;
- continuing to develop reserve-flow turbines with new projects for equipment planned throughout the territory.

Regional anchoring in hydropower valleys

EDF has taken care to ensure the sustainable and shared development of the areas near hydropower generation facilities, which are often rural and sometimes isolated. EDF's relationship with the localities where it has infrastructures is grounded in its operation as a responsible concession-holder and operator.

EDF's relationship with hydro power valleys is based on two key factors:

- first and foremost, employment, with the goal of maximizing economic benefits for local areas. EDF makes 67% of all its technical purchases in those territories which benefits the local industrial fabric (EDF's supplier panels list over 1,980 local companies representing trades specific to the hydropower sector). The employment footprint of EDF's hydroelectric activity in metropolitan France is estimated at 4,495 indirect jobs ⁽⁶⁾. In addition, ten years ago EDF launched its "EDF, une rivière, un territoire" (EDF, One River, One Territory) programme. Co-built locally with all stakeholders in hydro ecosystems, this aims to support valley development. This local programme has created or maintained over 610 jobs by means of loans to over 50 local companies. This should involve the creation or preservation of more than 725 jobs by 2025. Furthermore, in 2022, EDF set up a smaller loan scheme to support the development of tourism around hydroelectric facilities.

(1) Pursuant to the French Act of 16 October 1919 on the use of hydro power.

(2) French Energy Code, Article 521-16 paragraph 3.

(3) Seven other Member States also received formal warnings: Austria, Germany, Poland, Sweden, Portugal, and the United Kingdom, with Italy also receiving a second, additional formal warning.

(4) French Act combating climate imbalance and increasing resilience faced with its effects.

(5) Pursuant to a provision in the Climate and Energy Act of 8 November 2019 enshrined in Article L. 511-6-1 of the French Energy Code.

(6) In accordance with ordinarily accepted academic definitions, on the basis of purchases of €458 million made from the French economic sector in 2022, and an indirect employment impact per million euros on 64 economic sectors; based on INSEE economic data.

- Ongoing dialogue with economic, political, and non-profit stakeholders in the localities in question, in particular water users and environmental stakeholders. In 2022, this was highlighted by the consultation for the Malause fish pass on the Garonne (Tarn-et-Garonne) and the inauguration of the Nouveau Poutès dam (Haute-Loire). Summer 2022 also demonstrated how well EDF is embedded locally, with dialogue conducted with all stakeholders to address the drought.

Managing access to water

Regulatory notice

Regulation applicable to the balanced management of water resources

EDF's hydropower generation business is subject to the substantive provisions of water regulations. Such regulations cover in particular control over variations in water levels and flow rates, the safety of areas in the vicinity and downstream of hydropower facilities and, in general, maintaining balanced management of water resources.

The dams operated by EDF in France provide storage capacity for nearly 7 billion cubic metres of water at their nominal fill volume. Over and above being a hydropower supplier, EDF is therefore also engaged as a contributor to the sustainable management of water resources.

EDF maintains the flows of many rivers in summer for the benefit of aquatic environments and other water uses: drinking water, irrigation, sports and leisure activities in rivers, etc. For instance, the Durance-Verdon and Saint-Cassien reservoirs in Alpes-Maritimes played a fundamental role in Provence crop irrigation during summer 2022. By reducing the energy management of its infrastructures from March onwards, EDF was able to keep water in its upstream reservoirs to support farmers downstream. See also sections 3.2.3.3.2.1 "Management of water resources" and 3.2.3.3.2.2 "Keeping commitments".

Water management is carried out in consultation with the various stakeholders; in some cases, this includes agreements with local authorities, fishermen, farmers, and the managers of tourist destinations and industrial sites. EDF is thus very much a stakeholder in local water management governance. For instance, EDF has set up an innovative "Basin coordinator delegate" scheme, so that all EDF's business lines have representation in water-related authorities such as basin Committees and water agency Boards of Directors, on behalf of the UFE⁽¹⁾.

1.4.1.3.2 Other renewable energies

Biomass and biogas

Through its holdings, the EDF group owns shares in France (notably through its subsidiary Dalkia), and abroad in several dozen heating networks and small-scale, mainly wood-fired generating plants. It has been committed for several years to the development of anaerobic digestion, with the biogas produced used both in cogeneration and for direct injection into the natural gas distribution network.

Geothermal energy

To develop this type of energy, EDF is using its subsidiary Électricité de Strasbourg, which operates two industrial facilities in Alsace: one for heat at Rittershoffen, Ecogi, for a local industry, and the other for power generation, at Soultz-sous-Forêts.

Dalkia has also specialised in geothermal energy for over 40 years. Dalkia operates a number of surface and deep geothermal facilities in France.

1.4.1.3.3 EDF Renewables activities

Apart from hydropower, the EDF group's involvement in renewable energy is largely conducted by its wholly-owned subsidiary EDF Renewables. EDF Renewables companies in France and abroad had a combined headcount of 4,514 as of 31 December 2022.

EDF Renewables is fully engaged in the renewables market dynamic, with a strong presence in onshore and offshore wind power, as well as accelerating its solar and offshore wind power business.

EDF Renewables is also expanding into the storage sector, in line with EDF's Storage Plan, which calls for 10GW of new capacity by 2035, including 4GW from large-scale batteries.

EDF Renewables is also involved in the Group's development of low-carbon hydrogen, with a view to achieving the Hydrogen Plan target of 3GW of electrolytic hydrogen projects worldwide by 2030.

Finally, EDF is also present in the decentralised renewable energy sector (rooftop solar power) for residential and corporate customers. It has operations in France (via its subsidiary EDF ENR) and abroad, in particular in the United States, China, the United Kingdom and, since 2021, in Vietnam and Israel.

EDF Renewables has seen marked growth in installed capacity (up 10%/year on average over the past five years). As of 31 December 2022, EDF Renewables had gross installed capacity of 18,536MW, net installed capacity of 11,386MW and 6,576MW gross currently under construction. The project portfolio totalled a gross capacity of 86GW⁽²⁾ at the end of 2022.

With operations in over 20 countries, EDF Renewables is one of the benchmark players in the development and generation of electricity from renewable energy sources, in particular in its main historic locations of North America (United States, Canada, and Mexico) and Europe, mainly in France and the United Kingdom. EDF Renewables has also rebalanced its business in geographical terms, increasing its presence in other countries with high potential for the development of renewable energy, including South Africa, Brazil, China, India, UAE, Saudi Arabia and Morocco.

EDF Renewables is an integrated operator in renewable energies and is involved in every stage of the value chain. EDF Renewables operates upstream, in project development, as well as in engineering during the construction of power plants and their operation and maintenance. EDF Renewables develops projects on its own or in partnerships, as appropriate. At year-end 2022, its portfolio comprised 71% of wind power, 28% of solar power and 1% of storage⁽³⁾, and it had embarked on its technological rebalancing initiative by accelerating its development in solar power.

As part of its business model, the Group is also involved in the Development and Sale of Structured Assets (an activity referred to as "DSSA"), which consists of selling projects it has built, in whole or in part, to third-party investors. With regard to DSSA, the net capacity sold in 2022 amounted to 881MW.

(1) UFE: *Union Française de l'Électricité* (i.e. Union of the French electricity industry).

(2) Including storage.

(3) Net values.

1.4.1.3.3.1 Fleet

INSTALLED CAPACITY BY SEGMENT AND COUNTRY

(in MW)

	At 31/12/2022		At 31/12/2021	
	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾
Wind				
South Africa	145	73	145	73
Germany	176	174	175	173
Saudi Arabia	416	149	416	212
Belgium ⁽³⁾	325	27	325	27
Brazil	709	526	571	480
Canada	607	542	560	506
Chile	175	88	175	88
China	905	380	905	380
United States	3,815	3,040	4,016	2,943
France	2,328	1,918	1,808	1,637
Greece	264	238	264	238
India	553	432	364	262
Morocco	87	34	0	0
Mexico	324	162	324	162
Poland	68	68	68	68
United Kingdom ⁽⁴⁾	632	181	603	167
Turkey	0	0	0	0
Total wind power ⁽⁵⁾	11,530	8,031	10,719	7,416
Solar power				
Brazil	399	199	399	199
Canada	61	42	61	42
Chile	261	131	261	131
China	137	136	128	123
Egypt	164	80	165	65
United Arab Emirates	2,440	445	1,065	170
United States	1,280	860	1,005	741
France	508	449	378	320
Greece	62	57	32	30
India	663	328	657	325
Ireland	27	14	0	0
Israel	531	296	427	323
Mexico	120	120	120	120
United Kingdom	5	2	5	2
Vietnam	66	34	0	0
Total Solar power ⁽⁵⁾	6,722	3,194	4,703	2,591
Storage				
Germany	2	2	0	0
China	10	3	0	0
United States	125	83	55	55
United Kingdom	150	76	100	51
Total Storage ⁽⁵⁾	287	163	155	106
TOTAL ⁽⁵⁾	18,538	11,388	15,577	10,113

(1) Gross capacity: total capacity of the facilities in which EDF Renewables has a stake.

(2) Net capacity: capacity corresponding to EDF Renewables' stake.

(3) MW in offshore wind exclusively.

(4) EDF Renewables owns 51% of EDF Renewables UK (the other 49% is owned by EDF Energy).

(5) Corresponds to the sum of the exact values rounded to one decimal place.

In 2022, the electricity generation of EDF Renewables' fully consolidated fleet across all segments and countries was 30TWh. The load factor reached at end 2022 33% onshore wind power generation and 18% in solar power generation.

1.4.1.3.3.2 Segments and highlights

For details of renewables activities in Italy and Belgium, see sections 1.4.5.2 "Italy" and 1.4.5.3.1 "Northern Europe" respectively.

Wind power

Onshore wind power

In 2022, EDF Renewables continued its growth in onshore wind power. EDF Renewables had a gross total of 10,119MW onshore wind power capacity in operation as of the end of 2022. Onshore wind farms with a gross capacity of 925MW were commissioned in 2022. Onshore wind farms under construction represented a gross capacity of 1,317MW at 31 December 2022.

France

EDF Renewables has continued to expand, commissioning two wind farms in 2022 with combined installed capacity of 20.8MW, Varaize and Antezant (8.8MW and 12MW respectively). In addition, nearly 13MW of wind power projects were under construction. In 2022, EDF Renewables continued to repower the Tenesa wind farm in Corsica (11.7MW).

It has launched crowdfunding for the Sud-Arrageois onshore wind farm (21.6MW)⁽¹⁾. It has won 3 French Energy Regulation Commission (*Commission de régulation de l'énergie*, CRE) calls for tender, for projects totalling 32.4MW.

South Africa

EDF Renewables has entered into 20-year Power Purchasing Agreements (PPA) for wind farms located in the municipalities of Umsombomvu, Phezukomoya and San Kraal totalling 280MW. These projects are currently under construction.

Saudi Arabia

EDF Renewables (lead contractor) commissioned the Dumat Al Jandal project in a consortium with Masdar and Nesma. With a gross installed capacity of 416MW, this will be the first such wind farm in Saudi Arabia and the most powerful one in the Middle East. Since July 2022, the wind farm has been operating at full capacity, providing over 70,000 homes with renewable electricity.

Brazil

EDF Renewables has been operating in Brazil since 2015, and is one of the country's leaders in the renewable energy industry. Phase 3 of the Ventos da Bahia wind farm was commissioned in 2022. It consists of 33 wind turbines with total installed capacity of 181.5MW.

In addition, EDF Renewables has launched the construction of the second phase of the Serra do Seridó wind farm in the state of Paraíba, with 41 turbines and total installed capacity of 237MW, due to be commissioned in 2024.

The Brazilian subsidiary has also won the contract for the Serre das Alma wind farm project in Bahia, with construction due to start in 2023.

United States

EDF Renewables has commissioned two new wind farms in Texas: King Creek 1 and 2, with total installed capacity of 393MW.

India

EDF Renewables has won a 300MW wind farm project, SECI XII, in the state of Karnataka.

Morocco

EDF Renewables and Mitsui & Co. Ltd., an international trading and investment group with a diversified business portfolio, finalised the construction of the Taza wind farm (87MW) in northern Morocco. EDF Renewables has also launched the repowering of its Koudia wind farm, with commissioning scheduled in 2024.

United Kingdom

Two EDF Renewables projects in the United Kingdom, the Stranoch wind farm in Dumfries and Galloway and the Stornoway wind farm on the Isle of Lewis have each won a Contract for Difference (CfD). Between them, these onshore wind farms will supply 300MW of low-carbon power and will be commissioned in 2025 and 2027 respectively.

Offshore wind power

Offshore wind power represents a strong area in EDF Renewables' development. The company already has operations on the offshore wind power market, with almost 19GW of projects under development, under construction, in service, or under management and maintenance. EDF Renewables is present in Belgium, the United Kingdom, France, Ireland, and more recently in China and the United States. Together with its partners, the company is building projects totalling almost 1.5GW.

France

EDF Renewables is the offshore wind power leader, with four out of seven projects awarded in the calls for tender launched by the French State since 2011.

- It won three projects in 2012, namely the offshore wind farms in Saint-Nazaire, Fécamp and Courseulles-sur-Mer. Together they make up a capacity of nearly 1,430MW and cost around €6 billion. The partnership arrangement brings together EDF Renewables, Enbridge Inc., and wpd for the Fécamp and Courseulles-sur-Mer projects. For the Saint-Nazaire project, EDF Renewables is associated with Enbridge Inc. The construction of the Saint Nazaire wind farm, which was begun in September 2019, continued in 2021 and 2022 with offshore work. France's first offshore wind farm was commissioned in late November 2022⁽²⁾.
- The Fécamp offshore wind farm has been under construction since 2020. The electrical substation and 71 foundations were installed offshore in summer 2022. As of late 2022, the inter-turbine cables were being installed. The first wind turbine is due to be installed by the spring of 2023. Full commissioning of the wind farm is expected by the end of 2023.
- Construction of the Courseulles-sur-Mer offshore wind farm started in February 2021. An order for recyclable blades for 10 turbines was placed in 2022⁽³⁾. The connection of the wind farm to landfall and the electricity grid is currently being completed. The wind farm is scheduled to be commissioned in 2025.

EDF Renewables is also conducting a pilot offshore wind farm project (Provence Grand Large) in the Mediterranean, based on floating wind power technology. Its construction continued in 2022 with the assembly of the floating platforms⁽⁴⁾. The offshore installation of the wind farm is scheduled for the first half of 2023. It is expected to be commissioned at the end of 2023.

In June 2019, the Dunkirk project, with an installed capacity of almost 600MW, was awarded to a consortium consisting of EDF Renewables, companies Innogy (now RWE) and Enbridge. In 2021, following the withdrawal of RWE from the project, EDF Renewables and Enbridge both increased their stake in the project such that both now own 50%. The consortium (responsible for design, construction, and O&M of the future wind farm) and RTE (responsible for the electrical connection) is continuing with the consultation phase of the project, following on from the public debate organised by the Commission for Public Debate on Specific Projects (*Commission particulière du débat public*) in the fourth quarter of 2020. The commissioning of the wind farm is planned for 2028.

In 2021, EDF Renewables was shortlisted for a offshore wind project in Normandy launched by the government. It has also been shortlisted for three floating offshore wind farms, one in the south of Brittany (shortlisted in 2021) and two others in the Mediterranean (shortlisted in 2022).

United States

At the end of 2018, EDF Renewables set up a 50-50 joint venture, Atlantic Shores Offshore Wind, LLC, with Shell New Energies US LLC (Shell). The purpose of this joint venture is to develop offshore wind turbines on a site located off the coast of the New Jersey (WEA) under a lease issued by the US federal authorities. In June 2021, the joint venture won a Power Purchasing Agreement (PPA) to develop 1.5GW of capacity. In July 2022, the joint venture won another maritime area offshore from the state of New York in an auction organised by the federal authorities to develop a project for 1.5GW⁽⁵⁾.

(1) See the EDF Renewables press release dated 22 June 2022 "EDF Renewables and Lendosphere launch a crowdfunding programme for the Sud-Arrageois wind farm project in Pas-de-Calais – EDF Renewables" (edf-renouvelables.com).

(2) See the EDF Renewables press release dated 23 November 2022 "EDF Renewables, Enbridge and CPP Investments Announce France's First Offshore Wind Project, Saint-Nazaire, is Now Fully Operational".

(3) See the EDF Renewables press release dated 20 August 2022 "Recyclable blades for the Calvados offshore wind farm – a first in France".

(4) See the EDF Renewables press release dated 17 May 2022 "EDF Renewables and Enbridge Eolien France 2 continue construction of the Provence Grand Large pilot project and confirm their aspirations in the field of floating wind power".

(5) See the EDF Renewables press release dated 1 March 2022 "EDF wins a maritime zone in New York bight to develop offshore wind energy".

United Kingdom

In 2022, EDF Renewables continued the construction of the Neart na Gaoithe offshore wind farm in partnership with Irish electricity company ESB. This 450MW project is located in the Firth of Forth on the eastern coast of Scotland. It is scheduled to be commissioned in 2024.

Photovoltaic solar power

EDF Renewables accelerated to expand in solar power. At end 2022, gross installed solar capacity was 6,722MWp (3,194MWp net), up by 603MWp net i.e. +23% compared to end 2021.

EDF Renewables also has a portfolio of solar projects under construction of 3,526MWp gross.

France

EDF Renewables has structured its policy for contributing to the Solar Plan launched by the Group in December 2017. EDF is implementing a strategy covering all market segments. Such strategy is based on an integrated development model for projects up to their operation, the quest for industrial excellence and continued investment in innovation. This strategy leverages EDF's research and development and the territorial networking of EDF's teams dedicated to local authorities and businesses. The lands targeted as a priority are sites referred to as "damaged", i.e. industrial wastelands, polluted, abandoned or former quarry sites, which can be rehabilitated with the development of photovoltaic projects. The company is also looking to develop agrivoltaic solar projects.

EDF Renewables commissioned 17 solar power plants in 2022, with total capacity of 134.7MW, and launched the construction of solar power plants with 264MW net capacity. EDF's portfolio of solar projects in France includes 570MWp of authorised projects by the end of 2022.

EDF Renewables won contracts for a total capacity of 141MWp of solar power in the CRE's 2022 call for tenders.

Innovation also supports the development of solar power, notably in the form of:

- agrivoltaics, i.e. the development of power production facilities above certain types of crop. In 2022, EDF Renewables launched a pilot project known as Vitisolar above vineyards ⁽¹⁾ in the region of Bordeaux;
- floating solar power: the work site for Lazer, the EDF group's first floating solar power plant located in Hautes Alpes is currently being finalised. The solar farm of a power of 20MWp will be installed on the hydroelectric reservoir i.e. covering three-quarters of the water body's total area. It is expected to be commissioned in 2023.
- Ground-mounted solar power for self-consumption to support industrial companies' use of low-carbon power. In 2022, EDF Renewables launched its first ground-mounted solar power plant for self-consumption to provide electricity for part of the Sanofi factory in Aramon, Gard ⁽²⁾.

Some projects include a crowdfunding campaign, enabling the inhabitants of a region to be involved with the funding of the projects in question. This was the case for 19 power plants in 2022.

South Africa

EDF Renewables entered into an agreement with the Anglo American group to set up a joint venture, Envusa Energy, and launch a pipeline of over 600MW worth of wind and solar power projects, with construction due to begin in 2023 ⁽³⁾. Envusa Energy is aiming to have installed capacity of 3-5GW by 2030.

Saudi Arabia

South Jeddah, with capacity of 300MW, is EDF Renewables' first solar power project in Saudi Arabia. 68% of the solar panels have now been installed and the first MWh has been produced by the project. It will be completed in the second quarter of 2023.

United States

After having commissioned the Maverick 6 and 7 solar power plants in California in 2021 with total installed capacity of almost 310MW, in 2022 EDF Renewables

North America commissioned the Arrow Canyon and Holliday Creek power plants (275MW and 117MW respectively).

Construction of the Fox Squirrel and Desert Quartzite solar power plants (753MW and 377MW respectively) was also launched in 2022, giving a combined total of over 1GW. EDF Renewables and Ameren Missouri also announced that they had entered into an agreement for the Huck Finn solar power project, with installed capacity of 200MW and commissioning scheduled in 2024.

United Arab Emirates

The consortium consisting of EDF Renewables and the Chinese firm Jinko Power Technology Co. Ltd. is continuing to build the Al Dhafra solar power plant, with commissioning scheduled in 2023. The future solar power plant will be located 35km south of Abu Dhabi. With installed capacity of 2GW, it will be the most powerful solar farm in the world, supplying electricity to the equivalent of 160,000 local households each year.

India

EDF Renewables is developing its solar power business through EDEN Renewables India, a joint subsidiary created for this purpose in 2016 by EDF and Total EREN ⁽⁴⁾. EDEN is completing construction of the SECI III photovoltaic plant (450MW) in Rajasthan in the North of India.

Vietnam

EDF Renewables acquired a stake in SkyX Energy, a rooftop solar developer in Vietnam.

Israel

In 2021, EDF Renewables successfully responded to the call for tenders of the municipality of Netanya to develop rooftop solar. In 2022, 22 projects were connected to the grid; a further 26 projects are under construction. In all, 50MW will be connected by 2024.

More generally, in 2022 EDF Renewables commissioned 10 solar power plants in Israel with total installed capacity of over 100MW, including three floating solar power plants. Two solar power plants, one of them floating (Burgata), are under construction and due to be commissioned in 2023 ⁽⁵⁾.

United Kingdom

The Sutton Bridge solar power plant, with capacity of 49.9MW, is currently under construction. This is EDF Renewables' first major solar power project in the United Kingdom ⁽⁶⁾. The subsidiary has also entered into an agreement with Network Rail to develop the Bloy's Grove solar farm in Norfolk, with capacity of 49.9MW. This will cover approximately 15% of Network Rail's annual power use. The project forms part of an existing partnership between Network Rail and the EDF group in the United Kingdom to supply traction power.

Operating & Maintenance

As an integrated operator, EDF Renewables operates and maintains most of its own facilities. Dedicated first and foremost to EDF group wind and solar assets, this activity is also carried out on behalf of third parties. Worldwide, EDF Renewables operates 17.4GW at end December 2022 with over 1,000 experts, engineers and technicians across nine countries. EDF Renewables has long been active in the operation-maintenance field in North America where it manages over 13GW. The business in Europe and the rest of the world exceeds 4GW at end 2022.

This activity is driven by commissioning new plants and choosing which facilities to operate on a case-by-case basis according to technology and region. The aim is to achieve maximum efficiency in every facility in conjunction with providers throughout the expected or extended useful life of equipment.

Accordingly, EDF Renewables recently set up a predictive maintenance oversight centre (e-Diagnostic Center) drawing on specific in-house expertise centralised and coordinated with the EDF group's R&D Department. It complements the facility remote monitoring and control system made up of two real-time oversight centres in Colombiers (France) and San Diego (California).

(1) See the press release dated 21 February 2022 "EDF group and its partners launch Vitisolar: An experimental agrivoltaic project in vineyards in the Bordeaux region".

(2) See the EDF Renewables press release dated 18 March 2022 "Anglo American partners with EDF Renewables to secure 100% renewable energy supply for South Africa operations".

(3) See the EDF Renewables press release dated 19 April 2022: "EDF Renewables starts construction of a ground-based solar power plant for self-consumption to power the Sanofi factory in Aramon, (Gard)".

(4) Formerly EREN Renewable Energy.

(5) See the EDF Renewables press release dated 8 June 2022: "EDF Renewables commissions four solar power plants, including two floating, in Israel".

(6) See the EDF Renewables press release dated 28 April 2022: "Construction begins on solar farm at Sutton Bridge" (edf-re.uk).

EDF Renewables owns several European maintenance centres: in Belgium, Greece, United Kingdom and France. These operation-maintenance units are designed to place technical teams as close to wind or solar farms as possible. In 2022, EDF Renewables opened its second operation & maintenance centre for offshore wind power in France at Fécamp (the first, at Saint-Nazaire, was inaugurated in 2021). Some 100 maintenance technicians will work there in 2023 to operate the future Fécamp offshore wind farm.

In November 2022, EDF Renewables sold its subsidiary specialising in the operation and maintenance of offshore wind farms, the German firm Offshore Wind Solutions GmbH (OWS) in Emden.

Decentralised Energy France

EDF ENR is an integrated player in decentralised solar power generation, carrying out design, development, construction, operation, and maintenance of rooftop and car park canopy installations. A wholly-owned subsidiary of the Group, it markets solar power offers for residential customers, professionals, and local authorities in metropolitan France and overseas *départements* and territories. With over 60,000 facilities completed, EDF ENR now occupies a leading position. On the residential market, it carries out some 25% of all self-consumption installations in France. On the professional market, the offering features in the “*EDF Solutions Énergétiques*” catalogue.

In addition, EDF Renewables Technologies, a wholly-owned subsidiary of EDF Renewables, is present in the upstream segment. It owns 100% of EDF ENR PWT (Photowatt brand) which designs and manufactures photovoltaic modules using crystalline silicon technology with various applications ranging from residential equipment to land-based solar farms. Photowatt is rolling out an industrial model focusing on low-carbon production of high-technology silicon wafers and ingots. Alongside this joint project, Photowatt focuses on its R&D activities, in conjunction with the EDF group's R&D Department and solar energy research centres such as INES or the Photovoltaic Institute of Ile-de-France region.

United States

EDF Renewables is engaged in a growth strategy in the United States on the decentralised energy market. Since 2016, several acquisitions and partnerships have served to develop this business (acquisition in 2016 of Global Resources Options, Inc. (groSolar) and partnership in 2018 with EnterSolar).

In 2019 in North America, EDF Renewables acquired PowerFlex Systems with the aim of speeding up large-scale deployment of infrastructures for electric vehicles in the United States. Based in Los Altos, California, PowerFlex is a pioneering firm in the field of charging technology.

In North America, EDF Renewables entered into a strategic partnership with EnterSolar in 2018 and took a 50% equity stake in the company. In 2021, it acquired the remaining 50% interest in EnterSolar and consolidated all decentralised “behind the meter” activities under the PowerFlex brand. Bundling energy solutions for business and industry enables PowerFlex to offer customers a stand-alone or bundled package of on-site solar, battery storage, electric vehicle charging, microgrid and energy management systems.

In December 2022, PowerFlex announced investment of \$100 million by Manulife Investment Management, which joined the Board of Directors as a minority shareholder ⁽¹⁾. Today, PowerFlex is one of the largest developers and installers of commercial solar power in the United States, with over 400MW commissioned. The company has deployed and operates almost 10,000 charging stations.

Storage sector

EDF Renewables contributes to the Storage Plan launched by the Group in 2018. In a context marked by the strong growth of renewable energy generation and by the closure of large-scale electrical facilities, battery storage technology, combined with a smart control system, helps smooth out the generation of electricity of the national grid. In this context, through its subsidiaries, EDF Renewables develops innovative storage systems in the US, the United Kingdom, Germany, France and South Africa.

EDF Renewables has also launched a new microgrid activity comprising solar projects equipped with a battery storage system that is connected to a local grid in remote areas (deserts, islands).

South Africa

In September 2021, EDF Renewables and its partner Perpetua Holding were awarded an innovative project in South Africa. It combines solar, wind and battery storage technologies. This project named Umoyilanga consists of a 77MW wind farm and a 138MW solar plant, each equipped with a battery system.

United States

EDF Renewables is developing and building storage systems linked to solar power projects.

In 2022, EDF Renewables North America commissioned two Battery Energy Storage Systems (BESS): Maverick 6 (50MW) and Big Beau (40MW). In all, the subsidiary has 3 installed projects with total capacity of 125MW.

In June 2021, EDF Renewables North America won 3 long-term contracts with the New York State Energy Research and Development Authority (NYSERDA) for 3 solar-oriented projects. These solar power and storage projects correspond to combined capacity of one gigawatt (GW).

United Kingdom

Through its start-up Pivot Power ⁽²⁾, EDF Renewables opened the most powerful vehicle recharging station in Europe, the Oxford Energy Superhub, in July 2022. This project is part of a national network of Energy Superhubs developed by Pivot Power, combining batteries connected to the transport network and an electricity infrastructure to recharge electric vehicles. The aim is to encourage the use of renewable energy and accelerate the decarbonation of transportation. Initially the hub will offer fast charging for 42 vehicles.

In August 2022, EDF Renewables UK began construction of a new 50MW/100MWh battery facility at Energy Superhub Coventry, capable of powering 100,000 homes for two hours. The battery is due to be operational in 2023.

Pivot Power, a subsidiary of EDF Renewables, secured permission in March 2022 to build two new storage battery facilities at Sundon (Luton) and Indian Queens in Cornwall. Construction of the 50MW/100MWh lithium-ion storage battery facility at Sundon is due to begin in early 2023, with link-up to the grid planned by the end of the year ⁽³⁾.

(1) See Powerflex press release dated 13 December 2022 “PowerFlex Receives a \$100M Investment From Manulife Investment Management” (Powerflex.com).

(2) With Oxford City Council, Fastned, Tesla Superchargers and Wenea.

(3) See press release dated 17 March 2022 “Pivot Power announces planning approval for two new battery storage sites in Luton and Cornwall to supercharge a smarter energy grid”.

1.4.2 Sales and supply activities in France

Besides gas and electricity supply, EDF accompanies its customers by offering a wide range of services and energy solutions. EDF aspires to be a trusted partner for customers, by engaging in responsible marketing and providing simple, intelligible offers.

29.1 million

CUSTOMER SITES IN FRANCE ⁽¹⁾

231.6TWh

ELECTRICITY SALES IN 2022 ⁽²⁾

40.5TWh

GAS SALES IN 2022 ⁽³⁾

(1) EDF Customer Division + Électricité de Strasbourg: electricity: 26.7 million, gas: 2.4 million.

(2) EDF Customer Division (excluding transfers to local distribution companies) + Électricité de Strasbourg.

(3) EDF Customer Division + Électricité de Strasbourg.

1.4.2.1 Presentation of the market in France

1.4.2.1.1 Competition

Since 1 July 2007, the French market for electricity and gas has fully opened up, allowing each customer to choose their energy supplier.

In the electricity and gas markets many suppliers have been proposing offers to businesses and local authorities since the early 2000's. For residential customers, competition has intensified significantly since 2017 with the entry into the market of gas and electricity suppliers that are well-established in other activities or geographical areas.

To supply their customers in 2022, EDF's alternative suppliers had access to their own generation capacities as well as to the wholesale electricity market and the ARENH.

During the November 2021 application process, the demand from alternative providers for delivery in 2022 reached 160.33TWh for an ARENH distribution volume of 100TWh. On 13 January 2022, given the context of rising electricity prices, the French government announced an additional allocation of 20TWh in the ARENH volume in 2022, at a price of €46.2/MWh.

During the November 2022 application process, the demand from alternative providers reached 148.30TWh for an ARENH deliveries in 2023.

In 2022, some alternative suppliers voluntarily left the market or reduced their range of commercial services, while others were wound up by court order. In this environment, EDF won back market shares in all customer segments.

See also section 1.4.3.3 "Regulated access to historic nuclear power (ARENH)", as well as in section 2.2.1 "Market regulation, political and legal risks" Risk 1A "Changes in public policies and in the regulatory framework in France and Europe, especially relating to ARENH".

Regulatory notice

The Energy Regulation Commission (CRE)

The CRE is an independent administrative authority. Its responsibility is to ensure the proper workings of the electricity and natural gas markets for end consumers. In this respect, the CRE ensures, in particular, that the conditions for access to electricity and natural gas transmission and distribution networks do not impede the development of competition.

The CRE has significant powers: the power to make proposals, advisory powers and decision-making powers (approval power and regulatory power). The CRE makes proposals, in particular:

- to the Ministers for the Economy and for Energy regarding the amount of the costs that are attributable to the public service missions assigned to power producers, and the net amount of the related contribution;
- regarding the ARENH price once the Decree has been published that specifies the methods for identifying and recognising the costs that are taken into account for the calculation of the ARENH price.

Moreover, it has been the CRE's responsibility to send its reasoned proposals to the Ministers for the Economy and for Energy for changes in the regulated sales and transfer tariffs for electricity offered to the LDCs.

The CRE has decision-making power to establish Tariffs for Using the Public Electricity transmission and distribution Networks (*Tarifs d'Utilisation des Réseaux Publics de transport et de distribution d'Électricité*, TURPE).

Under its residual regulatory power, the CRE also takes network connection decisions, as well as decisions to define the rules for calculating and adjusting the rights of suppliers to the ARENH.

The CRE is also vested with very broad powers that enable it to obtain any information that it may deem useful for the fulfilment of its remit, as well as authority to settle disputes and to apply penalties, through the Settlement of Disputes and Sanctions Committee (CoRDiS).

The Act on the Energy Transition for Green Growth also gives the CRE the possibility of having the information it obtains through its remits audited, at the expense of the audited undertakings.

Constitutional Bylaw No. 2017-54 of 20 January 2017 on Independent Administrative Authorities and Independent Public Authorities and Act No. 2017-55 of 20 January 2017 on the General Statute of Independent Administrative Authorities and Independent Public Authorities, provided these authorities, including the CRE, with a ordinary legal status and lay down the rules relating to the mandate and ethics of members, the operation and organisation of these authorities and parliamentary control.

1.4.2.1.2 Regulated electricity sales tariff contracts

Access to regulated electricity tariffs

For details of the changes to the legal and regulatory framework and tariff changes for the year for regulated electricity sales tariffs in France (formerly "blue" tariffs), see note 5.1.1 to the consolidated financial statements for the year ended 31 December 2022 in section 6.1.

Since the Energy and Climate Act entered into force, the situation for electricity, by category of customer, is as follows:

- residential and non-residential final consumers who have subscribed power for their site(s) exceeding 36kVA: since 1 January 2016 these sites can no longer subscribe to regulated sales tariff products, which were withdrawn on 31 December 2015;
- residential end consumers, including sole proprietors and co-owners' associations of a single residential building: these customers have the right to regulated sales tariffs for their site(s) of 36kVA or less. They can freely switch back and forth between regulated tariffs and market offers;
- for non-residential end consumers with subscribed power levels of 36kVA or less, only consumers with fewer than 10 employees and a turnover, total revenue, or balance sheet of less than €2 million will still be able to benefit from regulated sales tariffs after 31 December 2020. Consumers who do not fall into this category lost the benefit of regulated tariffs on 31 December 2020, in accordance with the provisions of the Energy and Climate Act;
- residential and non-residential final consumers for their site(s) located in areas not connected to the continental metropolitan network: these customers have the right to regulated sales tariffs.

Regulatory notice

"Blue" tariff changes

In accordance with Article L. 337-4 of the French Energy Code, the CRE has been responsible for notifying the Ministers for the Economy and for Energy of its justified proposals for regulated electricity sales tariffs (TRV). If no objections are made within three months, the proposals are deemed to have been approved.

1.4.2.1.3 Electricity supply contracts

In France, residential and non-residential customers who are entitled to the regulated sales tariffs may also choose a market offer put forward by any supplier, including EDF.

With the exception of customers directly connected to the transmission network, who must sign separate supply and delivery contracts, all other customers may enter into a single contract with the supplier. In this regard, a commission is paid by the distributor to any supplier offering a single contract to its customers since in doing so, it provides customer management services on behalf of the distributor.

The quality of supply, which is the distributor's responsibility, is monitored on a regular basis under contracts with the distributors. EDF monitors the impact of outages and the quality of supply to its customers and their satisfaction. The aim is to work with the distributor on a continuous improvement basis.

1.4.2.2 Activities of the Customer Division

EDF's Customer Division brings together all business relating to the sale of electricity, gas, and related services in mainland metropolitan France. It also performs all customer management functions, including the management of customer requests via all channels (telephone, email, etc.), complaints handling, invoicing, and debt recovery. The activity spans all customer segments: residential consumers, professionals, companies, and local authorities. For larger customers (industry and service sectors), energy services are mainly marketed and provided by Dalkia, a subsidiary of EDF.

The Customer Division operates on the basis of recognised fundamentals:

- constantly seeking to further strengthen consumer confidence;
- local presence in the form of 6,200 customer advisers, who are all based in France, its 8 Regional Commercial Divisions and its Key Accounts Division;
- continual innovation in the fields of digital technology, electric mobility, self-consumption solutions, and electricity flexibility.

In 2021, EDF became the first energy supplier to obtain "Relation Client France" (France Customer Relations) certification created by the French Association of Customer Relations (*Association française de la relation client*, AFRC) and the Pro France Association. This certification recognises French companies that choose to locate all of their customer service in France and that are committed to providing jobs for local communities through initiatives in the fields of local integration, training and inclusivity.

1.4.2.2.1 Activity by customer category

1.4.2.2.1.1 Residential customers

Residential customer satisfaction and trust are a priority for EDF. Approximately 9 out of 10 customers are satisfied with their relationship with EDF following telephone contact. EDF is one of the most popular French companies. Brand image surveys show that two out of three customers trust EDF when it comes to obtaining assistance with managing their energy consumption. The annual report of the French national energy mediator published in May 2022 shows that EDF has one of the lowest rate of complaints. The customer experience offered is both human (through its advisors who are all located in France and can be reached by telephone or by chat) and digital (online customer account access, chat, web call back, mobile application, digital solutions, social media, etc.).

Energy supply

Electricity supply

EDF supplies electricity at regulated sales tariffs and also offers a complete range of market-price solutions for electricity that are adapted to the expectations and consumption profiles of customers. This range is built around two types of solution:

- the "Green Electric" range of solutions makes it possible to finance and support renewable energy generation resources to the extent of customers' consumption, through the following guarantees of origin: "Green Electric", "Green Electric Weekend", "Green Electric Auto" and "Green Electric Regional". In 2022, the "Green Electric Regional" solution was enriched with the addition of two new regions: Grand-Est and Auvergne-Rhône-Alpes. This offer also obtained the ADEME "GreenVolt Committed Choice" label following an AFNOR audit;
- the "Zen Electric" range enables customers to have access to supply solutions that are adapted to their consumption profile and their lifestyle ("Zen Weekend" and "Zen Weekend Plus").

Gas supply

EDF offers a wide range of market offers in gas. EDF assists its customers in managing and reducing their consumptions and therefore their CO₂ emissions. "Gas Advantage" offers a fixed price per kWh⁽¹⁾ for a period of four years. Over and above the characteristics of the "Gas Advantage" solution, "Sustainable Gas Advantage" offers partial carbon offsetting. "Connected Gas Advantage" gives customers the possibility of managing their heating remotely through the purchase of a smart thermostat. A new solution, "Optimised Gas Advantage", which is index-linked to the Regulated Gas Tariff, was launched to enable customers to benefit from the price increase cap.

EDF, with the support of its subsidiaries, in particular IZI Solutions and IZI Confort, is promoting the installation of heat pumps to replace gas boilers, which means that certain uses can be electrified, in accordance with its *raison d'être*.

Features and services

In parallel with its supply offers, EDF assists its residential customers so that they can monitor and understand their energy use. The aim is to encourage them to make energy savings using the "Mes Éco et Moi"⁽²⁾ (My Savings and Me) digital solutions. Customers who consult their energy use tracking tool more than two to three times a month can achieve savings of 10% on average on their bills⁽³⁾. The "EDF et Moi" (EDF and Me) app has enjoyed growing success, with 170 million visits in 2022.

(1) Excluding VAT.

(2) Available in the customer area of the website and in the "EDF et Moi" app.

(3) Internal survey, EDF R&D.

In 2022, EDF refreshed its range of assistance services, in partnership with AXA. Named "*Assistance Dépannage*" (Repairs Assistance), it is available with five different service levels and offers customers fast repair solutions. In collaboration with AXA, EDF also offers bill payment insurance. This service was repositioned and enriched in 2021 with the "*Assurénergie+*" policy. In the event of a personal injury, the customer receives an indemnity that is equal to the estimated monthly amount of their energy bills when the policy is purchased, for a maximum of one year and subject to contractual limits on pay-outs. In addition, the customer benefits from personal assistance services that are appropriate to their situation, in order to facilitate day-to-day living.

The local services platform "IZI by EDF", which EDF launched in 2019, has emerged as a player in the energy retrofitting and electric mobility sector. See section 1.4.6.1.4 "Other service activities of the EDF group" "IZI by EDF".

As part of the "*Coup de Pouce Chauffage*" (Heating Aid) scheme ⁽¹⁾, EDF launched the "*Mon chauffage durable*" offer in January 2019. It finances the replacement of ageing, CO₂-intensive heating systems with more efficient alternatives, such as heat pumps. Since March 2022, EDF has also offered, through its partners, a new boost for comprehensive retrofits. This solution provides support for households that retrofit all the energy systems in their homes, by giving priority to a coordinated set of work, rather than a series of individual operations.

Since 2020, EDF has offered its customers removal assistance through an app named "*Check*". Check is a web-based app that provides users with a personalised checklist to ensure nothing is forgotten, facilitating hassle-free removals, and offering advice for a successful house move. Customers who take out an energy contract with EDF also have access to special offers negotiated with leading partners in removals, household appliances, decoration, and building works.

EDF is investing in open innovation with "*EDF Pulse & You*", a digital collaborative platform for co-construction with internet users and start-ups. In particular, the platform allows smart objects to be co-built, application interfaces to be improved, and the social acceptability of soft mobility to be accelerated.

In order to widen access to crowdfunding ⁽²⁾, in 2021 EDF set up an internet portal that is dedicated to crowdfunding for energy transition, which is supported by the Group in France, in partnership with accredited crowdfunding organisations. It can be accessed on the "*EDF Pulse & You*" platform.

Earning of energy savings certificates (CEE)

Regulatory notice

The Energy Savings Certificates system (CEE), which was introduced in 2006, was updated on 1 January 2022 with the implementation of the fifth period of the system, after a fourth period (2018-2021), which targeted a total obligation of 2,133TWhp.

The fifth period of the CEE (which will run from 2022 to 2025) increases the efficiency of the system (through a sharp decrease in subsidies, checks on operations before filing an application, emphasis on the comprehensive renovation of housing, and enhancement of the national CEE programmes), and improves the system for the benefit of households with severe energy poverty (through an increase in the poverty requirement, restricting the scope to households with severe energy poverty and increasing the poverty penalty to 20/MWhp), while imposing additional obligations on the suppliers of carbon-intensive energies. The national obligation is set at 2,500TWhp for the period, of which 730TWhp is a "poverty" obligation; the latter has increased significantly compared to the figure for the fourth period.

EDF is of necessity an actor in energy savings certificate legislation, and encourages residential customers to make energy savings. In particular, it promotes home energy retrofits through its "Energy Savings Partners" and distributor networks. All residential customers who have made energy efficiency alterations to their home qualify for a direct cash bonus from EDF by visiting www.prime-energie.edf.fr ⁽³⁾.

Solidarity policy

Solidarity is a core value of EDF, which has been pursuing a policy dedicated to economically disadvantaged customers for close on 30 years. Accordingly, at the end of 2021, EDF undertook to assist its residential customers with unpaid bills by deciding not to cut off their electricity at any time during the year. With this measure, EDF goes further than its regulatory obligations outside the winter grace period ⁽⁴⁾, by replacing the cut-off with a power limit of 1kVA. This measure will not apply if it is physically or technically impossible to limit the electricity supply to the home. See section 3.3.4 "Energy poverty and social innovation".

Energy sobriety

Starting in the summer of 2022, the energy situation in France caused the government to ask various energy experts to implement initiatives in order to roll out an energy sobriety policy. This policy is completely consistent with EDF's *raison d'être*. Accordingly, EDF implemented a large-scale sobriety plan, which was presented during a press conference on 10 October 2022. It is built around three lines of action for the residential market:

- As from the start of the school year, launch relationship marketing and advertising campaigns based on a policy of raising awareness of three useful actions: "turn down, turn off, defer" ⁽⁵⁾;
- Relaunch load shedding offers and increase the number of customers with the TEMPO regulated tariff option;
- Support and assist customers in achieving reduced, more intelligent consumption.

EDF sent more than 50 million emails and letters at the end of 2022, which led to a sharp increase in the number of requests from customers. Around 1,500 customer service staff have been specifically trained on these subjects, especially TEMPO, in order to advise on and respond to customers' requests.

EDF wishes sobriety to become firmly anchored in its customers' daily habits, and hence has developed new systems and solutions, such as the power saving challenge for those of its customers who have chosen market-price solutions ⁽⁶⁾. This challenge, which was launched in December 2022, encourages customers to take the initiative to manage their consumption. Those customers who reduce their electricity consumption by 10% over the winter of 2022-2023 compared to the previous winter will be rewarded with an eco-responsible gift card or can transfer their reward to the Abbé Pierre Foundation, in which case EDF will make a 100% matching donation.

1.4.2.2.1.2 Business customers

EDF is firmly rooted in local territories and supports its Business and Local Authority customers to achieve their goals in terms of sustainable performance, competitiveness and lower carbon intensity, in conjunction with the national objective of carbon neutrality. EDF proposes a wide range of electricity and gas supply offers, as well as offers of services.

(1) The initiative was launched by the government on 14 January 2019.

(2) Crowdfunding.

(3) Subject to meeting the strict requirements of the CEE regulations in force and having provided the required supporting documents.

(4) During the winter grace period, from 1 November to 31 March, electricity suppliers may not cut-off the supply of electricity to a main residence for non-payment of bills (Article L. 115-3 of the Code of Social Action and Families and Decree No. 2014-274 of 27 February 2014 modifying Decree No. 2008-780 of 13 August 2008).

(5) <https://particulier.edf.fr/fr/accueil/economies-energie/gestes-utiles.html>

(6) See the press release of 13 December 2022 "EDF launches an energy sobriety challenge for its private customers in market offer".

EDF's offers

EDF proposes straightforward electricity and gas supply contracts, combined with management services and advice on eco-habits. For those customers who use more energy, contracts can be personalised (with specific durations and fixed or indexed prices), based on their expectations and budget forecasting capabilities. In addition, EDF provides support to customers with the highest consumption levels by means of personalised offers and rewards for customers who can shed load.

Through the solutions it proposes, EDF encourages its customers to optimise their consumption and to shift it to times when there is less strain on the grid. It offers, for example, a distinction between peak and off-peak prices, or between summer and winter prices. For its business customers, EDF also offers an innovative solution for professionals, with low prices during evenings after 8pm, as well as at weekends, and on public holidays.

EDF has an enhanced range of solutions and services for all electricity and gas customers, and for large and small businesses. These take the form, for example, of online consultation of consumptions, paperless bills, breakdown assistance and advice (participation in energy sobriety, optimisation of the contract power, energy audits and advice, assistance with implementing ISO 50001 certification, etc.). These offers are aimed in particular at customers who wish to commit to an energy management system.

In addition, EDF offers electrical engineering services, in order to ensure the safety of its customers' interior electrical installations.

EDF has introduced solutions that provide support to customers in optimising their bills, achieving energy efficiency and attaining their carbon reduction goals. In particular:

- EDF offers all its customers, for all its products, an option which guarantees that an amount of renewable energy generation that corresponds to their consumption will be injected into the grid. EDF facilitates communication with its customers regarding their commitment to the energy transition;
- with its subsidiary Agregio, EDF develops PPA-type (*Power Purchase Agreement*) solutions for its major customers using facilities that generate renewable-origin electricity;
- EDF proposes optimised solar power solutions for self-consumption of electricity based on needs, together with a range of related services, including financing, maintenance, supervision, and performance monitoring, in liaison with its subsidiary EDF ENR. EDF also has offers for its self-consuming customers to complement their electricity supply tailored to their profile, whereby they can maximise their savings from self-generation and, where necessary, manage their consumption. EDF is also innovating by experimenting with services and technical systems aimed to facilitate the organisation and management of collective self-consumption operations;

EDF supports its customers in their electric mobility projects in liaison with its subsidiary IZIVIA. It offers advice on sizing electric charging station facilities and associated services. EDF has also developed partnerships with automotive manufacturers and leaders in the automotive sector.

Earning of energy savings certificates (CEE)

EDF encourages its industrial, services and local authority customers to achieve energy savings by carrying out work:

- on energy efficiency and carbon reduction for industrial processes;
- on retrofit, insulation or management energy systems in collective and tertiary premises.

EDF participates in combating fuel poverty by supporting social landlords to retrofit housing and raise awareness of eco-habits among tenants.

Moreover, by funding CEE programmes, EDF participates in the following, in particular:

- raising awareness among young people of the ecological transition and eco-mobility;
- providing information and training, and contributing to the development of innovation in order to manage energy demand from industrial operators or SMEs.

EDF also contributes through subsidy funds for energy retrofits ⁽¹⁾.

Customer satisfaction

EDF has made customer satisfaction a key priority for many years. In a rapidly changing environment, EDF has undertaken major changes to significantly and constantly improve Customer Experience and the quality of service provided.

Satisfaction measurement systems have been implemented at various stages of the relationship with customers, but also with customers who have not contacted EDF. The aim is to measure their expectations in the fields of energy supply services, information and support, in order to set up action plans when necessary. These initiatives led to a significant increase in customer satisfaction in virtually all the segments over the last five years.

EDF and regional authorities, social housing landlords, local distribution companies (LDCs) and public service providers

Regarding energy transition, EDF offers customised solutions for local authorities and public institutions with decentralised decision-making powers (hospitals, universities and major graduate schools, chambers of commerce and industry, CROUS student service centres, ports and airports). The EDF group is also active in the following areas:

- the supply of electricity and gas at market prices, in response to their energy problems;
- the development of offers and services in the field of energy transition; local climate plans, eco-districts, local generation, road lighting, electric mobility, energy efficiency of buildings, etc.;
- in addition, with respect to its public service missions, EDF is in charge of:
 - > entering into concession agreements to supply electricity at the regulated sales tariff,
 - > the supply of electricity at the regulated sales tariff,
 - > the fight against energy poverty.

Overall satisfaction of customers in 2022 remains high with more than 9 customers out of 10 satisfied or very satisfied.

Concerning control over energy consumptions, agreements have been signed with regional authorities. They aim to provide support to these authorities in taking specific initiatives in the fields of energy transition and renewable energies. A support system for social housing landlords aims to improve the energy efficiency of social housing, and makes it possible for EDF to issue energy savings certificates. In 2022, 232,071 social housing homes received assistance for energy retrofits.

1.4.2.2.2 For sustainable cities and regions

Cities and regions have to reconcile local appeal with responsible development. The EDF group addresses the needs of local development stakeholders by identifying the various energy solutions and services available in the light of projects' technical and economic characteristics. The aim is to assist them with the energy transition and to reduce the carbon intensity of their habits. Forty-five Development Managers are present across all regions. The aim is for EDF to provide a better response to the needs of large cities, urban communities, medium-sized cities and rural areas.

EDF has developed a range of consultancy offerings with a view to:

- designing low-carbon neighbourhoods;
- developing housing retrofit strategies based on an asset strategy;
- vehicle fleet electrification, and charging station location plans with its subsidiary IZIVIA; and
- installing solar panels with its subsidiary EDF ENR or other partners.

1.4.2.2.3 Customer data protection

Specific attention is paid to the protection of EDF customers' data, and more generally to the protection of its information assets. Its goal is, in particular, the compliance of the processing of personal data with the General Data Protection Regulation (GDPR). Regular audits are carried out each year on the asset protection aspect, as well as on the information systems security aspect.

(1) Referred to in Article L. 312-7 of the French Construction and Housing Code.

EDF curates the classification of information and documents on the basis of their degree of confidentiality and ensures commensurate security measures are implemented. All customer advisers are regularly informed and trained in this

matter, so that they can respond to requests relating to personal data protection and the exercise of related rights. Complex requests are managed jointly with the Data Protection Officer (DPO).

1.4.3 Optimisation activities in France

Electricity cannot be stored, and therefore EDF has to supply just the right amount of electricity to match customer demand, at all times and at the lowest cost. The aim of optimisation is to predict this demand and implement the necessary trade-offs between the resources available to satisfy demand (production resources, long-term supply contracts, purchases on wholesale markets, etc.). Optimising EDF's output also involves covering physical, financial, and market risks.

1

Regulatory notice

Wholesale energy market – REMIT Regulation

Regulation (EU) No. 1227/2011 (REMIT) on wholesale energy market integrity and transparency entered into effect on 28 December 2011 and is designed to ensure that market participants and consumers have confidence in the integrity of the electricity and gas markets.

Strengthening wholesale energy market integrity and transparency must foster open and fair competition on these markets, in particular so that the prices set on these markets reflect a fair and competitive interplay between supply and demand. The regulation prohibits insider trading and market manipulation, and establishes an obligation to publish inside information, as defined within the meaning of REMIT.

The European Agency for the Cooperation of Energy Regulators (ACER) is primarily responsible for monitoring wholesale trades in energy products, in order to detect and prevent transactions based on inside information and market manipulations. ACER also collects the data needed to assess and monitor markets. The regulation provides that market participants, or a person authorised to do so on their behalf, must provide ACER with a detailed statement of operations on the wholesale energy market.

Market participants that perform transactions for which a declaration to ACER is mandatory must register with the national regulatory authority of the Member State in which they are established (the CRE in France) or, if they are not established in the European Union, that of a Member State in which they do business.

Moreover, at the national level, national regulatory authorities also work together and monitor wholesale energy product trading. Member States determine the regime for the penalties that are applicable to REMIT breaches.

In France, the applicable regulations as now codified in the French Energy Code are as follows:

- the Brottes Act No. 2013-312 of 15 April 2013 entrusts the duty of ensuring that REMIT is observed to the CRE, and the responsibility for penalties for REMIT breaches to CoRDiS (the CRE's Sanctions and Dispute Settlement Commission);
- Order No. 2016-461 of 14 April 2016, specifies the remits of the CRE in terms of collecting information, registration, and the obligations of persons who professionally arrange transactions;
- Order No. 2020-891 of 22 July 2020 on procedures brought before CoRDiS (based on Article 57 paragraph II of French Act 2019-1147 of 8 November 2019 on energy and the climate).

validated by EDF's Executive Committee (see also section 2.2.2 "Financial and market risks", risk factor 2A "Energy market risk").

Climate variations have a decisive impact on this management. For example, a fall in temperature of 1°C in the winter leads to a rise in electricity consumption in France by around 2,400MW⁽¹⁾; the brunt of temperature-sensitive demand falls on EDF's portfolio. In addition, depending on the run-off, the difference in hydro generation output within the EDF perimeter from one extreme year to another can reach 20TW hours, sometimes more.

With respect to RTE, DOAAT plays the role of "balance responsible entity" within EDF's perimeter in mainland France. In this regard, EDF is committed to financially compensating RTE in the event of a deviation in its balance perimeter. The optimisation consists of making RTE an offer for a schedule that is balanced with the demand, which serves to minimise the supply cost of EDF's contractual commitments, minimise the risks and ensure the physical security of supply within its perimeter.

The DOAAT ensures that it has, for all timeframes, sufficient resources in order to enable it to meet its commitments. To do this, it manages a set of leveraged actions:

- scheduling of the maintenance operations on power plant facilities (in particular nuclear plants);
- management of inventory (fossil fuels, hydro-electric reserves and customer load shedding);
- purchases and sales in wholesale markets via EDF Trading, which is in charge of market access on behalf of DOAAT (see section 1.4.6.4 "Optimisation and trading: EDF Trading").

DOAAT also manages the exposure of EDF's upstream/downstream portfolio to price variations in the energy and fuel (gas, coal, petroleum products) wholesale markets and in the CO₂ emissions licensing market, with the assistance of EDF Trading.

1.4.3.2 Long-term electricity purchase and sales contracts

EDF maintains commercial relations through energy purchase or sales contracts with European operators. These contracts are of many types, and confer:

- rights to the energy generated by facilities, primarily nuclear, over the duration of the exploitation of the facility (see section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation");
- drawing rights for totally or partially guaranteed electrical power, for a duration that is generally between 15 and 25 years.

1.4.3.3 Regulated Access to Historic Nuclear Power (ARENH)

Please refer to note 5.1.1 in the consolidated financial statements for the year ended 31 December 2022 in section 6.1, and to section 1.4.2.1.1 "Competition".

1.4.3.4 Capacity mechanism

Please refer to note 5.1 in the notes to the consolidated financial statements for the year ended 31 December 2022.

1.4.3.1 Role and activities of the Upstream/Downstream Optimisation & Trading Division (DOAAT)

The balance between electricity supply and demand at EDF is managed all the way down to real time, in line with the framework established by risk policies, developed in line with the instructions issued by the Group's Risk Control Department and

(1) Source: RTE.

1.4.3.5 Specific balancing and capacity perimeters for Purchase Obligations (OA) and sales to markets

Regulatory notice

EDF is a mandatory purchaser of the electricity generated by the generation facilities the government wishes to support and develop, by means of purchasing agreements (renewable energy sources and energy-efficient cogeneration facilities). Pursuant to the CRE resolution of 16 December 2014, all electricity purchased in this manner is managed within a dedicated 'balancing perimeter' for installations subject to Purchase Obligation (OA) agreements, which were implemented on 1 July 2015. The additional costs stemming from this obligation are offset for EDF on the basis of an electricity market benchmark price (the concept of "avoided cost"), in accordance with the law (Article L. 121-7 of the French Energy Code). Since 1 January 2017, the management costs for this public-service mission have also been offset.

The DOAAT organises the sale of the energy produced by the installations under Purchase Obligation contracts directly on the energy markets. The management of this perimeter is completely independent of that of the EDF portfolio. The electricity volumes under Purchase Obligations which are foreseeable over the long term (the portion of the Purchase Obligations referred to as "virtually certain") are sold via transparent and non-discriminatory calls for tenders. Electricity volumes under Purchase Obligations that can be forecast in the short term (from one day to the next, known as the "random portion of the Purchase Obligations") are sold on EPEX Spot.

Similarly, within a dedicated Purchase Obligation perimeter, the Upstream-Downstream Optimisation & Trading Division (DOAAT) carries out certification of the capacity of production installations that are subject to Purchase Obligations, together with the necessary rebalancing and sales to the market of the related capacity guarantees.

1.4.4 Regulated transmission and distribution activities in France

Power transmission and distribution activities in mainland France are the remit of the transmission system operator (RTE) for high and extra high voltages, and of distribution network operators (Enedis and LDCs in their respective exclusive service areas) for medium and low voltage.

RTE, which is an Independent Transmission Operator (as defined by EU law), and Enedis are subsidiaries that are managed in accordance with the rules on management independence, as provided for by the French Energy Code.

1.4.4.1 Transmission – Electricity Transmission Network (RTE)

105,817km

OF HIGH AND EXTRA HIGH
VOLTAGE CIRCUITS

52

CROSS-BORDER LINES

400TWh

IN WITHDRAWALS IN 2022
(ADJUSTED FOR WEATHER
EFFECT)

€1,722 million

INVESTMENTS IN 2022

Réseau de Transport d'Électricité (RTE) was founded on 1 July 2000 and has been a subsidiary since 1 September 2005. It is the owner and operator of the French electricity transmission network, which it operates, maintains and develops. At the end of 2022, with less than 100,000 kilometres of overhead power lines, more than 7,000 kilometres of underground power lines, 2,900 substations operated individually or jointly, and 52 cross-border lines, this is one of the largest networks in continental Europe. RTE's geographical location places it at the core of the European electricity market.

RTE guarantees the correct operation and safety of the electricity system, and provides free and fair access to all the network users. In its role as an industrial operator with responsibility for energy transition, RTE is optimising and converting its electricity network in order to be able to connect generation facilities, irrespective of future energy choices. RTE contributes its expertise and publishes reports to assist the public authorities in making informed choices.

As at 31 December 2022, RTE is indirectly owned (50.1%) by EDF via the company *Coentreprise de Transport d'Électricité* (CTE). Its specific conditions of governance mean that RTE is not fully consolidated by the Group, but rather accounted for using the equity method.

1.4.4.1.1 Governance of CTE and RTE

CTE

CTE is a limited company (*société anonyme*) with a Board of Directors, owned by EDF (50.1%), *Caisse des Dépôts et Consignations* (29.9%) and CNP Assurances (20%)⁽¹⁾. CTE holds 100% of the share capital of RTE. In accordance with its articles of association, the sole purpose of CTE is the acquisition and holding of RTE's shares, and more generally, all commercial, financial, intangible and tangible property transactions relating directly, or indirectly, to its corporate purpose or that may facilitate the fulfilment thereof or stimulate business growth.

CTE's Board of Directors is composed of eight members, who are appointed for a term of six years, including four EDF representatives, two CDC representatives and two CNP Assurances representatives. RTE's Compliance Auditor General attends meetings of CTE's Board of Directors.

RTE

RTE is a limited company (*société anonyme*) with both a Management Board and a Supervisory Board. RTE's Supervisory Board is composed of twelve members appointed for five years. Six are representatives of the shareholder CTE, two are appointed pursuant to Articles 4 and 6 of Ordinance No. 2014-948 of 20 August 2014 on the governance and equity transactions of companies in which the State holds shares (the French State and the Board member appointed at the proposal of the French State), and four are employee representatives.

Other individuals attend Supervisory Board meetings but are not members:

- a Government Commissioner;
- an Auditor General from the CGEfi (*Contrôle général économique et financier*);
- the Secretary of RTE's Central Social and Economic Committee (CSE-C);
- RTE's Compliance Auditor General;
- the members of RTE's Management Board;
- the Secretary of the Supervisory Board.

RTE's Management Board is made up of five members, who perform their duties under the oversight of the Supervisory Board, within the limits fixed by the French Energy Code and RTE's articles of association. With the agreement of the Energy Minister, the Supervisory Board appoints the President of the Management Board and, at the President's proposal, the other members of the Management Board.

(1) 0.96% is held by its subsidiary CNP Retraite.

1.4.4.1.2 RTE's activities

In France, RTE manages the public transmission network and the balance between electricity supply and demand. It carries out its missions under the conditions set out in standard specifications, which were approved by a decree that is applicable until 2051.

RTE thus manages the transmission infrastructure, guarantees access to the transmission network and manages energy flows to ensure the balance of the energy system.

RTE has to address various challenges in its mission as an electricity transmission network operator:

- integration of the European market;
- extensive restructuring of the generating fleet;
- societal changes that increase the pressure to integrate new infrastructures of general interest; and
- maintenance of its industrial facilities to meet the requirements of customers and of the community at large.

Publication of the prospective study on the functioning of the electricity system

Since 14 September 2022, every month until the end of winter, RTE publishes its annual and projected study on the functioning of the electricity system for the entire autumn and winter period. In an uncertain, unprecedented context linked to the energy crisis, RTE has implemented increased monitoring during this period. The study, entitled "Prospects for the Electricity System for Autumn and Winter 2022-2023", is based on continually updated generation and consumption scenarios. These include, in particular, weather forecasts and information on the availability of the electricity generation fleet.

The Ecowatt system

Out of all the parameters analysed in the study, energy consumption management is a key lever that will make it possible to improve supply security in the short term. To this end, RTE has launched a new tool for monitoring weekly electricity consumption. The EcoWatt system is designed to alert individuals, businesses and local authorities ahead of time, so that they can organise themselves and adopt appropriate eco-gestures in order to decrease their electricity consumption (in particular when the red EcoWatt alert is activated due to significant load and a risk of outages).

Regulatory notice

Certification by RTE

In accordance with the French Energy Code, transmission network operators must be certified according to a process that associates the CRE and the European Commission. It aims to ensure that the entity concerned meets the independence requirements for undertakings that engage in deregulated activities. RTE obtained certification from the CRE in 2012 and on 11 January 2018 (after change of shareholder) as an ITO (Independent Transmission Operator). This certification was confirmed by the CRE decision of 2 July 2020, following the reorganisation of the CDC's shareholdings.

Tariffs for Using the Public Electricity transmission and distribution Networks (TURPE)

Pursuant to Article L. 341-3 of the French Energy Code, the tariff for using the public electricity transmission network is set by way of a reasoned decision by the CRE, which defines the framework, structure, and level thereof.

TURPE 6 HTB was set by a CRE decision dated 21 January 2021, which was published in the French Official Journal on 23 April 2021. TURPE 6 determines:

- the resources available to RTE for the execution of its missions;

- the network use tariffs, which change each year according to inflation and the costs of managing the electricity system;
- the regulatory framework that is applicable to RTE and, in particular, the financial return on its assets, which is calculated by multiplying the regulated asset base (RAB) and a nominal rate before tax. For the 2021-2024 tariff period, the tariff decision set the rate of return at 4.6%. On 1 January 2023, the RAB totalled €15.6 billion ⁽¹⁾. The value of the RAB includes RTE's commissioned industrial assets, minus investment subsidies, and is calculated excluding assets under construction (which are remunerated at the debt rate, i.e., 2.4% as from 2021 pursuant to the TURPE 6 tariff). See also note 5.1.1 "Regulatory change in France" in the notes to the Group's consolidated financial statements in section 6.1.

At a time when the wholesale prices of electricity in Europe were increasing sharply and becoming highly volatile, two developments were brought to the CRE's attention in 2022:

- the first concerns the existence of a revenue surplus in connection with the access duties paid by electricity importers or exporters in order to be able to use the cross-border interconnection facilities run by RTE. The regulatory framework specifies that this revenue surplus belongs to the network users, and provides for it to be transferred to them over a period of several years. In a context where numerous network users are suffering from a strong impact linked to the increase in market prices, RTE proposed that the CRE approve the early, exceptional payment of the surplus revenue that was collected in 2022. The CRE issued a favourable decision in this regard on 8 December 2022, following a public consultation. This amount of €1.939 billion ⁽²⁾, which was set by a decision of 31 January 2023, was transferred through a one-off payment in February 2023;
- the second development primarily concerns the rules on risk sharing between network users and RTE regarding items linked to the management of the electricity system, such as network congestion, contractual arrangements for reserves and voltage management. The aim is to reduce the level of risk to the level that prevailed before the market price spike, in order to give RTE better protection from the volatility of electricity prices. The CRE published its decision No. 2022-317 on 1 December 2022. This contains a draft decision on the tariffs for use of the public electricity transmission and distribution networks (TURPE 6 HTB and HTA-BTE), which was submitted to the Higher Council for Energy (CSE) for an opinion. Starting in 2022, this resulted in the suspension of the application of the incentive regulation for RTE's congestion costs, and the payment, which was booked under income and expense adjustments, of the balance responsible entities' bad debts on the merits of each individual case.

1.4.4.1.2.1 Maintenance of the transmission infrastructure and asset management

RTE manages the assets of the transmission network through the maintenance, refurbishment or replacement of structures and emergency repairs.

The gradual integration of new technologies, in particular monitoring, makes it possible to:

- adapt technical policies for asset renewal; and
- develop conditional and predictive maintenance via the optimisation of resource management, by targeting priority operations and limiting action to what is strictly necessary.

Digitalisation of the grid and large-scale monitoring make it possible to carry out remote diagnosis and deploy new maintenance technologies such as drones, 3-D visualisation, and augmented reality. Alongside this, test and simulation software provide decision support for grid management. Massive data analysis will allow new asset management strategies to be developed, with the potential to achieve different balances between maintenance, renovation, and renewal.

Moreover, the construction in future years of rooms that are dedicated to the real-time management of infrastructures should make it possible to give priority treatment to resolving faults, with nationwide coverage. The aim is to reduce grid outage times for customers and communities.

(1) Amount to be confirmed by the CRE.

(2) Amount excluding tax.

1.4.4.1.2.2 Development and completion of new capital investments

Energy transition is modifying the fundamentals of the French electricity system. In response, RTE is adapting its business in order to prepare for and support these major changes. Each year, RTE draws up an annual investment programme that is submitted to the CRE for approval.

In 2022, RTE's total investments within the scope regulated by the CRE amounted to €1,722 million. RTE's 2023 investment programme, which has been submitted to the CRE for approval, amounts to €1,880.8 million.

The main investments in 2022 were as follows:

- the continuation of construction works on the "Savoie-Piedmont" direct current interconnection between France and Italy, with the commissioning, on 5 November 2022, of the first HVDC (high-voltage direct current) link. The second link is scheduled to come on line in mid-2023;
- the commissioning of the first French offshore wind farm in Saint-Nazaire, for an installed capacity of 480MW;
- the continuation of the connection works for the Fécamp, Sand-Briec, Courseulles-sur-Mer, Noirmoutier and Dieppe le Tréport offshore wind farms;
- the increase of the exchange capacity on the borders with Belgium (Avelin Avelgem line) and Spain (Argia Hernani line);
- the construction of a 2.5km tunnel using a micro-tunnelling machine in 2023, and the local-initiative power line burial works ("MESIL") in Villeneuve-la-Garenne to support the infrastructures that are planned for the Paris 2024 Olympic Games;
- the continuation of the construction of the South Aveyron station in order to secure the electricity supply to northern Occitania, while allowing for the introduction of renewable generation;
- the resumption of the Haute-Durance programme (securing supply to the Haute-Durance Valley).

Investment projections 2022-2026

Over the period 2022-2026, RTE is planning a continual increase of its investment programme (+43% over four years) in accordance with the trajectory presented in the ten-year plan for development of the network (*Schéma décennal de développement du réseau*, SDDR). The programme is characterised by ongoing major investments in the expansion and renewal of the network, and of the IT systems and real estate portfolio, and aims to:

- contribute to European climate goals;
- support energy transition, in particular through changes to the connection of an industry that is undergoing carbon intensity reduction;
- develop the grid of the future, including offshore;
- facilitate the integration of the European electricity system by means of interconnections.

The following are primarily concerned:

- the modernisation of the aging network, with the aim of rebuilding/refurbishing the "network for everyday needs" that was built when electricity became ordinary place in French homes during the fifties. Due to the age pyramid of RTE's "network" assets, the increase in renewal investments will be continued during the second half of the decade. For example, the number of kilometres of overhead powerlines that are renewed each year will quadruple over the next decade;
- the development of the offshore network, with projects to connect offshore wind farms that are materialising (the commissioning of the Sant-Briec and Fécamp wind farms is planned for 2023) and proliferating (calls for tenders AO4 to AO8 are currently being defined as part of the multi-year energy programme);

- the connection of new reduced carbon intensity generation resources, through the progress of the Regional Schemes for the Connection of Renewable Energies to the Grid (S3REnR). At the end of 2022, around 54GW of new capacities were reserved for generation using renewable sources, approximately 40% of which are part of projects for which the connection has already been contractually agreed with RTE.

1.4.4.1.2.3 Operation of the electricity system

The operating procedures for the electricity system and for the management of market mechanisms (including the management of interconnections), and the coordination of networks in Europe are organised in accordance with the European legislative and regulatory texts (network codes, Clean Energy Package, etc.).

Management of the electricity system

RTE manages the flows on the transmission network in real time. It makes use of the resources available to it through the adjustment mechanism to ensure the balance between supply and demand in real time. The cost that corresponds to the adjustments made by RTE and due to the negative differences between the projected flows and those already realised is passed on to the "balance responsible entities" (producers, traders, suppliers, etc.) in proportion to their difference. In the event of a positive difference, RTE compensates the balance responsible entities financially.

Management of the interconnections

RTE manages access to international interconnections in collaboration with the neighbouring European transmission network operators. These interconnections ensure the transmission of energy from one country to another, the operating safety of the electricity transmission networks and the development of the European electricity market. They ensure that electricity market players can sell and purchase energy in other European country, by taking into account the price differences on either side of the border, and can better pool the means of generation at European level (including renewable energies, in particular).

Network coordination in Europe

The regulatory texts also define the services that Coordination Centres ⁽¹⁾ will provide to the transmission system operators, within a harmonised framework and by implementing complementary and robust terms and conditions of supply between them. The first five services, the complete implementation of which is pending, concern the design of shared network models, capacity calculations, security analyses, the coordination of structure removals and the assessment of the extent to which supply matches demand. The Clean Energy Package includes a list of 16 additional services (ex post analyses, regional sizing of reserves, training, etc.). The network operators and Coordination Centres are currently designing ordinary methodologies for their progressive implementation, which started in mid-2022.

1.4.4.1.3 2022 Energy report

In France, the adjusted electricity consumption ⁽²⁾ (including Corsica) ended 2022 at 459TWh ⁽³⁾. This is a reduction of 1.7% compared to 2021 when it totalled 468TWh. This reduction, which was particularly noticeable in the second half of the year, concerns all sectors. While it is difficult to distinguish the respective contributions of energy sobriety that is not imposed and economic constraints that are, national mobilisation in favour of energy savings has played an important role. In 2022, the French balance of trade became positive for the first time in many years, with an import balance of 16.5TWh.

The quality of electricity supplied by RTE is estimated on the basis of two indicators: the equivalent outage time and outage frequency. The values of these indicators for 2022 are still provisional. Based on information available to date, the equivalent outage time is 2min 19s (the target set by the CRE is 2min 48s) and the outage frequency is 0.354 (the target set by the CRE is 0.46).

(1) Among these, Coreso, a technical coordination centre, brings together 9 Transmission System Operators (TSOs): RTE, ELIA, NGSO, EirGRID, Soni, 50hz, TERNA, REE, REN.

(2) Electricity consumption that would have been observed on the basis of reference temperatures and in the absence of 29 February for leap years.

(3) Source: "Electricity report 2023".

1.4.4.2 Distribution - Enedis

38.1 million CUSTOMERS	1.4 million KM OF NETWORK	€4,415 million INVESTMENTS IN 2022	39,208 EMPLOYEES	386 CONCESSION AGREEMENTS
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As a distribution network operator, Enedis' main mission is to operate and develop the public electricity distribution network. Enedis guarantees the security and safety of the network, and oversees the balance of electricity flows at all times. Enedis now serves around 95% of the population in continental metropolitan France. The remaining 5% are served by Local Distribution Companies (LDCs).

In 2022, Enedis distributed electricity to more than 38.1 million customers (points of delivery). It enabled feed from more than 634,700 production sites in mainland France by means of a network of around 1.4 million kilometres.

At 31 December 2022, the distribution network for which Enedis is the concession holder was made up of around:

- 664,447 kilometres of A-type high-voltage (HVA) lines of 20,000 volts;
- 736,976 kilometres of low-voltage (LV) lines of 400 volts;
- 2,246 HVB/HVA source substations;
- 806,610 HVA/LV transformer stations.

Simplified report of energy flows - 2022

(in TWh)



Electrical losses are inherent in the functioning of the distribution network. They primarily result from physical effects, which are directly dependent on the amount of electricity delivered. Enedis must compensate these losses to complete the amount of energy delivered to all the customers connected to the distribution network.

Energy purchases made to compensate losses recognised in the accounts, including restatements of prior fiscal years, amount to €2,223 million. To compensate these losses, Enedis buys the corresponding electricity from the wholesale market, either through organised market platforms, or through calls for tender that are open to around 20 qualified suppliers. Enedis also takes part in the consultations organised by the Purchase Obligation mission, within DOAAT.

Enedis' access to ARENH rights to cover losses is implemented through specific calls for tender with a panel of qualified suppliers for this product. Enedis exercises its ARENH rights when the market prices are higher than the ARENH price.

1.4.4.2.1 Organisation of Enedis

Pursuant to the EU Directives, in order to comply with the rules on non-discriminatory access to networks and on management independence that are binding on network operators, said operators must be independent from any energy supply and production activity. If the distribution network operator is part of a vertically integrated company, it must be legally separate in order to guarantee its functional and decision-making independence.

In this regard, EDF and Gaz de France, now Engie, made their distribution network operators subsidiaries. ERDF was founded in 2008, and changed its name to Enedis on 1 June 2016. This new name will also raise the profile of the network operator and clarify its purpose, as the CRE recommended.

Enedis and GRDF share a "ordinary service" in accordance with the legal framework (see section 1.4.4.2.3 "Service shared by Enedis and GRDF").

- The Supervisory Board comprises fifteen members, of which:
 - > eight are appointed by the Ordinary Shareholders' Meeting;
 - > five are representatives of the employees elected in accordance with the conditions set out in Act No. 83-675 dated 26 July 1983 relating to the democratisation of the public sector;
 - > one member is appointed by the French State by virtue of Articles 4 or 6 of Ordinance No. 2014-948 dated 20 August 2014; and
 - > one member, representing the organising authorities for the public electricity distribution network, is appointed by decree pursuant to Article 153 of Act No. 2015-992 relating to energy transition for green growth.
- Pursuant to the possibility offered by Ordinance No. 2014-948 dated 20 August 2014 (Article 15) and in compliance with Decree No. 2015-38 dated 19 January 2015, the French State appointed by a Decree dated 21 April 2020 a Government Commissioner for the purposes of attending the meetings of the Enedis Supervisory Board.
- The Management Board, which was made up of five members in 2022, performs its work under the oversight of the Supervisory Board, within the limits defined by the French Energy Code and Enedis' articles of association.

Enedis' missions in France

Enedis, pursuant to the conditions set by law and the concession contracts signed with each of the public electricity distribution contracting authorities, performs its missions as the public distribution network operator in mainland France. These missions are:

- define and implement operational, investment and development policies in relation to the electricity distribution network;
- provide connection and access for users to these networks under objective, transparent and non-discriminatory conditions, as well as inter-connection with other networks;
- provide users with the information needed to access the network efficiently (information protected by regulations or law excepted);
- oversee relations with the energy regulation authorities (the Ministry of Energy, the Energy Regulation Commission (CRE) and public distribution contracting authorities) in line with its activities;
- oversee relations with local authorities in respect of its activities;
- negotiate, conclude and manage concession contracts with the contracting authorities for the public distribution of electricity;
- operate, maintain and repair the electricity distribution networks;
- design and build infrastructure, as well as manage work on the networks;

- carry out metering activities for users connected to the networks, particularly as regards supply, installation, meter inspection, maintenance and renewal of metering devices, as well as managing data activities and any other missions relating to its work as a whole;
- ensure that the market works properly, and provide equal access to the network and data for market players;
- encourage the integration of renewable energy in the grid and the implementation of energy efficiency initiatives;

In 2022, Enedis invested €4,415 million, of which:

- €2,266 million was earmarked for connections (consumers and producers) and adjusting the grid to the load;
- €1,618 million was dedicated to the quality of the service, to securing the networks, and to the security and preservation of the environment;
- €531 million was invested in information systems, telecommunications and operational resources (vehicles, machinery, real estate, etc.).

Investments in connections are at their highest level since 2015 due to a sharp increase in demand and increased prices. On the customer side, this is driven by

- ensure the monitoring of the load sharing perimeters;
- be the guarantor of the distribution and accounting of energy flows between the network user players, and the fair compensation of losses on these networks.

1.4.4.2.2 Distribution activities

Change in investments

individual and multi-family housing, and charging stations for electric vehicles. On the producers' side, this is the result of the impacts of energy transition and the growth of renewable energies (wind and solar power).

In addition, the contracting authorities invested €745 million in 2022.

In all, almost €5,160 billion was therefore invested in 2022, in mainland France, on distribution networks within the scope operated by Enedis.

GROSS INVESTMENTS MADE BY ENEDIS

(in millions of euros)

	2022	2021
Connections and reinforcement	2,266	1,856
Regulatory, safety and transmission channel obligations	529	499
Work instruments and operational resources	531	458
Network modernisation ⁽¹⁾	1,089	1,565
TOTAL INVESTMENTS OF ENEDIS	4,415	4,379
Work allowances by third parties and local authorities ⁽²⁾	745	743
TOTAL NETWORK INVESTMENTS	5,160	5,122

(1) Of which €492 million in 2021 for the Linky programme. Starting in 2022, investments made in the Linky chain are booked as "Connections and reinforcement" or "Work instruments and operational resources". This change follows the completion of the large-scale rollout of these meters and therefore the end of the need to track these investments for the specific incorporation thereof into the TURPE.

(2) After deducting PCT ^(a) and Article 8 ^(b) for the part funded by Enedis.

(a) PCT (portion covered by the tariff): portion paid to project manager contractors from the contributions to the delivery tariff for financing a connection.

(b) Article 8 of Annex 1 of the concession specifications relating to the integration of works into the environment (for example, work to bury lines).

Furthermore, Enedis continues its efforts in the preventative maintenance of networks, including work relating to tree topping. This came to €343 million in 2022 (compared to €332 million in 2021).

Quality of service

Quality of service is one of Enedis' main objectives. In 2022, the average outage time, excluding transmission incidents and exceptional incidents, was 59.5 minutes. This good result respects the target set at 62 minutes by the incentive regulation that is part of TURPE, despite several events that placed strain on the grids. There were several gales at the start of the year (Eunice, Franklin and Diego). The summer was then marked by several periods of stormy weather (that affected overhead powerlines) and by several unexpected heatwaves (that affected buried powerlines). The quality of service provided is also reflected by maintaining steady voltage levels, kept as close as possible to the level set by regulations, and by minimising the number of outages.

To respond to large-scale incidents, Enedis relies on an Electricity Rapid Intervention Force (FIRE). This system allows it to mobilise, at any time, in an affected region, the teams and resources from other regions in order to restore customers' electricity as rapidly as possible. In 2022, FIRE intervened on four occasions on networks managed by Enedis. It also intervened twice on networks managed by EDF IES.

Development of renewable energies

During 2022 there was a significant increase in the number of new facilities that Enedis connected to the network, in particular photovoltaic facilities. Accordingly, 97,740 new photovoltaic facilities were connected (compared to 60,651 in 2021) for total power of 2,400MW (compared to 2,539MW in 2021). The increase in wind power generation connected to the public distribution network also continued, with 1,219MW connected in 2022 (compared to 1,008MW in 2021).

At the end of 2022, a total of around 31.4GW in photovoltaic and wind power generation was connected to the Enedis grid. It is made up respectively of 14.1GW from photovoltaic plants and 17.3GW from wind power generation. To the power thus generated are added other sources of power generation, in particular hydropower plants (1.6GW), cogeneration (2.6GW), biogas, biomass and dispatchable fossil-fuel thermal. In all, at the end of 2022, the generation fleet connected to Enedis was around 37.7GW.

In the total connections of photovoltaic facilities in 2022, 90,547 concern generators with low voltage ⁽¹⁾ connections of less than 36kVA, which are connected for self-consumption purposes, with or without sale of the surplus, which represents around 99% of the year's connections for "small producers".

In addition, Enedis has continued its efforts to develop capacities for accepting renewable energies. It has initiated construction work on substations within the regulatory framework of the regional plans for the connection of renewable energies to the network.

Development of electric mobility

The electrification of the transport sector has generated a significant amount of business for Enedis. All the charging stations that are needed for electric vehicles must be directly or indirectly connected to the public distribution network. This network must be capable of delivering the quantity of electricity needed for the instantaneous power required.

Sales of electric vehicles really took off in France in 2020, and represent around 10% of new vehicle sales, compared to between 2% and 3% in 2019. The increase continued in 2021 and in 2022. At the end of 2022, the number of electric vehicles on the road ⁽²⁾ reached 1,102,975, an increase of 46% compared to the figure at end-2021.

(1) Low voltage.

(2) Electric vehicles (EVs) and plug-in hybrid vehicles (PHVs).

In order to address the increase in connection volumes to Charging Facilities for Electric Vehicles (CFEV), Enedis set up a department to handle key CFEV accounts. It is tasked with coordinating the monitoring of connection studies and work by "CFEV multi-connectors" that roll out charging station installation plans throughout France.

At the end of 2022, through an organisation set up with highway concession holder companies and the operators of fast charging stations, the 332 highway service stations in the area covered by the concession that are supplied by the network operated by Enedis were equipped with fast charging infrastructures that are connected, or in the process of being connected, to the distribution network, with an average power level per service station of 1.8MW.

Enedis assists local authorities in defining infrastructure management schemes for electric vehicle charging (SDIRVE). At the end of 2022, 108 SDIRVE had been launched or are being approved by the administrative authorities.

Enedis is committed to the electrification of its own vehicle fleet. At the end of 2022, 26.2% of its fleet of light passenger vehicles and light commercial vehicles, a total of around 18,000 vehicles, had been electrified, and 5,150 charging stations are installed on its sites.

Activity of distribution network operator in connection with market participants

Under contracts with distribution network operators and suppliers, Enedis carries on activities in liaison with balance responsible entities and electricity suppliers. It reconstitutes the energy flows within the scope of each balance responsible entity (there were 70 such entities at the end of 2022), in order to provide information to the balance responsible entity mechanism run by RTE. Enedis is responsible for day-to-day relations with electricity suppliers (of which there were 94 at the end of 2022), to ensure that their customers with a single contract benefit from electricity supply and the associated services. Moreover, in the current energy context in which sobriety issues have become essential, Enedis has seen the number of contracts signed with third-party players (in order to access consumption data) increase. These contracts, of which there were 613 at the end of 2022, concern the suppliers of energy services that act on behalf of their customers, after obtaining their authorisation to access said information.

Regulatory notice

Tariff for Using the Public Electricity transmission and distribution Networks (distribution TURPE)

Over 90% of Enedis' sales are made up of revenues collected in respect of electricity transmission. The Tariff for using the Public Electricity transmission and distribution Networks (TURPE), in terms of levels and structure, is set by the CRE in a transparent and non-discriminatory manner, in order to cover all the costs borne by efficient network operators. See section 5.1.1 "Regulatory changes in France" of the notes to the Group's consolidated financial statements.

Concessions

At 31 December 2022, Enedis and EDF were co-concession holders of 386 concessions contracts, covering around 95% of the population in continental metropolitan France. These concession contracts are generally concluded for a period of 25 to 30 years.

In December 2017, the French National Federation of Licensing Authorities (*Fédération nationale des collectivités concédantes et régies*, FNCCR), France Urbaine, EDF and Enedis signed a framework agreement based on a new concession agreement model. France Urbaine represents municipalities, large urban inter-municipalities and cities. Most of its members have contracting authority status for public distribution of electricity.

The standard agreement thus endorsed restates the principles of the French concession model: public service, regional solidarity and national optimisation, while at the same time taking into account issues involving energy transition. The official introduction of this new template opens the way to a modernised and lasting relationship between Enedis and the contracting authorities.

At 31 December 2022, 302 concession contracts had thus been entered into on the basis of the new template, along with 33 contracts that were previously renewed or amended and that contain provisions that are similar to those of the new template, for a total of 335 modernised contracts. Negotiations are continuing with a view to renewing the contracts that were based on previous templates.

Regulatory notice

French legal system applicable to concessions

In accordance with Articles L. 121-4 *et seq.* and L. 322-1 *et seq.* of the French Energy Code, and Article L. 2224-31 of the French Local Authorities Code, the public distribution of electricity is operated under a system of public service concessions. Pursuant to this body of law, the contracting authorities organise the public electricity distribution service through concession agreements and general specifications that set forth the respective rights and obligations of the contracting authority and the operator. Currently, the contracting authorities are most often public institutions formed by associations of several municipalities cooperating together, some of which may cover an entire *département*.

The separation of production and supply activities on one hand, and network activities on the other imposed by European Directives has led to the identification of a public service with two distinct missions: on the one hand, the regulated tariff supply mission entrusted to EDF and the LDCs in their respective exclusive service areas and, on the other hand, the development and operation of the public electricity distribution networks, entrusted to Enedis and the LDCs in their respective exclusive service areas, and EDF for areas not interconnected to the continental metropolitan network.

Article L. 334-3 of the French Energy Code specifies that concession contracts must be tripartite, signed by the contracting authority, the distribution network operator (or the territorially competent LDC) for aspects relating to the management of the public distribution network, and by EDF (or the territorially competent LDC) for aspects relating to regulated tariff distribution.

Within the limits defined by statute and by case law precedent, the contracting authorities are the owners of the distribution networks, which constitute returnable assets ⁽¹⁾.

Pursuant to Article L. 3213-1 of the French Public Procurement Code, which transposed Article 10.1 of Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 into domestic law, concession contracts for the operation of the public distribution network and the supply of electricity at regulated tariffs are concluded directly, *i.e.*, with no publicity and competitive bidding procedures.

1.4.4.2.3 Service shared by Enedis and GRDF

The ordinary service function shared by Enedis and GRDF ⁽²⁾ is not a legal entity in its own right. Enedis' and GRDF's relations in this ordinary service are governed by an agreement that defines the scope of the service and the resulting division of costs. The agreement has an indefinite term and can be terminated at any time subject to 18 months' notice: in such a case, the parties undertake to renegotiate the agreement during the notice period. It is updated regularly. In 2019, the governance agreements between Enedis and GRDF were completely reviewed.

1.4.4.2.4 Future challenges

An ambitious investment path to facilitate ecological transition and guarantee the quality of supply in response to climate changes

Enedis has planned €96 billion of investments over the period 2022-2040. Annual investments will thus increase from €4.4 billion in 2022 to a sustainable figure of more than €5 billion.

These investments will make it possible to support ecological transition by connecting electric vehicle charging (CFEV) and renewable energy infrastructures. The phase-out of the sale of fossil-fuel vehicles in 2035 and electric vehicles becoming standard will result in a surge in investments around 2030, in connection with which multi-family housing will be a major challenge. Moreover, the rapid acceleration of the renewable energy development will continue, especially in the photovoltaic sector.

(1) Returnable assets are those that must imperatively be returned to the contracting local authority at the end of the concession. These assets are deemed to have belonged to this local authority from the outset. They are defined by the concession contract or even by the law. Unless stipulated otherwise, assets that are essential for the performance of the concession service are generally regarded as being returnable.

(2) Defined by Article L. 111-71 of the French Energy Code.

In parallel, Enedis has planned modernisation programmes that cover all at-risk structures, with targeted renewal according to the likelihood of failure. The programmes that have already started will be pursued, in order to continue the improvement of quality of supply, in an environment that has seen an increase in risks (fires, heatwaves, floods, gales and storms). They aim to:

- improve the networks' resistance to climatic variations (burial of lines that cross wooded areas or that are exposed to wind, ice or snow);
- change buried power lines that are insulated with impregnated paper;
- limit the impact of floods and accelerate restoration of supply.

Enedis will support the spectacular growth of electric mobility

The growth of electric mobility is the key contributing factor to the increase in France's electricity consumption over the period leading up to 2050. According to Enedis' projections, which are aligned with the National Low Carbon Strategy scenarios (SNBC), 17 million plug-in electric vehicles will be on the road in France in 2035, i.e., 40% of the total number of light passenger and light commercial vehicles at that time.

The volume of business associated with the connection of the new charging stations that are needed for these vehicles (in multi-family housing, in particular, on public streets, on mall parking lots, in company car parks and on major roads and highways, for example), and also the adaptation of distribution networks to the growth of this new form of use, represent a genuine challenge for Enedis.

In this regard, Enedis has run numerous studies and experiments on the structuring questions raised by electric mobility: coordination of charging, use of vehicle batteries to provide services to the electricity system, synchronisation of charging and renewable energy production, use of data from vehicles, charging stations and meters, etc. The aim is to anticipate the impacts on the electricity system and on the distributor's activities.

In order to address the complexity of energy transition the electricity distribution network is continuing its digital revolution

The massive arrival on the distribution network of scattered, intermittent generation sources, and the sharp growth of electric mobility, require control and management of flows that is increasingly granular and complex.

Under these circumstances, and to address the challenges of ecological transition, Enedis is relying on digital technologies and scaling up smart grids. This involves using networks with hundreds of thousands of sensors, continuing the digitalisation of previous-generation smart systems, and scaling up forecasting models for the running, as well as improving the oversight and robustness (including of the cybersecurity) of infrastructures and information systems.

To date, the rollout of smart grid technologies on an industrial scale is crucial as a means of making it possible to accelerate ecological transition. The leading example is the Linky bi-directional meter. The widespread rollout phase of the Linky meters, which was launched on 1 December 2015, was completed on 31 December 2021. This rollout is a success: the final cost of the project is less than the initial budget, the deadlines were met and the metering system is performing satisfactorily. The cumulated investments (2014-2021) total €3,907 million, which correspond to 34.26 million Linky meters installed⁽¹⁾.

The replacement of previous generation meters with Linky meters continued in 2022, driven by customer requests and maintenance. With around 1.1 million new replacement meters and around 0.4 million new delivery points commissioned, the fleet is now equipped with around 35.7 million Linky meters, which represents an equipment to household ratio of 92.1%. The expected trajectory, which conforms to the CRE's recommendations, should result in an equipment to household ratio of 97.5% by the end of 2025.

Regulatory notice

Linky regulation

The Linky project, led by Enedis, is subject to a specific regulatory framework regarding the lifespan of the meters (20 years), with a dedicated regulated asset basis (RAB) for the meters installed between 2015 and 2021 and the associated information systems.

The CRE's decision dated 17 July 2014 thus set a nominal return rate before tax of 7.25% for the assets and a 3% additional premium combined with an incentive regulation concerning compliance with costs, deadlines and system performance, which brings the total return on the RAB to 10.25%. As provided for in the decision dated 17 July 2014, the incentive regulation of the system's performance for 2020 and 2021 was set by the CRE in a decision dated 23 January 2020. After the massive rollout phase ended in December 2021, in its decision of 17 March 2022, the CRE defined the financial incentive indicators, as part of the monitoring of the performance of the Linky advanced metering system for the period 2022-2024. In addition, a deferred surcharge, which is designed to ensure that Linky remains tariff-neutral for customers, means that some income for the 2014-2022 period will be shifted to the 2023-2030 period. This deferred surcharge, plus an amount to cover financing costs (set at 4.6%), will thus be collected in full by the end of 2030. At 31 December 2022, the surcharge to be collected is +€2,051 million (this represents a claim by Enedis against network users, which is not recognised on the Group's balance sheet at 31 December 2022, pursuant to the accounting standards in force on this date).

Enedis is also determined to publicise and enhance the services that are made possible with Linky. These include, in particular, the creation of new offers by suppliers and the release onto the market by equipment manufacturers of smart devices that can interface with Linky (charging stations that start up during cheap rate periods, automatic management of charging, assistance with consumption management for vulnerable customers, etc.).

Enedis has also developed and launched new source substations, which are a key grid component, on an industrial scale. These are source substations that can be brought online quickly, the design and factory pre-assembly of which make it possible to save one year in terms of connection time to a generator, while optimising their cost. One-quarter of the substations that will be built between now and 2035 will be based on this system.

Innovation is crucial for optimising investments and operating infrastructures with a high degree of efficiency, while taking into account eco-design as from the launch phase of projects. The digital revolution on Enedis' grids and in its business lines is undertaken in cooperation with the entire innovation ecosystem, in the fields of both smart grids and FrenchTech. This innovation policy systematically draws on the support of research laboratories, universities, start-ups, associations and undertakings of all sizes. This approach represents job and growth opportunities for local communities and gives these achievements international visibility.

Enedis (with RTE) was thus behind the creation of Think Smartgrids, the French smart grid industry association that promotes the sector internationally. It currently has over a hundred members.

France in the lead as a result of Enedis' smart grid

The French public electricity distribution service was named the smartest Distribution Network Operator in the world for the second consecutive year, and was ranked first by the Smart Grid Index (SGI)⁽²⁾. Based on several criteria, Enedis' overall score in 2022 was 98.2% (out of 100%), an improvement of its 2021 score by 1.8 points. Enedis is maintaining its industrial, technical and technological momentum with a view to making the public distribution network in France a global benchmark for years to come.

Data management, a key aspect of the digital revolution

In a few years, Enedis has also become one of the energy sector's leaders in the field of data. At present, around 500 types of data per year are made available to customers, local authorities and market participants. Enedis was one of the first companies in its sector to launch a Europe-wide Open Data platform. It was also the

(1) Including experimental meters.

(2) The Singapore Power Group Smart Grid Index measures the smartness of power grids globally by comparing operators in seven key dimensions, such as green energy, data analytics, DER integration, digitalisation, cyber security, customer satisfaction, etc. The comparative analysis also identifies the best practices to build smarter grids that deliver better value to customers. In 2022, 94 operators from 39 countries were compared.

driving force behind the creation of the ORE (Energy Grid Operators) Agency ⁽¹⁾, which brings together all the electricity and gas network operators in France. This Agency releases comprehensive data on all the operators.

Enedis' remit to collect, protect and make data available has made it possible to develop industrial solutions for the entire French population, along the same lines as the Linky programme. The use of this data is of strategic interest to Enedis. This data also makes it possible for Enedis to improve its industrial performance and the quality of the service provided to customers. This moreover raises significant new challenges in the field of cybersecurity and requires enhanced protection of systems and data. All of Enedis' information systems comply with the rules on individual data protection. In this regard, Enedis complies with the standards and rules laid down by the French Data Protection Agency (*Commission nationale informatique et libertés*, CNIL).

A public service with a positive impact that supports ecological transition

Enedis is a major player in the French electric system, and is convinced that there can be no industrial and economic performance without exemplary conduct from a social, societal and environmental standpoint. Enedis has put together a business plan for the years 2020-2025. It is based on a ground-breaking experiment involving dialogue with internal and external stakeholders that was launched in May 2020.

Upon completion of this consultation, Enedis was able to assert its values and its informal *raison d'être*: "To become France's preferred public service that supports ecological transition in territories".

The goals and commitments of this CSR policy are organised around three pillars: public service that has a positive effect for the planet, for women and men, and for local communities. They are divided into 15 key actions, which are part of the efforts to achieve 10 of the UN's 17 Sustainable Development Goals.

Action to mitigate climate change

Enedis' commitment has been enhanced and clarified in the CSR policy, and is centred around five major ambitions that aim to mitigate the various impacts on the climate and biodiversity:

- reduce greenhouse gas emissions and contribute to France's National Low Carbon Strategy, which aims to achieve neutrality by 2050;
- anticipate foreseeable climate changes in order to adapt the public electricity network and maintain an efficient service;
- limit the impact of its activities on biodiversity;
- facilitate eco-design and the circular economy;
- prevent air, water and ground pollution.

IES KEY METRICS

	Data at end-2022
Number of customers	approximately 1,236,000
Network length (<i>in km</i>)	approximately 39,400
Net installed capacity of the EDF fleet (<i>in MW</i>)	2,005
<i>of which hydropower fleet and other renewable energy sources</i>	22%
<i>of which thermal fleet</i>	78%
Net output* (<i>in GWh</i>)	6,380
<i>of which hydropower output</i>	24%
Purchases of energy from third parties (<i>in GWh</i>)	3,489
<i>of which renewable energies, including bagasse</i>	55%
<i>of which other energies</i>	45%
TOTAL ENERGY GENERATED* AND PURCHASED FROM THIRD PARTIES	9,869

* Data including the EDF IES Division and EDF Production Électrique Insulaire (PEI), a wholly-owned subsidiary of the EDF group.

Enedis' priority ambition is to contribute to "carbon neutrality" by 2050. It aims to drastically reduce its own emissions (Scopes 1 and 2) and drive an ambitious procedure with its suppliers and providers to reduce Scope 3 emissions to the greatest extent possible. Enedis has set itself an initial reduction target of 20% across all scopes by 2025.

Enedis also intends to contribute to COP21 targets by accelerating the large-scale rollout of low-carbon electricity solutions and the controlled consumption of electricity by means of smart meters and smart grids.

In addition to its pro-climate actions, Enedis is working to preserve biodiversity. It has initiated actions to protect birds from electrocution via the National Avifauna Committee and in partnership with the French Bird Conservancy Society (*Ligue de protection des oiseaux*, LPO). It has also joined the *Entreprises Engagées pour la Nature* alliance of businesses that are committed to nature conservation.

Adjustment of distribution networks

With respect to adaptation to climate change, Enedis is working on reducing the vulnerability of its 1.4 million kilometres of networks to the various climate risks that have been identified. This mainly consists, for high-voltage overhead lines, of retrofits and burying specific sections of line.

Moreover, the Electricity Rapid Intervention Force (FIRE), which makes it possible to reposition resources and manpower anywhere in France in order to restore power as quickly as possible, has been modified in order to take into account the new interactions with other infrastructures (telecommunications, in particular).

1.4.4.3 Island Energy Systems

Electricity systems that are not inter-connected to the continental metropolitan network, or NIZ (Non-Interconnected Zones) and that are operated by EDF provide power to Corsica, the overseas *départements* (except Mayotte) and the overseas territories of Saint-Barthélemy, Saint-Martin and Saint-Pierre-et-Miquelon, as well as several Ponant islands (Sein, Ouessant, Molène and Chausey).

EDF's organisation in these regions is based on two structures:

- the Island Energy Systems (IES) Department, which is responsible for the supply and demand balance on a daily basis. It manages all the networks and carries on a sales and marketing activity with regulated sales tariffs, guided by an active energy efficiency policy;
- the subsidiary EDF Production Électrique Insulaire (EDF PEI), which is responsible for building and operating new means of generation.

The additional generation costs in these territories compared to the equivalent costs on the mainland are regarded by the legislature as a public service cost and, as such, are offset by the State budget.

The costs incurred by the network operator are, in contrast, covered by the Tariffs for Using the Public Electricity transmission and distribution Networks (TURPE) paid by network users and by the Electricity Equalisation Fund (*Fonds de péréquation de l'électricité*, FPE).

(1) The ORE Agency federates all the French electricity and gas distribution market participants. It provides an overview of distribution in France, using a one-stop-shop approach, and makes data available free of charge. It provides aggregated data on multiple energy types and multiple network operators in order to support energy transition in local communities throughout France, using an open data approach and in the form of data visualisations.

Changes and outlook

Investments to decarbonise and reinforce the electricity generation fleet

In accordance with the local multi-year energy programmes (PPE), the EDF group has undertaken to replace the main power plants that are at the end of their useful lives. The new power plants will be constructed and operated by the subsidiary EDF PEI. In areas where this is specified in the PPE, EDF PEI is planning to operate these new plants or to convert its existing plants (that were commissioned between 2012 and 2015) to use liquid biomass (in accordance with the Red II Directive). Firstly, the plant at Port Est on Reunion Island will be converted during the second half of 2023. It will thus become a 100% renewable energy plant.

EDF PEI is currently a partner in a photovoltaic plant with battery storage project in French Guiana, and in a wind power plant with battery storage project in Martinique. EDF PEI is strengthening its renewable energy capacity through ordinary projects with EDF Renewables. EDF PEI is also a partner of GMOB, the purpose of which is to install and run a network of electric charging stations in the French Caribbean.

Investments in electricity networks

The continued increase in consumption in most of these communities, despite being offset to a certain extent by the energy efficiency actions undertaken, the development of renewable energies and the growing number of generation facilities coming online, have led the EDF network operator to continue the expansion and reinforcement of the electricity networks. In total, the network operator EDF IES invested €240 million in Network activities in 2022.

A commitment to projects devoted to improved integration of renewable energies in the electricity generation mix and to optimising the management of electrical systems

In its capacity as electricity system manager, EDF IES contributes to improving technical capacities for the introduction of non-synchronous renewable energy generation into NIZ. It proposes changes to their technical specifications, by adapting the electricity system to make it more resistant to power disruptions, and by developing smart metering systems.

EDF has also brought online and manages several centralised storage systems. These are used as a power reserve, in the event of loss of a generation means, or to cover peaks in consumption.

Work is ongoing to create micro-networks that are 100% powered by renewable energies in certain isolated areas. In 2017, an innovative system combining photovoltaic, digital monitoring and storage was installed on the Island of Sein. It provides a supply of 100% renewable energy for several hours each day. Part of the Cirque de Mafate on Réunion is supplied with solar power, and is equipped with a battery. In 2021, in Saint-Georges-de-l'Oyapock in French Guiana (4,000 inhabitants) EDF commissioned a micro-network that is fuelled solely by renewable energy (hydropower and solid biomass), combined with a battery and a smart management system.

Energy efficiency is a crucial energy transition lever in the island systems. EDF contributes to the elaboration and implementation of the demand-side management (DSM) territorial strategy. One of the main tools are capital grants (over €600 million approved by the CRE for 2019-2023). EDF actively promotes DSM operations financed by these grants for all types of customers, particularly through the Agir Plus label.

EDF IES has committed to deploying 1.2 million digital meters in the overseas *départements* (excluding Mayotte) and Corsica by end-2023. This represents an investment of €268 million. These digital meters will contribute to an extensive modernisation of customer relations and enhance the effect of energy transition drivers. At end-2022, over 900,000 meters had been installed.

In March 2022, EDF IES signed a framework agreement with the French National Federation of Licensing Authorities (*Fédération nationale des collectivités concédantes et régies*, FNCCR) in order to implement a new model of general specifications for NIZ. On the basis of this model, which is adapted to the key issues associated with energy transition, EDF IES and the *Syndicat d'Électricité de la Réunion* (Sidélec) renewed their concession contract for 30 years on 22 November 2022.

1.4.4.4 Électricité de Strasbourg (ÉS)

The ÉS group is an Alsatian energy producer that is committed to the long-term energy and economic performance of the area it serves through its four business lines: electricity and gas distribution ⁽¹⁾, energy supplies, energy services and renewable energy generation. This portfolio of business lines enables the ÉS group to provide the best possible support to its customers for energy transition.

ÉS also provides services to Local Distribution Companies (LDCs), primarily in eastern France.

EDF Développement Environnement (EDEV) owns 88.64% of the ÉS group. The remaining shares are owned by the public and the company's employees. Its shares are listed on Euronext Paris.

Distribution

Strasbourg Électricité Réseaux is the ÉS subsidiary in charge of distribution. It acts as a network operator for the electricity distribution network in accordance with the rules on management independence.

Strasbourg Électricité Réseaux operates, maintains, develops and renews an electricity network of over 15,000 kilometres in the 400 Alsatian municipalities that chose it to operate their electricity distribution grids under concession agreements. These concession agreements were renewed between 1993 and 2001 for a term of 40 years. The area serviced covers three-quarters of the Bas-Rhin *département*. It includes more than 580,000 points of delivery for various voltage levels, as well as connections with the Enedis network and two other downstream network operators.

Trois Frontières Distribution Gaz is a company that was founded in 2021 as part of the transaction to acquire the gas distribution activity for the municipalities of Huningue, Saint-Louis, Hégenheim and Village Neuf in the south of Alsace. It performs its functions independently of any gas supply activity and ensures transparent, non-discriminatory access to the natural gas distribution network. It provides natural gas at more than 8,000 delivery points at medium and low pressure. As distribution network operator, Trois Frontières Distribution Gaz is responsible for gas network routing, connection and access. Trois Frontières Distribution Gaz is also responsible for meter reading.

Sales and marketing

ÉS Énergies Strasbourg is the sales and marketing subsidiary of the ÉS group. At end-2022, ÉS Énergies Strasbourg supplied power to more than 569,000 electricity customers (including renewable- and biogas-source energy), and more than 113,000 gas customers, both individuals and businesses (in the tertiary and industrial sectors) as well as local authorities.

In addition to supplying electricity and gas, ÉS Énergies Strasbourg offers related services. These include electricity, gas and plumbing corrective maintenance and digital services designed to help customers better manage their energy consumption. For its individual customers, ÉS Énergies Strasbourg has continued the implementation of support services. They cover the renovation and construction of housing, *via* a portal that puts customers in touch with a network of local partners. ÉS Énergies Strasbourg is also active in the development of solar power. It promotes sustainable transport, in particular charging infrastructures for electric vehicles. All of its commercial activities associated with photovoltaic, electric mobility, energy efficiency and housing retrofits are now gathered under the "Planigy par ÉS" brand, which was launched in September 2022.

As part of the recurring electricity supply business of ÉS Énergies Strasbourg, the sales subsidiary of the ÉS group, market transactions involving daily adjustments of customer portfolios were issued by mistake and in large numbers (surplus sales compared to requirements), namely 2.03GW and 5.75GW for 6 and 7 September 2022 respectively. This incident resulted in two financial press releases being issued on 8 and 9 September 2022, which stated, in particular, that the estimated cost was €60 million.

Régiongaz is the natural gas sales arm of the gas LDC on the Trois Frontières territory, which the ÉS group acquired on 1 January 2022. It supplies more than 8,500 customers with natural gas. Its customers are households, businesses (tertiary and industry) and some local authorities.

(1) The distribution business line is managed by Strasbourg Électricité Réseaux in accordance with the rules on the management independence of network operators.

Energy services

ÉS Services Énergétiques, a subsidiary that specialises in energy services, is owned by ÉS and Dalkia on a 50-50 basis. In the field of energy transition, ÉS Services Énergétiques has positioned itself as a provider of sustainable solutions and a creator of energy performance, with the aim of helping private- and public-sector stakeholders in Alsace reduce their carbon intensity. It provides attractive solutions on world performance markets and for energy performance contracts, which make it possible to:

- improve the energy efficiency of buildings, through retrofits;
- optimise the management of energy facilities;
- implement renewable energy solutions;
- raise users' awareness of energy savings.

Moreover, ÉS Services Énergétiques proposes solutions for managing and securing networks (heat, electricity or public lighting networks). It also carries out engineering work for mass catering providers.

Renewable energy generation

Deep geothermal energy

In France, the ÉS group is one of the leading players in the deep geothermal energy sector. Since 2016, it has operated the first deep geothermal power plant for

industrial use in Rittershoffen. The plant's renewable superheated water output is approximately 180GWh/year. This water comes from a geothermal source located at a depth of 2,500 metres.

ÉS also operates the Soultz-sous-Forêts geothermal power plant, which generates around 6GWh/year.

Biomass

The Strasbourg biomass cogeneration plant uses residue from the wood industry in the Vosges and Black Forest mountains. This 37MW thermal power plant produces 70GWh of electricity from renewable sources per year and 112GWh of heat from renewable sources per year.

Hydropower

The Framont hydropower plant, which has a capacity of 400kW, allows depending on water availability, the generation of approximately 1.5GWh/year, which is equivalent to the annual electricity consumption of 350 homes.

Moreover, ÉS holds a 35% stake in SERHY, a company that specialises in the construction and operation of hydropower plants, primarily in the Alpine and Pyrenean mountain ranges. SERHY produces around 160GWh/year from renewable energy sources.

1.4.5 International activities

The EDF group supplies electricity and gas to 40.3 million customers worldwide: residential customers, businesses, and local government. It is a major energy provider on key European markets: France, the United Kingdom, Italy, and Belgium. The Group is seeking to move into new geographical areas, developing low-carbon solutions in growing countries and strengthening its positions in Europe.

1.4.5.1 United Kingdom

EDF group activity in the United Kingdom (UK) is led by EDF Energy and EDF Trading ⁽¹⁾ and also consists of other Group companies (Imtech, EDF Renewables UK, Pod Point).

The purpose of EDF in the UK, the country's largest low-carbon electricity producer, is to help Britain achieve Net Zero. It does this by leading the transition to a decarbonised energy system in its seven business areas:

- the generation of electricity in the UK and delivering decommissioning services;
- the supply of electricity and gas and energy solutions to residential and business customers;
- building a new nuclear power station at Hinkley Point, in partnership with China General Nuclear Corporation (CGN);
- developing further new nuclear power stations;
- renewables, through EDF Renewables UK, which is a subsidiary of EDF Energy and a joint venture (JV) between EDF Energy and EDF Renewables;
- technical services, energy and low-carbon solutions at customer sites through Imtech, in JV with Dalkia;
- electric mobility industry.

In addition, **EDF Trading** is providing optimisation and risk management services to the EDF group as well as third parties.

EDF Energy is one of the UK's largest energy companies and the largest producer of low-carbon electricity. It produces around 14.3% of the nation's electricity based on power generation data for 2021 ⁽²⁾. EDF Energy supplies gas and electricity to around 6 million business and residential customer accounts as at December 2022. The company employs 10,795 people at sites throughout the UK as at December 2022.

EDF Renewables UK operates and develops new renewable generation and storage projects in the UK and Ireland, with 1GW of gross capacity in operation and over 8GW in planning, development and construction. This covers all technologies: onshore and offshore wind, solar and battery storage.

Imtech is one of the leading technical and engineering service providers in the UK and active from engineering services and contracting (Imtech Engineering Services) to technical facilities management (Imtech Inviron), systems integration and digital solutions (Capula) and energy services and energy performance contracting, especially in the public sector (Breathe). In 2022, Imtech acquired 100% of SPIE UK, a company which specializes in providing technical engineering solutions for the built environment in the UK.

In electric mobility, EDF Energy has a majority stake in **Pod Point**, a leading electric vehicle (EV) charging company in the UK. EDF Energy aims to maintain and build its leading position on UK charging point operations; develop smart charging; and offer low-carbon tariffs as well as wider services to support UK drivers in going electric.

1.4.5.1.1 EDF in the UK strategy and sustainability

EDF Energy simultaneously supports the UK in achieving its Net Zero ambitions and contributes to key pillars of EDF group's CAP 2030 strategy – generation of zero carbon electricity and helping its customers to achieve Net Zero.

EDF Energy contributes to EDF group's greenhouse gas emissions reduction targets and carbon intensity trajectory. The Sustainable Business Update ⁽³⁾ explains the progress and plans of the business to help Britain achieve Net Zero and meet wider sustainability objectives. In line with UK regulation ⁽⁴⁾, in summer 2022 EDF Energy published a carbon reduction plan covering certain emissions categories to 2026 ⁽⁵⁾.

(1) See 1.4.6.3 "Optimisation and Trading: EDF Trading".

(2) Data published by UK Government Department for Business, Energy & Industrial Strategy Historical electricity data – GOV.UK (www.gov.uk). If EDF Renewables' capacity is added, EDF Energy's total contribution to the country's low carbon electricity is 16.2%. EDF Energy also produced 1.2% of the electricity from coal and gas-fired plants. 2022 data will be released in mid-2023.

(3) <https://www.edfenergy.com/sites/default/files/edf-sustainable-business-update-160922.pdf>

(4) Régulation PPN06/21.

(5) edf_carbon_reduction_plan.pdf (edfenergy.com).

EDF Energy serves 3.7 million British homes and businesses. It is the largest supplier of businesses and the public sector in Great Britain (GB) and has been recognised as an industry leader for residential customer service by Citizens Advice ⁽¹⁾. In addition to the supply of electricity and gas, EDF Energy supports its customers in Net Zero focused areas including electric mobility, low-carbon heating, micro generation, renewable power purchase agreements (PPAs), flexibility services and smart meters combined with data services.

A resilient and efficient operating model remains a key priority, ensuring EDF Energy will also help meet customers' future energy requirements – whether they are switching to an electric car or a heat pump for instance. To this end, EDF Energy is preparing to migrate its 3.6 million residential and SME customers onto Kraken Technologies' market-leading EnTech platform, starting in 2023.

Improving the energy efficiency of UK building stock and decarbonising heat are key contributors to the UK achieving Net Zero and reducing fossil fuel dependency. EDF Energy is working towards delivering on its regulatory obligations. It is a leader in energy efficiency installations through the Energy Company Obligation (ECO) scheme and is committed to the roll-out of smart meters to homes and small businesses, as part of the national programme.

In May 2022, EDF Energy agreed a partnership with CB Heating, a heat pump installer, to offer an end-to-end service for customers and support the decarbonisation of heating in the UK. EDF Energy, CB Heating and Daikin have partnered to create a new training academy opened in November, set to train 4,000 heat pump installers a year to help the UK hit its target of 600,000 heat pumps by 2028.

Recent energy price increases, driven by global gas prices, are strongly impacting the UK operating and competitive environment. Wider inflationary pressures have created affordability challenges for customers. This has triggered unprecedented interventions by the UK Government with the introduction of additional taxes on generators and financial support for residential and business customers. EDF Energy has played its part in delivering these Government funded schemes designed to address the significant affordability challenge its customers face alongside EDF Energy funded support for struggling customers.

In November 2022 the UK Government announced further details on this tax mechanism on infra-marginal rents, the 'Electricity Generator Levy' (EGL). The EGL places a 45% tax on electricity generation income above £75/MWh generated between 1 January 2023 and 31 March 2028 and will apply to both EDF's operating UK nuclear assets as well as certain older renewable generators that are subsidised under the Renewable Obligation scheme.

The price levels seen in 2022 have further highlighted the need for continued investment in low-carbon electricity and technology to reduce the UK's reliance on fossil fuels, and the value of reliable, resilient suppliers such as EDF Energy.

In electricity generation, EDF Energy's key priority is to sustain safe, reliable and commercially viable operations. This includes supporting UK security of supply

through the West Burton A coal power station, which was due to close in September 2022 but following a request from the UK Government, West Burton A has been made available to National Grid ESO for 6 months until 31 March 2023 as an emergency service. The site has been chosen by the UK Government to host the UK's first prototype fusion energy power plant, supporting EDF Energy's commitment to a just transition for the workforce and communities connected to coal.

Since its acquisition of the UK nuclear fleet in 2009, EDF Energy has invested £7 billion. Through sustained investment and careful stewardship all the AGR stations have operated beyond their original 25-30 year design lives.

EDF Energy has decided to extend the end of generation for Heysham 1 and Hartlepool to 31 March 2026 with a +/-1 year proviso ⁽²⁾. Further work is underway to assess a 20 year life extension to Sizewell B, to continue the provision of 3% of GBs electricity demand till 2055.

EDF Energy moved Dungeness B into the defueling phase from June 2021, and Hunterston B and Hinkley Point B in January 2022 and August 2022 respectively. The remaining four AGR nuclear power stations are currently due to close by 2028. EDF Energy is responsible for defueling all seven AGR power stations over the next 10+ years under an agreement with the UK Government signed in June 2021.

EDF Energy's UK fleet of existing nuclear power stations has been accountable for supplying around 15-20% of the country's power since the mid-1970s. Nuclear generation output in 2022 was 43.6TWh vs 41.7TWh in 2021 despite Hunterston B and Hinkley Point B having been moved onto defueling phase.

UK Government support for nuclear has been confirmed through the ambition to increase nuclear capacity to 24GW by 2050 and launch of the "Great British Nuclear" vehicle with EDF Energy supporting this work. In partnership with CGN ⁽³⁾, EDF Energy is building two new nuclear units (3.2GW capacity in total) at Hinkley Point in Somerset, based on the EPR technology. The halfway point in construction of Hinkley Point C, Britain's single biggest action against climate change, was passed in 2022. As well as major milestones on site, the plant's 57km connection to the National Grid is complete and the target of 1,000 apprenticeships achieved.

There are plans for a similar 3.2GW EPR project at Sizewell in Suffolk, reaching its biggest milestone to date with the UK Government's decision to invest c£700m in the project. The funding will support the project's continued development towards a Final Investment Decision. This announcement follows approval of the Development Consent Order in July 2022 and the introduction of new financing legislation for nuclear projects in March 2022. It also led CGN to exit the project.

EDF Energy is also exploring models using nuclear to produce hydrogen and heat.

In addition, investigations are underway, with funding support from the UK Government, to assess Hartlepool as a site for high temperature gas reactors.

EDF Energy is committed to delivering nuclear excellence and working to preserve technical skills and capabilities during this transition period for the nuclear industry.

(1) Scores for April to June 2022.

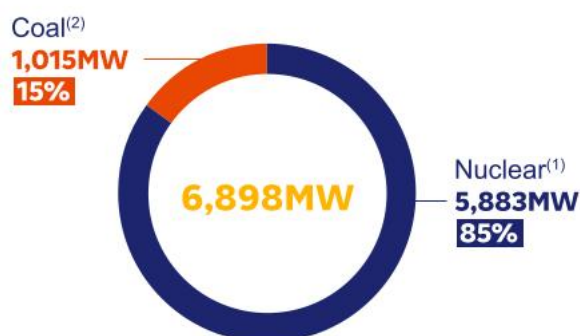
(2) See EDF Energy's press release of 9 March 2023 "EDF confirms plans to keep turbines turning at Heysham 1 and Hartlepool power stations".

(3) China General Nuclear Corporation.

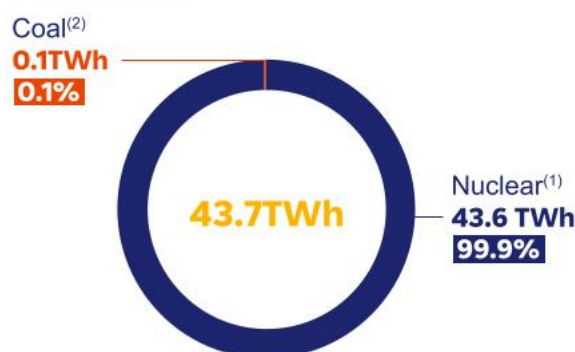
1.4.5.1.2 Activities of EDF Energy

Installed capacity and output of EDF Energy in the United Kingdom - 2022

Installed capacity



Electricity output



(1) The figures shown represent 100% of nuclear capacity and generation output, shared 80%/20% by EDF and Centrica.

(2) Coal capacity represents transmission entry capacity.

NB: The values take into account rounding.

EDF Energy	31/12/2022	31/12/2021
Electricity supplied ⁽¹⁾ (in GWh)	43,656	43,372
Gas supplied (in GWh)	29,910	36,032
Number of residential customer accounts (in thousands) ⁽²⁾	5,542	5,512
Number of employees ⁽³⁾	10,795	11,141
Total Recordable Incident Rate ⁽⁴⁾	0.70	0.71

(1) Power supplied to final consumer including previous year metering cut-offs.

(2) Year-end Figure.

(3) Headcount at the end of the period, including staff on maternity leave. Pod Point employees not included.

(4) Total Recordable Incident Rate: Annual total combined number of Lost Time Incidents, fatalities, Restricted Work Injuries and Medical Treatment Injuries (excluding First Aid)/number of hours worked $\times 1,000,000$. This covers all employees, agency and contractor staff. Excludes EDF Renewables UK and Hinkley Point C project. Accident Frequency Rate (AFR) for HPC is 0.09 at end December 2022. Due to the fatal HPC accident the actual figure submitted was 0.

1.4.5.1.2.1 Regulatory regime applicable to nuclear facilities in the UK

The following regime is applicable to both EDF Energy's generation and new build assets in the UK.

Regulatory notice

Basic nuclear facilities in the United Kingdom

In the United Kingdom, EDF Energy is required, under the Nuclear Installations Act 1965 ("NIA 1965"), to hold a nuclear site licence for each of its existing nuclear power plants and nuclear power plants under development and comply with a certain number of licence conditions. The Planning Act 2008 ("PA 2008") introduced the concept of Development Consent Orders ("DCOs"), which are the authorisations required to build a new nuclear power plant in the UK. The DCO application process involves conducting an environmental impact assessment, implementing environmental mitigation measures and holding a certain number of public consultations.

Office for Nuclear regulation (ONR)

In the United Kingdom, the Office for Nuclear regulation (ONR) and the Environment Agency (EA)/Scottish Environment Protection Agency (SEPA) are responsible for the safety, security, emergency planning and environmental regulation that applies to the UK's nuclear sites.

The ONR is responsible for the regulation and inspection of nuclear facilities and the following laws are overseen by the ONR:

- the Health and Safety at Work Act 1974 (HSWA 1974), which defines EDF's obligations for the safety of workers and others on its sites;
- the Nuclear Installations Act 1965 (NIA 1965), under which operators of nuclear power plants need to obtain a nuclear site licence, comply with that licence and maintain nuclear liability insurance;

- the Energy Act 2013 (Part 3) (EA 2013) conferred statutory body status on the ONR. It also confirmed ONR's purposes in respect of nuclear safety, nuclear site health and safety, nuclear security, nuclear safeguards and transport. Schedule 8 of the Act details the powers of ONR Inspectors;
- the Ionising Radiation regulations 2017 (IRR 2017), which are based on the Basic Safety Standards Directive and provide for the protection of workers and the public against ionising radiation;
- the Environmental Permitting (England and Wales) regulations 2016 and the Environmental Authorisations (Scotland) regulations 2018. The 2016 regulations provide the current permitting framework for radioactive substances. The 2018 regulations provide a framework for the authorisation of environmental activities and currently include only Radioactive Substances activities. The EA and SEPA are the responsible regulators for these 2016 and 2018 regulations respectively.

When assessing the measures that may be required to reduce the risks from activities within the scope of HSWA 1974, the ONR requires risks to be reduced as low as reasonably practicable.

The ONR uses the powers granted to it under the NIA 1965, the EA 2013 and the 36 standard Nuclear Site Licence Conditions as the basis for its monitoring and enforcement regime. The ONR has extensive inspection powers allowing it to inspect nuclear facilities, request documents and conduct investigations. It begins with a detailed review and assessment of the safety of the design and continues throughout the operation and decommissioning of the facilities.

Under the NIA 1965, the ONR is authorised to grant licences to applicants and to impose licence conditions which may be varied or revoked. In particular, the ONR can prohibit certain nuclear operations or revoke the licence of a nuclear site. More ordinarily, the ONR may agree to specific actions, approve arrangements or require changes/variations to operations. The maximum penalty for non-compliance with safety legislation is an unlimited fine or imprisonment for a term not exceeding two years for directors or both.

1.4.5.1.2.2 Nuclear generation

EDF Energy owns eight nuclear power stations in the UK (15 reactors) of which three (six reactors) have been moved to defueling operations. The total generating capacity was 7.3GW at the start of 2022 and 5.9GW at the end. Centrica plc. (Centrica) holds a 20% shareholding in Lake Acquisitions Limited, the parent company in which the nuclear generation assets sit (except Nuclear New Build).

Dungeness B was moved to defueling operations in 2021 and Hunterston B and Hinkley Point B from January 2022 and August 2022 respectively as previously planned.

Nuclear generation fleet technology

Seven of the eight nuclear power stations are AGR power stations (Dungeness B, Hartlepool, Heysham 1, Heysham 2, Hinkley Point B, Hunterston B and Torness) and the eighth, Sizewell B, is a Pressurised Water Reactor (PWR) power station.

Safety and radiological protection

Nuclear safety is EDF Energy's overriding priority. In 2022, 2 events on the International Nuclear Event Scale (INES scale) were recorded, both of which were rated at Level 1 (anomaly).

EDF Energy operates to strict procedures to minimise and control the radiation doses received by employees and contractors at all of EDF Energy's existing nuclear power stations. In 2022, the average individual dose received by all workers on EDF

Energy's existing nuclear sites was approximately 0.022mSv. The highest individual dose received in 2022 was 2.7mSv, with the legal dose limit being 20mSv per year.

Lifetime of power stations

The actual lifetime of each power station is determined primarily by the technical and economic practicability of supporting its safety case. This is assessed at each statutory outage for the following operating period through inspection, maintenance, testing and assessment of plant performance. Following the outage, consent is required from the Office for Nuclear regulation (ONR) before restarting the reactor. The operating period between statutory outages is normally three years for the AGR power stations and eighteen months for Sizewell B.

In addition, every ten years, the stations are subject to a more detailed and wide-ranging Periodic Safety Review (PSR) of design, operational and organisational safety which must also be accepted by the ONR in order to secure continued operation. The next PSR due for submission to ONR is in January 2024 for Sizewell B, with their decision expected in January 2025.

The AGR fleet were designed with a nominal 25-year lifetime, and Sizewell B with a 40 year lifetime. However, with the aggregation of technical information, and operational and safety experience of EDF Energy, it has been possible to extend the expected AGR lifetimes. Since British Energy was acquired by EDF, the AGR lifetimes have been extended by an average of six years.

See also in section 2.2.5 in Risk factor 5A "Nuclear facilities in the United Kingdom".

CAPACITY AND OUTPUT BY POWER PLANT

Power Plant	Power ⁽¹⁾ (in MW)	Output ⁽²⁾ (in TWh)	
AGR Power Plants		2022	2021
Dungeness B	-	-	(0.2)
Hartlepool	1,185	7.7	5.7
Heysham 1	1,060	6.3	5.8
Heysham 2	1,240	7.9	5.8
Hinkley Point B	965	4.1	4.8
Hunterston B	495	0.1	6.4
Torness	1,200	7.2	6.7
PWR Power Plant			
Sizewell B	1,198	10.4	6.7
TOTAL	7,343	43.6	41.7
LOAD FACTOR ⁽³⁾		77%	59%

(1) Capacities are stated for all generating reactors, net of all power consumed for the power stations' own use including power imported from the grid, at 1 January 2022. At 31 December 2022, Hunterston B Reactor 4 and Hinkley Point B had been moved to defueling operations and the capacity of the generating reactors became 5,883MW.

(2) Output in each year reflects any refuelling, planned and unplanned outages. Imports for non-generating stations are excluded.

(3) Load factors are obtained by dividing the actual output by the output that would have been achieved by each power plant operated at its stated capacity appropriate for the period. For 2022, Hinkley Point B has been included up to 30 June i.e. the end of the last quarter before end of generation, consistent with the WANO (World Association of Nuclear Operators) treatment of operational performance indicators.

Operational review of the existing nuclear generation fleet

The nuclear generation fleet produced 43.6TWh during 2022, 1.9TWh more than 2021 (41.7TWh). The increase in output is largely due to:

- two statutory outages carried out in 2022, on Heysham 1 Reactor 2 and Torness Reactor 2, versus five in 2021;
- unplanned losses in 2021 resulting from the suspension of on-load refueling at Heysham 2 & Torness, and a thermal sleeve repair at Sizewell B and securing a boiler tube leak safety case at Hartlepool; partly offset by

- the end of operational life of Hinkley Point B (on 1 August 2022) and Hunterston B (on 7 January 2022) as previously planned.

Following suspension of On-load refuelling in 2021 on all four reactors at Heysham 2 and Torness, the decision was taken in 2022 to continue off load refuelling for the remainder of their operational lives.

CURRENT EXPECTED OPERATING LIVES* AND CLOSURE DATES

Power Plant	Type of reactor	Start of Generation	Power Station Lifetime (Formally Declared)	Life Extensions (Already Formally Declared)	Associated Scheduled Closure Date
Hinkley Point B	AGR	Feb. 1976	46 years	21 years	2022
Hunterston B	AGR	Feb. 1976	46 years	21 years	2022
Dungeness B	AGR	Apr. 1983	38 years	13 years	2021
Heysham 1	AGR	July 1983	41 years	17 years	2026
Hartlepool	AGR	Aug. 1983	41 years	17 years	2026
Torness	AGR	May 1988	40 years	15 years	2028
Heysham 2	AGR	July 1988	40 years	15 years	2028
Sizewell B	PWR	Feb. 1995	40 years	–	2035

* As formally recorded by EDF Energy and approved by the NDA.

Radioactive Waste Management and decommissioning

In the UK, radioactive waste is classified into four categories:

- Low Level Waste (LLW), for which a disposal route exists – including the LLW near-surface Repository at Drigg West Cumbria;
- Intermediate Level Waste (ILW), for which no disposal route is currently available in the UK;
- High Level Waste (HLW) is defined as radioactive waste in which the temperature may rise significantly as a result of the radioactivity, so this factor has to be taken into account in the design of storage and disposal facilities;
- Higher Activity Waste (HAW) – this is effectively HLW, ILW and any LLW that are unsuitable for near-surface disposal.

EDF Energy nuclear generation's strategy for LLW and HAW reflects that the UK and Scottish Governments are focused on application of the waste hierarchy (reduce, reuse, recycle, recover). The use of a range of waste recycling and disposal routes will help to make the best use of the UK's Low Level Waste Repository (LLWR) in Cumbria. Only a disposal route for LLW currently exists in the UK.

HAW is stored for the medium-term in safe, purpose-built facilities at EDF Energy's stations while longer term national solutions are being established within England and Scotland.

Spent fuel from the AGRs is transported to Sellafield nuclear reprocessing site (owned by Sellafield Limited, a subsidiary of the NDA) for long term storage.

PWR spent fuel from Sizewell B is stored on site in a purpose-built spent fuel dry storage facility which will safely store all of the spent fuel that will be generated over Sizewell B's life. Following long-term surface storage, the Sizewell B PWR spent fuel will be disposed to a future UK geological disposal facility.

The AGR spent fuel arrangements were agreed at the time of the restructuring of British Energy and through them EDF Energy pays for long term storage (and in previous years reprocessing) of spent nuclear fuel. Sizewell B's fuel storage strategy is approved by the NDA as it is funded by the Nuclear Liabilities Fund. EDF Energy has policies to continually improve and optimise the spent fuel and waste arising through the company's wider safety, sustainability and environmental policies.

Regulatory notice

Radioactive waste

In the United Kingdom, EDF is required, under nuclear site licence Condition 34, to ensure, so far as is reasonably practicable, that radioactive material and radioactive waste on its sites is adequately controlled or contained so that it cannot leak or escape.

In England the Environment Agency (EA) regulates the disposal of radioactive waste from licensed nuclear sites under the Environmental Permitting (England and Wales) regulations 2016. These regulations also regulate what was previously governed by Pollution Prevention and Control, Water Resources Act discharge consents, Flood Risk activity consents and Waste Management licensing.

The Committee on Radioactive Waste Management (CoRWM) published its recommendations for the long-term management of higher activity waste in 2006. In response, the UK government decided to prefer the use of deep geological disposal facilities for the storage of higher activity waste in England. It set the framework for the management of long-term storage through geological storage, combined with a safe and secure interim storage.

In Scotland, the Scottish Environmental Protection Agency (SEPA) regulates the disposal of radioactive waste from licensed nuclear sites. The Scottish Government is pursuing a near surface near site long storage or disposal policy for HAW arising from Scottish sites.

Decommissioning of nuclear facilities

In the United Kingdom, EDF is subject to nuclear site licence Condition 35 which forms the basis for the detailed decommissioning plans and programmes required by the ONR, but its requirements must be taken into account with other legal provisions such as the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) regulations 1999 which require an assessment of the environmental impact of decommissioning and mitigation measures to reduce the environmental impact.

Decommissioning is usually carried out in stages, with ONR formal approval required to move on to the next stage. The ONR may order operators to start or cease decommissioning at any time and must approve decommissioning plans for each stage of the decommissioning process.

Prospective operators of nuclear power plants are required to submit in their FDP (Funding Decommissioning Programme), a Decommissioning and Waste Management Plan (DWMP), setting out the operator's costed plans for meeting its decommissioning and waste management and disposal obligations, and a Funding Arrangements Plan (FAP), explaining how the operator will make financial provision for its obligations. Chapter 1 of Part 3 of the Energy Act 2008 (EA 2008) sets out the rules governing the decommissioning and clean-up of nuclear sites, along with detailed provisions on FDPs. Also see note 15.2.3 "Provisions for nuclear plant decommissioning" of consolidated accounts.

EDF Energy is party to a suite of agreements (the Restructuring Agreements) that set out how qualifying decommissioning and uncontracted liabilities costs will be funded by the Nuclear Liability Fund (NLF) as well as including a guarantee by the UK Government for the costs of decommissioning the existing nuclear plants. The NLF was funded initially through a UK Government contribution and since privatization by EDF Energy Nuclear Generation Ltd. making quarterly payments to the NLF under the terms of a contribution agreement. In 2020, the UK Government made an additional contribution to the NLF of £5 billion.

EDF Energy and the UK Government signed an update to the Restructuring Agreements on 23 June 2021. The changes and clarifications to the Agreements confirm the recovery of qualifying costs and stipulate that once the AGR stations have finished defueling under EDF Energy responsibility, they will all be transferred to the Nuclear Decommissioning Authority (NDA) which will be responsible for subsequent decommissioning activities ⁽¹⁾.

1.4.5.1.2.3 Thermal generation and gas storage

Power Plant	Location	Year commissioned	Number of units	Type of station	Capacity (in MW)	Output (in TWh)	
						2022	2021
West Burton A	Nottinghamshire	1969	2	Coal-fired and OCGT ⁽¹⁾	1,000	0.1	0.5
West Burton B	Nottinghamshire	2013	3	Combined Cycle Gas Turbine	-	-	2.6
TOTAL	UNITED KINGDOM		5		1,000	0.1	3.1

(1) Open Cycle Gas Turbine.

The Cottam Power Plant closed on 30 September 2019 after more than 50 years of being in service. The decision to close the station was made following market changes together with a drive to actively remove carbon from the power generation process. Currently plans are progressing well with the decommissioning work and the likely timescale for completion of demolition is Q4 2025.

The West Burton A Power Station entered into partial decommissioning on 1 October 2021, reducing the available units from 4 to 2 (reducing Capacity from 1,987MW to 1,000MW). West Burton A previously announced that it would close on 30 September 2022 and go into full decommissioning however following a request from Government in April 2022, it was agreed that West Burton A would remain open for a further 6 months until 31 March 2023. The decision to close the station is in line with EDF's commitment to contribute to Net Zero. In 2022, West Burton A generated 0.1TWh of electricity, 0.4TWh less generation than last year mainly due to the strategic decision to reduce current coal stock and be a station of last resort in preparation for its closure.

The West Burton B CCGT power plant was sold on 31 August 2021. EDF Energy now provides West Burton B with a route-to-market service whereby EDF Energy

provides access to forward hedging and prompt optimisation services on behalf of the asset.

EDF Energy also operates a mid-cycle gas storage facility in Cheshire. Hill Top Farm became commercially operational in mid-January 2015 with three cavities. A fourth cavity became commercially operational in 2018 with the remaining cavity brought into service in December 2019. During 2020, the decision was made to decommission the Hole House Facility due requirements for some significant investment to the plant. Decommissioning work is progressing well, it is expected to be complete by Q4 2025.

Carbon Pricing

As the largest producer of low-carbon electricity in the country, EDF Energy benefits over the long term from the increase in the wholesale power price as a result of the application of a carbon price to the carbon emissions of fossil fuelled generation. Electricity producers in Great Britain are subject to two main carbon pricing mechanisms, the UK Emissions Trading System (UK ETS) and the UK's Carbon Price Support tax set at £18/tonne until March 2024.

1.4.5.1.2.4 Customer business

	31/12/2022	31/12/2021
Customer electricity supplied (in GWh)	43,656	43,372
Customer gas supplied (in GWh)	29,190	36,032
Number of domestic product customer accounts at the end of the period (in thousands)	5,542	5,512

EDF Energy is responsible for the supply of gas and electricity and related services to residential and business customers across Great Britain and the wholesale market optimisation of EDF Energy's generation and customer assets. The size of business customers ranges from large public sector contracts to small privately-owned businesses. EDF Energy adopts different risk management strategies for residential and business customers.

EDF Energy is the UK leader in energy efficiency installations, through the Energy Company Obligation Scheme (ECO).

EDF Energy remains committed to its Smart Meter installation programme and upgrading the UK's energy infrastructure to enable concepts such as smart grids and time-of-use tariffs, which contribute to grid resilience as the UK moves towards a low carbon future.

Residential customers

EDF Energy supplied 11.231TWh of electricity and 28.288TWh of gas for the residential segment in 2022. As at 31 December 2022, EDF Energy had 3.264 million electricity accounts and 2.278 million gas accounts. The 2022 churn at 3% showed a decrease compared to 2021 (at 17%), driven by the Energy Crisis. EDF Energy's market share decreased from 10.5% ⁽²⁾ in 2021 to 10.4% at the end of October in 2022.

Given the current cost of living crisis is now being accompanied with a forecast economic downturn until the end of 2024, there remains significant concern over the affordability of energy bills for customers. Therefore, EDF Energy is highly engaged with the UK Government and Ofgem to review issues such as supplier resilience, the future of the Default Tariff Cap methodology and Government support for consumers.

(1) Also see note 15.2.1 "Regulatory and contractual framework" of consolidated accounts.

(2) Cornwall insight figure. Electricity and gas perimeter.

Energy Crisis

During 2021 gas and power wholesale prices in the UK rose significantly, driven by lower gas storage levels following a cold winter, delays to the Nordstream II gas pipeline certification, high gas demand in Asia and an unplanned interconnector outage between UK-France. In 2021, EDF Energy was appointed as SoLR for several failed suppliers (Green Network Energy, Utility Point and Zog Energy) and during 2022 has successfully completed its industry mutualization levy claim, with the highest initial claim acceptance rate of any energy supplier (>90% claimed costs initially approved by Ofgem).

Throughout 2022 energy prices remained high for Winter 2022, due to restricted Russian gas supplies into Europe, low Nuclear generation availability in France and lost LNG cargoes as a result of several processing plant outages. The Government has therefore had to bring in a number of support schemes for domestic and non-domestic consumers to address the affordability challenges presented by such sustained high prices. These support schemes have shielded customers from some of the impact of the ongoing Energy Crisis.

However, EDF Energy still faces significant risk to its hedging strategy due to uncertainties around customer demand responses to the cost of living crisis, and the speed with which the market for Fixed contracts re-opens. There is also volatility risk due to an unseasonably warm start to the Winter and the significantly lower Government support levels for business customers after 31 March 2023. Furthermore, there is additional risk of bad debt due to customer affordability issues and increasing business customer insolvency risk whilst energy costs remain high.

EDF Energy is engaged very actively with the Regulator, UK Government and other stakeholders in the discussions on the market regulations reform and how to support customers through 2023 and beyond on the journey to Net Zero.

Regulatory Change

Default Tariff Cap and Government Bill Support

Ofgem introduced a cap on default tariffs for residential customers on 1 January 2019. On 3 February 2022, Ofgem announced a 54% increase to the Default Tariff Cap, applicable from April 2022 for the following six months. Ofgem later announced that the level of the Price Cap for 1 October 2022 to 31 December 2022 would be £3,549 for the average direct debit customer – an increase of 80% on the previous period, and that the Default Tariff Cap would be updated on a quarterly basis going forwards, rather than every six months.

However some supplier costs were not recoverable through the Standard Variable Tariff (SVT) calculation; in particular, it did not fully allow for the full recovery of energy costs relating to customers switching to SVT in Winter 2021.

To support British households, the Government introduced the Energy Bill Support Scheme (EBSS) under which it is providing a £400 non-repayable rebate to eligible households to help with their energy bills over the 6 months from October 2022 to March 2023.

On 8 September 2022, in addition to the EBSS, the British government announced the Energy Price Guarantee (EPG), to take effect from 1 October 2022, to limit the amount an energy supplier can charge per unit of energy used so that a typical dual-fuel household would pay up to circa £2,500 per year. Households are expected to save around £900 over the winter period from 1 October 2022 to 31 March 2023. Subsequently, on 15 March 2023, the British government announced the extension of the EPG, at the same level, until the end of June 2023. Energy suppliers are fully compensated by the government for the savings provided to their customers under the EPG.

Retail energy market resilience

In April 2022 Ofgem introduced a market stabilization charge (MSC) and a ban on acquisition-only tariffs until the end of March 2023. Following consultation, in February 2023 Ofgem announced that these measures will be extended to March 2024.

The MSC is a requirement on all domestic suppliers acquiring a domestic customer to pay a charge to the losing supplier when wholesale prices fall below the relevant wholesale price cap index. The mechanism is intended to help reduce the risk of costly supplier failures and attempts to provide protection to those firms who hedge energy in advance for their customers so that they are not penalised should wholesale energy prices fall sharply. The MSC was triggered for the first time in November 2022.

Ofgem also took steps to strengthen its milestone assessment framework for new and growing market entrants and increased the time period for assessment of new supply license applications.

ECO4 and Warm Home Discount

ECO3 ended on the 31 March 2022. It was replaced in summer 2022 with the fourth iteration of the ECO scheme called ECO4, which will cover a four-year period until 31 of March 2026. Like ECO3, the ECO4 scheme places an obligation on larger suppliers to promote energy efficiency measures that help low income and vulnerable customers achieve notional bill savings.

Alongside this, there is an ongoing consultation between Ofgem and large energy suppliers to introduce a parallel scheme called ECO+, due to launch in April 2023 and run until 31 March 2026. The ECO+ scheme is designed to widen the eligibility criteria for households to be able benefit from energy efficient measures with the help from government grants when they do not meet the qualifying criteria to be able to benefit from the ECO4 scheme.

The government also confirmed this year that the Warm Home Discount (WHD) scheme would be extended for a further four years until winter 2025/2026. The level of support given to qualifying households under the scheme has been increased to £150 for eligible customers from winter 2022/2023.

Faster Switching

In July 2022, Ofgem completed its Faster Switching regulatory project to make switching suppliers faster, easier and more cost-effective for customers. Since 18 July 2022, customers now have the option of switching during or after their 14-day cooling-off and once decided, the total switching process from the old supplier to the new supplier should take place within five working days, whereas previously it could take up to 21 working days.

Smart Metering Policy

GB energy suppliers were required to take "all reasonable steps" (ARS) to install smart meters for their residential and small business customers before the end of December 2021.

Since January 2022, there has been a new obligation on all suppliers to continue installing smart meters for the period until the end of December 2025. For this period suppliers will need to achieve annual minimum installation targets. The government has consulted on the annual minimum installation targets all suppliers will have to meet for the first two years: 2022 and 2023. These targets are challenging and there are real risks that suppliers will fail to achieve them, given that smart meters remain optional for customers. EDF Energy and other suppliers are working with government to develop future targets which strike the balance of completing smart meter roll out in a way that maintains pace, the correct technical standards and a positive customer experience.

EDF Energy remains committed to delivering smart meters to all residential and small business customers who want to benefit from this new technology. In 2022, EDF Energy has installed a further 563k smart meters and at the end of 2022, 54% of EDF Energy customers in scope for the rollout have smart meters. This meant that EDF Energy has installed a total of 2.9 million smart meters to date, despite several serious challenges, including a Covid-19 related pause of all smart meter installation activity.

Non-residential customers

In 2022, the non-residential segment supplied a total of 32.43TWh of electricity, of which 2.13TWh was supplied to 241k small business customers ("SME") and 30.29TWh to 11.8k medium and 5.2k large business customers ("I&C"). The business customer electricity market in the UK is 157.9TWh in total, making EDF Energy the largest supplier to business customers by volume.

The industry has recovered from the Covid-19 demand reduction seen in 2020. Whilst the UK non-residential electricity segment has seen an increase of 0.3TWh in the 6 months from 30 April 2021, a volume increase of 1.7TWh YoY was seen for EDF Energy non-residential electricity segment in 2022.

In SME, managing the risks which have arisen from the pandemic has been the primary focus for much of 2020 and 2021. Steps were taken to price-in additional risk, increase credit restrictions and limit winning higher risk sectors in order to protect EDF Energy's position. Despite this, SME has developed its channels as customer numbers grew 9% in electricity this year.

EDF Energy's Medium Business segment have continued its focus on the number of meters, which has increased by 45% since the start of the year.

In the Large Business segment, the continuation of a targeted new-business approach has led to the successful acquisitions of 14 new customers in 2022, with 2 exceeding 100GWh. Additionally, 23 Large Business contracts have been renewed.

In the Public Sector, EDF Energy have supplied 17TWh over several large contracts including Crown Commercial Services, Network Rail and Scottish Procurement.

In the electricity purchase market, EDF Energy has grown its PPA business and has become the largest renewable power offtaker (based on owned and 3rd party capacity) according to the latest industry market report. EDF has also successfully bid to become the offtaker of the Sofia Wind Farm, 6.5TWh of annual volume expected to become fully operational in 2026.

Regulatory change

Energy Bill Relief Scheme

In September 2022, the Government introduced the Energy Bill Relief Scheme (EBRS) to support businesses with their energy costs, in response to rising energy prices. Under the EBRS, the government is providing discounts on gas and electricity unit prices. The discount is calculated by comparing the estimated wholesale portion of the unit price a customer would be paying during winter 2022/2023 with a baseline 'government supported price' which is lower than currently expected wholesale prices this winter. The scheme runs from the 1 October 2022 until 31 March 2023. The support is applied to qualifying customers' bills automatically by energy suppliers who then recover the costs from government.

Microbusiness Review

Following two years of work, Ofgem completed its microbusiness review in 2022. The review culminated in a number of reforms to the market for microbusiness customers aimed at improving customer protections. These measures came into effect on 1 October 2022.

Wholesale Market Services

General principles

The policies surrounding EDF Energy's energy purchasing and risk management activities are carried out in accordance with EDF group's policies and ensure that EDF Energy's activities are optimised and its services delivered at a competitive price while limiting its gross margin volatility. The Wholesale Market Services (WMS) Division's purpose is to manage the wholesale market risk in one place within pre-defined risk limits and control framework. It provides an interface with the wholesale markets, via EDF Trading. WMS also provides modelling services to the whole of EDF Energy, as well as negotiating and managing asset backed commercial structures with third parties including providing route to market and optimization agreements for producers.

Electricity sales and procurement

Since April 2010, 20% of the output from nuclear generation is separately sold to Centrica, the minority shareholder of the current nuclear fleet, under the agreements entered into with Centrica. The remaining 80% is sold internally under the same transfer price as used for the transaction with Centrica, based on published market prices, smoothed over forward electricity prices where liquidity allows.

Over and above its own generation, EDF Energy also sources electricity through export power supplied from power purchase agreements which are mainly with renewable and CHP producers. In 2022, EDF Energy acquired approximately 8.1TWh through this channel.

EDF Energy's innovative Powershift platform gained its first customers in 2019. It offers customers flexibility and forecasting services for storage and small-scale generation to earn revenues from reducing or shifting energy demand. EDF Energy's Battery Flexibility Services have secured an additional 273MW in the year for contracts between 7 and 12 years in length.

For delivery in 2022, EDF Energy's net position on the wholesale market was a sale of approximately 1.6TWh (including structured trades). In 2022, EDF Energy sold approximately 31.6TWh and bought 30TWh.

Gas, coal and carbon rights procurement

Coal and gas contracts (physical and financial) and CO₂ emissions rights are entered into by EDF Energy to hedge the fuel requirements of its power plants, gas storage and gas consumers. Purchases are based on generation forecasts and target fuels stock levels. In 2022, EDF Energy's coal deliveries totaled c.131kt, as part of the National Grid Extension contract for West Burton A to provide security of supply throughout Winter-22.

Pod Point

Pod Point was successfully floated on the London Stock Exchange on 4 November 2021 raising £105 million of third-party financing to fund future growth in the UK electric vehicle market. EDF has retained a 54.05% stake in Pod Point following the IPO.

In 2022, Pod Point installed 68,693 Plug-in-Vehicles (PiV). These sales were achieved amid supply chain issues and slowing growth in the EV market.

1.4.5.1.2.5 Nuclear New Build business

Following the final investment decision (FID) made by EDF Energy's Board of Directors on 28 July 2016, EDF Energy and China General Nuclear Power Corporation (CGN) signed contracts for the construction and operation of two EPR reactors on Hinkley Point site in Somerset ("Hinkley Point C" or "HPC" project).

EDF participates in the development of the Sizewell nuclear power plant project in Suffolk ("Sizewell C" project, based on EPR technology).

Moreover, EDF owns 33.5% of "Bradwell B" project based on UK HPR1000 technology, in Essex.

Hinkley Point C (HPC)

EDF Energy's share in HPC is 66.5%, with CGN owning the remaining 33.5%.

As with any project of this scope, the project presents very important industrial risks in terms of schedule and budget overruns at completion of the project. These risks are detailed in section 2.2.4, risk factor 4A "Management of large and complex industrial projects (including EPR project)".

Project achievements

- On Unit 1, Liner Ring 3 has been lifted onto the Reactor Building and mechanical, electrical and HVAC (MEH) work on the Dome has been completed. All cranes for the U1 Turbine Hall have been delivered to storage (including the 300t crane), ready for installation.
- The two 3.5km intake tunnels and 1.8km outfall tunnel have been completed. The six intake and outfall heads have been successfully placed on the seabed.
- In April, the Simulator Building was opened, allowing training of future reactor operators.
- The progress of the Civil works is over 50% complete. In addition, MEH has just begun.
- On Unit 2, work on the Reactor Building's +5.15 slab has commenced.
- Manufacturing of key equipment is progressing with the completion of manufacturing of the Unit 1 Reactor Pressure Vessel delivered to site in February 2023. The polar crane beams have also been delivered to site.

Financing of the project

- EDF Energy has taken note of the UK Government requirement not to have the control of HPC sold down during the construction period without the prior approval of the UK Government.
- The agreements between EDF Energy and CGN include a compensation mechanism of certain additional costs by EDF in case of overrun of the initial budget or delays. This mechanism was triggered in January 2023. These arrangements are part of a shareholders agreement signed between EDF Energy and CGN in September 2016 and is subject to a confidentiality clause.
- As the project's total financing needs exceed the contractual commitment of the shareholders, shareholders will be asked to provide additional equity on a voluntary basis in H2 2023 (estimation). The probability that CGN will not finance the project beyond its contractual commitment is high. In the event that CGN does not allocate voluntary equity, it is likely that EDF will have to contribute in place of CGN, as soon as CGN has contributed its share of committed equity.

Project Costs and Timeline

The project's targets in terms of schedule and cost at completion from the last project review to date were announced on 19 May 2022 ⁽¹⁾:

- the start of electricity generation from Unit 1 is targeted for June 2027, compared to end-2025 as initially announced in 2016 ⁽²⁾;
- the project completion costs are estimated, in this review, in a range of £2015 25 to £2015 26 billion ⁽³⁾ corresponding to £31 to 32 billion in nominal based on the inflation indexes available at end-2021 ⁽⁴⁾;
- the risk of COD delay remains assessed at c. 15 months for each Unit, assuming in particular the absence of additional effects of the war in Ukraine.

The schedule and cost of electromechanical works and of final testing were not reviewed at this stage of the project's lifecycle.

The main Civil works and MEH performance in 2022 were less than expected. Mitigating actions to recover the impact of c. 3-6 months are underway.

At the end of 2022, the actual costs incurred excluding interim interest for the project as a whole ⁽⁵⁾ stood at £18.7 billion (at nominal values), or £2015 16.1 billion. The interim interests stand at £960 million.

At the end of 2022, the Group recorded a loss value of €0.55 billion in respect of the HPC project. This impairment is based on the 100bp increase in WACC between 2021 and 2022 in the UK market context, and on the update of the project schedule and costs. This impairment is reversible (see note 10.8.2 of consolidated financial statements at 31 December 2022).

Exchanges with the UK Office for Nuclear regulation (ONR)

ONR continues comprehensive regulatory oversight of the HPC project.

In Q4 2022, ONR approved, as part of its flexible permissioning regime, the End of Manufacture and release for transit of the RPV (Reactor Pressure Vessel) from Framatome, St Marcel. Looking forward, permissioning agreement will be needed from ONR for the Installation of the RPV.

In November 2022 there was a tragic fatal incident on site from crush injuries. The associated formal investigation by ONR continues.

Contract for Difference (CfD) ⁽⁶⁾

The HPC project company, NNB Generation Company (HPC) Limited and the Department of Energy and Climate Change (DECC) agreed, on October 2015, on the full terms of the CfD for HPC, which was approved by the European Commission in October 2014, ruling that the terms complied with EU state aid rules.

The CfD was signed on 29 September 2016 alongside all the other contracts with the UK Government and it is a contract to provide security in respect of revenues generated from electricity produced and sold by HPC through compensation based on the difference between the strike price and the market price, for a period of 35 years from commissioning of Unit 2.

From the plant's start date, if the reference price at which the producer sells electricity on the market is lower than the strike price set under the terms of the contract, the producer will receive an additional payment. If the reference price is higher than the strike price, the producer will be liable for the difference.

The key elements of the Contract for Difference are:

- the strike price for HPC is set at £2012 92.50/MWh. The strike price will be reduced to £2012 89.50/MWh if the Sizewell C project reaches a positive FID, with further compensation from Sizewell C to HPC in order to share first of a kind costs of EPR across both UK projects, payable on the later of 31 December 2025 and a positive FID for the Sizewell project;
- the strike price is fully indexed to UK inflation through the Consumer Price Index (CPI);

- the term of the exercise of the mechanism is 35 years; in case of a delay to Unit 1 leading to its commercial commissioning after 1 May 2029 or a delay of Unit 2 leading to its commercial commissioning after 31 October 2029, the corresponding 35-year term of the exercise would be decreased commensurately with the deadline overrun;
- moreover, any delay in the commercial commissioning of Unit 1 exceeding 4 years after the deadline specified by the contract for Unit 2, known as the Longstop Date, authorises (but does not oblige) the UK Government to terminate the contract. In view of the impacts of Covid-19 on the project, the Longstop Date has been moved from 1 November 2033 to 1 November 2036;
- the project is protected against certain unfavourable regulatory and legislative changes; provision has also been made to review the costs (up or down depending on the assumptions used) in the fifteenth and twenty fifth years, and to review certain conditions for the costs corresponding to decommissioning and waste management operations (Funding Decommissioning Programme).

There is no explicit volume guarantee in the CfD, nor is there a yearly ceiling; however, the contract is protected against change in law risk and any curtailment on the export of electricity so that the project is contractually hedged for these two events.

Exposure and management of foreign exchange, interest rate and inflation risks

Beyond the commissioning phase, the return of the euro investment is mainly dependent on fluctuations in sterling and UK inflation, as revenue is generated in sterling and linked to inflation.

HPC project is protected against power market price changes during the CfD period and is exposed to fluctuations in electricity prices beyond the CfD period.

In terms of foreign exchange, c. 1/3 of the project costs are denominated in Euro. This exposes both the project and EDF group to the GBP/EUR exchange rate. Should sterling fall against the euro, the Sterling cost of the project will go up and its return will therefore drop. A hedging strategy has been implemented at project level.

Nevertheless, at EDF group level, a Sterling devaluation will trigger a fall in euro funding requirements and therefore lower Group debt. Given the long-term investment horizon in the HPC project, EDF group has implemented a gradual strategy to cover the risk of an increase in sterling value for its HPC investment.

Funded Decommissioning Programme (FDP)

Contracts for the Funded Decommissioning Programme (FDP) of HPC were signed on 29 September 2016. For detailed explanation of statutory requirement for nuclear operators, see 1.4.5.1.2.2.

Sizewell C

Sizewell C is a project to construct a nuclear power station with two EPR reactors at Sizewell in Suffolk, England. The Sizewell C power plant is expected to have a total capacity of 3.26GW, providing electricity to 6 million households for around 60 years.

This project is based on a replication strategy from HPC, replicating as much as possible the HPC design and the HPC supply chain. Sizewell C will benefit from feedback and experience from HPC as well as a developed UK supply chain, which should providemore certainty over schedule and costs. Organisation and collaboration schemes with Hinkley Point C are being analysed to secure the benefits of the replicability of the Hinkley Point C project, while taking into account the difference in governance (% of ownership at term, partners, etc.). Depending on the schemes, the risk of non-compatibility with the project's deconsolidation objective could significantly increase.

(1) See EDF's Press release of 19 May 2021 "Hinkley Point C Update".

(2) Since the beginning of construction, the project has been delayed by 18 months in total, mainly due to the Covid-19 pandemic. See the press release of 27 January 2021.

(3) Costs net of operational action plans, in 2015 sterling, excluding interim interest and at a reference exchange rate for the project of £1 = €1.23.

(4) Based on inflation indexes as of 30 June 2022, the estimated nominal cost at completion could reach £32.7 billion. The real cost remains unchanged.

(5) Costs at the project's boundaries which is consistent with the Project completion cost.

(6) Terms of the contract are available on the UK government website: <https://www.gov.uk/government/publications/hinkley-point-c-documents>.

UK government's decision to back Sizewell C's development

The UK Government has expressed the intention to reach a Final Investment Decision on at least one large-scale nuclear power station this Parliament, i.e., before 24 January 2025, subject to value for money and all relevant approvals. This objective was first set out in the Energy White Paper in 2020 and has since been included in the government's Net Zero and British Energy Security Strategies.

In January 2022, the UK Government indirectly provided £100 million of government funding to the Sizewell C project development by payment to EDF in exchange for an option over the site land or over EDF's shares in the project company. This option will remain in place until Final Investment Decision date with the right for the UK Government to exercise the option only triggered before a Final Investment Decision if EDF decides not to proceed with the project.

On 29 November 2022, the UK Government announced its decision to directly invest c. £700m in Sizewell C to support the project's continued development and to gradually increase its shareholding through 2023 until it reaches parity with EDF as a 50% shareholder, in view of an expected FID in 2024. As at 31 December 2022, the UK Government holds a 32% shareholding in the project, with EDF owning the remaining 68%.

The UK Government's investment also led to China General Nuclear's (CGN) exit from the Sizewell C project. CGN held a c.20% shareholding in the project until 28 November 2022 and remains a shareholder in the Hinkley Point C project.

Regulation model and risk sharing mechanism

In March 2022, new legislation came into effect (Nuclear Energy (Financing) Act) introducing a Regulated Asset Base (RAB) model as an option to finance future nuclear projects. The RAB model is a tried and tested funding model that has already been used in the UK to finance other major infrastructure such as water, gas and electricity networks. Under this model a company receives a licence from an economic regulator to charge a regulated price in exchange for providing the infrastructure.

The Sizewell C project was designated in November 2022 as eligible to benefit from the RAB model but such a funding model has never been implemented in the UK for a single asset project of this nature and scale.

Under the RAB model, the project would receive an allowed revenue from the start of the construction phase, which would be funded by electricity suppliers being charged the cost of the project as users of the electricity system. The regulator would set an allowed revenue level for the project to recover costs (construction and operation), provide a return on the capital investment, complemented with an incentive regulation framework to deliver the project. The recovery of development costs incurred prior to the FID date via the RAB model remains to be confirmed.

In addition to the RAB, the Sizewell C project would be granted a Government Support Package (GSP) that would protect investors and debt holders from some high-impact risk events. The combination of the RAB and GSP aims to share the project's construction and operating risks between consumers, taxpayers and investors and to lower the cost of financing.

The terms of the RAB model and GSP for the Sizewell C project are being discussed with the UK Government.

Financing of the project

The financing terms of the project are not defined at this stage.

Consents, permits and licensing

In July 2022, the UK Government approved Development Consent Order (DCO), giving its go ahead to start building the power station. A request for judicial review has been launched and a hearing is scheduled to take place in March 2023.

In July 2022, the Office for Nuclear Regulation (ONR) concluded that the Sizewell C application to be granted a Nuclear Site Licence has met almost all the regulatory requirements set out in regulatory guidance, with a limited number of forward actions to be closed out. The Nuclear Site License is expected to be formally granted at Final Investment Decision date.

The Principal Environmental Permits to operate the future power station have reached a "Minded to Grant" position from the Environment Agency.

EDF's involvement after Final Investment Decision

At the date of Final Investment Decision, EDF plans to reduce its shareholding in the project to no more than 19.99%, and to deconsolidate the project from the Group's financial statements (including in the calculation of the economic indebtedness by the rating agencies).

Subject to Final Investment Decision, EDF will supply the UK EPR design, some key nuclear equipment through Framatome, the steam turbines (in the context of GE Steam Power's buyout by EDF), the fuel assemblies at minimum for the first fuel cycles as well as associated services to the Sizewell C project.

Final investment decision

The power plant's construction remains subject to the Final Investment Decision. EDF and the UK Government are working together to finalise the remaining steps and prepare the project for further investment.

EDF's ability to make the Final Investment Decision and contribute to the funding of the construction phase depends on the fulfilment of some conditions including:

- securing project financing which relies, among others, on the terms of the regulation framework and the level of residual risk post GSP, depending also on the changes in the macroeconomic environment;
- the ability of EDF to deconsolidate the project in the Group's financial statements from Final Investment Decision date (including in the calculation of the economic indebtedness by the rating agencies);
- a return on capital expected by EDF as an investor of up to 19.99% in line with its investment policy;
- the granting of the remaining required consents, in particular subsidy control clearance;
- the finalisation of the GSP;
- an agreement with the UK government on the base case estimate of costs at completion and schedule;
- the finalisation of the key EDF contracts to be signed at Final Investment Decision date.

EDF's financial commitment to fund the Sizewell project until Final Investment Decision date is subject to an equity cap, without any obligation to fund the project beyond the funding cap. Failure to meet these conditions would result in the Group not making a Final Investment Decision. In particular, an investment decision taken while EDF's ability to deconsolidate the project is not assured would strongly penalize the Group (see section 2.2.4 "Risks related to operational performance", risk factor 4A – "Management of large and complex industrial projects (including EPR project)").

Should EDF decide not to take a Final Investment Decision, the UK Government would have a right to exercise an option over the land or over EDF's shares in Sizewell C.

Bradwell B

EDF and CGN signed agreements alongside the HPC and Sizewell C contracts on 29 September 2016 in order to:

- obtain the design certification in the UK of the Chinese HPR1000 reactor developed by CGN (UK Hualong Pressurised Water Reactor – UK HPR1000). This process is supervised by a joint venture ("General Nuclear Systems Limited" or GNSL) currently owned at 66.5% by CGN and 33.5% by EDF;
- develop a nuclear power plant at Bradwell-on-Sea in Essex, England, using the UK HPR1000 technology. This process is led by a joint venture ("Bradwell Power Holding Company Limited" or BRB) currently owned at 66.5% by CGN and 33.5% by EDF.

The Generic Design Assessment (GDA) process for the UK HPR1000 reactor technology was successfully completed in February 2022 with the issuance of a Design Acceptance Confirmation (DAC) by the ONR and of a Statement of Design Acceptability (SoDA) by the Environment Agency.

The project has not seen any particular development since the GDA.

The project to build a nuclear power plant based on the UK HPR1000 technology reactor is unlikely to be implemented, mainly related to a lack of political support and local stakeholder support (see section 2.2.4 – risk 4A).

EDF's financial commitment to fund GNSL and Bradwell is subject to a cap, without any obligation to fund the project beyond the funding cap.

1.4.5.1.3 Brexit

The UK left the European Union (EU) on 31 January 2020, entering into a Transition Period that ended on 31 December 2020.

The EU-UK Trade and Cooperation Agreement (TCA), agreed on 24 December 2020, sets the basis for the EU-UK relationship from 1 January 2021. EDF Energy had identified the business risks arising from the UK's exit from the EU and was well prepared, enabling the business to manage most of the adverse impacts.

A civil nuclear agreement, the EU-UK Nuclear Cooperation Agreement (NCA), is similar to other NCAs that the EU has signed with third countries. It will operate for an initial period of 30 years, providing a commitment to cooperation on civil nuclear, including safeguards, safety and security. It also provides a framework for trade in nuclear materials and technology, facilitates research and development, and enables exchange of information.

EDF Energy continues to work closely with the UK Government and trade associations to monitor and adapt to the evolving EU-UK trade relationship.

1.4.5.2 Italy

1.4.5.2.1 EDF group market and footprint in Italy

Italy is one of the EDF group's four key markets in Europe alongside France, the United Kingdom and Belgium. The Group is mainly present in Italy through its 97.172% shareholding in Edison ⁽¹⁾, which is a major player in the Italian electricity, gas and energy and environmental services markets and a well-known Italian brand.

1.4.5.2.2 Edison's strategy

Like the majority of European energy systems, the Italian market is currently facing a certain number of challenges due, in particular, to the energy transition and the choice of a long-term energy mix. Thanks to its positioning and integrated presence in the gas and electric power value chain, Edison is well placed to seize opportunities created by changes in this market. At the same time, it aims to achieve efficiency and profitability, in line with Italian and international energy policies.

Throughout 2022, Edison continued to pursue its transformation strategy. In particular, it confirmed its position as a responsible actor in the context of the energy transition. This has resulted in particular in the streamlining and increase in renewable generation, the construction of two latest generation gas-fired power plants with low CO₂ emissions, the development of energy services, increasing its portfolio of end customers and the development of "green" gas. In keeping with this approach, Edison is implementing its decarbonisation action plan, in line with the Italian PNIEC ⁽²⁾, the European Green Deal and the United Nations Sustainable Development Goals (SDGs).

Therefore, Edison has adopted a sustainability policy based on the SDGs to work for the preservation of the environment and the improvement of the quality of life.

For example, due to the low rainfall in 2022, Edison took several actions to help protect the regions where it operates and the needs of local communities, such as increasing water discharges downstream of the Valtellina dams in Lombardy. Despite the difficulties facing the hydroelectric sector because power generation was 35.3% lower relative to historical averages, Edison chose to temporarily adjust the electricity generation schedule, thereby confirming its commitment as a responsible operator.

Similarly, in a context of high price volatility and uncertainty about the security of gas supplies, Edison was able to maximise the flexibility of its gas import portfolio for the benefit of its customers and the Italian market in general. The company also contributes to achieving security of supply with Edison Stoccaggio, which by October 2022 had already reached 100% of its storage capacity.

Going forward, the main avenues of development are as follows:

- **Renewable energy and flexibility:** Edison aims to increase its renewable energy generation by promoting specific capital investments in hydro power, wind power and solar power projects to optimise its electricity generation portfolio in Italy and to reduce its carbon emissions to reach 5GW capacity by 2030. Simultaneously, Edison aims to develop tools for managing flexibility such as additional storage and pumped storage hydropower capacity for intermittent unscheduled renewable energies.
- **Customers and services:** Edison's goal is to strengthen its position on the Italian market by increasing its portfolio of customers and proposing an innovative offering, through the development of energy services designed for end customers, and for residential consumers and industrial, services, and public administration customers in particular. Edison aims to increase its market share by helping customers and territories increase their competitiveness, efficiency, environmental sustainability and individual well-being. Edison promotes sustainable mobility, both with electric mobility solutions and by encouraging the development of facilities for the sale of LNG for heavy-duty land and sea transport.
- **Gas/green gas:** Edison is participating in the development of two high-efficiency CCGT power plants, which are expected to be commissioned in 2023. The aim is to compensate for the intermittency of non-programmable renewable sources and reduce emissions. Edison also intends to play a key role in the development of green gases (hydrogen and biomethane). Moreover, Edison's role is crucial in ensuring security of supply for Italy, through a diversified gas portfolio that is not dependent on Russian gas and through its gas storage facilities.

Edison is also the EDF group's gas platform. Since 2017 the company has had a service agreement with EDF enabling it to provide integrated management of all assets and develop EDF's upstream gas business (in particular the supply of gas and LNG, contract management, medium to long-term optimisation, transport, and storage). The Group also benefits from EDF Trading, responsible for the promotion of existing assets, as well as from short-term operations on wholesale markets on the continent and in the United Kingdom.

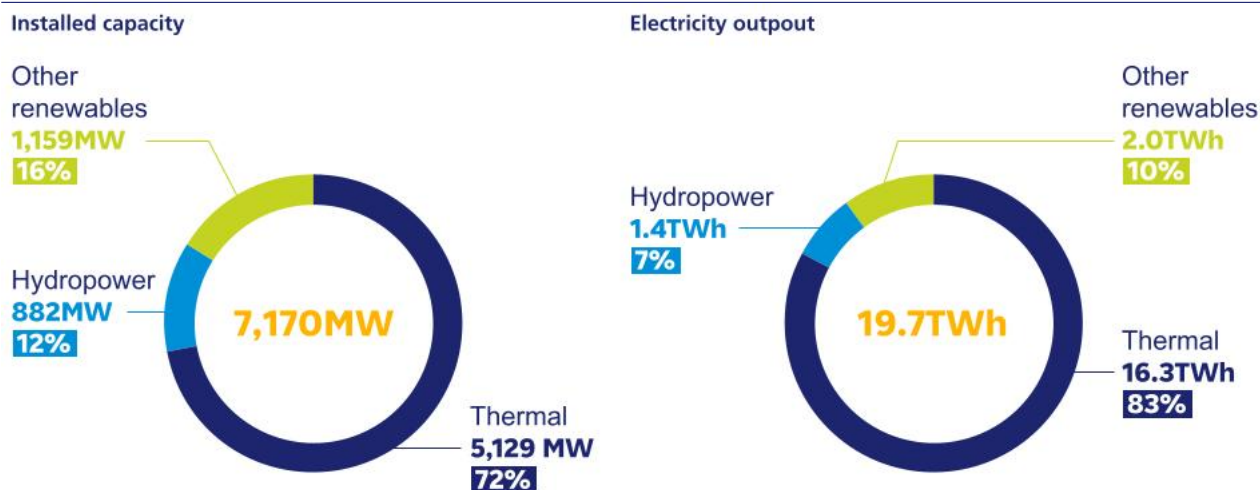
In February 2022, Moody's reviewed its outlook for Edison to "Baa3 with negative outlook", following the downgrade of EDF by one notch to "Baa1 with negative outlook". In December 2022, S&P confirmed its "BBB with stable outlook" rating and removed the negative outlook following similar action on EDF's rating. Standard & Poor's and Moody's both noted Edison's strong underlying operating performance, its solid credit metrics, its improved business risk profile and the progresses made in Edison's strategic repositioning.

(1) Equity stake; 99.473% share of voting rights.

(2) Piano Nazionale Integrato per l'Energia e il Clima.

1.4.5.2.3 Edison's business

Installed capacity and output of Edison in Italy ⁽¹⁾ - 2022



(1) Consolidated data. Customer energy efficiency services included.

NB: the values take into account roundings.

1.4.5.2.3.1 Electricity generation

Power generation in 2022

In Italy, as of 31 December 2022, Edison's installed power generation capacity totalled 7.2GW, with net electricity output of 19.7TWh in 2022, an increase of 12.7% compared to 2021 (including EESM ⁽¹⁾).

Based on power generation data for 2021 ⁽²⁾, Edison is the fourth-largest producer at the national level. In 2022, its net power output in Italy accounted for around 7.2% of net Italian electricity generation.

The increase in Edison's power generation in 2022 was mainly due to the increase in thermal generation (15.7TWh, excluding EESM, i.e. +28.9% compared to 2021). This increase offset low hydroelectric production. In 2022, Edison's hydro power output totalled 1.4TWh. The decrease of 46.1% relative to 2021 was mainly due to the sharply lower rainfall. Wind power and other renewable energy production amounted to 1.9TWh in 2022 (down 2.3% on 2021). This decrease was partially offset by changes in scope due to the acquisitions of Vibinum Srl and Aerochetto Srl in the third quarter of 2021, and of Winbis Srl and Cerbis Srl in July 2022, as well as the commissioning of the Mazara 2 plant in August 2022.

The generation fleet

Edison's generation fleet (excluding EESM) is currently made up of 107 hydropower plants, 14 thermal power plants (CCG), 53 wind farms and 56 photovoltaic plants. Combined-Cycle Gas Turbines account for 82% of electricity generation (excluding EESM), while hydropower accounts for 8% and combined wind and other renewable energies 10%.

In order to guarantee the flexibility and security of the national electricity system, Edison continued the construction of the Marghera Levante (780MW) and Presenzano (760MW) CCGT plants, launched in 2019 and 2020 respectively. These two installations are highly flexible and efficient (with energy efficiency of 63%), have a low environmental impact (with CO₂ emissions 40% lower than the national average and 70% fewer NOx emissions). Commissioning is expected in 2023. The two power plants will benefit from the fixed contribution of €75,000/MW for 15 years linked to the capacity market, with a positive impact on the volatility of Edison's margins, provided the commissioning deadlines and specific availability criteria are met.

In July 2022, Edison acquired a 66MW wind farm in Campania. Edison already has another 70MW wind farm in the region. Following this acquisition, it will operate one of the largest onshore wind farms in Italy with a total capacity of 136MW. Edison also inaugurated a wind farm in Mazara del Vallo (Sicily) in June 2022. It

thus confirms its commitment to the development of renewable production. With this new 45MW facility, Edison's installed wind power capacity exceeds 1GW, thus reaffirming its position as the Italian leader in this strategic sector.

In addition to wind power, the company has also confirmed its intention to pursue growth in other renewable technologies. At this time, the company has seven new solar power plants under construction, two in Sicily and five in northern Italy. In January 2022, it also finalised the acquisition of Energia Italia's mini-hydro plants and commissioned the new Saint Barth mini-hydro plant. Lastly, construction is underway on a new 2.7MW mini-hydro plant in Piedmont.

In the future, it will continue its expansion in renewables through both organic growth and partnerships with third-party developers, including options to acquire projects for new facilities.

Internationally, Edison is well-established in Greece, where it owns a 50% stake in ElpEdison SA, one of the country's main electricity operators. ElpEdison owns two CCGT plants: one in Thessaloniki (426MW) and the other in Thisvi (410MW), which was built by Edison and is gradually expanding its marketing activity, in particular in the residential market.

Lastly, Edison holds a 20% stake in Kraftwerke Hinterrhein AG, which operates 626MW of hydropower in Switzerland.

During the year, Edison sold a 50% stake in its subsidiary Ibiritermo in Brazil, which operates a 226MW CCGT plant.

1.4.5.2.3.2 Gas business

For the implementation of its gas strategy, the EDF group, through Edison, benefits from experience along the entire value chain of natural gas. Edison's Italian gas supply portfolio is based mainly on a series of long-term agreements. As of the end of 2022, these covered:

- approximately 14.5 billion cubic metres almost entirely *via* gas pipelines imports and LNG from Libya, Qatar, Azerbaijan and Algeria;
- 6.6 billion cubic metres bought on the market, through short-term contracts, or produced in Algeria.

In 2022, total sales of gas amounted to 21.1 billion cubic metres (compared with 18.9 billion cubic metres in 2021). Edison delivered 5.0 billion cubic metres of gas to the industrial sector, 1.6 billion cubic metres to the residential sector, 5.4 billion cubic metres to the thermoelectric sector (including Edison's own requirements), 9.0 billion cubic metres on the wholesale market, and 0.1 billion cubic metres of sales of production abroad.

(1) EESM: Energy & Environmental Services Market division.

(2) Data published by the ARERA (2022 ARERA report, vol. 1, p. 99, fig. 2.1); 2022 data will be released in mid-2023.

Due to the geopolitical context, the sole Russian gas supply contract for 1bcm has not been renewed for 2023.

However, starting in 2023, Edison will import LNG from the United States under a contract with Venture Global, which is expected to begin in the second half of the year.

Gas infrastructures

Edison contributes to the development of gas import infrastructure projects through IGI Poseidon in which Edison owns a 50% stake ⁽¹⁾. IGI Poseidon is promoting the following three projects:

- Eastmed, an interconnection between Greece and the eastern Mediterranean which will provide direct access to gas resources in the eastern Mediterranean (Israel, Cyprus), connecting them to the Greek, Italian and other European markets. The project is based on a 10bcm/year offshore/onshore line, expandable up to 20bcm/year, whose viability and sustainability have been demonstrated from a technological and economic point of view by engineering surveys carried out since 2014. The strategic relevance of the project has been confirmed by the 2020 intergovernmental agreement and by the Greek government granting the project the status of national importance and public utility. The project is in the final stage of development, so it may be ready for an investment appraisal in the coming years;
- Poseidon, an interconnection between Greece and Italy, which will allow available gas resources to be transferred from Greece to Italy by connecting to Eastmed. The project is a mature asset with finalised engineering activities and has obtained the required permits in Greece and Italy. In May 2020, it was declared a project of national importance for Greece;
- IGB, a 182km gas pipeline linking Greece and Bulgaria, which is operated by IGB and is jointly owned by BEH ⁽²⁾ and IGI-Poseidon. This infrastructure has a capacity of 3 billion cubic metres of gas and was commercially launched in October 2022. Its commissioning opens up a new strategic supply route for the countries of Southeast Europe in terms of security and provides a diversification alternative to Russian gas. The gas pipeline received funding of €110 million from the European Investment Bank (EIB).

These projects are among the European Commission's Projects of ordinary interest, and benefit from EU aid: Eastmed will receive a matching contribution from the European Commission covering 50% of its development costs (i.e. about €37 millions).

Edison also has the right of use of 80% of the Rovigo long-term offshore regasification terminal's capacity (6.4 billion cubic metres per year) where LNG imported from Qatar with Ras Laffan Liquefied Natural Gas Company Limited II (RasGas II) is regasified.

Concerning LNG, since 2018 Edison has been engaged in the "small-scale LNG transportation" project for the development of an LNG marketing supply chain, with the aim of helping to reduce emissions by maritime and road transport. The project led by Depositi Italiani GNL (owned 30% by Edison ⁽³⁾) comprises the construction by Depositi Italiani GNL (in which Edison owns a 30% stake) of an onshore depot at the port of Ravenna where the LNG will be stored at a small, dedicated LNG terminal. The facility, which is now complete, has a capacity of over 1 million cubic metres of LNG per year (Edison will have right of use to 85% of its capacity). It will be able to supply LNG to 12,000 trucks and up to 48 ferries.

Furthermore, Edison plans to build additional facilities in southern Italy, including a facility in Brindisi, which has already received a building permit. They will be key components in the development of a logistics chain for sustainable mobility in the southern Italian Mezzogiorno region. For this purpose, from the funds available under the PNRR (*Piano Nazionale di Ripresa e Resilienza*), Edison recently obtained the possibility of receiving a grant of between €45 and 65 million for the construction of the Brindisi warehouse.

In order to develop small-scale LNG in Italy, Edison signed an agreement with Snam in 2022, which provides for the possibility of jointly developing and investing in certain projects. This initiative will build on the development of the Italian LNG sector to encourage the gradual replacement of diesel and support the use of liquid biomethane (bioLNG). The goal is to promote the decarbonisation of land, sea and rail transport, as well as industrial and civil off-grid uses.

1.4.5.2.3.3 Sales and marketing

In 2022, Edison sold 37TWh of electricity in Italy (compared with 34.8TWh⁽⁴⁾ in 2021, i.e. down 6.2%), of which 19TWh were generated ⁽⁵⁾ and 18TWh were purchased on the markets. The 0.7TWh correspond to the energy and environmental services. Sales to end customers totalled 14.2TWh, up 6.6% compared to 2021 due to increased consumption by business customers and growth in the residential segment.

Gas sales increased to 21.1 billion cubic metres, particularly for thermoelectric uses (+6.9%) and on the wholesale market (+52.1%). Sales for industrial (-14.2%) and civil (-19.8%) purposes fell as a result of lower consumption due to price increases.

At the end of 2022, Edison was serving around 1.76 million customers in electricity and gas, in the business and residential segments (+10.6%).

The Group targets various market segments: residential, small businesses and large industrial customers. It offers electricity and gas supply solutions, as well as value-added services. Edison makes a concrete contribution to the energy transition through solutions that lower carbon footprints and environmental impacts, such as electric charging stations, solar panels, heat pumps and boilers.

To sell its electricity, gas and value-added service products to consumers and small businesses, Edison has adopted a multi-channel marketing approach that focuses on both physical and digital approaches. Firstly, Edison uses a network of technical partners and installers throughout the country, as well as its own shops and those of its partners. Secondly, Edison has increased the number of digital contact points (Private area and app) through which it can market its offers to individuals.

Given the significant price increases and price volatility experienced during the year, Edison stood by its retail customers who were faced with high bills. Edison informed its customers continuously and offered consumption monitoring services. Edison also offers its customers in difficulty a personalised payment schedule, particularly for households and small businesses, such as merchants and practitioners of liberal professions.

In May 2022, Edison acquired a majority stake in Gaxa, thereby entering the retail market in Sardinia ⁽⁶⁾. As a result of this acquisition it increased its customer base and became the island's leading operator in terms of gas sales. Its objective is to contribute to the development of the retail gas market in Sardinia in an environment where methanation is developing.

Edison has also proposed an ambitious energy communities development plan. These communities are associations of users who share the energy they produce from renewable sources to cover their own consumption. The goal is to set up 200 such communities in Italy by 2024. Edison, in partnership with Gabetti Lab, has begun work on developing two energy communities of co-owners, which are due to come on stream in early 2023. Several contracts for similar developments have also been signed. Edison pays the investment and maintenance costs, and the co-owners make their roof space available.

In addition, Edison is involved in the development of agricultural energy communities. Recently, Edison launched AgreGreen di Fondi, in collaboration with Cesab ⁽⁷⁾. The aim is to transform a local agricultural area into a laboratory for the energy transition, to be replicated on a national scale.

(1) Also see in section 1.4.6.2.2.2 "Infrastructures".

(2) Bulgarian Energy Holding.

(3) A 19% stake is held by Scale Gas Solutions (a company controlled by Enagas), and a further 51% stake by Petrolifera Italiana Rumena.

(4) 2022 and 2021 data including optimization volumes.

(5) Production data calculated in line with consolidation criteria

(6) See Edison's press release of 1 April 2022 "Edison signs an agreement with Italgas and Marguerite to acquire the majority of Gaxa and contribute to the development of retail market in Sardinia".

(7) Inter-University Environmental Sciences Research Centre.

1.4.5.2.3.4 Energy services

Edison develops sells and manages energy and environmental services.

In May 2022 ⁽¹⁾, Edison launched Edison Next. Already active in Italy, Spain and Poland, Edison Next is Edison's development platform for energy efficiency services, technologies and expertise. In 2022, the company provided services to over 65 industrial sites, over 2,100 public and private establishments and over 280 cities. Its strategic plan for 2030 forecasts investments of up to €2.5 billion in Italy and Spain and an EBITDA of €300 million.

The platform also offers public authorities energy services for buildings and urban regeneration solutions. Edison Next also assists communities, local areas and public authorities in their decarbonisation process and with public lighting.

In May 2022, Edison Next completed the acquisition of Citelum Italia, which does business in Italy and Spain and is the second largest public lighting operator in Italy. This acquisition has brought new expertise in the field of public lighting, intelligent signals and smart cities. In Spain, Edison Next also acquired control of Sistol, a company that develops energy consumption management and efficiency technologies. In Spain, Edison Next managed over 100 buildings in the tertiary sector in 2022 and provided its services to over 40 cities.

The business models are adjusted to customer requirements: Edison designs, builds, and manages assets for its customers, including cogeneration/tri plants, solar power installations, substations, thermal power plants for industrial use, cold production plants, compressed air plants, fluid distribution systems (electricity, gas, hot and refrigerated air, compressed air, industrial gas, water) and industrial water treatment plants. The range of services is completed by a consulting activity in terms of energy, management of environmental securities and internal and external training for customers and partners.

Edison's customers are in the industrial and business sectors. Contracts with the Stellantis group still form a large part of the business with major-account customers.

Projects are developed with customers in the form of industrial partnerships or performance agreements. The business model is flexible, and may range from customer assistance to third-party financing or direct investment by Edison in the projects (the Esco model).

In the public authorities market, Edison Next, through its services platform, technologies and expertise, offers a complete range of solutions designed to improve energy efficiency, reduce environmental impacts and create value for local areas.

Edison is also developing a biomethane production chain and aims to have 10 biogas plants in operation by 2030. In 2022, Edison Next Environment became the majority shareholder of Biotech Srl, which is planning to build a bioLNG plant in Campania. Work on the conversion of two plants that currently produce biogas from the treatment of the organic fraction of municipal solid waste (OFMSW) for the production of bioLNG is at an advanced stage. Recently the authorisation decree for the OFMSW biomethane plant in the Lazio region was also granted.

In September 2022, Edison and Saipem joined forces to carry out the "Puglia Green Hydrogen Valley" project in Apulia ⁽²⁾. They acquired 50% and 10%, respectively, of Alboran Hydrogen Brindisi Srl. This is an important step in the realisation of this project, one of the first initiatives for the large-scale production and transport of green hydrogen in Italy. The project includes the construction of three green hydrogen production plants (Brindisi, Taranto and Cerignola) with a total electrolysis capacity of 220MW, which will be powered by around 400MW of solar energy.

1.4.5.2.3.5 Regulated activities - Gas storage

Edison owns 100% of Edison Stoccaggio, a company that focuses on regulated gas storage activities and that has three storage sites (depleted gas fields): Cellino (since 1984), Collalto (since 1994) and San Potito & Cotignola (since 2013). The volume being worked upon on all of the sites is 1billion cubic metres.

1.4.5.3 Other international

1.4.5.3.1 Northern Europe

Belgium

The Benelux region features important interfaces with the Franco-German electricity marketplace and Great Britain. Moreover, projects for new links with Germany are being examined. Benelux constitutes an important node in the European gas market because of its numerous import and transit infrastructures, such as the Zeebrugge hub and the Dunkirk LNG terminal nearby.

The EDF group is present in Belgium through EDF Belgium and Luminus.

EDF Belgium

As part of a long-term nuclear energy cooperation agreement with Electrabel, EDF holds 50% in undivided co-ownership of the Tihange 1 nuclear power plant, through its wholly-owned Belgian subsidiary, EDF Belgium. The capacity attributed to EDF represents 481MW (or 2% of Belgian generation capacity). Tihange 1 output, which is attributed to EDF Belgium is sold to EDF (via a long-term contract renewed at the end of 2015 for 10 additional years) which, in turn, resells the electricity to Luminus at a market price. Tihange 1 is scheduled to continue to operate until 2025.

The extension of the lifespan of Tihange 1 requires significant investment, with EDF's share amounting to around €397 million, spread over the period from 2011 to 2022. This amount includes the impact of the 2022 triennial review estimated at €73 million.

Luminus

At the end of 2022, the EDF group held 68.63% of the Luminus company through its subsidiary EDF Belgium. Luminus is the second largest player in the Belgian energy market and holds a balanced upstream/downstream portfolio. The company, whose market share is close to 25%, possesses almost 10% of total Belgian generation capacity with 2,289MW installed at the end of 2022. The electricity generation of Luminus reached 6.9TWh in 2022. The company employs around 2,500 people.

As part of the Group's CAP 2030 strategic plan, Luminus has the ambition of developing its wind farm fleet and accelerating the deployment of its energy services in order to provide its customers with innovative and sustainable solutions, whilst pursuing its objective of reducing costs and rationalising its thermo-electrical generation fleet.

Luminus owns 10.2% (419MW) of Belgium's Tihange 2 and 3 nuclear power plants (commissioned in 1983 and 1985 respectively) and the Doel 3 and 4 plants (commissioned in 1982 and 1985 respectively), which have a lifespan of 40 years. The Doel 3 nuclear power plant was shut down permanently on 23 September 2022. In June 2022, Engie and the Belgian government signed a letter of intent setting out the terms governing a 10-year extension of the operation of the Doel 4 and Tihange 3 reactors.

In addition, Luminus has a generation allocation contract for 100MW relating to the two units of the Chooz B power plant.

Luminus also possesses a thermal fleet comprising several power plants (combined cycles and open cycles) for an installed capacity of 1,208MW. In April 2022, the Belgian federal government selected the project for a new CCGT plant in Seraing under the Capacity Remuneration Mechanism (CRM). This project involves the construction of a gas-steam turbine (GST) power plant with total capacity of approximately 870MW. This new generation unit will be located next to the existing plant in the Val business park in Seraing. The project also includes the conversion of the existing power plant to operate alongside the new unit. Work started in autumn 2022 and the new unit is scheduled to be commissioned in the second half of 2025.

(1) See Edison's press release of 11 May 2022, "Edison launches "Edison Next" for the decarbonisation of businesses and territories in Italy and Spain".

(2) See Edison's press release of 8 September 2022, "Edison and Saipem join together in a special purpose vehicle to implement the Puglia Green Hydrogen Valley project".

Luminus also operates in renewable energy. The company operates seven hydropower plants. At year-end 2022, Luminus owned 92 onshore wind farms with a total of 270 turbines across Wallonia and Flanders. Since the end of 2015, the company has been the leader in onshore wind farms in Belgium and had an installed capacity of 705MW at the end of 2022. In 2022, Luminus erected 15 wind turbines for a total capacity of 47MW.

Under its "Luminus" brand, EDF supplies electricity and gas to around 2.2 million residential and business customers ⁽¹⁾ in Belgium. In May 2021, Essent Belgium was acquired by Luminus to increase the size of the portfolio, a key investment that enables Luminus to strengthen its number two position in the electricity and gas supply business.

The company is involved in the energy services segment for residential customers through its subsidiaries Rami Services, Dauvister, and Insaver, mainly by providing boiler installation and maintenance, installing solar panels, and providing "Home Assistance" services in the event of unexpected damage at home. At the end of 2022, the B2C portfolio for these last three services exceeded 170,000 contracts thanks to bundle sales ⁽²⁾ through the Luminus website.

Luminus, together with its partners ⁽³⁾, offers comprehensive integrated electricity and heating solutions to its industrial customers. Its subsidiary Luminus Solutions (in which Luminus and Dalkia own a 51% and 49% stake respectively) provides energy efficiency services for administrative buildings, hospitals, schools, sports facilities, swimming pools and apartment complexes on the basis of an energy performance contract.

In 2022, Luminus maintained its expansion strategy around two axes:

- on the one hand, electric mobility, through the acquisition in 2021 of a stake in Powerdale;
- the strengthening of regional units centred on its subsidiaries ATS (for the north of the country) and Luminus Services (for the south of the country).

In addition, following the restructuring of the Citelum Group, Luminus took over the activities of Citelum Belgium under the name Luminus Cities. The company continued the renovation work on the LED lights on Wallonia's motorway network, which began in 2020. Luminus also reorganised its subsidiaries, transferring the management of Aralt (acquired at the same time as Essent) to Insaver (the photovoltaic subsidiary of ATS).

The 20-year PPP agreement for the design, modernisation, funding, management, and maintenance of 100,000 lights was awarded to the LuWa consortium (comprising Citelum (lead contractor), Luminus, CFE, and DIF) in 2019. It is expected to achieve energy savings of 76% by the end of the construction period (September 2023). In total, the operation will avoid the equivalent of 166,000 tonnes of CO₂ emissions between 2020 and 2040.

The Netherlands

Thanks to its strong technical performance and first in Europe to receive the "big five" certifications, the 870MW Sloe CCGT plant in the southwest of the Netherlands was included in the Group's asset disposal programme. On 25 January 2023, EDF announced the sale of its stake ⁽⁴⁾ in the plant to EPH, the Czech power producer and electric grid operator.

Germany

EDF has had operations in Germany for over 25 years. With around 3,800 employees and over 100 researchers, the EDF group engages in a large number of activities in Germany. It is active, in particular, in the fields of renewable energy, low-carbon hydrogen, batteries and energy services. EDF offers sustainable business models and innovative energy solutions, calling on the expertise and knowhow of its subsidiaries. EDF supports and contributes to the energy transition in Germany, which draws extensively on decarbonisation solutions, sector coupling, flexibility and energy efficiency.

EDF group entities operating in Germany

- EDF Deutschland GmbH, a wholly-owned subsidiary of EDF International SAS based in Berlin, is in charge of the Group's activities in Germany. It focuses on

the promotion and development of the Group's business, in particular new business models for energy and innovative solutions to support energy transition in Germany (Energiewende). EDF Deutschland also represents the Group in leading German political and economic circles.

- In 2020 Hynatics, a subsidiary in the Group in charge of putting forward an effective low-carbon hydrogen offering for industry and mobility, set up its German subsidiary, Hynatics Deutschland GmbH. It is involved, in particular, in the Westküste100 project. This consists in hydrogen production from renewable energy using the installation of a 30MW electrolyser for the Heide refinery. A proposal for a 500MW extension to decarbonise several industries in the region has been selected for funding by the German government, subject to approval by the European Commission. In addition, Hynatics Deutschland is developing a number of industrial hydrogen use projects, with a total of over 1GW of electrolysis capacity in the future.
- EDF Renewables had 176MW of gross installed onshore wind power capacity as of 31 December 2022, and operated 329MW of onshore wind power capacity. EDF Renewables offers battery storage and solar electricity sales (onsite PPAs) for industrial and commercial sites in Germany only. This subsidiary owns and operates 2,000kW of electricity storage systems, divided between three industrial sites. It has five new sites under construction with a total capacity of 5,100kW.
- The EDF group owns 100% of the share capital of the German company Energy2market (e2m), specialising in the aggregation of renewable production and local flexibility (see section 1.4.6.1.4 "Other service activities of the EDF group").
- EDF Energiewende & Neue Ressourcen GmbH is a wholly owned subsidiary of the EDF group with headquarters in Berlin and operations throughout Germany. Its business model is the supply, maintenance and supervision of energy management and optimisation products and services for commercial and industrial companies, public services and renewable energy development companies.
- Based in Erlangen (Bavaria), Framatome GmbH has 3,000 employees, making the subsidiary Framatome's second largest engineering concern. Its main business is maintaining, prolonging and upgrading nuclear plants all over the world (especially Instrumentation & Control systems). It is also involved in the building of EPRs in France, Finland, China and the United Kingdom. Framatome is active in electricity and hydrogen storage in Germany. Framatome's other German subsidiary, Advanced Nuclear Fuels GmbH (ANF), makes fuel assemblies for PWRs (pressurised water reactors) and BWRs (boiling water reactors) in Germany and Western Europe and has 440 employees in Lingen (head office) and Karstein.
- Metroscope, a subsidiary of EDF Pulse Holding develops AI for industrial asset MOC. Based in Berlin, the company seeks to improve the performance of German electricity generation plants. It has equipped 67 nuclear and gas power plants in five countries.
- EDF Trading is the wholesale trading branch for the entire EDF group. It operates in Germany in the electricity, gas, CO₂ and green certificate markets. It is also active in the green energy markets for short-, medium- and long-term products and PPAs.
- EIFER (*Europäisches Institut für Energieforschung* EDF-KIT EWIV), a Franco-German energy research institute, was founded by EDF and KIT in 2002. It aims to strengthen collaboration through joint projects focusing on industrial issues. EIFER offers innovative low-carbon energy solutions to support the sustainable development of cities, local communities and industries. EIFER, a research centre which reports to EDF's R&D Department, is based in Karlsruhe and has more than 100 employees.

Main interests

- EDF Deutschland holds a 25% stake in Hypion GmbH, a company that originates and develops hydrogen-related projects in the north of Germany.
- EDF Pulse Holding has a minority stake in McPhy, manufacturer and integrator of hydrogen-based energy storage equipment.
- The Group owns 50% of a run-of-river hydropower plant located in Iffezheim on the Rhine River (148MW, 5 turbines).

(1) In delivery points.

(2) Bundled offers.

(3) With ATS, Vanparijs, Dauvister and Newelec.

(4) See the EDF press release of 27 January 2023 "EDF announces the completion of the sale of its interest in the 870MW Sloe CCGT in the Netherlands"

- The EDF group also has storage for natural gas in salt cavities located in Etzel in Lower Saxony. The aboveground facilities are operated through a 50/50 joint venture with EnBW (see section 1.4.6.2.2 "Gas assets and projects"). Through its subsidiary EDF Gas Deutschland, EDF also holds a 16% stake in BEP gas pipeline (Bunde-Etzel-Pipelinegesellschaft).

Denmark

In May 2022, EDF International acquired Citelum Denmark, a wholly-owned subsidiary of Citelum SA. It is in the business of operating and maintaining the street lighting networks of Danish municipalities and, to a lesser extent, road signs. Following this acquisition, Citelum Denmark became EDF Denmark. Its main business activity remains centred on services in the field of public lighting and technical infrastructure. In addition, it has expanded its offer with a focus on the decarbonisation and digitalisation of urban infrastructures, drawing on the expertise and solutions developed within the EDF group. In particular, EDF Denmark has positioned itself in electric mobility to install and operate charging stations.

1.4.5.3.2 Central and Eastern Europe

Russia

The EDF group suspended all its development activities in the Russian Federation from 24 February 2022, the date of the start of the conflict between Russia and Ukraine. Dalkia sold its energy services subsidiary Dalkia Rus. On 8 July 2022, the EDF group adopted the decision to close its representative office in Moscow.

Central Asia

The Group's engineering Divisions (thermal, hydraulic, networks and systems) are active in this region to provide services.

In Uzbekistan, at the end of 2021, a consortium formed by EDF, Nebras (Qatar) and Sojitz (Japan) was selected by the Uzbek authorities to finance, build and operate for 25 years a 1,600MW combined-cycle gas turbine power plant at the Syrdarya site. Kyuden (Japan) also joined the consortium in late 2021. The project benefits from a shaping contract with the state-owned NEGU (National Electric Grid of Uzbekistan), which supplies the gas and receives the electricity in return. This contract is guaranteed by the Uzbek government. Commissioning is estimated to take place during 2026.

In late 2022, EDF created its subsidiary EDF – ICA (EDF In Central Asia) in Uzbekistan and is also developing other projects to support the country's energy transition, particularly in the field of hydropower and decentralised solar production.

1.4.5.3.3 Southern Europe

Spain

EDF International SAS held 31.48% of the share capital of Elcogas company owing a 320MW ICCG (Integrated Combined-Cycle Gasification) power plant. Elcogas is currently in the process of being wound up. Due to a regulatory change affecting the profitability of the plant, it has been shut down and subsequently dismantled. Therefore, the Shareholders' Meeting on May 2019 resolved to dissolve the company and place it in liquidation.

The Group is also present through Fenice's local subsidiary, EDF Fenice Ibérica, and Citelum, which, since May 2022, have done business under the Edison Next Spain brand.

EDF Trading operates in this market from its trading platform in London.

Framatome Spain is active in Spain through various engineering and maintenance contracts with firms that own nuclear reactors.

EDF also operates through its Madrid-based representation office EDF Peninsula Iberica, and is in charge of the promotion and development of the Group's business and new activities in energy transition in Spain and Portugal.

1.4.5.3.4 North America

The EDF group operates throughout the North American continent, with a strong presence in the United States.

It has more than 10.1GW of gross installed capacity in North America. It also manages, on behalf of third parties, around 61GW of installed capacity under operation and maintenance or optimisation services contracts.

EDF's activities in North America mainly include:

- Renewable energies, with a gross installed capacity of 5.2GW, mainly located in the United States through EDF Renewables North America, a wholly-owned American subsidiary of EDF Renewables. Equally, EDF Renewables Services (a wholly-owned subsidiary of EDF Renewables North America) manages close to 8GW in North America through operation and maintenance contracts on its own account or on behalf of third parties.
- Trading throughout the entire value chain in North American gas and electricity markets through EDF Trading North America. Also see section 1.4.6.4 "Optimization and trading: EDF Trading".
- Energy services, local management of energy and energy efficiency, and public lighting under the management of Dalkia and its subsidiaries Dalkia Energy Solutions and Aegis Energy Services. Also see section 1.4.6.1.1 "Dalkia".
- R&D and Innovation, as part of EDF Innovation Lab. Also see section 1.5.1.5 "EDF's R&D scientific partnerships internationally".
- Operating in nuclear energy in the United States since the 1950s, Framatome holds a large share of the market, involved in providing power to some 36 million American households. Its mission consists in ensuring the maintenance and modernisation of the American nuclear plants in operation and providing it with the fuel required and supporting the potential construction of new plants. Also see section 1.4.1.1.4 "Activities related to nuclear generation: Framatome".

1.4.5.3.5 South America

In South America, the EDF group is present in the Brazilian and Chilean markets, and is extending its ambitions in certain countries in the region, in which it is prospecting for development opportunities.

Brazil

Since April 2014, the Group has held 100% of EDF Norte Fluminense SA (EDF NF). EDF NF built and has operated, since the end of 2004, the Combined-Cycle Gas plant of Norte Fluminense, with installed capacity of 827MW, located in the region of Macaé, State of Rio de Janeiro. A 20-year Power Purchase Agreement (PPA) for 725MW is in place with Light, the distribution company for the city of Rio de Janeiro. EDF NF supplies the equivalent of almost 25% of the electricity energy consumed in the Rio de Janeiro metropolitan area (2,5 million of clients).

In addition, on December 2014, through EDF Norte Fluminense, EDF acquired a 51% stake in Sinop Energia, responsible for building, maintaining and operating the Sinop hydropower plant. Located in Mato Grosso and 70km away from the city of Sinop, it has an extension of 342km², built on the Teles Pires River. The plant began operations in 2019 with an installed capacity of 401.9MW supplying the equivalent of 50% of the State of Mato Grosso (1.6 million clients). EDF NF has signed a contract for the operation and maintenance of the plant, which since October 2021 has been operated remotely by EDF NF teams located at CCG Norte Fluminense, 2500km away.

In 2021 EDF NF signed a contract for the construction assistance, operation, and maintenance of the Marlim Azul CCG plant for a 10-year term.

On 16 December 2022, EDF Norte Fluminense won the auction for its first project in the energy transmission segment, expanding its operations in the sector and reinforcing its contribution to the country's energy security. The project includes the construction of 1.6km of transmission lines and a 345/138 kV substation.

In the renewable energy field, the EDF Renewables subsidiary has a portfolio of:

- 400MWp of solar energy from Pirapora power plant (one of the largest solar power plant of South America located at Minas Gerais State);
- 708,5MW of wind energy in operation and 740,8MW under construction in the states of Paraíba and Bahia.

In June 2022, Edison sold 50% of its subsidiary Ibiritermo, referring to a 226MW CCGT in the state of Minas Gerais.

Chile

Via its subsidiary EDF Chile, created in 2014, the Group has a 50% shareholding of GM Holdings ⁽¹⁾. GM Holdings operates 3 thermal generation assets, totalling 750MW.

On the 30 September 2021, EDF and AME finalized the financing of the Chacao+ project, which includes the construction of Chile's largest solar plant with a capacity of 480MW (construction on going) and the conversion of one of the thermal generation assets (132MW) from diesel to gas (conversion on going).

Moreover, EDF has been prospecting for development opportunities and working on the predevelopment phase of energy storage assets, especially hydro pump storage and green hydrogen projects.

The EDF group is also present in Chile through EDF Renewables which has three projects in operation and several other under development:

- the Bolero solar plant (146MWp) in the Atacama Desert a joint project with Maruibení which started operation in March 2017;
- the Santiago Solar photovoltaic project (115MWp) which is jointly held with AME which started operation in January 2018;
- the Cabo Leones 1 wind farm, a joint project with Grupo Ibereólica Renovables which came online in June 2018 with a capacity of 115MWp, which was expanded up to 175MWp in 2022.

Peru

Since 2018, the Group is present in Peru via its subsidiary EDF Peru SAC which is prospecting for development opportunities and working on the development phase of power generation assets, especially from photovoltaic, hydraulic sources and gas.

A first realization took place in 2021 with the award of several PPAs to supply electricity based on hybrid solar-diesel plants to some off grid cities of Loreto Region in the Peruvian Amazon Area, those cities being currently supplied only by diesel generators, with a high cost of generation and a very high level of emissions.

The distribution company Electro Oriente organized various auctions to replace a large part of the diesel generation by renewable energy (solar and batteries). EDF Peru and its partner Novum Solar, which already had 2 hybrid small solar plants in operation before the auctions, won 8 auctions and set up a joint company (Amazonas Energía Solar) to co-develop, build and operate these 10 plants.

At the end of 2022, 3 plants (out of the 10) are already operating: Purus, Atalaya and San Lorenzo (all together, approx. 4MWp and 2MWh) and the 7 remaining projects are moving forward with a progressive set up planning speed out on 2023-2025. The whole investment (until 2034) should amount to 37MWh of solar panels and 61MWh of batteries.

EDF Peru SAC also signed in the end of 2022 the Shareholders Agreement with its local partner Pedro Gonzales to step-into Electro Araya, a SPV dedicated to develop a Greenfield – 135MW run of river hydro plant.

In addition, EDF RE won an auction to replace up to 200GWh/y of generation based on heavy fuels with renewable energy in the city of Iquitos (largest isolated city in the world) and will build and operate a hybrid plant of 130MWp and 160MWh storage whose commissioning is planned in 2026.

Colombia

Since 2020, the Group is present in Colombia via EDF Renewables Colombia SAS and EDF Colombia SAS which have prospecting for development opportunities and worked on the development stage of power generation assets, especially of unconventional renewable energy (solar and biomass), and of green hydrogen generation facilities.

In 2022, an agreement was signed between Colombia Reforestadora de la Costa SAS ("Refocosta"), a 100% subsidiary of Valorem SAS, and EDF Colombia SAS ("EDF") for the construction of a 25MW biomass plant held through their joint subsidiary Refoenergy Villanueva SAS ("Refoenergy"). The construction is expected to start in early 2023.

1.4.5.3.6 Asia-Pacific

The EDF group's activities in the Asia-Pacific region are focused on China and fast developing countries. The presence in the sectors of electricity generation, networks and services constitutes an industrial challenge for the Group. In nuclear power, in addition to the EPR project in Taishan, the Group is also pursuing new projects.

1.4.5.3.6.1 Activities in China

The EDF group has had operations in China for over 40 years, and is now one of the largest foreign investors in electricity generation and energy services. EDF operates around 3.4GW of net installed capacity ⁽²⁾, in particular via stakes in the Taishan EPR power plant, the Dongtai IV and V offshore wind farms, coal-fired thermal power plants and operation of heating and cooling networks.

53.1% of electricity from assets held by EDF in China was CO₂-free in 2022, higher than the Chinese national average (49.6%).

The EDF group has been developing partnerships with leading Chinese electric energy companies, which open up new prospects for investment in the nuclear industry, renewable energies, energy services and engineering.

For the risks to which the Group is exposed, see section 2.2.4 "Risks related to operational performance" – risk factors 4A and 4B.

Partnership agreements

EDF is developing partnerships with key players in the Chinese nuclear industry, in particular its peers CGN and CNNC, to the benefit of the Group's business lines. The General Partnership Agreement between EDF and CGN was signed in 2007 and complemented in 2014 by implementation of agreements related to engineering, providers, R&D, and plant operation-maintenance.

The partnership with CGN resulted in the signature by EDF and CGN of the final contracts for the Hinkley Point C power plant in the United Kingdom on 29 September 2016. An agreement covering the development of the UK Hualong technology was also signed at that time.

The EDF group has set up a facility based in Beijing and Shenzhen (the Group's front office for China's nuclear industry) with the aim of promoting the EDF model of an integrated architect-assembler operator while acting as a flagship for French industry and positioning itself to support the Group's projects partnership with the Chinese nuclear sector. Experts in this facility are working, in particular, to further promote French codes and standards, as well as the Group's nuclear safety guidelines. They are also a source of technical exchanges benefiting the EDF group's nuclear projects and activities.

In addition, an agreement between AFCEN (chaired by EDF) and NEA (National Energy Administration) was signed in November 2017. Its objective is to promote mutual recognition of nuclear codes and standards and to establish a basis for cooperation between France and China enabling both countries to operate on the international nuclear market.

EDF also chairs the *Partenariat France Chine Électricité* (PFCE), made up of qualified suppliers of EDF which are seeking to develop in China.

In 2010, the Group concluded a partnership framework agreement with China National Nuclear Corporation (CNNC), extended in March 2014 and renewed in 2019, aimed at developing their cooperation along deeper, global lines.

In 2022, the Group signed a master cooperation agreement with State Power Investment Corporation (SPIC) to develop joint projects in the field of low-carbon energy.

Nuclear power generation activities

Daya Bay, Ling Ao and Taishan EPR power plants

EDF led the design, construction and commissioning in 1994 of the Daya Bay power plant (two nuclear reactors of 1,000MW each). EDF also assisted the Chinese group China General Nuclear Power Co. (CGN) in the construction of the Ling Ao Phase 1 power plant (two reactors of 1,000MW commissioned in 2002 and 2003), followed by Phase 2 (two additional reactors of 1,000MW commissioned in 2010 and 2011).

EDF is currently providing assistance to the CGN group with the operation of its entire fleet. The performance recorded by these plants since they were commissioned is one of the Group's main references in China, bearing witness to the cooperation between the two countries.

(1) Alongside BiobioGenera (50%) of which AME is the controlling shareholder.

(2) Share in the capacity corresponding to EDF's stake.

EDF owns a 30% shareholding in Taishan Nuclear Power Joint Venture Company Ltd. The company's purpose is to fund, build and operate two EPR nuclear reactors in Taishan (1,750MW each), in the province of Guangdong. TNJVOC operates the power plant. Through this transaction, the Group represents the first foreign investor in Chinese nuclear power generation. Unit 1 came into commercial operation on 13 December 2018, and Unit 2 on 7 September 2019. After their first 18-month fuel cycle, each of the units carried out its first "initial comprehensive inspection" shutdown with reloading.

Feedback on the technical issue encountered on Taishan No. 1 reactor

Monitoring of the Taishan No. 1 reactor gradually revealed an atypical evolution of the radiochemical parameters leading to the suspicion that the fuel assembly rods had become unsealed ⁽¹⁾. TNJVOC, which is in charge of the operation, shut down the reactor at the beginning of August.

The analyses carried out following the inspection of the fuel assemblies and the reactor vessel showed that the origin of the sealing issue was due to damage to the cladding on the fuel rods. This damage, which was limited to the lower area of the cladding, was caused by mechanical wear due to the failure of small devices holding the rods in the assemblies ⁽²⁾. Furthermore, the inspections carried out on the assemblies and the inside of the vessel also revealed a localised phenomenon between the assemblies and a component covering the core related to hydraulic exposure.

The analyses and investigations have enabled clear lessons to be drawn and technical provisions to be defined to avoid exposure to similar phenomena during the future operation of EPR reactors. After a thorough investigation, the Chinese safety authority approved the restart of the Taishan EPR No. 1 reactor. It was reconnected to the grid on 15 August 2022.

Concerning the impact of this feedback on the start-up of the Flamanville EPR, see section 1.4.1.1.3.1 "Flamanville 3 EPR project" – "Taishan feedback". See also paragraph c2.2 relating to Taishan EPR in risk 4A – Management of large and complex industrial projects (including EPR projects such as HPC, FLA3, Taishan) of section 2.2.4 "Risks related to operational performance".

Output of the Taishan EPR

The net output in 2022 was 12.4TWh. It was affected by the scheduled shutdown of unit 2 for refuelling and maintenance during the summer and by the fortuitous shutdown of unit 1 due to the technical issue encountered.

Tariff conditions applicable to nuclear power plants

On 20 March 2019, the NDRC (National Development and Reform Commission) had set a temporary tariff of RMB 435/MWh until the end of 2021. It was extended on 22 December 2021 pending publication of the new tariff mechanism for China's third-generation nuclear power plants, in particular Taishan. As of early 2023, there had been no further publications by the authorities (see also in section 2.2.4, risk 4A c.2.2 "Taishan EPR").

Framatome

Framatome has had operations in China for over 35 years. It is the designer of units 1 and 2 of the Taishan plants. Framatome is supplying some equipment and technology building blocks for the Hualong project (RCP, I&C, etc.) along with the fuel. Framatome operates in China via joint ventures with Dongfang Electric Corporation (FDJV) and China National Nuclear Corporation (CAST) and through its wholly-owned subsidiary Framatome Nuclear Services (FNS).

Renewable energy

Through the Chinese subsidiary of EDF Renewables, the EDF group has a stake in several onshore and offshore wind farms in operation, with gross total installed power of 1,040MW (587MW net) and a portfolio of projects under development totalling several hundred MW.

In 2018, EDF Renewables diversified its business into distributed solar power with the creation of an affiliate, aimed at developing rooftop solar power solutions for industrial customers. 162MW is in operation or under construction to date.

In 2022, construction work began on EDF Renewables' first ground-mounted solar power plant in China, in Jinchang, Gansu province. This 100MW facility is fully owned by EDF and is due to be commissioned in 2023.

In the sphere of offshore wind power, in March 2019, EDF concluded an agreement with the China Energy Investment electricity company for the construction of two projects (Dongtai IV and Dongtai V) off the shore of Jiangsu province. The two partners are building and operating these wind farms, with total capacity of 502MW.

Energy services

In the city of Sanmenxia (Henan province), EDF set up a joint venture (of which 65% is held by EDF) for the construction and operation of an urban heating network using the recovery of waste heat emitted by thermal power plants of its partner Datang. The 30-year concession agreement was signed on 9 August 2016.

In the city of Lingbao (Henan province), EDF set up a joint venture (of which 65% is held by EDF) to build and operate a heating network powered by a 35MW biomass cogeneration power plant commissioned in March 2020. An incident in January 2022 led to the shutdown of the facility and a technical inspection of the main equipment.

In the city of Sanya (Hainan province), EDF and its local partner signed in 2017 an agreement with the municipal government to build and operate a cooling power plant, which was initiated in September 2021 and provides air conditioning systems to hotels in this region.

In January 2021, EDF and Jinan Heating Group signed a 25-year contract to develop an urban air-conditioning network in a new business district of Jinan (9 million inhabitants), which began operating in August 2021.

In partnership with car manufacturer Beijing Automotive Group (BAIC), EDF inaugurated a first battery exchange station for a fleet of taxis for the City of Sanya (Hainan Province) in August 2020.

EDF is also present in this country for public lighting, through the 15-year contract signed with Kunming city (the capital city of Yunnan province) where it manages 130,000 street lights.

Coal-fired thermal power generation activities

Shandong Zhonghua Power Company, Ltd. (SZPC)

The EDF group holds 19.6% of SZPC, a company which owns three coal-fired power plants in the Shandong province. The other shareholders are China Energy Investment Group and the Hong Kong electricity producer CLP. These three plants were commissioned between 1987 and 2004, with a total capacity of 3,060MW. From 31 December 2021, SZPC started to progressively transfer its generation units to China Energy Investment Group with the Shiheng I&II units (1,260MW), with the total divestment of the asset being completed by 31 December 2028.

Datang Sanmenxia Power Generation Company Ltd. (DSPC)

The EDF group holds 35% of DSPC, the company that owns the Sanmenxia 2 power plant in Henan province, commissioned in 2007, with an installed capacity of 2×600MW, using a technology known as "supercritical coal".

Fuzhou Power Generation Company (FZPC)

The EDF group holds 49% of FZPC, a joint-venture created in 2014 with a subsidiary of the Datang group to build and operate an "ultra-supercritical" power plant (2×1,000MW) in the Jiangxi province. This technology makes it possible to reach high levels of temperature and pressure in the boiler, assuring a better output (close to 44% for Fuzhou) than a traditional power plant, while decreasing coal consumption and CO₂ per kilowatt-hour generated. The first unit was commissioned in December 2015, the second in April 2016.

Research & Development (R&D) activities

The R&D centre's activities in China involve the generation and storage of low-carbon electricity, innovative electricity grids, local multi-energy systems, energy engineering, electric mobility and open innovation. Benefiting from the highly dynamic and innovative Chinese ecosystem, EDF's R&D centre in China is working on applications of digital technology and artificial intelligence to energy business lines. The first edition of EDF Pulse China was organised in 2021 with the participation of over 200 Chinese start-ups.

(1) See EDF's press release dated 14 June 2021, "Information relating to reactor No. 1 of Taishan nuclear power plant" and dated 22 July 2021, "EDF's communication regarding the Taishan Nuclear Power Plant's No. 1 reactor".

(2) See EDF's press release of 12 January 2022 "Update on the Flamanville EPR".

1.4.5.3.6.2 Asia-Pacific region, excluding China

The EDF group's activities in Asia Pacific are focused on the development of the electricity sector, particularly through projects for the design, construction and operation of new thermal gas and hydraulic generation plants in countries offering Independent Power Plant (IPP) type opportunities. EDF is also involved in the field of renewable energies, nuclear, storage, smart cities, grids, electric mobility, hydrogen and innovation.

Headquartered in Tokyo, the EDF International Division Asia ("EDF Asia") relies on two subsidiaries in Laos (one 1070MW hydropower asset, jointly owned and operated with Lao and Thai partners) and Vietnam (one 715MW combined cycle power plant, jointly owned with Japanese partners), and several development offices in India, Singapore, Vietnam, Indonesia and in Japan.

Vietnam

At 31 December 2022, EDF owned 56.25% of Mekong Energy Company Ltd. (MECO), the company owning Phu My 2.2, a combined cycle gas power plant with a capacity of 715MW ⁽¹⁾. This is the first IPP project financed exclusively by foreign investors in Vietnam. The BOT (Build, Operate, Transfer) contract has a term of 20 years (the transfer will be done in February 2025). In 2005, EDF provided "turnkey" delivery of the power plant, and operations are now managed by MECO.

Once built, the high-efficiency and environmentally-optimised CCGT Son My1 plant with a capacity of 2,250MW in Binh Thuan province, situated north-east of Ho Chi Minh City will be operated by EDF for a period of 20 years.

The EDF group was chosen to head the consortium ⁽²⁾ tasked with studying the project. A memorandum of understanding setting out the general terms of the project was signed with Vietnam's Ministry of Industry and Trade (MOIT) in November 2018 and amended in December 2020. On 27 October 2021, the project was granted an "in-principle investment decision" from the Ministry of Industry and Trade. The working schedule for 2022/ 2023 will consist in obtaining final approval for this feasibility study from the MOIT and moving forward in the negotiation of a concession, PPA and other contractual documents required for commissioning of the first unit by the end of 2026.

Laos

At 31 December 2022, EDF Invest holds a 40% stake in Nam Theun 2 Power Company (NTPC), which owns the hydropower complex Nam Theun 2 with an installed capacity of 1,070MW. Nam Theun 2 was built by the EDF group under a "turnkey" contract and commissioned in 2010 ⁽³⁾. NTPC company operates the power plant on a 25-year concession agreement concluded with the government of Laos.

In 2022, Nam Theun 2 faced the driest year ever from the beginning of the operations with only 37% of reservoir filling. A particular mechanism has been triggered in the PPA to mitigate the financial impact of this hydrology. The business of the powerplant oriented to the shutdown and the maintenance period starting from mid of November 2022 till mid-March 2023. It is the longest and biggest shutdown for Nam Theun 2 to complete the major overhaul of 2 turbines, to maintain and repair the main civil structures in the Downstream Channel and to inspect the conditions of every facilities after 12 year of operation.

A project to develop a floating solar wind farm with capacity of 80MWp on the Nam Theun 2 hydroelectric dam reservoir was launched in 2019. The project was formalized by the signature of a Memorandum of Understanding (MoU) with the Lao government in July 2019 and then with EDF partners in June 2020. During the year 2021, important steps were taken, including the signing of a Project Development Agreement (PDA) with the Lao government and an MoU with partners, to optimize and develop production by NTPC. The benefits of this hybridization between two power sources are manifold. In particular, it allows a better production capacity in the dry season, thanks to an optimize water storage in the reservoir, and the development of a low-carbon energy without major environmental or social impact.

India

In the field of nuclear energy, for details of the cooperation agreement for the project to construct six EPR reactors in Jaitapur, see section 1.4.1.1.3.2 "Other New Nuclear projects".

EDF continues to develop the smart metering business by achieving new milestones in the on-going Smart Metering project and participating in new smart metering tenders being launched across India. The on-going Smart Metering project in India with the objective to deploy nearly 5 million Smart Meters has become a National Benchmark and is currently the largest smart meter deployment project of India with smart pre-paid metering. As of November 2022, more than 1 million Smart Meters have been successfully installed in smart pre-paid mode.

Other areas of focus for EDF in India is to develop conventional hydro projects and Pumped Storage Hydro projects and in particular pumped hydro projects which will be a cornerstone of India path towards the low CO₂ energy transition.

EDF Renewables continued growing its solar and wind power businesses in India.

Burma

Following the *coup d'État* on 1 February 2021, EDF announced the suspension of the Shweli 3 project in Burma, a 671MW hydroelectric dam development project on the Shweli River in northeast Burma (Shan State). Respect for fundamental human rights is a prerequisite for every project in which EDF is involved. Therefore, since the *coup d'État*, the Shweli 3 consortium has decided to suspend the development of the project, including the activities of its subcontractors.

In addition, EDF has also decided to suspend its development of hybrid microgrids (solar and battery) in several remote villages in Burma.

Indonesia

Since 2017, the EDF group has been continuing its development strategy in Indonesia, focusing on renewable energy projects, with in particular the development of hydropower or smart-Metering projects.

Singapore

EDF opened his 6th International R&D center in 2014, EDF Lab Singapore Pte. Ltd (the "Lab") to support the Singapore Housing Development Board (HDB, the city's largest construction firm) with a bespoke Urban planning tool for smart cities. The Lab is currently focusing on 3 core topics:

- Smart Grids (including the testbed MASERA, EDF R&D multi-energy platform in South-East Asia);
- Electric mobility & Hydrogen;
- Energy Markets.

As part of the strong links with academics, the Lab is involved in two "Digital Energy" research projects, partially funded by the Singaporean authorities:

- "Platform for Interconnected Microgrids Operation" (PRIMO): this is a research project led by the Lab with local academic partners (NTU, SIT, TUM@CREATE);
- "Descartes": this is a 5-year research project led by the CNRS in conjunction with 25 university partners and 5 industrial pilots, including the Lab, in charge of the "Digital Energy" package. This project aims to develop a hybrid artificial intelligence platform to improve decision-making for critical urban systems (energy, air quality, transport, etc.).

On top of the Lab, the subsidiary in Singapore ("EDF HQ Singapore Pte. Ltd.") was established in 2018, and embed itself in the development and innovation ecosystem of smart grids, electric mobility, smart cities and interconnections. EDF HQ Singapore Pte. Ltd and Tuas Power were awarded by government agency in charge of Singapore's industrial progress (JTC) and the regulator Energy Market Authority (EMA) for the so-called "Smart H2 project". This project and its feasibility study, subsidized by Singapore government, consist in a renewable energy system that thanks to a virtual power plant will produce green hydrogen in an electrolyzer and then sell it to an industrial customer. The project would include a 1MWe electrolyzer and will use an Energy Management System and green certificates.

(1) The other shareholders are TEPCO (JERA) and SGM2 (Sumitomo).

(2) Alongside local partner Pacific Corporation and Japanese partners Sojitz Corporation and Kyushu Electric Power Co. with stakes of 37.5%, 25%, 18.75% and 18.75% respectively.

(3) The other shareholders are a Thai company, EGCO (Electricity Generating Public Company Limited), which holds 35%, and a Lao State company, LHSE (Lao Holding State Enterprise), which holds 25%.

Besides, EDF HQ Singapore Pte. Ltd gives support for project development for other subsidiaries in Asia (business development, finance and human resources).

Japan

EDF opened a Japanese subsidiary EDF Japan KK in July 2022. EDF Japan KK is hosting the corporate management team of EDF Asia. It is also engaging into business development activities in Japan (hydrogen downstream import and applications, batteries). Low Carbon hydrogen-based projects will also be leveraged to support this kind of projects in Asia and globally.

Australia

To pursue its development and extend its presence in Asia, EDF initiated a process with the Foreign Investment Review Board to open a subsidiary in Australia in 2023.

The main focus will be on hydropower, PSP (pump storage plant) and other innovative projects to support the country's energy transition.

1.4.5.3.7 Africa

The Group is developing on the African continent by assisting countries with high-energy demand, on a selective basis appropriate to each geographic region, and by building sustainable and multi-industry partnerships.

EDF is also intensifying its action in the supply of competitive off-grid energy. The EDF group has more than twenty years' experience in off-grid power provision in Africa. Since 2017, the EDF group has joined forces with innovative start-ups to supply power and services to customers in rural areas and on urban outskirts in line with their income and needs. These solutions range from the sale of individual solar kits to mini-grids and solar pumps for farmers. Such services enable more than 2 million people in South Africa, Ivory Coast, Ghana, Senegal, Kenya, Zambia and Togo to light and power their household appliances.

The EDF group has also created NEoT Offgrid Africa ⁽¹⁾, a company that will contribute to the financing of proposed off-grid energy supply and service solutions.

South Africa

- The EDF group has had operations in South Africa since 1978 with the construction of the Koeberg nuclear power plant. EDF has also been assisting the national electricity supplier ESKOM with the operation and maintenance of this power plant. Framatome is also a major supplier to ESKOM (general maintenance and fuel).
- The EDF group has established a privileged relationship with ESKOM, which was memorialised in a memorandum of understanding (MoU) signed in May 2022. It aims to facilitate exchanges between the parties' technical teams and to assist ESKOM in dealing with the challenges it faces in South Africa.
- The EDF group established a EDF Development South Africa 2007 in Johannesburg, with a view to preparing the relaunching of the South African nuclear programme. The South African subsidiary is also responsible for developing EDF's business activities in Southern Africa, particularly as regards generation projects as well as the sale of services relating to thermal and hydropower engineering, transmission and distribution. In December 2018, EDF Development South Africa purchased 30% of the South African engineering company GIBB Power to support the development of its engineering activity in the Southern Africa Region.
- The EDF group's renewables activities in the country began in 2011 with the acquisition of Innwind, in which the Group now has an 84% stake, allowing it to respond to renewables calls for tender issued by the South African government. Three wind power projects were won in 2012 and one in 2015, totalling 142MW. All four projects are currently in operation.

In 2021, EDF Renewables (South Africa) was awarded several significant contracts in these government tenders.

In the first quarter of 2022, EDF took the final decision to invest in a hybrid wind, solar and battery project (of 75MW) (Umoyilanga), which is expected to be commissioned in 2024.

In October 2022, the legal closing of three wind projects totalling 420MW was finalised. They are expected to be commissioned in mid-2024.

EDF Renewables won a tender by the mining company Anglo American for 100MW of photovoltaic capacity to supply its Mogalakwena mine (final investment decision expected in 2023).

It announced the creation of a joint venture (Envusa Energy) with Anglo American to develop up to 5GW of renewable projects.

- In August 2022, the Group acquired a 50% stake in DPA Southern Africa to develop solar projects for commercial and industrial customers (C&I) in South Africa (project portfolio of over 80MW).
- In the off-grid sector, KES (Kwazulu Energy Services), established in 2002 and 50% owned by EDF International, sells and operates solar kits for low-income residential customers.

Mozambique

- The Group has been active in Mozambique since the end of the 1980s involving the provision of engineering services. It has established privileged partnerships with EDM (Electricidade de Moçambique), formalised by the signature of a memorandum of understanding (MoU) in 2017, which was renewed in November 2021 for three years.
- In July 2022, EDF IN was selected to execute a contract to reduce non-technical losses on the EDM distribution network (financed by the French Development Agency – AFD).
- The consortium comprising EDF and TotalEnergies has been pre-qualified to participate in the tender for the Mphanda Nkuwa hydropower project (1,500MW). The submission of tenders is expected to take place in March 2023.
- EDF signed a FEXTE ⁽²⁾ in August 2022 with EDM concerning the AFD financing. The aim is to improve the performance of the network to prevent widespread blackouts, as occurred in 2020, with actions to be implemented in 2023.

Morocco

- The EDF group has been active in Morocco since the 1970s. To help support its development in the region, the Group created EDF Maroc in 1997, EDF Renewables Maroc in 2012 as well as EDF Fenice Maroc in 2016.

It has formed preferred partnerships with National Office of Electricity and Drinking Water (ONEE) and Moroccan Agency for Sustainable Energy (MASEN), electricity distribution authorities, and industrial players. The Group does business in the areas of renewable, thermal and hydraulic generation, as well as in networks and training.

- The Group is contributing to the decarbonisation of the Moroccan energy mix. After having been selected by ONEE in a tender for the development, financing, construction and operation-maintenance of the Taza wind farm (150MW), the consortium led by EDF Renewables ⁽³⁾ commissioned phase 1 of this project (87MW) in July 2022. The consortium has started discussions on phase 2 with MASEN and ONEE with the goal of commissioning this second phase in 2025.
- At the conclusion of a tender launched by MASEN, EDF Renewables, acting through a consortium ⁽⁴⁾, was chosen in 2018 to design, build, operate and maintain the first phase of the Noor Midelt solar complex. This 800MW capacity project is an innovative hybrid power plant combining concentrated solar power and photovoltaic solar power, a world first. The power purchase agreement was signed between the consortium and MASEN in 2020.
- EDF Renewables Maroc, in partnership with MASEN, began construction of the new Koudia Al Baida wind farm (100MW) in July 2022. This project will "repower" the existing wind farm in the north of the country (50MW), the first such project in Africa. The wind farm is expected to be commissioned in the second quarter of 2024.

Senegal

The Group is also present in Senegal, through the wholly-owned company ERA, the operator of the rural electrification concession in Kaffrine-Tambacounda-Kédougou. In an electricity sector that is undergoing institutional changes (a new electricity code was adopted in July 2021), the question of the economic sustainability of the rural electrification concession model remains topical through issues of tariff revision. ERA submitted a request to the regulator for an exceptional tariff review, which is still pending.

(1) Minority stake of EDF Pulse Holding alongside the investment funds of the Meridiam asset management company.

(2) FEXTE (Technical Expertise and Experience Exchange Fund) finances technical cooperation programmes and project preparation studies in developing countries.

(3) In partnership with the Japanese group Mitsui & Co.

(4) With Masdar and Green of Africa.

Cameroon

- The EDF group began doing business in Cameroon in 2014 with the construction of the Nachtigal hydroelectric dam. Nachtigal Hydro Power Company (NHPC), which was established in July 2016, is 40% owned by EDF International ⁽¹⁾. NHPC is in charge of the design, financing and construction of the 420MW Nachtigal hydroelectric project located on the Sanaga River north of Yaoundé, and is responsible for the transmission line between Nachtigal and Yaoundé, which was completed in 2021. In April 2017, NHPC signed a power generation concession agreement for a term of 35 years from commercial commissioning in 2024. The financial closing was completed in December 2018. EDF signed a project owner assistance contract with NHPC to ensure successful completion of the project.

The Nachtigal hydroelectric power plant is a sizeable project for the country and will, on commissioning, be the most important generation resource in Cameroon. It aims at providing around one third of the electricity needs and generating numerous economic benefits for the local economy. At year-end 2022, the project was over 80% complete. The updated schedule includes an 11-month delay including a 5-month delay due to the impact of the Covid health crisis. Commissioning of the first unit is scheduled for the end of 2023 and operational commissioning is planned for the second half of 2024.

- Following the MoU signed with the Government of Cameroon awarding EDF exclusive development of the Kikot hydroelectric project on the Sanaga River, discussions between the Republic of Cameroon and EDF enabled an agreement to be signed, in June 2021, on the joint development of this project. A project company in which EDF International and the Government of Cameroon will each hold a 50% interest will be created in 2023.
- The EDF group continues to act as consultant to Eneo, the incumbent electricity operator in the distribution sector.

Egypt

- The two Benban 65MW solar power plants, developed on a parity basis with Egyptian company Elsewedy Electric, were commissioned in August 2019. The PPA is for 25 years.
- In 2019, EDF Renewables took out a strategic stake in KarmSolar, a major player on the emerging market for privately-produced and distributed solar power in Egypt. The company also operates microgrid projects that include storage. KarmSolar has a portfolio of 39MW of operational solar power plants and 200MW of plants under development.
- The EDF group is also assisting Egypt with its energy transition in a consultancy capacity. In the field of transmission with EETC (Egyptian Electricity Transmission Company), the EDF group is supervising the engineering and construction of the dispatcher in the Delta and the new national dispatcher to be located in Egypt's new administrative capital.
- To support the EIB, the Group is pursuing its consultancy activity with EETC for the development of its transmission network.
- In April 2022, an alliance was formed under the name "Green Fuel Alliance" between EDF Renewables and Zero Waste, a local partner. A memorandum of understanding was signed with the Egyptian government for the production of green ammonia. The alliance is negotiating the terms and framework of the agreement with the Egyptian sovereign wealth fund.

Ivory Coast

- The EDF group is jointly ⁽²⁾ developing the "Biovéa" project for a biomass electricity power plant of 46MW. An agreement on the transmission price for electricity was entered into with the State of Ivory Coast in November 2017. The concession agreement with the State was signed in December 2019. The financial closing was completed and construction began in late 2022.
- In 2019, EDF International became a 49% shareholder in Conergies Group with strong development and innovation expertise in the fields of heating, ventilation, industrial cooling and solar power in West Africa.

- In August 2016, the Group created a local subsidiary to support its development strategy in the Ivory Coast and in the subregion. ZECI, a joint venture ⁽³⁾, was created in October 2016 to deploy an off-grid project to install and maintain solar kits for households in rural areas and on urban outskirts.

Ghana

Since December 2017, EDF International has held a 30% stake in ZEGHA, a company that markets solar kits, and whose development was stopped in 2020.

Togo

- The Group is present in the country through BBOXX EDF Togo, a joint venture created with the British company BBOXX. The company undertakes the sale, installation and maintenance of solar kits for rural households. In addition, a partnership to deploy solar pumps was set up in 2020 with the Kenyan company SunCulture (owned by EDF International via an indirect stake) and the Togolese government.
- In early 2020, the EDF group created a branch to support its development strategy and ensure the continued provision of engineering services.

Kenya

- Since July 2018, the EDF group has been contributing to the development of Kenyan company SunCulture to support the sale, installation, and maintenance of solar pumps for farmers, mainly in Kenya. EDF assists SunCulture with its international development through a 16.9% stake held in Savant Group, the parent company of SunCulture.
- In 2021, the EDF group acquired an indirect interest in Bboxx Capital Kenya Limited. The company undertakes the sale, installation and maintenance of solar kits for rural households.
- Since February 2021, the EDF group has owned 50% of DPA Kenya ⁽⁴⁾. The company specialises in distributed solar power for the business market. DPA Kenya develops solutions ranging from design to maintenance and financing. In October 2022, the construction of the first joint 4MW project for the cement manufacturer DEVKI was launched, with an expected commissioning date of 2023.
- As Kenya revives its nuclear project ambitions, the Group has expressed its interest to the government.

Malawi

In August 2022, the government of Malawi, IFC ⁽⁵⁾ and the consortium between EDF and SCATEC signed a Relationship Agreement that gives the consortium a 55% stake in the 350MW Mpatamanga hydropower project in Malawi. In September 2022, the consortium was officially appointed Strategic Sponsor of the project. When commissioned, expected in 2029, Mpatamanga will provide electricity to around 2 million people and avoid 520,000 tonnes of CO₂ emissions per year. EDF and SCATEC will lead the development, construction and operation phases.

Eswatini (formerly Swaziland)

The EDF group, acting through a partnership ⁽⁶⁾, has been pre-qualified to bid for the Eswatini government's August 2020 tender to develop a 25MW biomass power plant (MOBIO project).

Zambia

In order to develop its offer in mini-grids, in 2020 EDF International took out a 12% stake in Standard Micro Grid Initiatives Limited. This start-up develops and installs mini-grids using a solution with standardised containers and smart meters, enabling the sale of energy blocks on demand.

(1) Jointly owned by IFC (20%), the Republic of Cameroon (15%), Africa50 (15%) and STOA (10%)
 (2) In partnership with SIFCA, an Ivorian agro-industrial group in West Africa, and Meridiam, an investment firm.
 (3) ZECI is 50% owned by EDF International and 50% by Méridiam, which acquired a stake in late 2021.
 (4) Formerly Econet Energy Kenya.
 (5) IFC: International Finance Corporation.
 (6) Partnership with the Montigny group.

1.4.5.3.8 Middle East

The EDF group engages in development and project monitoring activities in the Middle East, and has a regional location based in the United Arab Emirates covering business in the region. The Group has locations in Qatar (Doha), Saudi Arabia (Riyadh), Lebanon (Beirut), Bahrain and the United Arab Emirates (Abu Dhabi and Dubai).

These locations generate commercial business and projects in these countries, where the main challenge in the coming years is to support them in their energy transition.

The major projects in the zone are located notably in the United Arab Emirates with, in 2022, in Abu Dhabi:

- the finalisation of the financial closing of a \$3.8 billion strategic project to be carried out by a consortium ⁽¹⁾, which will develop and operate a high-voltage direct current (HVDC-VSC) submarine transmission system. This is a first in the Middle East and North Africa region. This major project will link ADNOC's ⁽²⁾ offshore production activities to cleaner, more efficient energy supplied through the Abu Dhabi onshore power grid. The project will reduce ADNOC's offshore carbon footprint by more than 30%, while supporting the UAE's "Net Zero by 2050 Strategic Initiative";
- in 2022, Emerge secured several contracts for projects totalling 150MW of distributed solar power. Emerge is a joint venture created in 2021 by EDF and Masdar, a world leader in renewable energy. In addition, the company develops energy efficiency and public lighting projects. Emerge's offer is primarily aimed at commercial and industrial customers in the United Arab Emirates and Saudi Arabia. It is thus contributing to the ambitious objectives of these countries in terms of energy transition;
- acting through a consortium ⁽³⁾, a development contract for the financing, construction and operation of the Al Dhafra PV2 solar photovoltaic project. The solar power plant, which will have installed capacity of 2GW, and which is expected to be commissioned by the summer of 2023, will be the most powerful in the world. It should enable the avoidance of 2.4 million tonnes of CO₂ per year;
- the signature of commercial contracts for the design, installation and management of phase 2 of the Abu Dhabi public lighting project (130,000 light points), through a consortium with Engie. The financial closing is scheduled for spring 2023.

Other major projects are located in Dubai with the customer DEWA:

- a development contract for an 800MW solar photovoltaic power plant, called "DEWA III". EDF, through its subsidiary EDF Renewables, has developed this project alongside Masdar and the customer DEWA (which is in charge of water and electricity in the Emirate). This plant was, at the time of its inauguration in 2020, the largest solar power plant in the world. In August 2021, EDF Renewables and its partner Masdar created Energize O&M Co to operate and maintain the plant. Thanks to the production of DEWA III, 240,000 households in Dubai will be supplied with carbon-free electricity;
- an assistance agreement for the management of a 250MW dam pumping station planned for the Hatta mountains in the Emirate of Dubai, the construction of which has already started, for the customer DEWA (at the end of the first half of 2024);

- an engineering consultancy project for the construction of a 3x233MWe thermal power plant in Al Aweer.

Other projects:

- in the UAE, the EDF group has sought to establish a long-term relationship with Nawah, the operator of the Barakah nuclear plant and subsidiary of Emirates Nuclear Energy Corporation (ENEC). In 2018, EDF and Nawah signed a long-term master agreement under which EDF will assist Nawah with the operation and maintenance of the Barakah plant through various services such as safety, radiation protection, fuel cycle management and environmental monitoring. A second agreement was signed in June 2021 between Framatome and NAWAH for the provision of maintenance services;
- another major engineering consultancy project for the customer Kahramaa (water and electricity in Qatar) is currently being conducted in Doha. It involves the construction of electrical substations and high-voltage cable networks, in particular the evacuation substations for Al Kharsaa, the largest solar power plant in Qatar, which was commissioned in 2022. Several projects of high technical and strategic value including the development of renewable energies and the improvement of the performance of the transmission network have been successfully carried out with this customer.
- Finally, continuing its growth momentum in the region, in June 2022 Dalkia acquired US Chiller Services, a company based mainly in the Middle East and the United States. This company with 330 employees specialises in the operation and maintenance of large refrigeration plants.

The main projects in Saudi Arabia include the following:

- in 2014, the EDF group signed a partnership agreement with the Saudi Electricity Company (SEC), the country's benchmark electricity operator, enabling a broad cooperation between the two groups, including training initiatives. In 2022, EDF won a tender from the SEC to act as Project Management Office (PMO) for the deployment of its distribution network automation project;
- EDF Renewables jointly ⁽⁴⁾ won in 2019 a call for tender for the financing, construction, and operation of the first wind power project in Saudi Arabia, with installed power of 400MW, at Dumat Al Jandal. Commercial operation began in July 2022;
- in 2020, EDF Renewables was awarded, as part of a partnership ⁽⁵⁾, the South Jeddah project in a tender organised by the Ministry of Energy. This 300MW solar photovoltaic power plant is expected to be commissioned in 2023. It will be EDF Renewables' first solar power plant in Saudi Arabia.

Activity in Israel:

The EDF group has been present in Israel since 2010 through its subsidiary EDF Renewables. At year-end 2022, it operated solar power projects connected to the grid with total gross capacity of 530MW (including floating projects with a capacity of 36MW). It is building additional projects with a capacity of 93MWp, including 38MWh of storage and 18MWh of stand-alone batteries. The subsidiary is preparing for the construction in 2023 of around 70MW of floating photovoltaic projects, 40MW of solar roofs and shades; 100MW of ground-mounted photovoltaic projects associated with storage and 67MW of wind projects. These projects have been won through tenders organised by the State or by local authorities.

Furthermore, EDF Hydro's Hydraulic engineering centre supplies services to the first Israeli project for the storage of electricity through pumping, on Mount Gilboa.

(1) Consortium comprising KEPCO and Kyushu Electric Power Co.

(2) Abu Dhabi National Oil Company.

(3) Consortium formed by EDF Renewables and Chinese company Jinko Power Technology Co. Ltd. At the financial closing, the two developers were joined by local partners Taqa and Masdar.

(4) Consortium consisting of EDF Renewables, Masdar and Nesma Renouvelables.

(5) Consortium consisting of EDF Renewables, Masdar and Nesma Renouvelables.

1.4.6 Energy services and other activities

In a regulatory and societal environment which places the fight against climate change at centre stage, and in line with its *raison d'être*, the EDF group aspires to significant growth in energy services in order to deliver high-performance, innovative and sustainable solutions to its customers.

These services address the issues raised by local authorities, businesses and residential customers in a wide variety of fields: decentralised energy generation, low-carbon heating networks, green hydrogen, smart lighting, electric mobility, smart building management, energy saving advice, and energy efficiency. The range of solutions offered by the Group is innovative and meets customers' emerging requirements, notably reducing carbon emissions and improving energy performance.

1.4.6.1 Energy services

The services proposed draw on the Group's expertise, in particular in R&D, and are implemented through its various subsidiaries and departments.

1.4.6.1.1 Dalkia

The EDF group has held a 99.94% equity interest in Dalkia since July 2014. Dalkia is a leading player in the European energy services market that provides a full range of services and has an excellent sales network in France. The company is expanding internationally in four geographical zones (Great Britain, USA, Poland and the Middle East).

Dalkia provides its customers with expertise to develop, produce, and manage more environmentally-friendly and economical energy systems. Thanks to its nearly 80 years of experience in managing heating and cooling networks, optimising industrial utilities, improving the energy performance of buildings, or using local and renewable energies, Dalkia offers its customers tailor-made solutions to reduce their energy consumption and to improve the environmental and economic performance of their installations.

Dalkia (including its subsidiaries) manages over 90,000 energy installations in France and abroad.

The company achieved 6.5TWh of energy savings in 2022, as well as enabled its customers to avoid the emission of 4.2 million tonnes ⁽¹⁾ of CO₂.

Dalkia and the development of renewable energy

Dalkia's core business is to make the best use of local energy sources for heating and cooling networks. Dalkia uses local sources of energy to provide its customers – both businesses and local authorities – with sustainable energy solutions:

- the development of renewable energy is a focus of Dalkia's priorities, particularly through the use of renewable and recovered energy sources, such as biomass, biogas, geothermal and recovered energy;
- Dalkia encourages the production of energy from waste reclamation through a circular economy-type approach, which limits the use of fossil fuels and contributes to the achievement of Dalkia's decarbonisation goals.

Dalkia and energy savings

Dalkia's second business line is "energy savings", in particular through Energy Performance Contracts:

- Dalkia develops energy saving solutions, through smart buildings that consume less and less, and energy renovation works to make buildings more efficient;
- Dalkia also optimises its customers' consumption by processing their data using "Dalkia Energy Savings Centres", which are energy performance management centres that combine digital and human intelligence.

Main subsidiaries of Dalkia in France

Dalkia Froid Solutions

Dalkia Froid Solutions, a wholly-owned subsidiary of the Dalkia Group, specialises in industrial and commercial refrigeration and HVAC. Its aim is to supply its customers with controlled temperatures, by optimising energy consumption and protecting the environment through innovative end-to-end management of the process, encompassing consultancy, design, installation, and maintenance.

Dalkia Air Solutions

Dalkia Air Solutions, a wholly-owned subsidiary of the Dalkia group, provides a complete range of auditing, design, installation and maintenance services for compressed air, nitrogen, and breathing air systems aimed at all sectors of industry. Compressed air is an energy intensive utility that requires a significant amount of electricity, and thus has a potential for energy savings.

Dalkia EN

Dalkia EN (*Énergie Nucléaire*, Nuclear Energy) is a wholly-owned subsidiary of the Dalkia group that is dedicated to the nuclear environment. The entity has a headcount of over 700 employees working in two business lines

- maintenance of backup electricity production resources, and cold generation and ventilation systems for nuclear power plants; and
- coordinating providers and building maintenance for nuclear and thermal power plants.

Dalkia Electrotechnics Holding

Dalkia Electrotechnics Holding is a wholly-owned subsidiary of Dalkia ⁽²⁾. It provides electrical engineering services primarily in two fields:

- high voltage: private or public electricity networks, lighting, industrial processes, transport, etc.;
- medium and low voltage: smart sensors, access controls, video surveillance, traffic lights, etc.

Dalkia Electrotechnics Holding designs, installs, operates and maintains electrical installations and offers a range of services that are tailored to its customers' needs. Citelum France was integrated into Dalkia Electrotechnics Holding in January 2022, and was renamed "Dalkia Electrotechnics".

CRAM

CRAM is a wholly-owned subsidiary of Dalkia, located primarily in north-western France (Normandy, Picardy and Ile-de-France). It provides services, and designs and implements projects in the field of operations and maintenance, management and construction of heating and climate control facilities. The company has a workforce of 700 employees and manages over 7,000 installations.

Main subsidiaries of Dalkia abroad

Dalkia Polska Solutions and Dalkia Polska Energia (Poland)

Dalkia Polska Solutions, based in Poland, designs, builds and maintains technical facilities (ventilation, heating, air conditioning, fire protection, etc.) for commercial buildings and industrial sites. It also provides innovative solutions for the building's energy performance management.

Dalkia Polska Energia is mainly specialised in the generation and distribution of heat in the region of Katowice in Poland (Upper Silesia). It has recognised expertise in the energy recovery of mine gas as an alternative to coal to be used by heating networks and electricity distribution facilities.

Imtech (United Kingdom)

Imtech, jointly owned by Dalkia and EDF Energy, specialises in major HVAC and electrical engineering works, technical facilities maintenance, and data acquisition and control systems integration. Imtech provides its services to the construction, industry and tertiary sectors, and public authorities.

Imtech is established in the United Kingdom. Its subsidiary, Breathe, is a specialist in energy performance in the UK. Imtech bought out Spie UK on 19 December 2022 ⁽³⁾. This acquisition will allow Imtech to expand its presence on its principal markets and extend its offering with specialised services in the fields of industrial instrumentation, clean rooms, and security systems.

(1) 4 million tonnes excluding CO₂ emissions avoided by gas co-generation.

(2) See the Dalkia press release dated 25 January 2022 "Dalkia launches its electrical engineering subsidiary".

(3) See Dalkia press release of 19 December 2022 "Imtech has signed an agreement for the acquisition of SPIE UK".

Dalkia Energy Solutions (United States)

Based in Massachusetts, Dalkia Energy Solutions provides companies and industrial customers with a comprehensive approach to consultancy, project management and the performance of energy efficiency work, with nationwide coverage in the United States.

Dalkia Energy bought out the entire stock of US company Chiller Services LLC on 21 June 2022 ⁽¹⁾.

Aegis Energy Services (United States)

Aegis Energy Services LLC, which is based in Massachusetts, specialises in small gas cogeneration plants and facilities, which it designs, builds, commissions and maintains.

Dalkia Middle East Energy Company Limited (Middle East)

Dalkia Middle East Energy Company Limited was incorporated in 2021 and is active in the field of power plants and cooling networks, energy performance contracts and multi-technical maintenance.

Dalkia Middle East has bought out the entire stock of the following companies:

- Al Shirawi US Chiller LLC on 21 June 2022;
- CGC US Chillers WLL (Qatar) on 29 September 2022.

These companies specialise in operation, maintenance, works and repairs on chillers and other HVAC equipment ⁽²⁾.

1.4.6.1.2 Citelum

The process of geographical and operational reorganisation of the business of Citelum, a subsidiary devoted to street lighting and related services, continued in 2022.

The business in Italy and Spain has been transferred to Edison Next (formerly Fenice); business in Denmark has been transferred to EDF International, finalising the consolidation of electrical engineering businesses within the Group. Business in Brazil and Chile has been disposed of to local buyers.

These final transactions conclude the reorganisation of Citelum. From 2023 onwards, there will be support for Citelum's remaining non-significant business lines until the end of their last contractual obligations.

1.4.6.1.3 EDF Pulse Holding**The Innovation and Pulse Programmes Department**

The Innovation and Pulse Programmes Department called DIPP (*"Direction de l'Innovation et des Programmes Pulse"*) is structured around three core functions:

- strategic framework for innovation: elaborate an annual strategic framework for innovation, applicable to the scope of the EDF group ⁽³⁾, that identifies priority areas for innovation and key projects, as well as their associated action plans. This framework is prepared in close collaboration with R&D and the EDF group's business lines;
- performance and development: consolidating expertise around innovation tools and methods to support Group business lines *via* Pulse programmes and defining innovation value creation indicators. (see section 3.3.3.6.7 "Developing a culture of innovation: the EDF Pulse ecosystem").
- new business: identify and develop new growth levers for the EDF group through the following three programmes:
 - > the EDF Pulse Incubation programme, for the development of intrapreneurship projects;
 - > the EDF Pulse Ventures programme, for investment in start-ups and in funds that are dedicated to innovation,

- > the Major Innovative Industrial Projects team whose goal is to position the Group on industrial projects that are not mature enough for the Group's business lines but that are potentially strategic for the Group.

Stakes in start-ups and investment funds are managed by EDF Pulse Holding, a dedicated wholly-owned subsidiary of EDF. The development of the EDF Pulse Holding portfolio is directly linked to the activities of the EDF Pulse Incubation and EDF Pulse Ventures programmes which are detailed below.

EDF Pulse Incubation

The EDF Pulse Incubation programme draws on the ideas and know-how of the Group's employees to design and develop new business and services. The incubator programme offers bespoke support for employees and enlists in-house and third-party experts to test, create, and develop business models, as well as foster the professional development of intrapreneur employees. This support helps intrapreneur employees, as well as the EDF group as a whole, since it contributes to the Group's evolution and the upskilling of its employees. Due to the close proximity of EDF Pulse Incubation's teams to those of EDF Pulse Ventures, incubated projects benefit from an "investment"-driven vision, while continually monitoring market trends and needs.

Intrapreneurial projects may lead to the incorporation of a new EDF group subsidiary. This was the case, for example, of:

- **Hynamics**, which produces and markets low-carbon hydrogen from water electrolysis using low-carbon electricity for the heavy-duty mobility and industrial markets;
- **Metroscope**, which has developed digital twin software for improving the performance of industrial facilities;
- **Exaion**, which provides environmentally-friendly, competitive and sovereign cloud-based blockchain and high-performance computing solutions;
- **Urbanomy** provides public and private-sector companies with energy and carbon consultancy services.

In 2022, the EDF Pulse Incubation programme supported the creation of the Yxir subsidiary (see below).

EDF Pulse Ventures

The mission of the EDF Pulse Ventures programme is to identify new business and innovative solutions outside the EDF group. It is a vector for developing EDF Pulse Holding's investment portfolio in start-ups and venture capital funds through investment, usually involving minority stakes and in exceptional cases majority stakes. One such example is Perfesco, which funds energy efficiency projects for industry by means of energy savings achieved in the sector.

The goal of the programme is to explore new business for the Group, de-risk it and create synergies between EDF Pulse Holding start-ups and the Group's business lines.

Since 2017, around €400 million has been invested through the EDF Pulse Incubation and EDF Pulse Ventures programmes, in 29 in-house and external start-ups and in 21 investment funds, primarily in France, but also in Europe and North America.

New additions to the EDF Pulse Holding portfolio in 2022**BeZero Carbon**

BeZero Carbon is a ratings agency for voluntary carbon offsetting. Combining its expertise in climate science, finance, and policy, it provides carbon ratings as well as risk and data analysis solutions, improving access to information and providing decision support. Its aim is to create markets with a positive environmental impact. EDF Pulse Holding acquired a stake in this UK-based start-up during a Series B investment round of \$50 million.

(1) See Dalkia's press release of 21 June 2022 "Dalkia reaches a major milestone in its development in the Middle-East with the acquisition of U.S. Chiller Services company".

(2) HVAC: heating, ventilation, and air conditioning control

(3) Excluding Enedis and RTE.

Carbon8

Carbon8 is a spin-out from the University of Greenwich, London. It develops and markets patented carbonation technology capable of combining industrial residues with CO₂ to produce high-value mineral composites. The design has been integrated in a container, allowing the process to be rolled out directly on customer sites. This form of permanent CO₂ capture and storage helps heavy industry improve its waste management and achieve zero waste-to-landfill and zero CO₂ emissions goals. EDF Pulse Holding bought a stake in this start-up during a £5 million round of fund-raising.

Ekoscan Integrity

Ekoscan Integrity is an integrated supplier of technology solutions for ultrasound non-destructive testing that provides customers with swift, effective infrastructure monitoring capabilities. Ekoscan Integrity has expanded rapidly internationally thanks to a significant technology lead, exclusive patents, unique expertise, and an approach based on data and AI. It benefits from over 40 years of experience in industry, acquired mainly in the highly demanding nuclear sector. EDF Pulse Holding took out a stake in this French-based start-up on the occasion of a €23 million round of fund-raising.

Yxir

Yxir is a new EDF group subsidiary that has emerged from the EDF Pulse Innovation programme. It develops and markets a service offering based on artificial intelligence, allowing industrial players to control product and service quality. The Yxir solution processes and analyses data from quality management systems to provide four high-value features: smart troubleshooting, trend and recurrence monitoring, multi-correlation analysis and automation of key performance indicators (KPIs).

Quantonation fund

Quantonation 1 is a venture capital fund managed by Quantonation Ventures dedicated to quantum technology. This can have innovative applications in fields such as high-performance computing, cybersecurity, energy, and the development of drugs. Quantonation aims to support the transition of these technologies to products that are commercially available for industry. EDF Pulse Holding bought into Quantonation 1, the first fund closed by Quantonation Ventures, on 11 July 2022.

1.4.6.1.4 Other service activities of the EDF group

Other entities and subsidiaries of the EDF group complete the range of energy services that EDF offers. They are active in specific areas, and target various categories of customers (residential, professional, business and local government). They cover a wide range of activities including research, construction, equipment maintenance, investment financing and assistance with obtaining permits and subsidies.

Datanumia

To help customers manage their energy and utilities consumption, the EDF group provides facility monitoring and management solutions. Datanumia is a wholly-owned subsidiary of the EDF group. It provides innovative digital solutions so that each type of customer (residential, business and local government) can optimise their energy consumption and their carbon footprint by leveraging new forms of energy.

Datanumia specialises in energy intelligence for buildings and industrial processes. The company assists companies and local government in the energy transition throughout the energy management value chain. Datanumia's bespoke solutions (including energy performance control, energy audits and support to address the French Service Sector Decree (*Décret Tertiaire*)). Datanumia processes almost 10 million data units daily for a total of more than 45,000 sites, and specialises in the IoT (Internet of Things). It collects data from 60,000 smart objects every day, and provides energy management for total building space of over 120 million square metres.

Datanumia also designs and implements solutions for individuals to monitor and control their energy consumption. Datanumia thus provides a digital platform so that EDF customers can benefit from a range of innovative digital solutions in order to monitor and obtain a granular understanding of their energy consumption (electricity and gas). This platform currently has over six million active residential customers. In 2022 Datanumia also developed a solution allowing domestic customers to monitor their power consumption in real time.

Sowee

Sowee is a wholly-owned subsidiary of the EDF group that was founded in 2016. Its goal is to give each customer the means to achieve more efficient energy consumption. Sowee provides residential customers with solutions and services for managing energy consumption, which can be separate from the energy supply contract. All Sowee customers are able to monitor their consumption and their invoices in their mobile application. They can also receive warnings if their consumption exceeds certain limits. For a customer, understanding their energy consumption is the first step towards planning and controlling their expenses.

For customers who have a gas boiler or electric radiators Sowee provides the Sowee Smart Station as an additional tool. This provides remote, smart management services for customers' heating systems, without them having to change their installation. The Smart Station also facilitates access to services that help with daily life through the integration of Amazon Alexa and the display of practical information, such as the indoor (CO₂ and humidity) and outdoor air quality, weather forecasts, ephemeris, etc. Lastly, Sowee also launched a "managed load shedding" option in 2021 for its customers who own the Smart Station.

IZIVIA

IZIVIA, a wholly-owned subsidiary of the EDF group, is a flagship player in the electric mobility market in France. IZIVIA provides charging solutions for electric vehicles targeted at local authorities, energy consortia, and businesses. It sells turnkey electric vehicle charging infrastructure systems (IRVE) including design, supply, operation, maintenance, and charging services for drivers. IZIVIA is a leader in public and in-company charging solutions in France. The company operates 20,000 charging stations and has the best quality of service on the market.

IZI Confort

IZI Confort is wholly-owned subsidiary of the EDF group, specialising in the installation, maintenance, and repair of domestic electric heating, ventilation and air conditioning equipment: heat pumps, gas and oil-fired boilers, air conditioners, thermodynamic tanks, etc.

With over 1,000 employees across France, IZI Confort completes more than 800k call-outs a year, meeting the needs of homeowners, private and public collective housing, and businesses.

IZI Confort on 70 local offices and its digital channels in order to win over and serve customers. IZI Confort continues to expand its portfolio of heat pumps in order to assist its customers in energy transition, pursuant to EDF's *raison d'être*. The company is also trialling remote diagnosis and repair.

Driven by relentless pursuit of growth, IZI Confort is positioning itself as a specialist decarbonisation services provider.

IZI by EDF

IZI by EDF was launched in February 2019. It is EDF's brand that provides services other than energy in France for residential customers and very small businesses, irrespective of whether they are EDF customers, to support their facilities and energy transition.

In 2021, IZI by EDF released a full-service offering for sustainable homes and electric mobility:

- a turnkey energy renovation offer focusing on heating solutions (heat pumps and boilers), insulation, ventilation, and window installation (with full management of the deduction of state aid from the customer quote), as well as a finance solution and a quality commitment;
- a full-service solution to transition to electric mobility, including the installation of a home charging station, green electricity supply with Vert Électrique Auto, the *pass mobilité* mobility pass for charging anywhere in Europe, and electric vehicle leasing.

In 2022, IZI by EDF continued its development with the installation of charging stations for residential blocks. With the expansion of the EV market and the extension of its offering, IZI by EDF doubled its sales of heat pumps and almost tripled its sales of domestic electric vehicle charging stations compared to 2021.

Through IZI by EDF, EDF can act as a general and lead contractor for its customers. It assumes liability, guarantees successful services and issues the ten-year warranty itself. It thus makes serious commitments to the quality of work and customer relations, with the support of carefully selected and qualified contractors.

Local Energy Management

In 2019, the EDF group created the Local Energy Management (LEM) entity to speed up the development of innovative offers relating to decentralised energy management. LEM provides coordination for companies that are expanding through intrapreneurship or acquisition-based growth, including Agregio, DREEV, e2m, PowerShift, and Store & Forecast, in a range of business lines:

- aggregating, managing, and promoting local flexibility, both upstream (intermittent production from wind and solar farms, flexible storage or generation facilities) and downstream (consumer load shedding capacities);
- marketing renewable energy production through new supply models such as Power Purchase Agreements (providing renewable energy from renewables producers), Virtual Power Plant platforms, and peer-to-peer sales, through which residential customers can buy from producers using blockchain;
- smart charging solutions for electric mobility;
- software solutions for energy optimisation of local electricity systems through energy forecasting and storage.

A wholly-owned subsidiary of EDF, **Agregio** is an aggregator directed at three types of customers:

- producers of renewable electricity (wind and solar power, etc.), to which Agregio offers tailored solutions, to optimise and sell/deliver their production, capacity and origin guarantees, on the electricity markets or to consumers, thereby securing their long-term revenues;
- electricity consumers (industries, companies, etc.): Agregio is aimed at consumers who are willing to load shed or modulate their consumption in exchange for compensation, according to the needs of the electricity system;
- managers of storage facilities. Agregio also optimises storage systems.

Energy2market (e2m), is a company specialising in the aggregation of renewable production and local flexibilities. It manages and operates over 5,000 smart, decentralised energy production and flexibility sites (wind farms, solar farms, cogeneration sites, biomass plants, storage batteries, etc.), which represent a total installed capacity of over 4.2GW.

At the end of 2022, the EDF group was one of the European leaders on these new markets, with a portfolio of 10GW of decentralised assets.

1.4.6.2 Gas business

The EDF group's gas strategy aims to ensure the security of gas supply for its 6.4 million customers⁽¹⁾, its cogeneration plants and its gas power plants.

Thus, the EDF group is present on the natural gas market in France and across Europe, mainly through Edison, EDF Energy, and Luminus. Since August 2017, Edison has become the EDF group's gas platform under a service agreement to manage the assets of the Group⁽²⁾. EDF also relies on EDF Trading for its short-term operations relating to transactions on the continental and United Kingdom wholesale markets, and on Dalkia (for cogeneration plants).

The optimisation of EDF's LNG asset portfolio flexibility is managed by JERA Global Markets, a joint venture between EDF Trading Limited (33.33%) and JERA Trading International Pte (66.67%).

1.4.6.2.1 Natural gas end-market

In Europe, on 31 December 2022, the downstream customer portfolios were as follows:

- France (EDF and Électricité de Strasbourg): around 2.4 million customers (ranging from retail to key accounts), with a total volume sold of around 40.5TWh;
- Italy (Edison): around 0.9 million customers, with a total volume sold of around 73TWh of gas;
- United Kingdom (EDF Energy⁽³⁾): around 2.3 million customers, with a volume sold of around 29.2TWh;

- Belgium (Luminus): around 0.8 million customers, with a total volume sold of around 13.9TWh.

1.4.6.2.2 Gas assets and projects

Supply sources

In Europe, the Group's gas and LNG supply comes from:

- short- and medium-term wholesale gas markets; and
- a diversified portfolio of long-term contracts, originating from Qatar, the United States, the North Sea, North Africa and Azerbaijan.

In the United States, the majority of the supplies originate from the wholesale gas markets and is exported in the form of LNG via long-term liquefaction and transport contracts. In the rest of the world, specific contracts have been signed to ensure the supply of the Group's gas power plants.

With the aim of maintaining its position on the end market, the Group optimises and diversifies its portfolio of medium and long-term sources of gas. For LNG, EDF has entered into medium and long-term contracts, primarily with the goal of enhancing the regasification capacity of the Dunkirk LNG terminal.

In 2021, Edison started importing one billion cubic metres of gas per year from Azerbaijan under a long-term contract⁽⁴⁾. Edison's contract for the supply of Russian gas was not renewed in 2023 due to current geopolitical conditions. From 2023 onwards, Edison will import gas from the USA under its agreement with Venture Global.

Infrastructures

Gas pipelines and Liquefied natural gas (LNG) regasification terminals

Apart from its various rights to transport capacity in the European network, the EDF group participates, through its Edison subsidiary, in infrastructure projects for gas importation⁽⁴⁾.

In line with the Group's Gas strategy, EDF is the main shipper that uses the Dunkirk LNG terminal in the long term.

EDF retains the right to use 80% of the Rovigo offshore terminal's regasification capacity, i.e. 6.4 billion cubic metres per year⁽⁴⁾, through Edison.

The Group also holds regasification capacities in the terminal of Zeebrugge (Belgium).

Small scale LNG supply chain

Since 2018, Edison has been overseeing the small scale LNG project, the aim of which is to develop a supply chain to sell LNG in Italy, as well as helping reduce CO₂ emissions for road and sea transport. Edison has completed construction of the first coastal storage facility in Ravenna which became commercially available in 2021, with capacity of over 1 million cubic metres of LNG per year (with Edison entitled to use 85% of this). Supply of LNG to the depot is via a small-scale LNG terminal.

Besides, benefiting from funds tied to the Italian recovery and resilience plan PNRR (*Piano Nazionale di Ripresa e Resilienza*), Edison recently became eligible for a subsidy of €45-65 million for the construction of the Brindisi storage facility⁽⁴⁾. The final investment decision remains to be made.

Storage

In Germany, the EDF group has storage for natural gas in salt cavities located in Etzel. EDF has around 180 million cubic metres of volume capacity. The aboveground facilities are operated through a 50/50 joint venture with EnBW.

With respect to storage activities of the Group in Italy and in the United Kingdom, see respectively, sections 1.4.5.2.3.5 "Regulated activities - gas storage" and 1.4.5.1.2.3 "Thermal generation and gas storage".

The Group also holds storage rights in the Netherlands, Belgium and France.

(1) Customers are broken down by number of delivery points at end 2022.

(2) see section 1.4.5.2.2 "Edison's strategy".

(3) Excluding Northern Ireland.

(4) see section 1.4.5.2.3.2 "Gas business".

Exploration and Production

In 2022, Edison continued to phase out its exploration and production (E&P) business, entering into an agreement to dispose of its stake in Reggane Nord (Algeria) to Repsol and Wintershall Dea. This operation, subject to validation by the local authorities, should be completed during the first half of 2023.

1.4.6.3 EDF's Hydrogen Plan

In April 2022, EDF launched its fifth industrial plan, the Hydrogen Plan, with the aim of developing 3GW of electrolytic hydrogen projects worldwide by 2030, thereby positioning itself as one of the European leaders in low-carbon electrolytic hydrogen (using renewable or nuclear electricity, and low-carbon grid) ⁽¹⁾.

Production of low-carbon hydrogen to help with the decarbonation of industry and transportation

The fifth industrial plan seeks to support decarbonation in industry and transportation and forms part of the EDF group's CAP 2030 strategy. Indeed, the development of low-carbon hydrogen alongside direct electrification will play a key role in achieving carbon neutrality, in particular through the in-depth decarbonation of industrial processes such as chemistry (production of ammonia and methanol), refining and steelmaking.

Low-carbon hydrogen produced by water electrolysis also has a major role to play in the decarbonation of heavy-duty mobility. It can already contribute to the decarbonation of local ecosystems (buses, refuse collection vehicles, trucks, trains in non-electrified areas, etc.). In future, hydrogen derivatives such as e-fuels will allow for the decarbonation of air and sea transport.

The EDF group is well-placed to take a strong position on the hydrogen value chain:

• Expertise

EDF can draw on its expertise in electrolytic hydrogen, developed for many years by EDF R&D as part of its innovation policy: the first research in this field by R&D dates back to the 1970s. Moreover, since 2003 electrolytic hydrogen has been at the heart of the knowhow developed by EIFER ⁽²⁾ and at the electrolyser test platform commissioned in 2020 at EDF R&D's facility EDF Lab Les Renardières.

In 2018, EDF took out a stake in French electrolyser manufacturer McPhy to strengthen the Group's industrial expertise in this area.

In 2019, EDF set up Hynamics. This wholly-owned subsidiary markets hydrogen decarbonation solutions for industry and heavy-duty transportation. Based on its investor and operator/maintainer model, it offers turnkey solutions to its customers in France and more generally in Europe.

In 2021, EDF bought into the Hy24 investment fund dedicated to hydrogen.

• Positioning on the value chain

Upstream, the EDF group can draw on its low-carbon electricity generation fleet (nuclear and renewable fleets with assets in over twenty countries), its knowhow in contract and energy management and its ability to put together integrated projects, for instance by optimising the coupling of hydrogen production and renewable electricity production in the most favourable areas.

In respect of the production of hydrogen and its derivatives ⁽³⁾, the Group already has expertise and operational knowhow thanks to the first projects developed and commissioned by Hynamics. It can also draw on the expertise of Group engineering for the integration of major industrial projects and its experience in terms of industrial safety management and project development, all in line with its CSR commitments.

The Group is already developing projects, with a significant pipeline of some sixty electrolytic hydrogen projects corresponding to total potential in excess of 1GW

Hydrogen projects in France

Projects for industry

In partnership with the cement group Vicat, the Hynovi project is aiming to create France's first decarbonised methanol production system using captured CO₂ combined with hydrogen produced by water electrolysis. The French government has pre-notified the European Commission of the project in respect of IPCIE-H2 ⁽⁴⁾. With production of 200,000 tonnes of synthetic methanol per year, equivalent to one quarter of national consumption, the project aims to avoid almost 500,000 tonnes of CO₂ emissions per year.

Two other Hynamics projects have also been selected for IPCIE-H2 and pre-notified by the European Commission. One is a project with fertiliser manufacturer Boréal, the other is with Domo Chemicals, one of the largest high-carbon hydrogen consumer sites in France, in the heart of the Lyon area's 'chemical valley'.

Mobility projects

Hynamics also successfully bid on mobility-related ADEME ⁽⁵⁾ calls for projects to supply energy for buses for the Auxerrois and Grand Belfort Urban Districts.

As a result, Hynamics and Transdev have launched the largest renewable hydrogen production and distribution site in France, in Auxerre. Dubbed AuxHYGen, the facility has a capacity of 1MW and can produce up to 400kg of green hydrogen per day via water electrolysis, thus avoiding 2,200 tonnes of CO₂ emissions every year. The aim is to extend the production capacities of these installations from 1 to 3MW by 2025.

On 13 September 2022, the Mob'HyZEE project was one of the winners of the European Commission's 'Connecting Europe Facility Transport' funding programme. The hydrogen station project managed by Hynamics will receive subsidies worth €10.2 million, with total investment amounting to almost €40 million.

Hydrogen projects in Germany

In August 2020, the Westküste100 joint venture, in which Hynamics is a 24% shareholder, was awarded €15 million to install a 30MW electrolyser, one of Europe's biggest, on the Heide refinery site in Schleswig Holstein as part of the German Reallabor programme. Extension of the project, known as Hyscale100, involves deploying almost 2GW of electrolysis capacity by 2030 to address the hydrogen needs of the refinery, as well as to produce synthetic fuels; it was pre-notified by the German government to the European Commission in respect of IPCIE-H2 (Important Project of ordinary European Interest for Hydrogen).

Hydrogen projects in United Kingdom

In 2022, EDF Renewables UK and Hynamics announced their intention of making major investments in the Teesside project. In doing so, they are supporting the aims of local and national government to regenerate the Tees valley by investing in decarbonation. Tees Green Hydrogen is a pioneering project to supply local business customers with hydrogen, supporting them in their decarbonation engagement. In the first phase, the electrolyser will be between 30 and 50MW; it is designed to be able to be upgraded to over 500MW.

Hydrogen projects in Belgium

With the support of Hynamics, Luminus positioned itself on several projects to develop, finance, construct, and operate hydrogen production facilities in Belgium.

(1) Currently, 95% of hydrogen is manufactured using fossil fuels; since this process generates CO₂, it is referred to as "grey" hydrogen. Hydrogen (H₂) can either be created from methane by means of steam reforming, or by splitting a water molecule (H₂O) by electrolysis, i.e. by means of an electric current. Hydrogen is considered to be "green" if the electrolysis in question is produced by renewable energy, or low-carbon energy if it is produced using nuclear electricity. "Green" or "low-carbon" hydrogen is thus an attractive way of decarbonising sectors in which direct electrification is not possible. Such sectors include refining, chemicals, and heavy-duty transport.

(2) EIFER is the joint research centre for EDF and the Karlsruhe Institute of Technology (*Karlsruher Institut für Technologie*, KIT) in Germany.

(3) Synthetic fuels (also known as e-fuels) such as e-methanol, e-ammonia and e-kerosene can be produced from hydrogen; their increasingly wider use is being envisaged to help with the decarbonation of sea and air transport.

(4) IPCIE: Important Project of ordinary European Interest.

(5) ADEME: French Environmental & Energy Management Agency.

Luminus had already entered into an agreement with Terranova as part of the European Commission's "Green Octopus" programme. The aim is to make the port of Ghent one of the suppliers of green hydrogen in Belgium, in order to achieve decarbonisation of industrial uses, heavy-duty mobility, and the supply chain. The project involves connecting Luminus wind turbines and Terranova's solar power plants to an electrolyser to produce green hydrogen starting in 2023.

Hydrogen projects in Italy

Edison is developing several electrolytic hydrogen production projects in Italy (see section 1.4.5.2 "Italy").

Hydrogen projects outside Europe

With major engagement on the part of EDF Renewables and the International Relations Department, the Group is also making progress with ambitious projects outside Europe combining renewable energy and hydrogen production internationally, in particular in North America, South America, and the Middle East. These geographies offer major development potential, with especially favourable conditions for renewable energy.

1.4.6.4 Optimisation and trading: EDF Trading

EDF Trading (EDFT) is the EDF group's interface to the wholesale energy markets providing market, optimisation and risk management services to EDF group as well as third parties. The company operates across Europe, North America and Asia in the wholesale markets for electricity, natural gas and LPG. EDFT also provides counterparties and customers with access to financial oil and environmental products. EDFT carries out LNG, coal and related freight activities, through JERA Global Markets in partnership with JERA of Japan.

EDF Trading's registered office is located in London. The company has around 800 employees globally and its regulated activities are authorized by the UK's financial market regulator, the Financial Conduct Authority.

Among other things, EDFT provides a full range of wholesale market services to EDF DOAAT (see section 1.4.3 "Optimisation activities in France") and EDF Customers Division in France and serves as a route to market for other entities of EDF group.

European Electricity market

EDF Trading is a leading participant in the European electricity wholesale market trading over 2,000TWh annually. The company provides a full range of risk management services to EDF group's asset operators and to third parties. It has a wide geographic footprint and scale of activity which makes it able to adapt quickly to changes in the market and to develop new business and to take advantage of market opportunities where appropriate.

Japanese Power market

EDF Trading commenced physical trading of Japanese Power in 2022 after setting up an office in Tokyo and plans to continue developing its physical and financial Japanese power business as the Japanese power market evolves.

European Gas

EDF Trading is a leading participant in the European gas wholesale market trading 593bcm annually. It optimises EDF entities' gas assets including transmission rights,

long-term supply contracts and re-gasification and storage capacities. This enables EDFT to support the EDF group and third parties with complete gas wholesale market solutions.

North American wholesale markets

EDF Trading North America is a leader in the wholesale energy markets in North America, where it benefits from broad geographical coverage, offering solutions to customers across the entire North American energy value chain. It provides energy management solutions, natural gas supply, and real-time services for electricity producers in the USA. As one of the leading suppliers of generation services for power plants in the USA, EDF Trading North America manages over 31GW for 124 electric power plants owned by third parties ⁽¹⁾. For retail energy aggregators, it provides supply services on the wholesale market, as well as services to interface with Independent System Operators (ISOs) in various states in North America.

Retail sales operations in North America

In 2022, EDF Trading sold its North American retail operations to BP.

Environmental products

EDF Trading is committed to the environmental products marketplace and, in line with the EDF *raison d'être*, it offers a broad range of multi-commodity hedging solutions that support the EDF group and third parties decarbonization targets around the world. EDF Trading is active in the compliance and voluntary carbon markets, guarantees of origin certificates in Europe, Renewable Energy Certificates in the US, and International Renewable Energy Certificates in the rest of the world. In addition, it is a recognised provider of risk management products in the European weather market. In 2022, EDF Trading began trading physical green fuels in the form of bioethanol.

International markets

Following the sale of its coal and freight business to JERA in April 2017 and the merging of their LNG optimisation and trading activities into JERA Global Markets in 2019, EDFT holds a 33% financial stake in JERA Global Markets, a leading seaborne energy trader.

1.4.6.5 Equity interests

EDF Trading Logistics

EDF Trading Logistics acts as EDF's vehicle for fuel oil and liquid biomass purchases. It organises fuel oil, solid or liquid biomass and coal supply logistics operations for all of the EDF group's thermal plants in mainland France, Corsica and France's overseas departments, in close collaboration with DOAAT, EDF PEI and IES. It controls the coal terminals in the ports of Le Havre and Montoir de Bretagne. In 2022, it supplied almost 1.1 million tonnes of fuel oil, 1.2 million tonnes of coal, and 4.4 ktonnes of solid biomass.

In addition, EDF Trading Logistics provides the Group with its expertise in regard to managing risks related to the transportation of fuel oil (hazardous materials), an activity which received ISO 14001 certification that was renewed on 4 November 2022. It is also active in the management of the environmental crises associated with this line of business.

(1) 2021 data.

1.5 Research & development, patents and licences

The EDF group's Research & Development (R&D) activities are handled by the Research & Development Division EDF R&D and also by certain Group subsidiaries. These activities are complementary and in line with the Group's *raison d'être* and CAP 2030 strategy. A R&D Charter coordination scheme for these has been drawn up at Group level.

The EDF group's R&D is both integrated and cross-disciplinary, in order to facilitate synergies and method transfers between the different Divisions. Skills cover all the Group's field of activities. They are specific to particular disciplines, business lines and projects, and also come together for work on major systems.

EDF R&D has a headcount of 1,747 in France, plus 128 PhD students and 90 students in work-study programmes. It also employs 227 people representing 45 nationalities worldwide on local contracts, as well as 16 expatriates.

EDF R&D is organised on a multi-site basis, with several sites located in France and abroad, mainly in Germany, the United Kingdom, China, the United States, Singapore and Italy. EDF R&D's main centre is located in Palaiseau on the Paris-Saclay campus.

The main missions of EDF R&D are firstly, to support the Group's divisions and subsidiaries on a day to day basis, by providing them with its top-level expertise and high performance practices, and secondly, to contribute to building the Group's future by anticipating the developments and major challenges with which it is confronted.

Its research focuses on four main priorities:

- decarbonising customers' uses thanks to electricity;
- strengthening the performance of generation means;
- inventing tomorrow's energy systems;
- accelerating digital transformation.

In 2022, the EDF group's total R&D budget was €649 million. It comprises EDF's R&D budget of €473 million, as well as the R&D carried out by certain wholly-owned subsidiaries, mainly Framatome, EDF Energy and Edison. This is one of the largest R&D budgets of any major electricity company. 99% of EDF R&D's operating budget in France is dedicated to decarbonation and energy systems transition.

1.5.1 R&D programmes

EDF R&D's work serves all the Group's business lines. It offers technological solutions designed to improve their performance, and prepare the Group's future in the longer term. It contributes to making EDF a world leading industrial group in low-carbon electricity systems.

The research work on grids on behalf of Enedis is carried out under a services contract, which defines obligations that guarantee the protection of commercially sensitive information and compliance with the principle of the independent management of the distributor. Enedis also runs its own R&D programme, independently of EDF.

1.5.1.1 decarbonising customers' uses thanks to electricity

The energy crisis amid the risks of gas shortages due to the conflict in Ukraine and electricity shortages due to stress corrosion had far-reaching effects on relations with business, local authority, and domestic customers in 2022. In the spring, work began to reinforce customers' "energy sobriety" efforts and leverage sources of flexibility to the fullest.

On the business customer market, the impetus of energy efficiency projects was maintained. Some one hundred projects were studied by R&D teams to support EDF's Major Account Customers department. R&D's familiarity with different sectors was also leveraged to provide sales staff with screening details enabling them to focus on the most promising sectors in terms of load shedding and deferred

consumption: service sector buildings with less than 5,000m² of space, wholesalers, logistics warehouses, etc.

On the domestic customer market, R&D was engaged to help with the "turn down, turn off, defer" campaign. The knowledge base covering specific uses of electricity was used to describe and evaluate the impact of energy-saving tips proposed to customers through the winter. A solution known as SMACH (Multi-Agent Simulator of Human Behaviour) was used to promote and validate the effect of halting the lunchtime off-peak hour signal for the 12.30pm peak.

1.5.1.2 strengthening the performance of generation means

In the field of nuclear, hydro and fossil-fired power generation, EDF R&D is developing tools and methods to:

- improve the safety of production resources;
- optimise their operational lifespan;
- increase their performance in terms of output and environmental impact.

1.5.1.2.1 Strengthening and maintaining the Group's low-carbon nuclear generation

EDF

R&D is working to protect EDF's assets through actions in line with its policy to improve the safety of facilities, particularly with regard to enhanced performance and extended operating lifespan. R&D has launched a far-reaching programme designed to identify technology barriers to the extension of nuclear power plants' operating lifespans beyond 60 years. The programme also seeks to provide better assessments of constraints as well as studies, analysis and experiments with the test resources available so as to characterise and extend operating lifespan whilst ensuring safety.

More broadly, the EDF group (EDF and Framatome) conducts R&D in partnership with the CEA as part of the *Institut Tripartite* (Tri-party institute) and is developing the Nuclear Plant of Tomorrow Initiative which is structured in technological blocks for existing plants and nuclear new build.

To support these programmes, R&D is developing digital simulation tools and experimental test resources, as well as tools that are capable of handling the fresh challenges raised by the increase in large sets of digital data, IT security, and new information and communication technologies.

Encouraged by the success of the ConnexLab experiment, which aims to test out new operating and maintenance concepts, EDF R&D launched a "Digital Reactor" project in 2020. The project is well underway and has produced significant results for the nuclear industry. It brings together 9 key partners (EDF, CEA, Framatome, SMEs, MSEs and academics) to provide engineering departments and design firms that work in the industry with a computing environment based on the best available techniques, both in terms of available computing power and in terms of state-of-the-art scientific programming.

R&D is pursuing the development of digital initiatives, while continuing to give priority to strong partnership-based relationships with the other stakeholders in the nuclear industry. It thus launched two new projects, which are supported by the France Relance plan:

- the ICAREX project, to build rapid prototypes of control rooms for nuclear plants and SMRs in particular; and
- the MECANUM project, to be able to benefit from an industry platform for mechanical engineering calculations.

In addition, EDF R&D develops high-value nuclear design calculation methods. It has joined forces with Framatome to develop the Odyssee core design calculation method. This project aims to allow for better and more efficient nuclear core calculation, benefiting both the fleet in operation and new reactors.

Framatome

Framatome R&D aims to master the most advanced technologies, in order to attain the highest standards of safety and performance for its activities as a designer and supplier of nuclear steam supply systems, nuclear equipment and services, as well as fuel.

This R&D activity is primarily carried out within Framatome's development teams and Technical Centres, in partnership with EDF R&D.

International partnerships have also been set up.

1.5.1.2.2 Supporting the development of renewable energies, storage, and hydrogen

A major avenue of research concerns support for the development of renewable energies in France and internationally. For renewable energies, storage and hydrogen, EDF R&D's goal is to:

- identify technological breakthroughs that offer a significant competitive advantage; and
- help the most promising technologies emerge industrially, working in partnership with academics, the industry and start-ups.

EDF is investigating a wide range of low carbon hydrogen technologies and storage solutions: hydropower, photovoltaics, onshore and offshore wind power, solar thermodynamic power, biomass, marine energies, geothermal power, electrochemical batteries, flywheels, thermal storage, thermochemical storage, flow cells, supercapacitors, electrolyzers, fuel cells (hydrogen) and thermal energy storage (heat and cold).

In the field of offshore wind power, R&D has developed specific modelling tools for the hydrodynamic and mechanical sizing of fixed and floating offshore wind turbines.

R&D is also working to develop tools and methods to enhance operational performance and optimise the cost of projects on electricity generation systems that are based on renewable energies, projects on storage and systems for hydrogen generation by electrolysis power by EDF group low carbon electricity.

1.5.1.2.3 Environmental performance of facilities

Climate change, the marked decline in biodiversity and Earth's limited resources make EDF a legitimate choice for a low carbon energy mix. The aim of the R&D Division's initiatives is:

- to contribute to determining the ways in which changes to the regulatory environment are implemented;
- to provide justification for our production facilities being on par with the best available techniques (BAT), at an economically acceptable cost, and to leverage these best available techniques in new projects;
- to acknowledge and manage our impact on terrestrial and aquatic environments;
- to know how to anticipate and adapt to the impacts of climate change, for example foresee changes in the availability and quality of local water resources and assess the robustness of the heat sinks for plants in light of future climate change;
- to contribute to leveraging our positive actions with regard to stakeholders, including locally.

For many years, EDF has set up research teams dedicated to biodiversity issues. An ambitious research programme is seeking to develop high-performance tools to assess and manage the impacts of EDF's production resources on biodiversity and constantly improve biodiversity in the vicinity of power plants.

Since early 2022, R&D has also been contributing to the project to adapt nuclear units in the face of climate change.

1.5.1.3 inventing tomorrow's energy systems

Energy transition towards a low-carbon economy in Europe hinges on strong integration of variable and decentralised renewable energies, in particular on the distribution network. This integration requires more intelligent electrical systems, or smart grids, to be developed, in order to have the capacity to manage a more decentralised electricity systems, with a much higher number of stakeholders. The major issues are technical, economic and regulatory, and this will involve taking on new challenges such as:

- developing transmission grids and grids to connect to European coverage, and reinforcing links between the European wholesale markets in order to optimise flows of electricity;
- managing the intermittence of production sources that use renewable energies and pushing back the limits of their inclusion in electrical systems, both for the management of local energy flows and electricity grid;
- integrating new uses of electricity by optimising the production mix and grid requirements, and by exploring flexibility levers and how they are structured;
- optimising decentralised energy systems (demand-side management, decentralised generation and storage, etc.) by integrating them into larger scale energy management systems;
- adapting the coordination of electricity systems in order to address a reduction in inertia of the electricity system in a context of increasing use of power electronics in order to factor in patterns of use and new production sources.

These challenges require work on the transmission and distribution grid materials, generation and storage means, their communication functionalities and protocols, on control materials and methods, and also on the economy of consumption, electricity services and the related markets.

1.5.1.4 Accelerating digital transformation

The digital transition impacts the entire electric power system and is a key driver of the electric and climate transitions described above. The information technology research programme focuses on:

- understanding and anticipating the impacts on the Group's businesses and the possible disruptions that may be caused by booming technologies such as artificial intelligence, quantum computing, the internet of things, mobile networks including 5G networks, cyber security of industrial systems, blockchains, virtual reality, etc.
- maintaining and developing a cross-disciplinary ecosystem of scientific computing to support the studies conducted by EDF R&D and engineering.

1.5.1.5 EDF's R&D scientific partnerships internationally

To conduct its research and development programmes, EDF R&D nurtures a large number of partnerships both in France and internationally. The goals are to attain the highest international levels in the disciplines at the heart of the EDF group's key challenges and to supplement its in-house skills and direct academic research towards R&D that is relevant for the EDF group.

R&D's partnership policy is embodied in a variety of ways, both nationally and internationally.

France

R&D has entered into framework agreements with major public research organisations. The main academic partner in France is the French national research agency (CNRS). Over the past few years, R&D has also set up about twenty laboratories and teams on a joint basis with academic partners and technical or industrial centres. These include FiME (Energy Finance and Markets, *Finances et marchés énergies*), GIS SEISM (earthquakes) and SEIDO (Internet of things and Cybersecurity). A new team known as LARTISSTE (Statistical Learning and Uncertainty Processing) with a large number of industrial and academic partners has also been created. With its partners, it is participating in collaborative research projects funded by several national or European agencies.

Furthermore, partnership framework agreements exist with various industrial and academic stakeholders. These include: Naval Group, INERIS, INRIA, Telecom Paris, IPP (Polytechnic Institute of Paris) and ENS Paris Saclay.

Other developments include several partnerships within the Paris-Saclay campus ecosystem, including:

- the SEISM Scientific Interest group on earthquakes, which brings together CentraleSupélec, ENS Paris-Saclay, CNRS, BRGM, EDF; and
- the Institute of Mechanical Science and Industrial Applications (Institut des sciences de la mécanique et applications industrielles, IMSIA) joint research unit, which brings together ENSTA, CNRS, CEA, and EDF.

R&D is also present within the Energy Transition Institutes (ITE) which were set up as part of France's "Investments for the Future" initiative: the Ile-de-France Photovoltaic Institute (IPVF), France Énergies Marines, which focuses on marine energies and offshore wind power, Efficacy, which works on energy efficiency, Supergrid Institute, which specialises in electricity networks of the future and Vedecom, which works on electric mobility, as well as in the IRT SystemX, which is located in the heart of the Paris-Saclay research hub.

The EDF group is the driving force behind ConnexiTy, an R&D programme aimed at connecting players in the nuclear sector, using digital technologies.

EDF R&D has also set up the Materials Ageing Institute (MAI), an international research centre on materials ageing that brings together, alongside EDF, most of the world's major nuclear operators.

EDF is also a founding member of several European associations recognised at the EU level, such as NUGENIA and the SNETP for nuclear power and EASE for storage.

Germany

In the early 2000s, EDF set up a European Economic Interest Group in Germany with the Karlsruhe Institute of Technology (KIT) known as EIFER. EIFER is the reference centre for the hydrogen industry; in this respect it supports the EDF group's subsidiary Hynamics, which is dedicated to the commercial development of hydrogen solutions for industrial markets and heavy-duty mobility. EIFER teams are also fully engaged with topics relating to local decentralised energy systems, sustainable cities and territories, geothermal energy, e-fuels and biofuels.

United Kingdom

EDF R&D UK consolidates the Group's positions in the British research eco-system, particularly through Strathclyde University in the field of renewables, as well as with Manchester University, Imperial College, the National Nuclear Laboratory (NNL) and the University of Bristol in the field of nuclear energy.

The centre provides direct support to the activities of EDF business units, be it:

- in the existing nuclear field (extension of AGR reactor lifespans, and decommissioning following EDF UK's announcement of the planned shutdown of several reactors); or
- in new projects, including setting up the HPC project, in particular to solve the site's environmental problems.

The centre is also fully committed to digital solutions for customers, blockchain and offshore wind farm projects, for which it is the reference centre for all the Group's projects in France and abroad.

Italy

In Italy, Edison's Research, Development & Technological Innovation Division (RD&TI) provides medium to long-term support for strategy and, in the shorter term, informs the development of new services and offerings from Edison. The teams focus in particular on photovoltaics, electric vehicles and digital technology. Staff and laboratories are located mainly in innovation spaces in the two Italian *Politecnici* (polytechnical institutes in Milan and Turin), thus nurturing cooperation and embedding Edison RD&TI in the world of innovation and research in Italy.

Asia

The centre based in Beijing is a valuable asset for taking part in partners' large-scale Chinese demonstrators (such as those of CGN, CNNC, and State Grid) for smart grids and nuclear facilities. It also benefits from China's highly advanced additive manufacturing ⁽¹⁾ ecosystem. In 2022, the centre delivered the electricity trading platform established by the EDF China subsidiary with a local partner as part of the market deregulation decided by the Chinese government. The centre also actively supports EDF China's commercial activities on the field of local multi-energy projects combining electricity, biomass, and heating and cooling networks.

Singapore's R&D centre focuses more especially on the industrialisation of microgrid solutions at competitive prices using renewable energy, which is developed and tested with its demonstrator on Semakau Island off the coast of Singapore. The centre is also engaged alongside academic partners and local industry on a range of projects:

- feasibility studies for electricity interconnections in the Southeast Asia sub-region;
- electric mobility projects in Singapore;
- green hydrogen generation projects for an industrial hub.

United States

The EDF group has had an R&D and Innovation centre in Silicon Valley for several years. The centre supports its development in the USA and contributes to innovation in the Group. This laboratory's research areas include:

- direct support to the North America EDF Renewables subsidiary;
- analysis, using a dedicated team, of technological and digital trends;
- market design to inform the selection of development projects for the Group's business units in the USA;
- assessment of new business models for the Group in the USA.

1.5.2 Intellectual property policy

Intellectual property plays a major role in protecting the EDF group's technologies and know-how from competition, and in leveraging these assets through licensing agreements. Expanding the patent portfolio is thus a priority, with a view to making the best use of its capacity for innovation and its technology expertise. The portfolio consists of both patents and court-certified software and know-how.

At the end of 2022, the portfolio of the EDF group and Enedis comprised 740 patented innovations, protected by 2,189 property titles in France and abroad. In 2022, EDF filed 53 patent applications ⁽²⁾ (49 in 2021).

(1) Additive manufacturing, more ordinarily known as "3-D printing", refers to all the processes involved in manufacturing a physical object from a digital object by adding materials.

(2) Enedis filed three patent applications.



2



RISK FACTORS AND CONTROL FRAMEWORK

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2.1 Risk management and control of activities

This section presents the business control and risk management systems applicable to the entire Group for 2022. These systems, developed and implemented with due respect for the management independence of network infrastructure managers, are in line with the framework defined by the Group's policies. They also comply with

the general principles set out in the AMF risk management and internal control system reference framework (published on 22 July 2010). They are also based on developments in the main international reference frameworks, in particular COSO-2013.

2.1.1 Control environment

Framework and objectives

The EDF group organises the control of activities and risks in the form of forty Group policies, validated and signed by the Executive Committee. This corpus defines all of the long-term and cross-functional requirements to be implemented in all of the Group's entities and subsidiaries. Regular updates make it possible to adapt requirements to regulatory changes and strategic policy orientations. They are fully in line with the Group's *raison d'être*.

The objectives of the system for controlling the Group's risks and activities, defined in the Group "Functioning Principles/Risk Management and Internal Control" policy are:

- identify and periodically reassess the significant risks and opportunities likely to impact the Group's targets, in order to ensure the existence of relevant and effective action plans;

- constantly ensure:

- > compliance with laws and regulations, including those relating to the management independence of network infrastructure managers,
- > the smooth running of processes and projects,
- > the reliability of financial and non-financial information,
- > compliance with Group policies,
- > the control of risks and activities of any kind.

Organisation

The organisation of EDF's Executive Management is described in section 4.3.1. "Members of the Executive Committee". Each member of the Executive Committee is responsible for implementing all actions necessary for controlling the risks within their scope.



Board of Directors

The Board of Directors regularly examines, in connection with the strategy defined by it, opportunities and risks as well as the measures taken as a consequence.

Audit Committee

The mission of the Audit Committee is to monitor, under the responsibility of the Board of Directors, the effectiveness of the internal control, risk management and internal audit systems.

Executive Committee Commitments Committee

To improve the quality of the appraisal and monitoring of projects, the Group Executive Committee Commitments Committee (CECEG) thoroughly examines the most significant projects in terms of the extent of the commitments and/or the risks incurred before decisions are made by the Executive Committee (see section 2.1.3.4 "Approval of capital commitments").

Risk Committee

The Executive Committee meets at least twice a year as a Risk Committee, at which time it examines in particular the mapping of Group risks, the assessment of internal control activities and audit activities (annual programme, results). It identifies the priority risks for the Group, shares the related strategy for mitigation and designates the members of the Executive Committee who are its sponsors.

Scope

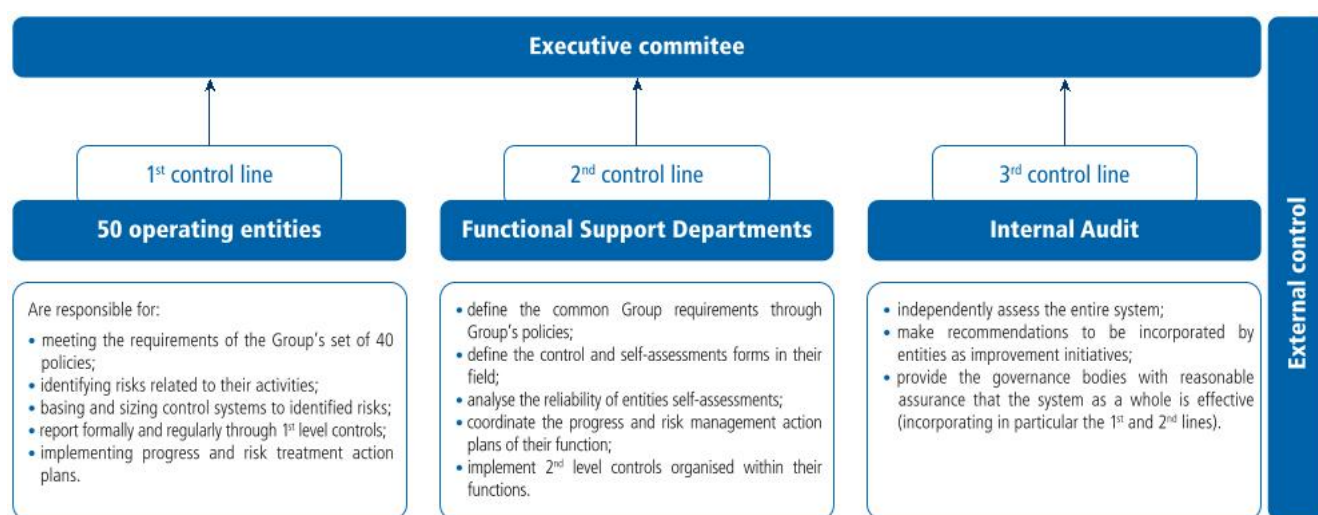
Regarding the scope of control (excluding subsidiaries managing regulated infrastructures), these purposes and principles are implemented by the entities or subsidiaries, which themselves ensure their implementation in the entities or subsidiaries they control.

Regarding the Group's other subsidiaries (subsidiaries that are operators of regulated infrastructure and significant shareholdings), EDF representatives within

the governing bodies make sure that a system for controlling activities and risks is put in place. They provide regular information on risk mapping, internal control and audit activities (programme and main results). They can also check the effectiveness and appropriateness of each of these measures through a periodic audit of the respective entities. The applicable principles are adapted for the operators of regulated infrastructures to ensure compliance with obligations related to their management independence.

2.1.2 Principles of execution

All of the measures based on the three control lines provide the managers and governing bodies of the Group with a warranty appropriate for the identification and coverage of the main risks.



1st line of control: management of operations

Report on the control of the activities and risks of the entities

Each Group entity (50 entities in 2022 covering the scope of EDF and controlled subsidiaries) prepares an annual report on the control of its activities and risks, which includes a self-assessment, and a response to the "Group's essential improvement actions". Each report gives rise to a commitment signed by the Director of the entity on the level of control achieved and an actions plan.

Entity self-assessments report on the control of all the entity's "business line" activities and all the requirements of the other cross-functional areas identified in Group policies, in line with their risk mapping. The report particularly includes self-assessments on the control of the requirements relating to accounting and financial internal control, in line with the AMF framework (see section 2.1.3.5 "Reliability of financial information - internal accounting and financial controls").

Within the Group, 88% of the entities subject to a "risk and control of activities" self-assessment report indicate that they have an ICP (internal control plan) including a set of controls to be implemented annually.

Entities risks mapping

The entities and affiliates produce an annual risk map based on a methodology ordinary to the Group. The process of constructing the risk map for the entities is based on:

- the principle of management accountability;
- a typology of risks, including internal or external risks and operational or strategic risks, as well as opportunities;
- a qualitative evaluation method for the impact, the probability and the level of control of each risk;
- action plans for dealing with risks and the evaluation of their effectiveness.

Numerous discussions take place between the Group Risk Department and the entities and subsidiaries to review the relevance of risks and the soundness of the control actions undertaken.

Methods and tools: Several methodological documents and tools are made available to the entities and affiliates to support those processes:

- a risk analysis methodological guide and a software package to support entity risk mapping;
- an internal control guide, a detailed self-assessment framework and a digital platform for sharing and summarising self-assessments.

2nd line of control: risk management and control of activities

The second line comprises Group support functions which are responsible for leading and coordinating the implementation of Group policies for which they are responsible.

GROUP POLICIES

- | | |
|---|---|
| <ul style="list-style-type: none"> ● Management and operation <ul style="list-style-type: none"> > Operating principles/Risk management & Internal control > Governance of subsidiaries and minority shareholdings > EDF group project management > Crisis management and business continuity ● Ethics & Compliance policy and related instructions (control of integrity in business relationships, fraud, REMIT, GDPR, stock-market compliance) ● Safety & Security <ul style="list-style-type: none"> > Nuclear safety > Security of assets against malicious acts ● Corporate social responsibility policy ● Human Resources <ul style="list-style-type: none"> > Health and safety > Remuneration & social security benefits > Talent > Experts > Skills Development in France > Group Mobility ● Supplier policy | <ul style="list-style-type: none"> ● Real Estate & General Services <ul style="list-style-type: none"> > Group travel > France service-sector real estate ● Group Legal risk management policy and related instructions ● Finance & Markets <ul style="list-style-type: none"> > Business and financial performance management > Financing, cash management, and financial risk control > Capital commitments > Energy market risk > Tax and customs > Insurance > Financial & accounting reporting, and related instruction ● Communication <ul style="list-style-type: none"> > Communication/Institutional relations/Partnerships > Financial communication ● Information systems & Digital Transformation <ul style="list-style-type: none"> > Governance of information systems and digital transformation > Data management > Security of information systems |
|---|---|

Group risk mapping

The Group risk mapping comprises:

- risks associated with the political and regulatory context, and legal and compliance issues;
- financial risks;
- strategic risks, risks related to the transformation of the Group, including in particular risks related to climate issues;
- risks related to the Group's operating activities and its supply chains, as well as to the Group's major projects, in all its business lines, particularly nuclear. These risks also relate to health, personal safety, asset protection and IS security.

These risks are laid out in § 2.2 "Risks to which the Group is exposed". In addition, some risks are detailed in section 3, in particular risks related to climate and environmental issues, duty of care, and personal health and safety.

On the basis of the risk maps and activity control reports drawn up by the Group's entities and subsidiaries (1st line of control), supplemented by cross-reviews with the 2nd line of control and with the Internal Audit Department, the Group's Risk Management Department draws up a consolidated map of its major risks. This map includes an overall assessment of internal control, and provides Management and the governance bodies with a consolidated, prioritised and regularly updated view of the major risks, and their level of control. This mapping is validated by the Risk Committee and is presented to the Board of Directors after examination by the Audit Committee.

3rd line of control: the Group's audit unit

The Group's audit unit is composed of all of the Group's internal audit resources. Pursuant to a decision of the Chairman and Chief Executive Officer, this unit is led by the Group Audit Director. It includes the Internal Audit Department ("IAD", reporting to the General Secretary) and audit teams specific to each of the main

French and foreign subsidiaries. The relationship between the IAD and audit teams of the operators of regulated infrastructure, and also their respective prerogatives, have been defined to ensure compliance with the principle of management independence. The IAD carries out functional supervision of the unit (co-appointment and co-assessment of the subsidiaries' Audit Directors by the IAD – excluding Enedis –, sharing best practice, training, sharing tools and methods, etc.). At the end of 2022, the Group audit unit consisted of 70 FTE employees.

Operating standards for EDF and controlled subsidiaries

The IAD applies the international standards defined by the Institute of Internal Auditors and monitors their compliance.

The remits, powers and responsibilities of the auditors as well as the rights and duties of the audited parties are defined in a charter issued in July 2019. It sets out the fundamental principles governing audits, the procedures for drawing up the programme, the types of assurance assignments entrusted to it, and the duties of the audited parties and auditors. It includes a code of ethics applicable to the entire audit function. This Code is aimed at promoting an ethical culture, and recalls that the auditor must comply with and apply certain basic principles relevant to the profession and the conduct of internal audits.

The Internal Audit Department has direct access to the Chairman and Chief Executive Officer. It reports on assignments to the Audit Committee, which issues an opinion on the risk-based internal audit, reviews the performance of audits and verifies the matching of the resources dedicated to internal audits with the workload. The IAD's processes, from the definition of the audit programme to the monitoring of action plans, are all outlined and managed.

Auditors are trained in the same methodology, in line with international standards and are evaluated at the end of each assignment. The IAD's processes for all the above-mentioned activities (from the definition of the audit programme to the monitoring of action plans) are outlined and managed. The audit unit regularly submits voluntarily to assessment by IFACI ⁽¹⁾. The last assessment, in 2018, stated as previously that the audit practices complied with the international standards of the profession.

(1) Institut français de l'Audit et du Contrôle Interne (French Institute of Audit and Internal Control).

Operating procedures

The Group's audit unit conducts audits of the entities and controlled subsidiaries, Business Units, projects and cross-functional functions. These audits include a review of the robustness of internal control and are carried out every three to five years depending on their level of significance. The IAD is the sole entity with powers to conduct corporate cross-functional BU/project audits, whereas the Audit Departments of the subsidiaries only conduct audits within their scope.

The audit programme is developed on the basis of the Group risks.

All audits give rise to recommendations which, once validated by the audited parties and their management, become the subject of action plans drafted by the aforementioned management and audited parties. These action plans are sent to the IAD for its opinion; the IAD subsequently monitors them, starting no later than six months after the audit report is circulated. A half-yearly summary report recaps the main findings of the corporate audit and the follow-up of action plans. This half-yearly report also presents the results of the audit programme, the level of satisfaction of the audited parties, the activity of the entity, an assessment of skills and the budget. Furthermore, it identifies any recurring or generic problems observed in several audits and deserving special attention. Finally, it provides an audit-based view of the Group's level of risk control. This report is presented to the

Chairman and Chief Executive Officer, the Executive Committee, and then to the Audit Committee and the Board of Directors.

External controls

Like all listed companies, the EDF group is subject to review by the AMF. As a company majority-owned by the French State, EDF is also subject to control by the Cour des Comptes (French Court of Auditors), the economic and financial controllers of the Inspectorate of Finance, the Economic Affairs Committees or *ad hoc* Committees of Enquiry of the French National Assembly and Senate.

In accordance with the law, the Statutory Auditors certify the annual financial statements (parent company and consolidated financial statements) and perform a limited review of the Group's half-yearly condensed consolidated financial statements. Their report on the annual financial statements includes checks on the corporate governance information required by the Articles L. 225-37-6 of the French Commercial Code.

In view of its business activities, EDF is also subject to control, in France, by the Energy Regulation Commission (CRE) and the French Nuclear Safety Authority (ASN).

2

2.1.3 The main programmes for controlling activities

The activity control programmes are implemented to ensure that the requirements set out in the Group's policies, validated by the Executive Committee (see box in section 2.1.2), are met and are selected according to the major risks.

2.1.3.1 The Group Ethics and Compliance programme

The Group Ethics and Compliance Department implements the Group Ethics and Compliance programme on the basis of the following reference frameworks (see section 3.1 "Carbon neutrality and the climate"):

- the Group Ethics and Compliance Policy (PECG) lays down the main rules of which Managers must be aware, and with which they must comply with and ensure compliance within their entities, in strict accordance with the risks of their respective entities. The PECG is backed up by instruction memoranda and support guides designed to assist its deployment, including in particular monitoring the integrity of business relations, financial ethics, protection of personal data, the combating of fraud, the management of gifts and invitations, the prevention of conflicts of interest and the duty of vigilance. The PECG is the supra-reference to the Group Ethics Charter and the Ethics and Compliance code of conduct, which can be updated according to new applicable regulations, and which is subject to audit;
- the Group Ethics Charter built around the Group's three values (Respect, Solidarity, Responsibility), defines the requirements that should guide the actions and conduct of the Group employees on a daily basis;
- the Ethics and Compliance code of conduct, reviewed in 2021, is set out in the internal regulations of the entities, is the reference document for the prevention of corruption, and applies to all employees (requirements of the Sapin II Act);
- the EDF group's ethics and compliance whistle-blowing system, allows the Group's employees and external personnel (temporary staff, employees of a service provider, etc.) or occasional employees (fixed-term contracts, apprentices, trainees, etc.), to submit a report in accordance with the "Sapin II" Act of 9 December 2016, relating to transparency, the combating of corruption and the modernisation of economic life (see section 3.3.2.4 "The EDF Group whistleblowing procedure"). The same whistle-blowing system is also made available to third parties for issues covered by the "Duty of Vigilance" Act of 27 March 2017 relating to the duty of vigilance of parent companies and companies placing orders.

2.1.3.2 The Information Systems and Assets Security programme

The Information Security and Information Systems programme is covered by both the policy for the Security of Assets against Malicious Acts and the policy for the Security of Information Systems and IS Governance of information systems and

digital transformation. Both policies aim to prevent the risk of attacks and limit the impact of any such attack. These policies are supplemented by guidelines on the protection of personal data.

The main strategic orientations for controlling activities aim to:

- legitimise and strengthen governance and management;
- generalise the culture of safety throughout the Group;
- secure the most critical functions in close collaboration with the business lines;
- anticipate, strengthen and maintain the uniformity of monitoring and the ability to react in the event of an incident.

A charter governing the use of IT resources sets out IT best practices, and is annexed to EDFs internal regulations. IS security training and awareness-raising courses adapted to different profiles (users, project managers, IS security managers, etc.) are offered on a regular basis to employees. The Executive Committee and the Audit Committee of the Board of Directors receive reports on cyber security risk management. Several dozen security audits are carried out each year by external IS security audit companies qualified to PASSI standard (IS security audit providers), and by the ANSSI (the French National Cyber security Agency), both on IT infrastructures and on business information systems. In addition, the EDF group SOC (Security Operational Centre) reports monthly on IS security incidents.

Lastly, IS crisis and cyber security drills are regularly carried out to test the various measures put in place.

The main actions for cyber security risk control that were implemented in 2022 are set out in section 2.2.4 "Attacks against assets, including cyber attacks" (4D).

2.1.3.3 The Health and Safety programme

The EDF group's health and safety programme is set out in section 3.3.1.3.1 "Health and safety policy".

2.1.3.4 Approval of capital commitments

The EDF group's Capital Commitments policy sets the framework for decisions on commitments in terms of management, governance and control. This policy applies to all capital-commitment projects, regardless of their amount, for all EDF entities and subsidiaries, excluding regulated subsidiaries while adhering to the governance principles applying to listed companies. Before each commitment decision, the proposed projects undergo a risk analysis according to a methodological reference framework made available to the entire Group. Capital commitment projects are reviewed, where applicable, by the Board of Directors as described in sections 4.2.2.3 "Powers and duties of the Board of Directors" and 4.2.2.9 "Activity of the Board of Directors in 2022".

Strategic projects (beyond the thresholds defined in the Commitments policy) are reviewed by the Group Executive Committee Commitments Committee (CECEG).

Strategic disposal projects are examined separately and supervised by the Disposals Committee (part of the CECEG) to preserve confidentiality and responsiveness.

2.1.3.5 Reliability of financial information - internal accounting and financial controls

The EDF group has organised its financial risk management around the following functions:

Performance Management, reporting, with the following main tasks:

- contributing to the management of the Group entities' performance by implementing the Group's performance plans and by challenging the measures implemented by the entities and business lines. For this purpose, the Finance Department implements a set of management indicators adapted to the economic model of each of the Group's activities;
- contributing to budget monitoring through general performance reviews in the departments and controlled subsidiaries;
- developing and disseminating financial management methods and processes, contributing to the dissemination of a management culture within the Group;
- managing the management cycle processes, summarising them and suggesting decisions to management and subsidiaries;
- developing medium- and long-term financial trajectories.

Accounting:

- preparing EDF's corporate financial statements and the Group's consolidated financial statements;
- ensuring accounting compliance by using Group reference frameworks based on accounting standards and the chart of accounts;
- coordinating the Group's internal accounting and financial control system, in accordance with the system presented below.

Taxation:

- ensuring the consistency of tax practices, the requirements of which are listed in the Group's Tax policy. The precise provisions in this area are discussed in section 3.4.2.2 "Contribution to development through taxation";
- ensuring the proper execution of legal and declarative obligations, notably by monitoring the subject;
- ensuring the accounting follow-up of the deferred tax position and the periodic review of evidence justifying the accounts;
- identifying and controlling the Group's tax risks.

Finance and Investments:

- coordinating the actions inherent in the Group's balance sheet and financial result, with the aim in particular of controlling the exposure of the Group's hedging assets, debt and the Group's overall balance sheet to financial risks;
- managing the investments, acquisitions and disposals as well as the listed and unlisted dedicated assets. The Group Risk Department prepares an annual risk mandate and specific working frameworks which define the principles for managing risks and the risk limits that are acceptable for this portfolio;
- appraising the investment projects presented to the CECEG meetings to anticipate impacts and improve the reliability of the financial trajectories relative to the Group's balance sheet and profit and loss accounts, as defined by the Commitments policy;
- contributing to portfolio reviews and economic and financial optimisation analyses;
- ensuring that the Group is financed in accordance with the Financing, Treasury and Financial Risk Management policy;
- verifying the due implementation of the policy principles (drafting of work management frameworks, methodology, monitoring of exposures, regular calculation of risk indicators and controlling compliance with risk limits). The positions of the trading room in charge of cash management are monitored by the Group Risk Department.

The Financing, Treasury and Financial Risk Management policy requires the Group entities to continuously and systematically identify financial risks (particularly those pertaining to liquidity, interest rates, foreign exchange and counterparty). The Group Risk Department exercises second level control of these risks via:

- verification that the policy principles have been duly implemented (preparing work management frameworks, methodology, monitoring exposures, regular calculation of risk indicators and controlling compliance with risk limits);
- controlling the positions of the trading room in charge of cash management. For these activities, a system is in place of indicators and risk limits, which are checked on a daily basis. The Markets Committee (a body that brings together the Finance and Investment Department and the Group Risk Department) checks and reviews on a quarterly basis, where necessary, requests for exemptions from the work management frameworks and requests for investment in new financial products.

The policy on the constitution, management and control of the financial risks involving EDF's Dedicated Assets applies to the portfolio of Dedicated Assets managed by the Finance Department. The Group Risk Department prepares an annual risk mandate and specific work management frameworks which define the principles for managing risks and the risk limits that are acceptable for this portfolio.

Reference frameworks

The accounting standards used by the EDF group (the scope of the Group's consolidated financial statements is set out in the appendix to the consolidated financial statements for the year ended 31 December 2022; see section 6 "Financial statements") comply with the international standards published by the International Accounting Standards Board ("IASB") approved by the European Union and applicable as at 31 December 2020. These international standards include the IAS (International Accounting Standards), IFRS (International Financial Reporting Standards) and the SIC and IFRIC interpretations. The accounting rules and methods are specified in the Group's accounting principles manual and summarised in the notes to the consolidated financial statements for the year ended 31 December 2022.

The principles applicable to the preparation and reporting to the Group's Finance Department are defined in the Accounting and Financial Reporting policy. The specific internal control provisions are described in the Group guideline entitled "Internal Accounting and Financial Control", and the control objectives to be implemented in the entities are specified and updated each year in the Group's Internal Control Guide. The Financial Management Directors of the Departments of the Business Lines and Subsidiaries sit on the Management Committee of the entities to which they belong. With the exception of the operators of regulated infrastructure, they are appointed and assessed jointly by operational management and the management of the Finance function. A network of correspondents from the Operational Departments and subsidiaries facilitates dissemination of the guidelines and harmonised implementation throughout the various Group entities.

Each operational and functional Director of EDF makes a commitment each year with regard to the quality of the Accounting and Financial Internal Control system, the improvement goals for the coming period and the truthfulness and exhaustiveness of the accounting information for which they are responsible by drafting a commitment letter sent to the Group Accounting and Tax Director. In return, each Director receives from the Group's Accounting and Tax Director a letter assessing the accounting and tax quality based on the various elements of the assessment (results of internal controls, indicators of the accounting quality dashboard, letter certifying the compliance of the CSP2C accounts, specific actions) to highlight the progress made and determine the improvements to be made or continued. An indicator reference framework is used within EDF. It measures areas of conformity of the accounting information for each process. As regards subsidiaries, each entity is responsible for implementing the Group's Internal Accounting and Financial Control guideline.

Procedures for preparing and auditing the consolidated financial statements

The consolidated financial statements are prepared by the Consolidation Department of the Consolidation Accounting Division based on data entered locally by each entity (parent-company and subsidiary entities) in accordance with Group standards and closing instructions, following a single chart of accounts. The scope of consolidation is closed after identifying all companies of significance that are controlled, jointly-controlled or under significant influence. The non-significant nature of entities in which EDF holds an interest and which may fall within the consolidation scope is examined regularly and submitted annually for assessment by the Statutory Auditors.

The half-year consolidated financial statements are presented to the Audit Committee and then approved by the Board of Directors. The annual consolidated financial statements are reviewed by the Audit Committee, then closed at 31 December of the fiscal year by the Board of Directors and lastly, approved by the Shareholders' General Meeting.

Each half-yearly and annual closing gives rise to the preparation of instructions specifying the main deliverables expected from each party involved in the publication of the financial statements as well as the preparation of the management report and the Universal Registration Document (URD) for the annual financial statements. Meetings with EDF departments and the subsidiaries facilitate the preparation of these financial statements and make it possible to anticipate changes with regard to certain treatments thereby increasing the reliability of the accounting and financial information published. An analysis after the event of the conditions concerning completion of the foregoing (compliance with deadlines, quality of information, etc.) allows for regular improvement of the process for preparing and analysing the consolidated financial statements.

Quarterly reporting of information on the EDF group's balance sheet and the profit and loss statement serves to anticipate the processing of complex operations and contributes to enhancing the reliability of the results.

Management forecasts and outturns are generated using a single reference framework and tools shared between accounting and management. This system contributes to the coherence of Group management, facilitates dialogue at all levels of the organisation, and helps promote both the sharing of information between the different parties and the quality of the information produced.

Procedures for preparing and auditing the corporate financial statements

The corporate financial statements are prepared annually and semi-annually by the Parent Company Financial Statements Department of the Accounting Consolidation Division. The annual corporate financial statements are closed on 31 December of the fiscal year, approved by the Board of Directors of EDF, and then approved by the Shareholders' Meeting.

The condensed half-year corporate financial statements are closed on 30 June of the fiscal year, and then approved by the Board of Directors. EDF's transactional accounting (excluding the Nuclear Fuel Division, the Island Energy Systems Division, the Decommissioning and Waste Projects Division and the Executive Talents Managers Training Department for the payroll accounting aspect) is entrusted to the Shared Accounting and Consulting Services Centre (CSP2C) of the Tertiary Services Department, which also handles the transactional accounting for certain French subsidiaries. The treatment of transactional accounting is organised by process. "Governance pacts" set out the respective responsibilities of the operational and functional departments, of the CSP2C or, where applicable, the accounting operators in the operational business lines and the Accounting Consolidation Division.

Meetings are organised on a quarterly basis with the EDF departments to prepare the financial statements and anticipate changes with regard to certain processes to increase the reliability of the published accounting and financial information.

2.1.3.6 Crisis management and business continuity

As is the case with the Covid-19 pandemic, the Group's activities may also be affected by natural disasters (floods, landslides, earthquakes, etc.), significant climatic variations (droughts, etc.) and any other event the scope of which is difficult to predict (pandemic, major industrial accident in the world, etc.); this was the case with the storms Amélie (2019), Alex (2020) in metropolitan France, and Irma (2017) in the West Indies, and with episodes of extreme cold (winter 2017) or heat waves (summer 2019). In the event of an exceptional incident, the measures adopted may generate costs beyond those of repairing the damage caused by the disaster and the loss of earnings from the interruption of the supply of goods and services by the Group.

To manage this risk, EDF has defined a Crisis Management and Business Continuity policy that takes into account the Group's territorial presence and the importance of the Group's industrial activities and public service to the economy from the standpoint of business continuity. This policy defines the organisation principles and sets out the entire system required for implementing that policy. This policy consists in particular of:

- ensuring the existence of structures to manage crises and permanent systems for reporting alerts;

- checking the existence and regular updating of relevant crisis management procedures, having regard to the risks involved;
- defining, for periods of crisis, coordination procedures with all stakeholders;
- making sure that feedback from crises and crisis drills is systematically taken into consideration in order to avoid or mitigate the consequences of similar crises, thereby enriching the Business Continuity Plans (BCP);
- ensuring the existence and updating of business continuity plans within each entity;
- checking the implementation of professional development actions for all parties in the crisis.

A crisis drills programme allows regular testing of the effectiveness and overall consistency of these mechanisms.

In 2019, the EDF group set up an action plan to increase the entities' preparedness with regard to business continuity issues. In this context, the development of a pandemic crisis drill, including the revision of the EDF group's pandemic plan, was initiated in the summer of 2019. These activities proved to be particularly valuable for managing the Covid crisis in 2020. By relying on operational, prepared and tested mechanisms, the EDF group was able to deal proactively with and anticipate the health crisis as from the end of January 2020. Feedback after the summer of 2020 enabled the Group to approach the second lockdown, in November 2020, with the lessons learned regarding requirements for continuing its activity.

In 2021, an Information Systems coordination activity was conducted to ensure consistency and mutual understanding between the IS section of the business lines' BCP and the IS BC.

In 2022, the in-depth analysis of business continuity focused on temporary unavailability of electricity and its impacts, particularly on telecommunications. Crisis drills on these themes aim at validating these BCPs, and any points for improvement required. Beyond validation of processes, the drills, particularly in areas usually perceived as reserved to specialists, provide opportunities for learning, awareness-raising, and sharing among the different business-line priorities, thanks to a dialogue based on concrete examples. These themes are covered by regularly conducted analyses, as in the case of IS crises, for example, even if they are of limited extent, and/or drills and action plans if areas of vulnerability remain.

In 2021, opportunities arose for testing the robustness of the crisis mechanism and its agility in the face of the different phases of lockdown and changing telework conditions during the Covid crisis, particularly with regard to its impact on the availability of the nuclear plant, and the special attention to be paid to the components for balancing supply and demand during the winter of 2021/2022. In 2022, this theme was thoroughly explored with the Ministry for Ecological Transition, by means of crisis drills and actions conducted in the context of crisis on the energy markets. Continuity plans were developed from the standpoint of possible selective shut-downs, in addition to an in-depth analysis of their IS aspects in 2021. These studies support mutual cooperation between the business lines and the IS experts, in order to respond to cyber-attack risks.

2.1.3.7 Insurance

In order to protect its assets and limit the impact of certain events on its financial position, the EDF group has dedicated insurance programmes that cover its major risks relating to property damage, civil liability and personal insurance. Note that nuclear risks are subject to the specific civil liability regime described below.

Organisation

The Group Insurance Division is responsible, while upholding the management independence of the regulated infrastructure operators, for preparing the EDF group policy covering insurance, steering and tracking its implementation throughout the Group, in order to optimise the overall costs of its insurable risks⁽¹⁾.

The Insurance Managers of entities and controlled subsidiaries that are included in the Group's programmes are responsible for:

- ensuring that all risks are insured;
- scheduling prevention inspections and overseeing implementation of the resulting recommendations;
- reviewing cover strategies and amounts declared (risk quantification);
- analysing losses and participating in claims handling.

(1) Risks that can be transferred to both the insurance markets and the alternative markets.

This work, carried out in close collaboration with the Group Insurance Division, allows for continuous improvement of the quality of information on insurable risks in step with programme renewals prevention inspections (evaluation of maximum possible losses, "MPL"). In connection with prevention actions, the Group Insurance Division establishes and oversees implementation of the site inspection programmes.

Group Insurance Policies

Purpose: the Insurance policy, validated by the Executive Committee in January 2017, specifies the risks that the Group decides to transfer to the market, and the general principles for optimising these transfers:

- mass purchasing through the implementation of Group insurance programmes;
- sharing between traditional markets and other types of cover (specialised mutual insurance companies, transfer to the financial markets, etc.);
- individual and Group deductibles (generally, only large-scale risks are transferred);
- optimisation of intermediation expenses.

Principles of execution:

Since 2011, a Strategic Insurance Policy Committee ("COSA") provides an opportunity for the business lines and the Finance Department to reflect on changes to and procedures for implementing the policy covering Insurance, in particular on the main characteristics of the programmes.

The Group Insurance Division and the Group Risk Department perform an annual analysis of the risk mapping at Group level, supplemented by the insurance cover system in place. Based on this shared view, EDF is in a position to improve, and, where applicable, extend the cover of insurable risks in accordance with the principles established by the Group in this area.

The goal of the Group's insurance programmes is to integrate the controlled subsidiaries as broadly as possible, in order first, to homogenise risk cover and streamline its management, and secondly, to control the corresponding insurance costs.

Insurance contracts, according to market practice, include exclusions, limits and sub-limits.

Use of captive insurance companies and mutual insurance companies

Like all major French and international groups, EDF uses captive insurance companies and mutual insurance companies to supplement cover provided by the traditional insurance markets.

The EDF's Group's ⁽¹⁾ captive insurance companies are:

- Wagram Insurance Company DAC, an insurance company founded in 2003 in Dublin, which is involved in the majority of the Group's insurance programmes;
- Océane Re, a reinsurance company established in 2003 in Luxembourg, to reinsure EDF's nuclear civil liability risk.

Furthermore, EDF is a member of the Everen (formerly Oil Insurance Limited (OIL)) mutual insurance company in order to deal with the risks of damage (excluding overhead networks) to the property owned by or under concession to the Group (EDF and its consolidated subsidiaries). Everen is a mutual insurance company dedicated to the needs of companies in the energy sector which provides its members with cover for property damage. The scope covered includes *inter alia* nuclear power plants (the conventional portion), fossil-fuel-fired power plants, hydropower facilities, network substations, and exploration and production assets.

The Group's damage insurance programmes combine this cover provided by Everen and cover provided by captive insurance companies and market insurers.

The EDF group is also a member of the European Liability Insurance for the Nuclear Industry (ELINI), the European Mutual Association for Nuclear Insurance (EMANI), the Nuclear Industry Reinsurance Association (NIRA) and Blue Re, which are mutual insurance companies that manage cover in this field for European nuclear power operators.

The captive and mutual insurance companies enable EDF to reduce the total amount of premiums paid and, more generally, to reduce the cost of its insurance schemes.

Civil liability insurance (not including nuclear civil liability)

EDF has taken out general civil liability insurance covering EDF, Enedis and their controlled subsidiaries against the financial consequences of civil liability, excluding nuclear damage that may be incurred by the entities in the course of their activities due to damage caused to third parties. The actions and measures implemented to prevent industrial and environmental risks and mitigate their effects are described in particular at the beginning of this section in the paragraph titled "2nd line of control: risk management and control of activities".

This cover is purchased to the extent of available capacity at acceptable financial terms, on the insurance and reinsurance markets. Maximum cover is €1 billion. Under this programme, the share of risk retained by the Group with regard to an insurable accident ("retention"), including the share of Wagram Insurance Company DAC and Océane Re, does not exceed €40 million per insurable accident. Subsidiaries generally opt for lower deductibles that are more consistent with their financial capacity.

Civil liability insurance for corporate officers

EDF has a civil liability insurance programme covering corporate officers and executives of EDF, Enedis and their controlled subsidiaries against the financial consequences of their civil liability incurred in performing their management functions.

Damage insurance (excluding nuclear assets)

Conventional damage programme

The scope of the conventional damage programme includes virtually all EDF subsidiaries, in particular EDF Energy, Edison, Dalkia, and the distribution network operator Enedis.

Wagram Insurance Company DAC, together with other insurers and reinsurers, provide extensions of cover (property damage and business interruption) in addition to the cover provided by Everen increasing the maximum to €1 billion. Under this programme, the Group's retention per claim, including the deductible (which varies by subsidiary) and the share of the risk retained by Wagram Insurance Company DAC and by Océane Re, does not exceed €35 million.

This programme provides business interruption cover for most of the subsidiaries in the event of property damage, but not for EDF, which does not benefit from this cover. The actions and measures implemented to prevent industrial and environmental risks and mitigate their effects are described in particular at the beginning of this section in the paragraph titled "2nd line of control: risk management and control of activities".

Cover for "construction" risks

EDF has taken out insurance policies covering specific construction risks (construction all-risk, and erection/testing all-risk policies). These policies are not included in any Group programme but are purchased on an *ad hoc* basis for major construction projects such as the EPRs of Flamanville and Hinkley Point C, the construction of combined cycle power plants, dams, etc.

Cyber risk cover

Since 1 July 2017, cyber risk cover has been put in place. This €70 million cover protects EDF and the Group's controlled subsidiaries for the expenses incurred in handling major disruptions caused by a cyber attack on the Group's information systems.

(1) Framatome and EDF Energy have their own captive insurance companies to meet their own coverage needs.

Specific insurance for nuclear facility operations

Several international conventions govern the civil liability of nuclear facility operators, in particular the Paris Convention of 29 July 1960 on Third-Party Liability in the Field of Nuclear Energy and the Brussels Convention of 31 January 1963, which supplements the Paris Convention (hereinafter the "Conventions"). The Paris Convention introduced a special liability regime for nuclear damage, which is strict (even in the absence of fault), limited as to amount ⁽¹⁾ and duration, and is exclusively focused on the nuclear facility operator. These Conventions apply to the signatory countries that have ratified them, including France and the United Kingdom.

Protocols to amend the Paris and Brussels Conventions were signed on 12 February 2004 and entered into force on 1 January 2022. They require higher amounts of compensation than the original conventions, in order to cover a greater number of victims and types of damage that are eligible for indemnification. The State, in which is located the nuclear facility of the operator that is liable for causing the damage, is liable for amounts above the €700 million for which the operator is liable, up to €1,200 million (provided that such State is a Contracting Party to the Brussels Convention). Above this amount, the Member States that are Contracting Parties to the Brussels Convention are liable up to a maximum amount of €1,500 million. In addition, for personal injury only, the time limit for instituting actions for compensation has been raised from 10 years to 30 years from the date of the incident. The definition of "nuclear damage" is evolving and includes, in addition to damage to persons and property, consequential damage, economic losses, the cost of protective measures, the cost of measures to rehabilitate damaged environments, and certain other losses resulting from damage to the environment.

These Conventions also provide that the operator has an obligation to take out insurance or lodge a financial guarantee for the liability amounts established, in order to guarantee the availability of funds.

In France, the civil liability obligations imposed on nuclear facility operators have been transposed into the French Environmental Code. Thus, the liability limits for civil liability of nuclear facility operators are set at €700 million for nuclear damage caused by each nuclear accident (€70 million for low-risk facilities) and €80 million in the event of transport of nuclear substances for a given nuclear accident ⁽²⁾.

EDF has implemented the "Nuclear Civil Liability Insurance Programme (RCN)" insurance cover obtained following a call for tenders, which enables the Group to meet its obligations arising from the revised Paris Convention, while controlling

their financial impact. This insurance is shared between the nuclear insurance market (AXA, reinsured by the French nuclear pool Assuratome), the Group's captive insurance companies, and the nuclear mutual insurance company ELINI.

Framatome entered the Group insurance scheme on 18 February 2020.

In the United Kingdom, EDF Energy has implemented a programme satisfying the requirements of the updated Paris Convention, subscribed with the British NRI pool, the Group's captive insurance companies and the ELINI nuclear mutual insurer. Note that the British operators' obligations will be gradually raised over a five-year period, from €700 million to €1,200 million.

Cover for damage to nuclear facilities

The cover obtained through EDF's membership of the Everen mutual insurance company provides protection against material damage in cold regions, excluding the consequences of a nuclear accident, amounting to 60% of \$450 million in excess of a deductible of USD 15 million, both in France and the United Kingdom.

Since 1 October 2021, the insurance system covering nuclear facilities is as follows:

- in France, the protection provided by Everen is supplemented, for the consequences of a nuclear accident, including the costs of site decontamination, by insurance cover of up to €80 million in excess of a deductible of up to €20 million using the EMANI nuclear mutual insurance company, Axa and Allianz (all of which are reinsured by Assuratome), and Wagram Insurance Company DAC (the latter reinsured by Océane Re);
- in the United Kingdom, Everen's protection is supplemented, for the consequences of a nuclear accident, including the costs of site decontamination, by an insurance programme with capacity defined based on the technology and status of the plants of up to £1 billion provided by the nuclear mutual insurance association EMANI, the British nuclear pool NRI and Northcourt, which consists of British specialist insurers.

Framatome is insured by the mutual insurance association EMANI for damage and consequential operating loss affecting the facilities involved in the manufacture of fuel, up to a limit of €650 million, with a deductible not exceeding €5 million for damage, and 90 days for operating loss. Furthermore, EDF Inc. is a member of NEIL (Nuclear Electric Insurance Limited) – a nuclear mutual insurance company in the United States.

Premiums

The total amount of Group insurance premiums for all types of cover was €311 million in 2022.

(1) With the exception of Party Countries that have opted for unlimited liability (Germany, Switzerland, Sweden, etc.).

(2) Articles L. 597-4 and L. 597-8 of the French Environmental Code.

2.2 Risks to which the Group is exposed

The Group operates in a fast-changing environment that entails numerous risks of various kinds: they may be regulatory, strategic or operational. Some are exogenous; others are endogenous and inherent to the Group's business lines. Their consequences may affect the Group's operating results, the Group's financial position and its ability to finance its strategy or development. They may also affect its internal or external stakeholders or environment, or its reputation.

The Group describes hereinafter the specific risks to which it considers itself exposed, and the corresponding main control actions, without overriding the managerial independence of regulated infrastructure operators. For non-specific risks, the absence of a risk description in this section does exclude their being taken into account.

The risks must be read in their entirety, as some of them may be interdependent.

Risks are divided into five categories described in sections 2.2.1 to 2.2.5:

- Section 2.2.1 "Market regulation, political and legal risks" describes the risks related to changes in public policy and regulation in the countries and territories where the Group operates, as well as the legal risks to which the Group is exposed;
- Section 2.2.2 "Financial and market risks" describes the risks arising from exposure to the energy markets in which the Group operates, as well as risks related to changes in the financial markets and the reliability of the related information;
- Section 2.2.3 "Group transformation and strategic risks" describes the risks related to the Group's ability to adapt, particularly in terms of strategy and skills, in response to the needs for transformation brought about by climate change, new competition, and technological and societal changes;
- Section 2.2.4 "Risks related to operational performance" describes the risks related to the control of the Group's operating activities across its various industrial projects and activities. In particular, this section describes the Group's risk relating to current and/or future EPR projects, which is a major risk;
- Section 2.2.5 "Specific risks related to nuclear activities" supplements section 2.2.4 for activities relating to the Group's nuclear activities (nuclear safety, operation, fuel cycle and long-term commitments).

The risks are outlined in detail in each of the relevant sections for their respective category. They are numbered to make it easier to connect the summary table and the detailed descriptions that follow.

The aftermath of the Covid crisis, and the consequences of current geopolitical tensions, particularly the Ukraine conflict, drive inflation and cause disruption on the various markets. These factors are treated as factors aggravating the following risks:

- energy market risk (Risk 2A): increased volatility, upward pressure on prices and reduced liquidity, and the impact on regulatory changes (Risk 1A);
- operational continuity of supply chains and contractual relationships (Risk 4B): inflationary pressures, disruption of industrial supply chains for products or equipment from countries affected by the conflict, disruption of contracts with companies affected by economic sanctions against Russia;
- financial risks in section 2.2.2 "Financial and market risks", particularly the liquidity risk;
- damage to assets including cyber-attacks (Risk 4D): increase in cyber threats.

All the risks identified in this document have been selected because they are significant in terms of the materiality of their estimated impact on the Group. In addition, they are prioritised based on a qualitative assessment of their criticality, taking into account simultaneously the significance of the potential impact for the Group, the probability of their occurrence and the level of control, in light of the actions undertaken. This prioritisation produces a three-level scale for all risks: the criticality can be considered strong, intermediate or moderate. The categories are not ordered hierarchically.

As a general rule, the scope of exposure is France, Belgium, Italy, the United Kingdom and all countries in which the Group is present. Where the scope of exposure is more restrictive, it is specified in the table and in the risk description.

Exposure to risk may vary according to duration. The potential impact of these risks may produce effects at very different time horizons, ranging from very short term (less than a year), to medium term (up to a few years) to very long term (up to several decades or more), given the nature of the relevant industrial activities which may span centuries.

In order to control risks, measures have been put in place. Some measures apply to all risks: internal control, commitment approval process (see section 2.1 "Risk management and control of activities"); others are specific to each risk.

Additional provisions for taking into account certain risks related to Corporate Social Responsibility are set out in chapter 3. Cross-references shall, where appropriate, be specified in the risk description.

TABLE OF RISKS - NUMBERING, LABELS AND CRITICALITIES

Criticality is appraised having regard to the control actions undertaken.

Category	Risk	Criticality
1. Market regulation, political and legal risks	1A – Changes in public policies and in the regulatory framework in France and Europe, especially relating to ARENH.	●●●
	1B – Changes in the legal and regulatory framework for hydraulic concessions	●●
	1C – Changes in the legislative and regulatory framework for electricity distribution concessions	●●
	1D – Ethical or compliance violations	●
	1E – Litigation risk	●
2. Financial and market risks	2A – Energy market risk	●●●
	2B – Financial markets risk	●●
	2C – Interest rate risk	●●
	2D – Access to liquidity risk	●●
	2E – Counterparty risk	●●
	2F – Foreign exchange risk	●
3. Group transformation and strategic risks	3A – Transformation capacity in the face of disruptions	●●
	3B – Adaptation to climate change: physical and transition risks	●●
	3C – Adaptation of employees' skills	●●
	3D – Ability to fulfil long-term social commitments	●●
4. Operational performance	4A – Management of large and complex industrial projects, including EPR projects	●●●
	4B – Operational continuity of supply chains and of contractual relationships	●●
	4C – Occupational health or safety violations (employees and service providers)	●●
	4D – Attacks against assets, including cyber attacks	●●
	4E – Hydraulic safety violations	●●
	4F – Risk of supply/demand imbalance within EDF	●●
	4G – Risk of black-out	●
	4H – Industrial safety violations and impact on environmental assets, including biodiversity	●
5. Specific risks related to nuclear activities	5A – Failure to comply with the objectives in terms of operation and/or of extending the operating life of nuclear power plants (France and United Kingdom)	●●●
	5B – Control of radioactive waste treatment, of the decommissioning of nuclear facilities, and ability to meet related commitments	●●
	5C – Nuclear safety violations during operation resulting in nuclear civil liability	●●
	5D – Control of the fuel cycle	●●

Caption

●●● Strong criticality

●● Intermediate criticality

● Moderate criticality

2.2.1 Market regulation, political and legal risks

1A – Changes in public policies and in the regulatory framework in France and Europe, especially relating to ARENH

Summary: Public energy policies and market regulation in Europe, France and more generally the countries where the Group operates are likely to change even at short notice and, as a result, the Group faces major regulatory risk. In France, these changes may have an impact on regulated sales tariffs, the ARENH (Regulated Access to Historic Nuclear Energy) or the Tariffs for Using the Public Transmission and Distribution Networks (TURPE). They may impact the tax regime applicable to the Company. They may also affect the framework for CO₂ emission certificates or the Group's investment financing mechanisms through the European taxonomy.

The consequences may be considerable for the Group, and could slow its development compared with its competitors, or hinder its financial situation and its ability to finance its strategy or meet its commitments to climate protection.

Discussions are beginning on both a national and a European scale on the changes in the architecture for the European electricity market. They are particularly aimed at reducing the heavy dependence of retail electricity prices on fluctuations in gas prices, and they seek to create more favourable conditions for investment both upstream (decarbonised electricity generation) and downstream (electrification of uses). In the current context of crisis in prices, there is a risk that any measures taken may be prejudicial to the Company.

In particular:

- the Government's announcements in 13 January 2022, specified in the Decree of 11 March 2022, imposed certain regulatory measures having significant financial impacts for the Group;
- the existing regulatory framework in France, and the definition of the future regulatory framework, both of which apply to the value generated by the Group's existing nuclear power generation in France, could work against EDF's interests, and jeopardise the Group's ability to complete its industrial project and, where applicable, impair the financing for the NNF project (New Nuclear France).

Criticality: ●●● Strong

a) Context

In France, the context determining the scale of this risk (laws, regulations, policy directions) is as follows:

- **Energy mix:** the Act sets at 2035 the target date for the reduction to 50% of the nuclear power component in electricity generation, and sets at 40% the target for reduction in fossil fuel consumption by 2030 (compared with 2012), and plans to achieve carbon neutrality by 2050 by dividing greenhouse gas emissions by a more than factor of six.
- **The speech by the President of the Republic on 10 February 2022 in Belfort:** the President of the Republic called upon EDF to prolong the life of all the nuclear reactors that could be extended without any concessions on safety, to examine the conditions for extension beyond 50 years in coordination with the nuclear safety authority (ASN), and to launch a new reactor programme: the construction of six EPR2 reactors and the launching of feasibility studies for the construction of eight additional EPR2 reactors. The President also announced the massive development of renewable energies: solar energy (with a tenfold increase in installed power to exceed 100GW), offshore wind power (target 40GW to be commissioned in 2050), onshore wind power (installed power 18.5GW at end 2021, to be doubled by 2050), and hydropower.
- **The review process for the SFEC (French energy climate strategy)** began in October 2021. A first public consultation was held from November 2021 to February 2022, giving EDF the opportunity to express itself via a consultation paper. The aim is to publish in 2024 the texts comprising the French strategy: the SNBC (national low-carbon strategy), the PPE (multi-year energy programming) with its two periods, namely, 2023-2028 and 2029 to 2033, and the PNAACC (national plan for adapting to climate change). The French State services organised – the sequence is still continuing in March 2023 – working parties (for the SNBC) and some 35 workshops (for the PPE) during which EDF has presented and continues to present its analyses and expectations. A first version of the long-term scenario underpinning the SFEC was published in the summer of 2022 and a new version will be drafted in the spring of 2023. This scenario must respond to a number of constraints or assumptions recognised as critical to achieving carbon neutrality in 2050 (quantity of electricity to be generated, availability of bio energy, the quantitative role of hydrogen and energy of synthesis generation, the feasibility and acceptability of assumptions relating to restraint or efficiency on the final-demand side, etc.).

A second consultation, on the energy mix, was launched in November 2022. Among other features, it includes discussions in the regions. It is planned to introduce an energy-climate planning bill in mid-2023, for adoption by the year-end. The PPE and SNBC decrees would then be drafted in 2024.

- **To support the SFEC process,** in late 2022, the Government took the initiative of preparing two bills, which, without impinging on the development goals set by the SFEC, are designed to facilitate and accelerate the deployment of new renewable and nuclear installations:

- > the law on accelerating renewable energy generation was passed by Parliament on 7 February 2023, aimed in particular at easing the constraints on the development of the various renewable energies: hydropower, onshore wind power, offshore wind power, and solar power;
- > the bill "on accelerating the procedures relating to the construction of new nuclear installations close to existing nuclear sites, and to the operation of existing installations" will be examined by Parliament in 2023. Its aims are:
 - on one hand, to facilitate the construction of new nuclear reactors by making the building-permit rules for urban-planning purposes less stringent; under the Coastline Act from the moment that the new reactors are sited next to an existing power plant; this will be under French State control,
 - on the other, to facilitate the extension of the operating life of the present nuclear installations by simplifying the procedure for periodic review of reactors aged more than 35 years, and by replacing the automatic permanent shutdown of a nuclear installation that has ceased to operate for more than two years by a procedure requiring a decree of closure.

- **The ARENH and the regulatory framework for the existing nuclear facilities:** law No. 2022-1158 of 16 August 2022 introducing emergency measures for protecting purchasing power set the "ARENH ceiling" at 120TWh, within which limit the Government has powers to lay down in an order the "maximum overall volume of electricity that EDF can pass on" to alternative suppliers, and this Act introduced scope for raising its price to €49.5/MWh upon agreement by the European Commission. At this stage, however, the Government has maintained the maximum overall volume of electricity that can be passed on at 100TWh for 2023, and, as far as we are aware, has not approached the Commission to raise the ARENH price ⁽¹⁾.

• Emergency measures

- > A €3 billion **fund** has been set up to assist major companies particularly affected by the price crisis. The criteria for entitlement to these exceptional French State aids are controlled by the Community decision relating to the Ukraine emergency measures.
- > A "**tariff shield**": for 2023, the French State has decided to cap the increase in TRVE to 15% including VAT. The corresponding loss of earnings is recognised as a public service expense and the Company will be compensated for its sales to TRVE customers as a market offer to customers eligible for TRVE.

(1) See Government press release of 27 October 2022.

- A “cushioning effect”, consisting of a reduction of the portion supplied to customers exceeding an updated price charged, and charged to a fraction of the volumes delivered, has been instituted to benefit SMEs and local and regional authorities that are not eligible for TRVE, and are not eligible for the tariff shield referred-to in the previous point. Two successive decrees specified the scope of the measure in January 2023.

The compensation mechanisms of these measures (tariff shield and cushioning) are discussed in the paragraph below entitled “public service expenses and income”.

- A “Contribution levied on the infra-marginal electricity generation windfall” (CRIM): the Finance Act for 2023 implements EU regulation 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices, by instituting a levy, above a ceiling expressed as an MWh price, on income of electricity producers derived from certain primary energy sources. A decree specifying the terms and procedures for declaration and payment of the CRIM levy is pending. Its promulgation is expected before the end of the 1st quarter of 2023.

EDF falls under this measure for its power generation as follows: nuclear (excluding revenues derived from ARENH volumes made over to competitors to supply end customers or network managers in order to offset their losses); hydropower from free-running water, and part of the energy generated at dams (controllable hydropower from large-capacity lakes and dams is not covered by this measure); thermal fire generation (excluding coal-fired). While the European regulation covers only a period expiring in July 2023, the French measure applies to a period from July 2022 to December 2023. On the basis of both the calculation method laid down in the Act and the market price outturns in 2022 and forecast for 2023, and allowing for the eligibility for any loss carry-forwards, the levy is estimated at between €0 billion and €5 billion for 2023. The final amounts are not yet known and are awaiting the future implementing decree.

The intention of the European Commission and the Member States is to use the resources thereby accruing for redistribution to consumers in order to uncouple the final costs of electricity from gas prices.

Excluding France, but in the UK, Belgium and Italy, mechanisms for tapping infra-marginal windfalls were also adopted in 2022 (UK: 45% above £75/MWh; Belgium and Italy: 100% above €180/MWh).

• Public service expenses and income:

In France, public service missions are assigned to EDF under French law (in particular by Articles L. 121-1 *et seq.* of the French Energy Code), which also provides for compensation mechanisms in favour of EDF in respect of the discharge of such missions in accordance with a rule of full compensation of expenses out of the French State general budget. Nevertheless, financial flows may differ from one year to the next, since the French State may accelerate or defer the settlement of the amounts paid to EDF, when the amounts of the expenses recognised exceed or fall short of forecast.

On 15 July 2022, The French Energy Regulation Commission (CRE) discussed, as it does each year, the amount of public service expenses to be compensated in 2023. It met afresh on 3 November 2022 in the context of the high rise in market prices, and estimated a negative compensation amount of €31.6 billion, excluding price-freezing measures. Thus, for the first time, these sums should be repaid to the French State by EDF in respect of the public service missions carried out by the Company. However, taking into account the significant fall in electricity prices since end December 2022, (Cal23 at €270/MWh to be compared with the €517/MWh used by the CRE in its discussions on 3 November 2022), the expenses to be reimbursed for 2023 by EDF to the French State are now estimated by EDF at €14.8 billion. These fluctuations in market prices may still be very sizeable in 2023.

Moreover, the expenses relating to the emergency measures applied in 2023 (tariff shields, cushioning effects) were not evaluated by CRE (the French Energy Regulation Commission) in its latest discussions, since the principle for compensating them was only introduced on 30 December 2022, under the 2023 Finance Act. In early February, EDF estimated the amount of that compensation (flow from the French State to EDF) at around €18 billion. The CRE will provide a final evaluation of that amount in May 2023.

On the basis of these different amounts, EDF estimates a net compensation flow between EDF and the French State to date of the order of some €3 billion.

The Finance Act for 2023 includes a special provision authorising the CRE to re-evaluate the overall amount of compensation during 2023. The CRE has confirmed its intention to conduct that re-evaluation in July 2023. This re-evaluation should allow a firm figure to be arrived-at for the net flow between

EDF and the French State for the year 2023. The final provisions have not yet been laid down for a possible mechanism to neutralise the different compensation flows between now and that firm evaluation.

The European context also determines the scale of that risk:

- The “Fit for 55” climate package, published by the European Commission on 14 July 2021, is one of the flagship schemes of the newly-reconstituted European Commission. In particular, it includes an increase in all targets to achieve -55% net GHG by 2030 compared with 1990, and carbon neutrality by 2050. The main policy thrusts relate to:
 - the revision of the EU Emissions Trading Scheme (EU-ETS) within the EU, including its extension to other sectors;
 - various legislative proposals (energy efficiency, renewable energies, energy taxation), including proposals aimed at regulating the development of hydrogen (with a definition of low-carbon electrolytic hydrogen compatible with the French electricity mix);
 - a revision of the Guidelines on French State aid for environmental protection and energy (EEAG) adopted on 21 December 2021, applicable from January 2022, which constitute a framework for structuring future EDF group investments.
- The legal framework for the European Sustainable Finance Taxonomy. Amending delegated EU regulation 2022/1214 which incorporates the nuclear and gas activities into the taxonomy was adopted on 9 March 2022 and will enter into force as from 2023. An appeal was lodged by the Republic of Austria on 7 October 2022 (published in the OJEU on 23 January 2023) against the delegated Act by the Commission incorporating certain nuclear and gas activities in the taxonomy.
- In response to the energy crisis, the European Commission published on 18 May 2022 the RepowerEU plan aimed at increasing Europe’s independence from Russian fossil fuels, accelerating the energy transition and strengthening the resilience of the European energy system. This plan lays down a series of measures aimed at enhancing the ambit of several legislative instruments, particularly those pertaining to energy efficiency, renewable energies and the development of hydrogen.
- The European Commission has opened a public consultation on reforming the electricity market design (the consultation is open from 24 January to 13 February 2023). The Commission wishes to submit draft legislation to the European Council at its meeting on 23 and 24 March.

b) Main risks

• General risks related to the existing ARENH scheme

Regardless of the corresponding exceptional situation due to the announcements of 13 January 2022, as long as the ARENH scheme exists, it exposes EDF to the following risks:

- since the ARENH mechanism is globally optional and free of charge, it gives suppliers opportunities for trade-offs between the ARENH mechanism and the market price, to the detriment of EDF, and exposes EDF to major uncertainties that have a negative impact on the effectiveness of its energy market risk management. As a result, EDF is highly exposed to falls in wholesale electricity market prices when their total level (energy + capacity) is below the ARENH price (currently €42/MWh) for the year of delivery in question. Conversely, the positive impact of wholesale electricity market price increases is limited when their total level (energy + capacity) is above the ARENH price;
- beyond this, there is a risk of ARENH volume increasing, while this increase fails to correspond to a sufficient increase in price;
- the implementation of this measure has given rise to disputes described in note 17.3 to the consolidated financial statements for the fiscal year ended 31 December 2022. Some of these disputes, which relate to the application of *force majeure* in the context of the Covid-19 health crisis, exemplify the trade-offs performed by certain alternative suppliers when market prices become lower than the ARENH price, by suspending the performance of the ARENH contract between them and EDF in order to benefit from cheaper supplies on the markets;
- added to this is the risk arising from the practices of so-called “intermittent” suppliers to reduce their portfolio before the onset of winter (some suggest to their customers to return in the spring) to resell on the markets the ARENH volumes thereby becoming available.

● The risk of a reform of the market architecture at variance with the issues facing the Company

- > Negotiations between the French State and the European Commission on a future regulatory framework have been halted;
- > The following would be the main risks to the Company in the future:
 - the unavailability of the resources required to implement an industrial investments programme which is essential to a successful energy transition;
 - the risk of the authorities systematically resorting to regulatory measures or measures adopted in emergency that are at variance with this policy aim, and of EDF not enjoying the optimum conditions for generating value from its power generation at a fair price freely negotiated with its customers, and of its being hampered in deploying its industrial strategy.

● Risks of upward spiralling of the levy on electricity generators' infra-margin revenues

The amount of this levy for 2023 is estimated at between €0 billion and €5 billion (see the context described above):

- > owing to the uncertainties regarding its calculation, the contribution amount could be -revalued;
- > the contribution amount is limited in 2023 because the calculation includes the period from July to December 2022, in which EDF has recognised a "deficit" that could be carried forward to 2023. In the event of this carry-forward being disputed, EDF would then be exposed to a very high tax charge;
- > lastly, there is a risk of the measure being extended to 2024.

● Risks related to compensation for public-service expenses

- > The mechanisms described in the foregoing context can be summarised as follows: first, the pricing cap for 2023, protecting consumers by limiting pricing increases to 15%, and other shielding mechanisms, should be reflected in a compensation payment by the French State to EDF, of an amount not yet defined, but evaluated by EDF at €18 billion. Furthermore, the compensation for energy expenses will give rise in 2023 to a compensation payment by EDF to the French State, not yet finally evaluated, but estimated by EDF at some €14.8 billion:
 - these figures are not consolidated and are subject to a high degree of uncertainty in a highly volatile market context,
 - the precise compensation terms (implementation date, flows neutralisation mechanism, etc.) are also uncertain and have not been validated,
 - these uncertainties entail a capital-outflow risk for EDF (a risk of EDF making overpayments in 2023 which would only be offset in 2024);
- > More broadly, the legislation provides for EDF to be fully compensated for the public service expenses it bears. However, it cannot be completely ruled out that the terms of such compensation may be called into question and that such compensation may not entail any new public service obligation imposed upon EDF.

● Other price and tariff risks

- > **TURPE** (Public Transmission System Access Tariff): the French Energy Regulation Commission (CRE) deliberations in January 2021 formalised the implementation of TURPE 6 HVB and TURPE 6 HVA/LV as from 1 August 2021. The risk is that the level of compensation of network operators may not be sufficient to enable them to carry out the tasks entrusted to them, which are inherently evolving, beyond the TURPE 6 tariff period;
- > **CO₂ price**: the revision of the EU Emissions Trading Scheme (EU-ETS) could introduce many uncertainties and risks regarding the level and predictability of prices;
- > **emergency supply**: there is a risk of not being able to recoup the costs incurred in providing emergency supply to customers who can leave EDF's portfolio at any time, subject to prior notice to the companies. This risk exists in both the transitional and the permanent arrangements for emergency supply;
- > **hedging of costs of customers reverting to TRVE** (regulated tariffs for electricity sales): as a result of the crisis in prices, the disappearance of some suppliers and the leap-frogging increases of market offers, in 2022 a considerable and unforeseen number of eligible customers requested subscription to TRVE contracts. This trend may continue in 2023. This results in unforeseen expenses for supply to those contracts, and it is desirable to organise hedging of those expenses in 2023.

● Risks related to the energy mix

- > Decisions ruling premature shutting down of power generating assets may arise, not due to an industrial choice, but to an energy policy decision or a court ruling. Such potential energy-policy decisions should lead to EDF being compensated for the harm suffered, as recalled by the French Conseil constitutionnel (the French Constitutional Council) in a decision of 13 August 2015. There is a risk that EDF would not be compensated for the entire loss;
- > Risk of the French State failing to make or delaying the formal decision to launch a programme for the construction of new EPR2 or even SMR nuclear reactors, particularly in view of the Energy Programming Act.

● LPEC related risks (Energy Climate Planning Act)

The overall framework proposed by the French State during the preliminary exchanges, as it emerges during the first twelve months of deliberations, lays down a satisfactory breakdown of EDF's strategic policy orientations (priority to de-carbonation, first and foremost *via* electrification, upward revision of the nuclear generation trajectory complementary to the development of new, renewable energies (ENR), in line with the strategy announced by the President of the Republic in Belfort on 10 February 2022, etc.). In this context, the risks are as follows:

- > a risk of delay or reduction in the aims of the LPEC (Quinquennial Planning Act on energy and climate) seeking to decarbonise all sections of society efficiently and fairly from an economic and climatic standpoint, with particular reference to decarbonising buildings by electrification *via* the installation of heat pumps;
- > the risk of the respective development trajectories for new generation resources (offshore wind power, solar energy, hydropower, nuclear power) lacking sufficient consistency with each other to ensure the most efficient possible electrical mix, having regard to the electrical system;
- > the risk of the role allocated to hydrogen in the long-term energy mix being insufficiently clarified, and likewise as concerns the strategy and regulatory framework for production of low-carbon hydrogen, to be developed in coordination with our European partners;
- > the risk of the CCS technology strategy, not mature as yet, being insufficiently detailed.

● Risks associated with the European context

- > the risk of difficulties or delays in validation by the European Commission of the NNF programme framework;
- > the risk entailed in the design of a reform in the domestic electricity market (market design) not being favourable to the Group's interests;
- > additional emergency measures by the European Commission, in response to a prolonging of the energy crisis, cannot be ruled out, with likely impacts on the Group;
- > proposals to accelerate the permitting procedures for development of renewable energies are currently under discussion within the framework for RepowerEU, and the revision of the RED II renewable energy Directive. However, risks of hampering the development of renewable energies persist;
- > regarding electrolytic hydrogen, risks remain from the European regulatory framework and from the French strategy for the method of calculating emissions associated with hydrogen generated using network electricity;
- > **taxonomy**: the Complementary Delegated Act includes nuclear energy as a transitional energy source. There remains a risk regarding the interpretation of the technical alignment criteria for purposes of their implementation as from 1 January 2023, and from the appeal for annulment lodged by Austria and Luxembourg;
- > the risk of introducing a cap on the use of woody biomass, and of a definition that would exclude this resource from renewable energies (review of the renewable energy Directive). This would significantly impact the activities of Dalkia;
- > the risk from the introduction of technical provisions precluding the decarbonisation of electricity mixes in ultra-peripheral regions with electricity generating plant operating using bio liquids.

c) Control actions

- Control actions are limited for those risks, which stem from decisions originating outside the Company. Nevertheless, the control actions include the following:
 - monitoring the political, legislative and regulatory context in France, Europe and in the regions where the Group operates;
 - analysis of the potential consequences of published or still pending legislative or regulatory instruments in order to identify the impact on the Group, particularly as concerns the ARENH, the tariff shield, the cushioning, the taxation of infra-marginal power generation revenues; see in particular the action plan for strengthening the Group's balance sheet structure;
 - dialogue with and lobbying of public authorities (particularly in France and Europe) to share views on all the potential direct and indirect impacts on the EDF group of the pending instruments and public policies;
 - contribution to public consultations on relevant pending texts at the national and European level;
 - participation of EDF in the Conseil supérieur de l'énergie (CSE);
- EDF's participation in industry associations and think tanks in France and at the European level;
- the institution of operational measures to align with legislative and regulatory instruments posing a significant challenge or impact identified for EDF or the Group;
- energy market risk and financial risk control policies.
- Concerning the energy public service expenses: frequent dialogue with DGEC, APE and the Budget Directorate in order to support the parliamentary examination of the Finance Act for 2023 (with particular reference to the amount of budget allocations to the "Energy Public Service" programme), and to defend the compensation for expenses in 2023 in order to ensure the closest possible fit with the expenses actually recognised (including expenses relating to price freezes) making sure that such compensation is as complete and up-to-date as possible.
- EDF maintains a close dialogue with the French State authorities on the issue of financing public energy service obligations, in order to secure implementation of the compensation mechanism. EDF is particularly vigilant regarding capital-outflow risks, and actively seeks to secure payment by the French State at the end of the year and avoid year-on-year trade-offs by the State.

1B – Changes in the legal and regulatory framework for hydraulic concessions

Summary: The Group carries on its hydropower generation activities mainly in France under concessions or licence agreements. Therefore, the Group does not always own the assets it operates. In France, changes in the legislative and regulatory framework, particularly for the renewal of concessions (provisions for facilities with installed capacity above 4.5MW), changes in the economic conditions of concession specifications and in the conditions for implementing publicity and competitive-bidding procedures could have an impact on the Group's earnings.

Criticality: ●● Intermediate

a) Main risks

The challenges associated with the renewal of hydraulic concessions in France are specified in section 1.4.1.3.1.4 "Issues relating to hydropower generation". The French State has not renewed 31 concession titles that expired on 31 December 2022, corresponding to an installed capacity of 3,260MW. On the topic of concessions renewal, discussions have begun between the French State and the European Commission on the rescission of two formal notices dated 22 October 2015 and 7 March 2019.

There is the risk that the EDF group may not obtain the renewal of each of its concessions in its favour or may obtain the renewal under less favourable economic conditions. In addition, the compensation that should be paid by the State, in particular, in the event of early termination of the operation of a concession, may not fully compensate the loss of revenue borne by the Group. Future regulations or the discussion with the European Commission could also change in a way that is detrimental to the Group. These factors could have an adverse impact on its activities and financial position.

Depending on the conditions in each country, and mainly in Italy, these concessions may not be continued or may not be renewed in its favour with changes to the financial terms and conditions of the concession specifications, which would have an adverse impact on the Group's activities and financial position.

b) Control actions

EDF operates as a responsible concession holder through dialogue and joint construction with all its stakeholders, chiefly regarding the management of water resources and support for local economic development in the regions.

This consultation is conducted on a daily basis by EDF's close collaboration with actors from the economic, political and trade-association sectors in the geographical areas concerned and by maintaining a close dialogue with the people living near the facilities.

In France, anchoring the economy in the regions means maximising local economic benefits by making 67% of all of its purchases in the hydraulic regions to support the local industrial fabric (referencing in the supplier panels of more than 1,980 local companies in the specifically hydraulic trades).

1C – Changes in the legislative and regulatory framework for electricity distribution concessions

Summary: Enedis conducts its distribution activities under public service concessions and does not own most of the assets it operates. Changes in the legislative framework, and in concession specifications, could have an impact on the Group's results.

Criticality: ●● Intermediate

a) Context

In France, the law stipulates that Enedis and the Local Distribution Companies (LDC) have exclusive rights, in their respective service areas (as well as EDF for areas not interconnected with the continental metropolitan network), to carry out the mission of developing and operating the public electricity distribution networks. Similarly, EDF and the LDCs carry out a supply mission in their service areas at regulated tariffs, here again under the exclusive rights granted to them by law.

Insofar as the powers of AODE (authority responsible for organising public electricity distribution) are conferred by law upon local authorities (municipalities or EPCs, which are inter-municipality cooperation establishments) and where these

AODEs are, except for source stations, the owners of the assets constituting the public electricity distribution network, the law requires Enedis to enter into concession contracts with them for a period generally ranging from 25 to 30 years.

Consequently, Enedis carries out its public service missions (maintenance, renewal and development of the network, metering, connections, etc.) both under the law (the French Energy Code designates the operators of the electricity distribution networks and specifies the missions conferred upon them) and under these concession contracts. Moreover, the purpose of such contracts is, yet again in application of the law, to provide access to the TRVE regulated sales tariffs; they are therefore trilateral (they bind the AODEs, the distribution network operators and the regulated tariff supplier).

b) Main risks

Due to the exclusive rights granted to them, Enedis and EDF, when renewing a concession contract, cannot be pitted against other parties. The current process for renewing concession contracts with all of the AODEs is based on a contract template drawn up in December 2017 by the FNCCR (the French national federation of licensing authorities), France Urbaine, Enedis and EDF.

Even though two decisions of the French Conseil d'État (Council of State) in July and September 2020 confirmed the compatibility of the exclusive rights granted to Enedis and EDF under, on the one hand, European Union law and, on the other hand, the constitutional principle of the administrative freedom of local authorities,

the Group cannot exclude the possibility of these provisions being amended by legislation or following an unfavourable court ruling.

c) Control actions

- Vigilance in the monitoring of legislative and regulatory instruments, whether they are European or national and regardless of whether they are sector-specific.
- Careful monitoring of any legal dispute that might call into question the public electricity distribution model (challenging the exclusive rights of the Distribution Network Managers and tariff equalisation, among others).

1D - Ethics or Compliance Violations

Summary: Risks of prohibited and unethical practices in the conduct of business by employees or third parties could put the EDF group at risk of non-compliance with regulations, or even violations of human rights or fundamental freedoms.

Criticality: ● Moderate

a) Main risks

The international nature of the Group's activities and the strengthening of regulatory frameworks that control unethical business practices, in particular, are likely to expose the Group, its employees or third parties acting on behalf of the Group to breaches of its ethical commitments or non-compliance that could damage its reputation or lead to civil or criminal sanctions and impact the Group's financial performance.

b) Control actions

Thirteen programmes have been set up to prevent risks relating to ethical breaches or non-compliance. These programmes cover the following topics:

- preventing the risk of corruption and influence peddling;
- preventing conflicts of interest;
- fight against fraud;
- compliance with international sanctions programmes;

- prevention of harassment and discrimination;
- prevention of market abuse;
- prevention of the risk of money laundering and financing of terrorism;
- compliance with the European EMIR regulation (European Market Infrastructure Regulation for the regulation of financial markets);
- compliance with the REMIT (Regulation on Wholesale Energy Market Integrity and Transparency) regulation;
- preventing breaches of competition law;
- personal data protection;
- export control (dual-use goods);
- the duty of vigilance (covering environmental, human rights and health and safety issues).

These programmes are detailed in section 3.3.2 "Ethics, compliance and human rights".

1E - Litigation risk

Summary: Proceedings or litigation could have a significant financial or reputational impact on the Group.

Criticality: ● Moderate

a) Main risks

In the ordinary course of its business, the EDF group is involved in litigation, the proceedings or outcome of which could have a material adverse effect on its earnings or financial position.

In particular, the EDF group is subject in France to proceedings initiated by its competitors or by administrative authorities owing to its position in certain markets. Claims made against EDF could be considerable and could lead to the payment of compensation or a fine, or even lead to orders being issued that could have an impact on some of EDF's activities. For example, in proceedings before the competition authorities in France or before the European Commission, the amount of fines may be as high as 10% of the consolidated revenues of the company concerned (or of the group to which it belongs, as the case may be). The EDF group may also be involved in litigation relating to commercial or fiscal disputes with significant stakes, the outcome of which is inherently unpredictable.

b) Control actions

The EDF group considers that overall, in all the countries in which it operates, it complies with all the specific regulations in force, and particularly those relating to the conditions under which it carries out its nuclear activities. However, it cannot anticipate in this respect what may be decided by the supervisory and administrative or judicial authorities to which such matters are referred. These risks are monitored with particular vigilance and give rise to implementation of prevention policies (contractual policies, compliance policies, etc.). A procedure is in place to provide information to the Group's legal department on actual or potential material litigation or other disputes.

The main proceedings in which the EDF group is involved are described in note 17.3 to the consolidated financial statements for the year ended 31 December 2022 and in section 7.1.5 "Disputes".

2.2.2 Financial and market risks

The EDF group, through its varied activities, is exposed to numerous financial and market risks. This section describes these various risks by addressing interest rate

risk, financial market risk, energy market risk, foreign exchange risk, counterparty risk and liquidity risk. All of these risks could affect the Group's ability to finance its investments. Financial and market risks are also discussed in the activity report (see section 5.1.6) and the appendices to the consolidated financial statements for the year ended 31 December 2022.

2A - Energy market risk

Summary: In order to sell its output, the Group is exposed, directly or indirectly, to the prices of the European wholesale energy markets and capacity markets, the levels of which impact its financial position.

In particular, the very high volatility of the energy markets, which are positioned at a very high level since the end of 2021, the uncertainty regarding the level of the Group's French nuclear production, the possible increases in the ARENH ceiling (see risk 1A) by the French State, and the institution of a measure termed "tapping the infra-marginal windfall", give rise to great uncertainty about the Group's net exposure, and represent a major risk for the Group.

Criticality: ●●● Strong

a) Context

In conducting its production, distribution and marketing activities, the Group does business in energy markets, primarily in Europe. Accordingly, the Group is exposed to changes in wholesale market prices: electricity energy prices and prices of capacity guarantees for the countries concerned, gas, coal, petroleum products, CO₂ emission quotas (see section 5.1.2 "Economic environment" for information on recent changes in these prices). A connection exists between these markets: a fall in the prices of gas, coal, petroleum products or CO₂ leads to a fall in electricity prices.

The wholesale prices of these various commodities fluctuate with the supply-demand balance worldwide (for oil, coal and gas) or at European and national level (for electricity). These markets can experience significant and unpredictable price fluctuations, in both directions, as well as liquidity crises. As an example, the Ukrainian conflict entails significant risks for the supply of gas at European level, and this knocks on to the prices for gas traded on the various European marketplaces.

b) Main risks

These exposures may thus impact the Group's earnings and all of its financial indicators.

In France, the degree of exposure to market prices for electricity depends in particular on the level of sales under the ARENH system currently applicable until the end of 2025, which in turn depends on the level of market prices and potential regulatory changes. The risks associated with possible changes to the ARENH system are described in risk 1A "Changes in public policies and the regulatory framework in France and Europe, especially relating to ARENH".

The French government announced on 13 January 2022, and further elaborated by the decree of 11 March 2022, that EDF should sell an additional 20TWh of ARENH to its competitors over the period from 1 April to 31 December 2022 at a price of €46.2/MWh.

Thus, the very high prices and highly volatile markets, combined with a significant drop in nuclear production for 2022 and 2023 (see risk 5A below – "Non-compliance with operating and/or activity continuation targets of nuclear plants"), and the government decisions described above concerning the ARENH mechanism and the mechanism for appropriation of the infra-marginal income represent a major risk in terms of financial impact for the Group.

In these circumstances, the Group's market actions expose it both to sizeable liquidity requirements to meet margin calls, and to increased counterparty risks in the event of default by its trading partners.

Lastly, the Group is exposed to numerous requests for information pursuant to the European regulation relating to wholesale energy market transparency and integrity⁽¹⁾.

c) Control actions

The Group manages its exposure to energy markets through a specific energy market risk policy, which is essentially aimed at gradually reducing uncertainties regarding the level of its financial results in the coming years (see section 5.1.6 "Management and control of market risks" for more detailed information on the associated principles and organisational measures). This policy serves to smooth the impact of price changes but cannot negate it. The Group remains subject to the contingencies affecting its production or the consumption of its customers, or to the structural trends of upward or downward movements in the commodity markets (see note 18.6 to the consolidated financial statements for the fiscal year ended 31 December 2022).

The level of hedging sought by the Group entails striking the right balance between reducing uncertainties due to price fluctuations and those due to changes in volume of the EDF portfolio.

In addition, a Group REMIT Directive defines the expectations for ensuring that Group entities comply with the European regulation No. 1227/2011 on the transparency and integrity of wholesale energy markets.

2B - Financial markets risk

Summary: As a result of its activities, the EDF group is exposed to risks related to the financial markets, in particular an equity risk.

Criticality: ●● Intermediate

Main risks

The Group is exposed to equity risk on securities held primarily as dedicated assets constituted to cover the cost of long-term commitments in relation with the nuclear business, in connection with outsourced pension funds and, to a lesser extent, in connection with its cash assets and investments held directly by the Group.

EDF is exposed to equity risks, interest rate risks and foreign exchange risks through its dedicated asset portfolio.

The market value of the listed equities in EDF's dedicated asset portfolio was €11,697 million at 31 December 2022. The volatility of the listed equities at the same date was 17.04% based on 52 weekly performances, compared with 10.93% at 31 December 2021. Applying this volatility to the value of listed equity assets at the same date, the Group estimates the annual volatility of the equities portion of dedicated assets at €1,993 million.

⁽¹⁾ EU regulation no. 1227/2011, see section 3.3.2.2.4 "Integrity and transparency of the wholesale energy market (REMIT regulation)".

At 31 December 2022, the sensitivity of the listed bonds (€11,089 million) was 4.9, meaning that a uniform 100 basis-point rise in interest rates would result in a €538 million decline in market value. This sensitivity was 5.3 at 31 December 2021.

2C – Interest rate risk

Summary: The Group is exposed to risks related to changes in interest rates in the various countries in which it operates. These rates depend partly on the decisions of the central banks.

Criticality: ●● Intermediate

a) Risk of falling interest rates

Main risks

Lower interest rate fluctuations could affect the Group's economic indebtedness, due to changes in the value of the Group's financial assets and liabilities, as well as its discounted liabilities. The discount rates for pension commitments and other specific employee benefit commitments (see note 16 to the consolidated financial statements for the fiscal year ended 31 December 2022) and the Group's long-term nuclear commitments (see note 15 to the consolidated financial statements for the fiscal year ended 31 December 2022) are directly or indirectly linked to interest rates over different time horizons.

For the specific case of nuclear provisions in France, given the decline in rates over the past few years, the discount rate could be reduced over the next few years. The extent of this decrease, if any, will depend on the future trend in rates, mainly in 20-year sovereign rates.

The Order of 1 July 2020 on securing the financing of nuclear expenses, which amends the initial Order of 21 March 2007, outlines new provisions concerning the regulatory ceiling on the discount rate. This is now expressed as a real value corresponding to the unrounded representative value of the expected long-term actual interest rate used for the calculation published by the European Insurance and Occupational Pensions Authority (EIOPA) of the ultimate forward rate (UFR) applicable on the relevant date, increased by 150 basis points. This ceiling is applicable as from the year 2024. Until 2024, the ceiling is equal to the weighted average of 2.3% and this new ceiling. The weighting assigned to the 2.3% amount is set at 50% for 2020, 25% for 2021, 12.5% for 2022 and 6.25% for 2023.

Furthermore, an increase in nuclear provisions due to a decrease of the discount rate may require allocations to the dedicated assets, and may result in an adverse effect on the Group's earnings, cash flow generation and net debt.

As the case may be, this increase in provisions, including those to be covered by dedicated assets, does not however automatically knock on to the amount to be allocated to dedicated assets at the dates in question, as this depends in particular on:

- the return on dedicated assets and the resulting hedge rate;
- the period within which the allocation is made, as applicable rules provide for the option to set a maximum time period to proceed with the allocation, subject to approval by the Supervisory Authority.

In this respect, the decree of 1 July 2020 relating to securing the financing of nuclear expenses has modified the regulatory framework of the allocation obligation:

- elimination of the obligation, which previously existed under certain conditions, to allocate funds to dedicated assets when the coverage rate is greater than 100%;
- raising the threshold to 120% (from 110% previously) above which it is possible to withdraw funds from dedicated assets;
- increasing to 5 years (instead of 3 years previously) the maximum period for allocating funds to dedicated assets in the event of under-coverage, following authorisation by the administrative authority.

Given the changes in the regulatory framework, no additional provision is expected for 2022, as the rate of coverage of nuclear provisions by dedicated assets is greater than 100%.

Moreover, an increase in inflation rate expectations, at a given interest rate, would result in a decrease in real interest rates which would have effects similar to a decrease in interest rates on the Group's discounted liabilities, given that the future expenses included in these liabilities are considered to be indexed to inflation rates.

b) Risk of higher interest rates

Main risks

Upward variations in interest rates could affect the Group's ability to obtain financing on optimal terms, or even its ability to refinance itself if the markets were very strained in view of the risk related to changes in flows linked to variable-rate financial assets and liabilities. Financial securities and derivatives held by the Group, as well as debts issued, may pay or receive coupons directly indexed to variable interest rates.

Thus, a 0.5% increase in interest rates would have an effect on the pre-tax income of approximately -€160 million, due to the increase in coupons on the debt issued by the Group, at variable or floating rates, offset by the increase in the Group's cash proceeds.

These unfavourable impacts related to a rise in interest rates are in principle more than offset by the favourable impacts related to a rise in interest rates connected with long-term commitments (see previous point).

2D – Access to liquidity risk

Summary: The Group must at all times have sufficient financial resources to finance its day-to-day business activities, the investments necessary for its expansion and the appropriations to the dedicated portfolio of assets covering long-term nuclear commitments, as well as to deal with any exceptional events that may arise. Any downgrading of EDF's ⁽¹⁾ financial rating could increase the cost of refinancing existing loans and have a negative impact on the Group's ability to obtain financing. On 31 December 2022, the Group's net financial debt amounts to €64.5 billion.

Criticality: ●● Intermediate

a) Context

The year 2022 was marked by the volatility of the energy markets, which resulted in particular in significant margin calls and collateral in the trading activity. In this context, the Group's ability to raise new debt, refinance its existing indebtedness or,

more generally, raise funds in financial markets, and the conditions that can be negotiated to this effect, depend on numerous factors including the rating of the Group's entities by rating agencies.

To meet liquidity needs, the Group issues securities on the bond and money markets, and resorts to bank borrowings with or without collateral.

(1) At the date of this Universal Registration Document, EDF's long-term rating is as follows: BBB with a stable outlook (S&P Global Ratings); Baa1 with a negative outlook (Moody's); BBB+ with a stable outlook (Fitch Ratings).

Accordingly, on 5 October 2022, the Group issued euro-denominated senior bonds in 3 tranches for a total amount of €3 billion, including a green bond for €1.25 billion maturing in 12 years. On 30 November 2022, EDF conducted a hybrid bond issue for an amount of €1 billion.

The Group contracted the following:

- on 15 March 2022, bilateral loans with a 3-year maturity for a total of €10.3 billion from 11 banks;
- on 25 March and 29 April 2022, two bilateral term loans maturing in 3 years for a total of €2 billion;
- on 7 October 2022, a green bilateral loan for €1 billion maturing in 3 years, and dedicated to financing the maintenance of the existing nuclear fleet in France;
- in November 2022, bilateral term loans maturing in 3 years, for a total of €2.1 billion, from 6 banks, dedicated to financing the maintenance of the existing nuclear fleet in France.

Lastly, on 5 April 2022, EDF performed a capital increase for an amount of €3.1 billion, supplemented by a capital increase reserved to employees for an amount of €0.1 billion.

b) Main risks

Any downgrading of EDF's financial rating could increase the cost of refinancing existing loans and have a negative impact on the Group's ability to obtain financing. This risk is increased in the event of delay in completion of the simplified public purchase offer.

The new ARENH volume allocations, the shutdown of nuclear power plants in France and the volatility of the electricity markets, in particular the margin calls on the trading activities, put pressure on the Group's rating and accentuate short-term liquidity requirements. This more uncertain financial outlook could lead to a further downgrading of the short- and long-term ratings by the rating agencies, and impact both the ability to access liquidity and its cost. EDF was placed under surveillance on 25 May 2022 by S&P. The rating was confirmed on 14 December 2022, with a stable outlook. Similarly, Fitch confirmed its EDF rating on 6 September 2022, with a stable outlook (section 5.1.6.1.2 "Credit rating").

This risk, having already increased the previous year, increased still further during 2022, particularly because of the very high volatility of energy prices, significant margin calls, and the unavailability of nuclear power stations.

Consequently, the year 2022 was marked by heavy calls on financial institutions in order to meet the Group's exceptional liquidity requirements. These calls may probably not recur in 2023, since the banks have reached a certain saturation of their EDF risk.

c) Control actions

The EDF group was able to meet its financing needs by conservative liquidity management and has obtained financing on satisfactory terms.

A range of specific levers are used to manage the Group's liquidity risk:

- EDF has not made issues on the dollar market since 2018, on the yen market since 2017, and on the pound sterling market since 2014. This will give it latitude for diversifying the financing currencies;
- on 12 July 2022, EDF published a Green financing framework⁽¹⁾ enabling it to substantially increase its green issues, for which there is sustained investor demand;
- centralisation of financing for controlled subsidiaries at the level of the Group's Cash Management Department. Changes in subsidiaries' working capital requirement are financed out of the Group treasury resources in the form of stand-by credit lines provided for subsidiaries, which may also be granted revolving credit from the Group. EDF and the investment subsidiary EDF Investissements Groupe (EDF IG), set up in partnership with the bank Natixis Belgique Investissements, also provide medium and long-term financing for EDF group operations outside France. Each company independently sets its own terms, which are the same as the subsidiary would have in an arm's-length market transaction;
- the Group's cash pooling system, which centralises cash management for controlled subsidiaries. This system is aimed at making the subsidiaries' cash balances available to EDF in return for interest, so as to optimise the Group's cash management and provide subsidiaries with a system that guarantees them market-equivalent financial terms, active management and diversification of the financing sources used by the Group. The Group has access to short-term resources on various markets through programmes for French commercial paper (*billets de trésorerie*) and US commercial paper (US CP). For EDF, the ceilings for these programmes were increased from €6 billion to €10 billion for the NeuCP programme (Negotiable European Commercial Paper) and \$10 billion for its US commercial paper;
- the repurchase of securities (repo) from the Treasury portfolio placed with bank counterparties for cash.

2

2E - Counterparty risk

Summary: Like all economic operators, the Group is exposed to possible default by certain counterparties (partners, subcontractors, service providers, suppliers or customers).

Criticality: ●● Intermediate

a) Main risks

A default by these counterparties may impact the Group financially (loss of receivables, additional costs, in particular if EDF is required to find satisfactory alternatives or take over the relevant activities or pay contractual penalties).

The ending of support measures implemented during the Covid crisis may lead to a risk of default by some of the Group's counterparties. To date, no significant default has been identified among the Group's counterparties. The Group remains vigilant regarding industrial counterparties which may become vulnerable in the context of a worsening economic situation and of the energy crisis related to the Ukraine conflict. The Group is also closely monitoring the activities of its EDF Trading subsidiary in a context of highly volatile energy prices.

b) Control actions

For certain activities, the risk may be hedged by the use of margin calls.

Furthermore, the Group has a counterparty risk management policy which applies to EDF and all operationally controlled subsidiaries. This policy sets out the governance associated with monitoring this type of risk, and the organisation of counterparty risk management and monitoring. The policy also involves quarterly consolidation of the Group's exposures.

At 30 September 2022, 88% of the Group's exposure concerned "investment grade" counterparties, mainly due to the predominance of exposures generated by the cash and asset management activity, as most short-term investments concern low-risk assets:

(1) <https://www.edf.fr/groupe-edf/espaces-dedies/investisseurs-actionnaires/espace-obligataire/finance-durable>

2F – Foreign exchange rate risk

Summary: Due to the diversity of its activities and their geographical distribution, the Group is exposed to the risks of fluctuations in foreign exchange rates, which may impact currency translation adjustments, balance sheet items and the Group's financial expenses, equity and financial position.

Criticality: ● Moderate

a) Main risks

Due to the diversity of its activities and geographical locations, the Group is exposed to the risk of exchange rate fluctuations, which may impact the translation differences affecting balance sheet items, Group financial expenses, equity capital, net income and the internal rate of return (IRR) of projects.

As the Group is involved in long-term contracts, an unfavourable currency fluctuation could have consequences on project profitability. In the absence of hedging, currency fluctuations between the euro and the currencies of the various international markets in which the Group operates can therefore significantly affect the Group's results and make it difficult to compare performance levels from year to year. If the euro appreciates (or depreciates) against another currency, the euro value of the assets, liabilities, income and expenses initially recognised in that other currency will decline (or increase). Moreover, insofar as the Group is likely to incur expenses in a currency other than that in which the corresponding sales are made, fluctuations in exchange rates could result in an increase in expenses, expressed as a percentage of turnover, which could affect the Group's profitability and income.

b) Control actions

To limit exposure to foreign exchange risk, the Group has introduced the following management principles:

- local currency financing: to the extent possible given the local financial markets' capacities, each entity finances its activities in its own functional

currency. When financing is contracted in other currencies, derivatives may be used to limit foreign exchange risk;

- matching of assets and liabilities: the net assets of subsidiaries located outside the Euro zone expose the Group to a foreign exchange risk. The foreign exchange risk for the consolidated balance sheet from foreign currency assets is managed by market hedging with debts issued or contracted in foreign currencies or by using derivative financial instruments. Hedging of net assets in foreign currencies complies with risk/return targets. The hedging ratio varies depending on the currency. If no hedging instruments are available, or if hedging costs are prohibitive, the foreign exchange positions remain open and the risk on such positions is monitored by sensitivity calculations;
- hedging of operating cash flows in foreign currencies: in general, the operating cash flows of EDF and its subsidiaries are in the relevant local currencies, with the exception of flows related to fuel purchases which are primarily in US dollars, and certain flows related to purchases of equipment, which concern lower amounts. Under the principles laid down in the strategic financial management framework, EDF and the main subsidiaries concerned by foreign exchange risks (EDF Energy, EDF Trading, Edison, EDF Renewables) are required to hedge firm or highly probable commitments related to these future operating cash flows.

2.2.3 Group transformation and strategic risks

3A – Transformation capacity in the face of disruptions

Summary: The Group's development strategy, changes in the scope of activities and synergies within the Group could not be implemented in accordance with the objectives defined by the Group.

Criticality: ●● Intermediate

a) Context

- Changes in the decarbonisation trajectory of the energy sector, emergence of new markets and new players, changes in the business models of the stakeholders;
- changes and volatility in energy and commodity prices;
- changes in the international competitive context, depending on the competitive situation. The Group is faced with different contexts (more or less total opening up of markets, position in relation to competitors, regulation, etc.) and new customer expectations;
- changes in public policies and in the regulatory framework in France and in Europe with a significant impact on the Group's activities (SFEC and CRIM);
- the French State's decision to conduct a simplified takeover bid;
- geopolitical tensions;
- the impact of climate change on our activities.

In this context of multiple crises (security of supply, inflation, geopolitical tensions, etc.), competition is intensifying in all areas: energy production, new renewable energies, etc.), supply, services, storage and disposal, international calls for tenders, and the game rules are changing (infra-day windfall tax).

b) Main risks

In the context above, the main risk is that the Group's strategy will not be successfully implemented. In particular:

- there is a risk that the transformations undertaken to cope with these changes will be insufficient, or that the Group's model will be jeopardised. This risk may increase in the event of further delay in completion of the simplified takeover bid. The potential consequences of this risk are measured in the following terms:
 - > profitability (if regulations are imposed that are unfavourable as with ARENH) in the activity model,
 - > market share losses, failure to meet decarbonisation targets, failure to gain expected market share or lowered margins,
 - > decline in upstream/downstream integration, which could lead to a reduced ability to cope with seasonal variations in activity, physical and market uncertainties, and lead to a loss of gross margin,
 - > reduced cross-functional synergies deployed within the integrated Group, which could undermine the Group's ability to meet the diverse expectations of its customers and stakeholders, and reduce the efficiency and therefore the competitiveness of low-carbon industrial solutions,
 - > decrease in the Group's ability to seize new opportunities (mobility, hydrogen, etc.) and loss of the Group's leading position in the energy field;

- nuclear costs and cost trends (new nuclear projects, *Grand carénage*, etc.) and the Group's ability to finance them could force the Group to reconsider the pace at which it deploys its strategy;
- even with a transformation that is well under way and adequate contractual arrangements, the Group cannot ensure that its various low-carbon solutions projects can be implemented according to the planned schedules and under satisfactory economic, financial, regulatory, partnership or legal conditions. It cannot ensure that they will meet the needs expressed by our customers and stakeholders over time with the profitability expected at the outset. All of this could have a negative impact on the Group's financial position, its commitment to combating climate change, and its reputation;
- there is a risk that staff will not be sufficiently mobilised individually and collectively due to a deteriorating labour-relations climate, as a result of the changes associated with the adaptations or transformations under way, be they internal or external.

c) Control actions

The following actions are in line with the Group's *raison d'être* and its CSR commitments, responding to the needs of its customers and stakeholders:

- continued development and deployment of low-carbon solutions: supply and services, particularly for energy efficiency and decarbonisation of uses, low-

carbon electricity generation, storage solutions, low-carbon hydrogen projects, flexibility solutions, with a view to sustainable development and proximity to customers and regions. This development concerns France, the "core" countries in Europe (United Kingdom, Italy, Belgium) and the other countries where the Group is present, in accordance with the CAP 2030 strategy. This strategy combines the search for growth drivers with the promotion of existing assets. The strategy and drivers of the Group's transformation are described in section 1.3 "Group strategy and objectives";

- in particular, the Solar Plan, the Electric Storage Plan, the Electric Mobility Plan and the Excell plan are major levers for developing and expanding the range of low-carbon energy solutions offered by the Group in addition to the generation plants already widely available within the Group, particularly wind, solar, hydro and nuclear power (see section 1.4.1.1.1 "The excell plan");
- implementation of development, adaptation and transformation programmes and performance plans. These programmes may be complemented by a strategic analysis of assets which may itself lead to a requirement for additional financial agility, giving rise to disposals or acquisitions (see section 1.2.3 "Significant events of the year");
- actions to mobilise work groups through transformation projects, including in particular the "work differently, manage differently" project within EDF.

3B - Adaptation to climate change: physical and transition risks

Summary: The Group is exposed to physical effects of climate change that could have consequences on its own industrial and tertiary facilities and more generally on the Group's financial position. The societal, technological and economic context may not be favourable to the Group's low-carbon solutions.

Criticality: ●● Intermediate

According to the breakdown proposed by the TCFD (Task Force for Climate-Related Financial Disclosures), with which EDF complies (see section 3.1.3.2.1 "The EDF group and the TCFD"), climate change risks are structured into two parts: risks of not adapting to the physical effects of climate change (termed "physical risks"), and risks induced by the transition to a low-carbon economy (termed "transition risks").

a) Main physical risks

The EDF group's facilities are closely tied to water, wind and solar resources. The overall reliability of the electricity system depends on the resilience of the generation facilities and network infrastructure to climate change, whether it be chronic effects or an increase in the frequency and intensity of extreme weather events.

Extreme risks can potentially affect the safety and security of facilities and network infrastructure or generation. Chronic risks can potentially have consequences on power generation, the environment, and network capacities. These consequences can also lead to risks related to water resources (resource conflicts).

Due to this climate sensitivity and taking into account the many uncertainties associated with the effects of climate change, despite the control actions undertaken, climate change could have an adverse impact on the Group's business continuity, operating performance, and balance sheet and financial results.

b) Control actions for physical risks

- Periodic reviews are carried out on nuclear and hydraulic facilities, incorporating both feedback and climate change projections; this is a key cornerstone of the robustness of the facilities.

- As per the Group CSR policy, to address these risks, the operating entities shall regularly update their climate change adaptation plans, based whenever possible on IPCC scenarios, in order to review the measures taken and to be taken. To this end, a guide to implementing adaptation plans is available to the Group's entities. These adaptation plans are particularly strong for nuclear entities in France and the United Kingdom and hydraulic and island entities.
- Since the 1990s, the EDF group has been building up specific R&D expertise on climate change issues, which it has invested in collaborative academic research projects to support these actions.
- The Group carries out numerous monitoring and anticipation actions on extreme and chronic effects, so as to update its adaptation plans as much as necessary, both for production facilities and infrastructures, as well as to anticipate the consequences on the supply-demand balance.
- The Group coordinates internally and with external stakeholders on water uses.
- In connection with climate change and its potential consequences in terms of external threats (temperature, flooding, storms, etc.), a programme called ADAPT has been set up in France for the Group's nuclear and thermal generation facilities in order to sustainably ensure the resilience of these industrial tools.
- The Group regularly renews or takes out specific insurance covers, even if this could prove increasingly difficult or expensive due to the impact, frequency and magnitude of natural disasters experienced in recent years.

c) Main transition risks

The Group's long-term strategic directions are in line with the transition to a low-carbon economy. The EDF group's *raison d'être*, adopted in May 2020, centres on the objective of "building a CO₂-neutral energy future". The majority of the Group's investments are directed towards this low-carbon climate strategy (see section 3.1.1.4 "Roadmap for increasing the Group's decarbonised production").

In this seemingly favourable and promising context, there are several significant transition risks:

- this opportunity could be stalled by the external, societal, competitive, social, economic, or industrial context. In particular, nuclear energy may not be recognised at the societal level as a key factor in enabling the low-carbon transition. For example:
 - > the standards or taxonomies currently being put in place to recognise decarbonised energies could include criteria that would adversely affect nuclear energy, which would constitute a very significant risk for EDF and more generally for the achievement of national and European emission reduction objectives. In this respect, there is still a risk that decarbonised nuclear electricity will not be sufficiently recognised due to its classification as transitional energy by the European taxonomy, with potential consequences for access to financing for new projects. This topic of European taxonomy is developed in risk No. 1A above "Political and legal Risks",
 - > in France, in connection with the preparation of the 2019-2028 Multi-Year Energy Programme, the French government asked for a review of several scenarios between 2030 and 2050, "ranging from a 100% renewable scenario to one in which nuclear power remains a sustainable source of electricity generation integrated into the mix for reasons of production management and competitiveness";
- achieving the objectives of reducing emissions and, more generally, ensuring the success of the Group's low-carbon strategy, depend primarily on the successful shutdown or decarbonisation of fossil fuel power plants and the accelerated development of renewable generation resources to complement nuclear and hydroelectric generation;
- in addition, new low-carbon energy solutions may induce new societal questions (intrusive new technologies, land rights-of-way, new conflicts related to the use of water or scarce resources, etc.);
- the publication in May 2021 of the International Energy Agency's (IEA) Net Zero scenario sets 2040 as the new target for decarbonising the electricity sector by 100% (or even 2035 for developed countries). This target has been taken up by many players, including Eurelectric, investor coalitions (e.g. IIGCC) and SBTi in its new Net Zero standard published in October 2021, and has led EDF to re-examine its carbon trajectory and its 2020 commitments. This new situation carries risks for the Group: the risk of certain development projects being jeopardised, the risk of having to make commitments that are more difficult to keep, and the risk to the Company's profitability (by relinquishing profitable activities);
- the new European Directive on the reporting of non-financial data (the CSRD Directive, adopted in November 2022) sets the goal for all European companies to be aligned with the 1.5°C target and for attaining carbon neutrality by 2050. The fact that the EDF group has not yet received 1.5°C labelling by the SBTi organisation is liable to provoke misunderstanding among our stakeholders;
- new legislative or regulatory changes brought about by climate change could also have a negative impact on EDF's business and lead to new legal or compliance risks;
- the Group may also have to deal with the emergence of new technologies or disruptive solutions that are part of the efforts to meet the transition objectives.

Such situations could make it more difficult to carry out these transformations and achieve the desired objectives. These situations could directly or indirectly affect the Group's business volumes, margins, asset value, financial position, reputation and/or prospects.

d) Control actions to address transition risks

- Carbon trajectory. In 2018, the Group made a commitment to significantly reduce its carbon dioxide emissions, with a target of 30 million tonnes in 2030 instead of 51 million tonnes in 2017 (a 40% reduction). The EDF group also confirmed this goal in 2020 by joining the "Business Ambition for 1.5 degrees" initiative. The EDF group has made new commitments to contribute to achieve

carbon neutrality by 2050, both in direct and indirect emissions (scopes 1, 2 and 3), with milestones set for 2023 and 2030. The SBTi organisation certified this approach in 2020 as going beyond the 2°C set out in the Paris Agreement. Thus, for the first time, the EDF group has set reduction targets for its indirect emissions, covering in particular the emissions associated with the sale of gas to end customers (see section 3.1.1 "Group Carbon trajectory"). The EDF group undertook discussions with the SBTi organisation in 2022 in order to obtain 1.5°C labelling for its trajectory.

- Deployment of low-carbon solutions. The Group has been particularly active in the development of renewable energy in France, electric storage and low-carbon electric mobility, which will make it possible to develop and promote the Group's low-carbon energy solutions, particularly for the transport sector, which still emits a very high level of carbon dioxide in France and Europe.
- As a final step in the process of contributing to achieving neutrality, the Group favours so-called "negative emission" projects to offset its residual emissions by 2050 (see section 3.1.1.6 "Carbon offsetting solutions").
- Control actions for risk No. 1A concerning changes in public policies and the regulatory framework consist of: monitoring the political, legislative and regulatory context; analysing the potential consequences of legislation in preparation; dialoguing with and lobbying the public authorities.

e) Overall control actions - summaries and mapping of climate risks

- In 2019, a summary on climate change and its impacts on EDF, integrating the accumulation of all the knowledge acquired by the EDF group and its scientific partners, was presented to EDF's Scientific Council.
- Since the 1990s, the Group has had significant expertise in climate change, both in its R&D Department and in its engineering centres, and this expertise has been maintained over time. The precise resources allocated to this expertise are specified in section 3.1.2.4 "High level, internal Climat Department".
- In 2019, a Group-wide climate risk mapping of all physical and transition risks was also established following the recommendations of the TCFD (Task Force on Climate-Related Financial Disclosures) and submitted to the Audit Committee. Climate risks are now identified, assessed and updated annually in accordance with the Group's general risk mapping methodology (summarised in this risk factor and further detailed in section 3.1.3.2.2 "Identifying climate change risks and opportunities").
- This mapping of climate risks, based in particular on the operational entities' adaptation plans and the report to the Scientific Council, has led since 2020 to a "climate" action plan, included in the Cap 2030 strategic programme covering actions relating to emissions reduction and resilience. This action plan mobilises the Group both at the corporate level and at the entity level to guide and coordinate the various control actions.
- An audit on the adaptation of the EDF group resources to climate change was conducted between October 2021 and February 2022.
- Numerous actions are carried out internally to raise awareness of climate issues among all employees and to mobilise them in concrete ways. By way of example (these examples are developed in section 3.1.3.5.2 "Innovation and collective intelligence focused on climate action"):
 - > the Climate Fresk, has been developed by the Group to all its teams since 2020. By the end of 2022, the Group had raised awareness among 60,000 employees using this tool (see section 3.1.3.5.2.2. "The "Climate Fresk"),
 - > the "Fighting CO₂" programme offers all employees in France the opportunity to become ambassadors for the energy transition by making a private commitment,
 - > the Carbon Neutrality Passport enables employees to assess their carbon footprint and make a commitment to start taking action: obtaining this passport was one of the criteria of the profit-sharing agreement signed for 2020. Over 36,000 passports were obtained in 2022 (see section 3.1.3.5.2.1 "The carbon neutrality passport").

3C – Adaptation of employees' skills

Summary:

The Group will have to secure the skills of the various sectors of the energy transition in a job market under pressure to cope with a significant volume of activity, particularly following the Belfort speech of 10 February 2022 (existing fleet, EPR 2, increase in the volume of connections, gain of customers).

Criticality: ●● Intermediate

a) Main risks

The EDF group must cope with an employment market where labour is increasingly scarce and increasingly competitive: heavy competition among economic transactors in all industries seeking skills, particularly in engineer, technician and IS profiles; difficulty in recruiting skills in certain technical trades (welders, plate metal workers) as in many industries; and a training supply that does not always meet requirements.

In this new context, the Group, like all its industrial partners, must face unprecedented industrial issues requiring appropriate and skilled resources in the four energy-sector business lines (nuclear, distribution, renewable energy and energy services).

While the action plans hitherto implemented have allowed control of staff career paths, covered risks identified under benefit of strategic workforce planning (GPEC), and secured skills requirements for the coming period, the risk of the mismatching of skills with requirements is nevertheless increasing on account of the extension in the relevant scope in 2022. This is true because the skills issue exists throughout the

EDF group ecosystem and affects its ability to call upon external resources: subcontracting and temporary workers.

b) Control actions

Risk management is based on matching skills to short-, medium- and long-term needs. In this respect, the main control actions concern:

- better identification of needs by all the sectors concerned (Nuclear, Networks, Renewables and Energy Services) via the EDEC and territorial GPEC;
- strengthened work and partnership on attractiveness;
- a more global approach to the Attractiveness, Sourcing, Training and Recruitment chain;
- an ambitious skills development policy within the France Group scope: increased recourse to alternative and digital procedures, including in live work situations; accelerated skills acquisition by newly-hired employees through knowledge and skills transfers between employees (knowledge management approaches extended to all business lines beyond nuclear, to impart a learning mentality to the organisation).

2

3D – Ability to fulfil long-term social commitments

Summary: The Group may be required to meet significant commitments related to pensions and other employee benefits.

Criticality: ●● Intermediate

a) Main risks

The pension plans applicable in the various countries in which the Group operates involve long-term commitments to pay benefits to the Group's employees (see note 16 to the consolidated financial statements for the fiscal year ended 31 December 2022). In France, in addition to these pension commitments, the Group also owes obligations for post-employment benefits and long-term benefits for employees currently in service. Pension reform in France may have an impact on the Group's commitments.

The amounts of these commitments, the provisions booked, the outsourced funds or pension funds set up and the additional contributions required to make up insufficient funding are calculated based on certain actuarial assumptions, including a discount rate subject to adjustment depending on market conditions and, with regard to employee-related commitments in France, on the rules governing retirement benefits paid out by the general retirement schemes, and the amounts to be borne by the Group. These assumptions and rules may be adjusted in

the future, which could increase the Group's current commitments for pensions and other employee benefits and, therefore, require a corresponding increase in provisions.

Furthermore, if the value of pension funds in the UK proves insufficient to meet the corresponding commitments, primarily due to calculation assumptions or developments in the financial markets, the Group may be obliged to make additional contributions to the relevant funds, which may have an adverse impact on its financial position.

b) Control actions

In order to cover these commitments, the Group has set up pension funds in the United Kingdom, where coverage of commitments is a regulatory obligation, and outsourced funds in France, which provide partial coverage of the commitments. In the United Kingdom, the pension reform in 2021 (from defined benefit to defined contribution) and the merger of the three existing funds (BEGG, EEGS and EEPS) into one fund (EDFG) from 31 December 2021 will limit future risks.

2.2.4 Risks related to operational performance

4A – Management of large and complex industrial projects including EPR projects (HPC, FLA3, Taishan...)

Summary: The Group carries out very large-scale projects. These projects represent a major risk for the Group in terms of the potential financial impact on its shareholders' equity and implications for its development strategy. In particular, the success of EPR projects depends on specific industrial, regulatory and financial factors.

Criticality: ●●● Strong

a) Context

As part of its activity and in its capacity as project owner or prime contractor, the Group is called upon to carry out highly complex projects, such as the EPR projects at Flamanville 3 in France and Hinkley Point C (HPC) in the United Kingdom, projects in progress, as well as upcoming projects such as EPR2 in France and Sizewell C. These projects require significant investments and lengthy procedures for enquiries and regulatory approvals.

The success of these projects will determine the future of the nuclear industry sector. These projects represent a major risk for the Group.

The Group's other major projects under way are:

- major projects related to the existing nuclear plant (*Grand carénage*, see risk 5A below, and decommissioning projects);
- offshore renewable energy projects (off-shore wind power);
- international hydropower projects.

b) Main risks

These projects are exposed to numerous technical and operational risks relating to their industrial implementation, which could result in start-up delays and an increase in associated costs or a possible reconsideration of certain technical choices. This could ultimately lead to a drop in expected profitability or even to more asset write-downs (see note 10.8.2 to the consolidated financial statements for the fiscal year ended 31 December 2022).

Given their scale, these projects could have a massive impact on the Group's results and balance sheet, mainly on its equity capital and its financing capacity, and entail major risks for the Group.

There exist other technical, industrial, operational, economic, regulatory, political, environmental or acceptability risks, which could jeopardise project schedules, associated costs and/or profitability.

Risks of technical or operational non-performance,

The technical and operational risks associated with large and complex industrial projects expose the Group to major uncertainties in the implementation and operation of these projects. These risks may have a major impact on the Group's business, results, asset value, financial position, reputation, organisation and outlook.

By way of illustration:

- delays in construction or difficulties in the commercial commissioning of the HPC EPR units beyond 31 October 2036 could result in the loss of the revenue protection afforded to these works via the CfD (see section 1.4.5.1.2.5 "Nuclear New Build business");
- the conclusions of the ongoing investigation into the June 2021 finding of fuel leakage in a reactor at the Taishan plant were progressively taken on board in other EPR projects (see section 1.4.5.3.6.1 "Activities in China", and see below, "Operational control of EPR projects").

In addition to or as a result of these uncertainties, the Group may be in breach of its contractual obligations.

Strategic risks

The Group's strategic goal is to become involved in the construction of new nuclear facilities in France and abroad. The risk with regard to these projects would be that investment decisions might not be made or might be made under poor technical, regulatory or financial conditions.

Risks related to financing and, where applicable, the regulatory framework

New reactor construction projects, particularly in France and the United Kingdom, require considerable investment, as well as appropriate market organisation, with appropriate financing and pricing conditions. Given the economic or institutional climate or depending on the appropriate progress of the pending projects, obtaining such funding may be delayed or compromised.

In France, inadequate market organisation and the failure to obtain or delays in obtaining the authorisations required to continue the development of the EPR2 reactor, could have an impact on the Group's financial position, particularly because of the development costs upstream of the decision which might ultimately be borne by EDF. Any event that may delay the launch of the project could lead to disruptions to engineering activities, difficulties in maintaining skills and in mobilising the supply chain, which would be detrimental to the industrial control and performance of the programme.

In the United Kingdom, the new context created by the implementation of Brexit may lead to changes in the conditions for the implementation and profitability of projects and may not allow sufficient conditions to be met for involving investors in the Group's future projects in the United Kingdom:

- as the financing needs of the HPC project exceed the contractual commitment of the shareholders (committed equity), the shareholders will be asked to allocate additional equity (voluntary equity). In the event that CGN (the China General Nuclear Corporation) does not allocate voluntary equity capital, it is likely that the Group will be required to contribute those funds in the place of CGN since CGN will have contributed its share of committed equity;
- for the Sizewell C project, failure to obtain the right financing framework and appropriate regulation could significantly affect the project, and lead the Group to decide not to invest (see next page 2 – "Sizewell C (UK)").

In addition, the classification as transitional energy under the Taxonomy regulation (see risk 1A) could insufficiently recognise decarbonised nuclear electricity, with potential consequences for access to financing for new projects. The legislation does not include the fuel cycle or waste management. Finally, the conditions set out in the Delegated Act for the classification of nuclear energy as an aligned activity may not be fully met. These elements could influence the Group's ability to finance future major nuclear projects (see risk 1A).

External risks – political and geopolitical, administrative procedures

All these projects are large-scale and of long duration. They involve numerous industrial partners. Relations with the partners involved with EDF in these projects may also be a source of difficulties.

For example, trade tensions between the United States and China could have an impact on the conduct of some of these projects given the technologies and partnerships implemented (see risk 4B). In the United Kingdom, as EDF and CGN are partners in the HPC and Bradwell projects, these projects could be impacted by the worsening diplomatic relations between the United Kingdom, France, the United States and China, in particular for the Bradwell project led by CGN.

These projects require, among other things, administrative authorisations, licences or permits which may be subject to disputes, withdrawals or delays in obtaining them.

Risks related to CSR issues

A very large number of stakeholders are involved in these projects, which may, for example, need to be associated with territorial development projects or suffer from difficulties related to local acceptance.

Cyclical risks

Inflationary pressures could also lead to higher project costs (see in particular risk 4B "Operational continuity of supply chains and contractual relationships").

The health crisis has affected the deployment of these major projects and could, if it were to worsen, lead to further delays or additional costs.

In addition, the health crisis may have weakened the financial strength of some partners.

Other risks

Other issues and risks specific to nuclear activities, whether in terms of nuclear safety, control of operations and maintenance activities, long-term commitments or the fuel cycle, are specified in section 2.2.5 "Specific risks related to nuclear activities".

c) Control actions

c1) Cross-cutting control actions

- As part of a continuous improvement approach to project management, the Group has a project management policy and a Commitments policy which require an analysis of risks and associated security measures. Regular project reviews are carried out and the Group set up a Major Project Control unit at the end of 2020. The Group has been implementing the Excell plan since December 2019, which will return the French nuclear industry to a high standard of stringency and quality to ensure success for the major projects under way and to be carried out in France, the United Kingdom and elsewhere in the world (see section 1.4.1.1.1 "The excell plan").
- Project management takes into account, in accordance with EDF's vigilance plan, the potential impacts of projects on human rights, the environment, health and safety, as well as the CSR issues of dialogue and consultation with stakeholders, territorial development, development of industrial sectors, ethics and responsible land management (see sections 3.2, 3.3, 3.4 and 3.9).

c2) Control of committed EPR projects

1. EPR Flamanville 3 (France)

In particular, meeting the timetable and cost objectives as announced⁽¹⁾ is still dependent on the following (see section 1.4.1.1.3.1 "Flamanville 3 EPR project"):

- the finalising of Non-Destructive Tests and Stress-relieving Heat Treatments for "complex geometric shapes", following on from upgrading the Main Secondary Circuit and conducting hydraulic tests for its fresh approval;
- ASN's confirmation of the conclusions drawn by EDF from the loop tests demonstrating the adequacy of the work conducted to assure the efficiency of the SIS/CHR filtration when recirculating water from the Main Primary Circuit after a pipe breach;
- the remainder of the examination of the last technical issues in conjunction with the French Nuclear Safety Authority (ASN) with a view to obtaining the administrative authorisations;
- the completion of the final stages of the facility;
- the possible emergence of new technical issues, particularly in the context of further work. A decree of 25 March 2020 extended the maximum time limit for commissioning the reactor to April 2024.

In addition to the activities still to be carried out before the fuel is loaded into the reactor vessel and the overall start-up tests are carried out, the project could also face other potentially significant additional costs and delays in the event of a new hazard. Schedule and cost to completion risks remain high.

2. EPR Taishan (China)

In China, the Group has a 30% stake in TNPJVC (Taishan Nuclear Power Joint Venture Company Limited) alongside its Chinese partner CGN and Guangdong Energy Group (19%). Taishan 1 was the first EPR reactor to be coupled to the grid on 29 June 2018. It became commercially operational on 13 December 2018. The Taishan 2 reactor became commercially operational on 07 September 2019 (see section 1.4.1.1.3.2 "Other New Nuclear projects").

The profitability of the asset is linked to the feed-in tariff for electricity produced by Taishan and could be affected if tariff decisions are not favourable. On 20 March 2019, a temporary tariff was set by the National Development and Reform Commission (NDRC) at RMB 435/MWh until the end of 2021, for a guaranteed annual volume of generation offtake equivalent to 7,500 hours of full power operation. Any surplus above this volume is sold at the market price. As with any scalable generation facility, the actual call-up of the Taishan plant is decided by the Guangdong provincial power grid operator. The temporary tariff was extended on 22 December 2021 until the publication of the new tariff mechanism applied to Chinese third-generation nuclear power plants, particularly the Taishan plant. The authorities had issued no further publication at the beginning of 2023. The profitability of the asset is also subject to the risk of changes in the volume of sales at this tariff, against a background of development in the electricity market.

The financing arrangements put in place by TNPJVC include provisions to secure the repayment of the joint venture's financial liabilities. In certain situations, these provisions may temporarily limit the payment of dividends. If the company were to fail to generate a positive cumulative net result or a sufficient level of cash flow, the amount of dividends expected by EDF would be revised downwards which could result in the need for depreciation of the asset⁽²⁾.

3. Hinkley Point C - EPR (United Kingdom)

Control of the design and bringing the manufacturing and the major milestones of the Hinkley Point C (HPC) construction site under control will determine the profitability of the project and the financing of any future projects in the United Kingdom.

Construction passed a number of milestones in 2022 (see section 1.4.5.1.2.5 "Nuclear New Build business"). However the project was marked by:

- civil engineering performance remaining lower than expected;
- shortages in the global building materials market and job market;
- one fatal accident on the site in November 2022, still under investigation by the ONR (Office for Nuclear Regulation). The project team maintains constant vigilance as to health and safety of workers;
- supply chain problems due to the geopolitical and macroeconomic climate.

There is a risk that these factors will continue to impact construction progress and the supply chain. Action plans are under way to catch up delays and improve civil engineering performance. Compliance with the schedule and cost to completion (see section 1.4.5.1.2.5 "Nuclear New Build business") requires that these actions produce the expected results.

The IRR of the HPC project is sensitive to:

- inflation and changes in electricity market prices beyond the term of the CfD;
- impacts of the agreements between EDF and CGN which include a mechanism for compensating certain EDF price supplements between the two shareholders in case of a deviation from the initial cost budget or delays. Given the current schedule and the forecast cost to completion, this mechanism was triggered in January 2023 (see section 1.4.5.1 "United Kingdom");
- the risk of CGN not contributing Voluntary Equity;
- the exchange rate between the British Pound and the Euro. A hedging strategy for this risk is in place at the HPC project and Group levels.

(1) See press release of 16 December 2022.

(2) The value of TNPJVC's share of equity at the end of 2021 in EDF's accounts is €210 million – see Note 12 to the consolidated financial statements for the fiscal year closed 31 December 2022.

3) Control of future projects

1. Renewal of the nuclear plant in France - EPR2 (see section 1.4.1.1.3.2 Other "New Nuclear" projects)

The main challenge is to ensure that the conditions are fulfilled as early as possible for a decision to launch the programme and its transposition into the legal and financial framework necessary for its implementation.

This requires several main prior actions:

- consolidation of estimated costs to completion and planning costs;
- signature of principal contracts before the programme commitment decision;
- following the structuring of the programme with the creation in 2022 of the Directorate for the New Nuclear Programme for France, defining in particular the schedule for financing, regulation and governance to which the French State and EDF will commit;
- If necessary, notification by the French State to the European Commission of the programme's structuring arrangements, having regard to state aid regulations;
- public consultation on the programme and on the site for the first buildings. The conclusions of this consultation must be taken into account as a constituent part of the application for authorisation to create (DAC) that the nuclear operator must submit to the administrative authorities in order to launch the construction of a new nuclear facility.

2. Sizewell C (United Kingdom)

A description of the Sizewell C project development is provided in section 1.4.5.1.2.5. EDF's ability to make the final investment decision alongside other investors and to contribute to the financing of the construction phase is contingent on, *inter alia*:

- securing the project financing which relies among others on the regulatory framework and the level of residual risk post GSP, also depending on macroeconomic trends;
- EDF's ability to deconsolidate the project in the Group's financial statements (including in the calculation of the economic indebtedness by the rating agencies) following the final investment decision;
- remuneration of the capital expected by EDF as investor to within 19.99%, in line with its investment policy;
- the obtaining of all the required authorisations remaining outstanding, particularly the authorisation concerning control of subsidies;
- the finalising of the Government Support Package (GSP);
- an agreement with the British government concerning the reference estimation of the cost to completion and the estimated project timetable;
- the finalising of the main EDF contracts to be signed on the date of the Final Investment Decision (FID).

EDF's commitment to fund Sizewell C up until the date of the FID is subject to an equity cap, without any obligation to fund the project beyond the funding cap.

Failure to bring about these conditions could result in the Group not making a final investment decision. In particular, an investment decision when EDF's ability to deconsolidate the project is not secured would heavily penalise the Group.

The main control actions to create favourable conditions for the decision include:

- work with the British government to finalise the remaining stages and prepare for future investments. On 29 November 2022, the British government announced its decision to invest some £700 million in the Sizewell C project and to sustainably assist the project's development in the long term;
- work with supply chain operators to develop an appropriate contractual strategy, particularly including the replication strategy; Organisational and collaborative discussions with Hinkley Point C are underway to secure the benefits of HPC's replication on the Sizewell C project, while taking into account the difference in governance (percentage of eventual ownership, partners, etc.). Depending on the schema, the risk of non-compatibility with the deconsolidation target could be significantly aggravated.
- a detailed review of the cost and planning, taking into account the feedback from the HPC project.

3. Jaitapur (India)

EDF and its partners submitted a comprehensive conditional non-binding bid to NPCIL at the end of 2018; in this offer, the EDF group and its partners would undertake to supply all the studies and equipment for the nuclear island, the conventional island, the auxiliary systems, as well as the heat sinks and galleries of the EPR technology.

EDF does not plan to invest in the project. The NPCIL client will be the overall project manager and integrator in the implementation phase (bearing in particular the risks of licensing, construction, assembly and overall integration). In April 2021, a binding technical and commercial offer was transmitted and discussions are ongoing (see section 1.4.1.1.3.2 "Other New Nuclear projects").

The project has the risk profile of a supplier of engineering services and plant and equipment supplies. Its value therefore lies in the realisation of the margin included in the price of the services sold. Like all large, complex industrial projects, this project presents technical, industrial and cost control risks for the scope under the responsibility of EDF and its partners, as well as a risk relating to compliance with pre-defined milestones, having regard in particular to the expected revenue model. In addition to the country risk, which includes a substantial tax dimension, the conditions related to the scope of nuclear liability in India must be met, and the project's financing plan must be secured before the final contracts are signed.

C4) Control actions specific to Framatome

Framatome can expose the Group to risk through its activities in France and abroad, for nuclear operators other than EDF, or other customers.

The Group's exposure may be financial or address its reputation. Framatome's industrial performance is strategic for EDF as a nuclear Operator in France and the UK.

The success of EPR projects, the competitiveness of the nuclear industry in France, and the success of the Group's international development all depend on the quality and compliance with contractual clauses in the production of studies, components and services by Framatome.

4B - Operational continuity of supply chains and of contractual relationships

Summary: The Group is exposed to the due completion and operational sustainability of the supply chains and of the contractual relations with its suppliers, as well as being exposed to the risk of price volatility, the risk to availability (discontinuance or shortage of supply), the logistic risk entailed in materials, equipment or services that it purchases for the requirements of its business lines. These risks may be exacerbated by crises and conflicts, such as the Russian-Ukrainian conflict, with nations or blocks of nations at loggerheads with each other, particularly when major sources of raw materials or of production resources essential to continuity of supply to the Group or to its industrial partners are located in the territories concerned.

Criticality: ●● Intermediate

a) Main risks

Access to materials or products that are critical for the Group

The Group's needs for critical materials or products may arise in markets with a reduced area or in markets subject to growing pressure, due in particular to the structure of and trends in the industrial offer or to increased competition from new uses. This pressure is attributable in particular to the growing needs of information systems and the needs of energy actors, especially those related to climate transition. These market pressures may increase the cost of supplying certain critical products or services and lead to a reduction in supply by some suppliers in response to a contraction in their margins. Fluctuations in the price and availability of certain raw materials or products that play a key role in setting the price of electricity and energy services may affect the Group's supply capacity and earnings. This risk is currently heightened due to inflationary pressures on the price of raw materials and components needed for operations.

The Group uses technologies, mainly in the fields of nuclear, hydraulic and renewable energy generation, electrical storage and mobility, which require materials and elements that may be highly sensitive in terms of access ⁽¹⁾. The scarcity of or conditions of access to certain raw materials may be critical for the Group due to geological, geopolitical, industrial, regulatory or competitive limitations, particularly in a context of energy transition. Certain crisis situations, such as the Covid health crisis, may also accentuate or generate difficulties regarding access to certain products, materials or services required for the Group's activities and may make the provision of certain services particularly complex or even delay their completion. The development, particularly related to storage/disposal, the growth of renewable energies and the market penetration of low-carbon electricity, could pose problems regarding access to certain materials: lithium for batteries, ferromagnetic rare earths for wind power, indium or selenium for solar energy. These difficulties could limit the Group's ability to achieve its development objectives. In addition, control of the conditions under which raw or semi-finished materials are extracted, processed, packaged or made available for the Group's needs may be subject to provisions calling for greater control of regulatory requirements and the duty of vigilance.

Supplier panels

The Group currently depends on a limited number of industrial players with specific skills and the required experience. This situation reduces competition in markets where EDF is a buyer and exposes the Group to the risk of default of one or more of these specialised suppliers or service providers. Apart from the large groups, it is the small and medium-sized French companies that represent the main portion of the supplier industrial fabric. These companies have so far weathered the Covid crisis relatively well. Those companies that were the most affected suffered from their exposure to the aeronautics, oil and automotive sectors rather than to the nuclear sector, as the nuclear sector continued to ensure sustained activity thanks to the major maintenance projects under way, particularly in France. However, the trend towards financial vulnerability observed over the last ten years or so persists, although bankruptcies, which are limited in number, generally end in a takeover and provide an opportunity for revitalisation.

Contractual relations and partnerships

Relations with the partners involved with EDF in completing these projects may also be a source of difficulties. Trade tensions between the United States and China could have an impact on the conduct of some of these projects given the technologies and partnerships implemented.

In this respect, decisions were made in October 2018 by the US Department of Energy ("US DoE") relating to civil nuclear cooperation with China with regard to CGN, and in August 2019 by the US Department of Commerce ("US DoC") placing four CGN Group entities on the Restricted Entity List. These decisions concern in particular the transfer of American goods and technologies, in particular dual-use goods and technologies, to CGN, EDF's partner, notably in its new nuclear projects in the United Kingdom. As a result of these decisions, the transfer of goods and technology within the technical scope to the entities in question must be specifically authorised in advance by the competent US authorities.

In June 2020, the US Department of Defense also published a list of entities, including CGN, presumed to belong to or be affiliated with the Chinese army. This geopolitical risk also exists in the United Kingdom.

As a result of these measures, the People's Republic of China enacted its first integrated law on the control of exports of sensitive goods and technologies (December 2020), as well as a "blocking law" against decisions, particularly those of the United States, that are extraterritorial in scope (January 2021).

These risks may be aggravated by conflicts between nations or blocs of nations, and in particular, to date, the Ukrainian conflict, when major sources of raw materials or of production resources essential for the continuity of supply to the Group or to its industrial partners are located in the territories concerned.

b) Control actions

In 2021, the Group adopted a new Suppliers policy which aims to secure the performance objectives of projects by ensuring their reliance on panels of suppliers that meet their needs and by allaying risk situations of supplier failure, quality crisis or contractual deadlock.

Furthermore, the Excell plan launched in 2020 (see section 1.4.1.1.1 "The excell plan") aims to meet these challenges, in particular those concerning strengthening the sector's skills (welding plan and initiatives connected with professional and educational facilities), improving supplier selection and qualification processes, taking into account the CSR issues relating to "Ethics, compliance and human rights" and to "responsible territorial development" (see sections 3.3.2 "Ethics, compliance and human rights" and 3.4.2 "Responsible regional development"), as well as increasing the number of more partnership-based contractual relationships. In 2021 in this context, the Group set up a "Supplier policy panel" for the nuclear sector intended to coordinate the actions of the entities involved in the relationship with suppliers. GIFEN ⁽²⁾ is also a key player in relaying the Group's industrial policy.

Regarding contracts entered into between the Group and suppliers of equipment or services, improved contracting processes and management of the contracts that have been entered into, in particular through the implementation of vigilance actions at each stage, constitute a major issue as concerns controlling operations, deadlines and associated costs.

(1) The topic of Uranium supply is not considered here. It is dealt with in Risk 5D Control of the fuel cycle.

(2) The *Groupement des industriels français de l'énergie nucléaire* (French Nuclear Energy Industry Group), created in October 2018, aims to bring together all the actors of the French nuclear industry to ensure the attractiveness of the sector and maintain its skills.

The Contract Management function, led by the Contract Management Department, itself reporting to the Group Legal Affairs Department, aims to improve risk management and create opportunities in the management of contracts. This function calls on the involvement of Contract Managers from the departments throughout the contractual process. It is an additional line of defence in the management of contracts, along with Group senior managers and the departments.

In response to the regulations and laws adopted by the USA and China, and in order to ensure its compliance with these laws and decisions, the EDF group (EDF, NNB, Framatome, etc.) has taken precautionary measures in connection with the organisation of its nuclear projects, particularly in the United Kingdom.

4C – Occupational health or safety violations (employees and service providers)

Summary: The Group is exposed to health and safety risks in the workplace, both in terms of its employees and those of its service providers.

Criticality: ●● Intermediate

a) Main risks

Human resources and their related skills are a major challenge for the Group and its service providers. The industrial nature and diversity of the Group's activities reinforce the crucial importance of complying with the rules and taking into account the various risks that may affect people working in the Group's industrial facilities in order to protect health and safety in the workplace.

The risk of work-related accidents or occupational illnesses cannot be excluded in any of the Group's areas of activity. The occurrence of such events may lead to lawsuits against the Group and may result in the payment of damages, which could be significant.

b) Control actions

The Group has for many years taken the steps necessary to comply with the health and safety laws and regulations in the various countries in which it operates, and considers that it takes the measures required to ensure the health and safety of both its employees and its subcontractors.

Each Group entity has action plans aimed at continuously improving health and safety at work. Actions are also carried out at the Group level as a whole: definition and promotion of the vital rules and the BEST reference framework for health and safety management, one-day shutdown on 13 October 2022 for each team to reflect on improving and strengthening safety actions at shop-floor level (see section 3.3.1.3 "Health and safety of employees and subcontractors").

4D – Attacks against assets, including cyber attacks

Summary: The Group is exposed to risks of failure of or damage to its tangible or intangible assets, including its information system. In particular, these risks may arise from malicious actions, including cybercrime.

Criticality: ●● Intermediate

a) Impact on assets

Main risks

The Group's assets consist of its staff and its tangible and intangible assets. The facilities or assets operated by the Group or its employees may be the target of malicious acts of any kind. These acts could have negative consequences on the Group's operational activity, financial position, legal situation, assets or reputation.

The Group would also be forced to make additional investments or incur additional costs if laws and regulations relating to the protection of sensitive sites and critical infrastructures became more stringent.

Control actions

The EDF group has defined its Security of Assets against Malicious Acts policy to prevent this risk and limit its impact in the event of an attack. This policy is supplemented by procedures for the protection of people, property assets, intangible assets, instructions and an IT tool for collecting security incidents. This policy and procedure were updated in 2021 to take into account the changing threat environment. These policies and procedures are supported by a network of Asset Security Managers (RSP) who are members of the entities' Management Boards.

The main asset-protection actions are:

- coordination of the RSP network, training of new RSPs, letters (DSIE@EDF), support on request (e.g. security of premises, projects abroad and security, etc.) and presentations on current topics (IGI 1300 interministerial general instruction regarding classified media and documents & secrecy protection, new tool for collecting security incidents, etc.);
- production of an e-learning course on the Security of Assets against Malicious Acts policy;
- adapting the EDF procedures for implementing the Group's Asset Security policy in dealing with malicious acts, in particular the Classification and Protection of Information memorandum and the procedure for reporting security incidents;
- implementation of the new security incident collection application;

- participating in steering the implementation of the NIS directives and the Military Programming Act (LPM) in conjunction with ANSSI, DSIG and the entities involved;
- contributing to the introduction of the obligations associated with the new version of the IGI 1300, an instruction involving significant changes for the Group:
 - > participating in the drafting of the IGI 1300 ministerial memoranda with the French ecological transition Ministry (MTE) and other relevant operators,
 - > drafting IGI implementation internal memoranda,
 - > assisting entities in the implementation of this instruction by ensuring that all regulatory obligations are properly implemented;
- setting up a training course with the DGSI and the DRHG on radicalisation and religious issues in companies for HRDs, managers and lawyers;
- helping to take into account "Asset Security" files during the development of IS applications, etc.;
- contributing to the preparation of compliance files.

b) Information Systems failure, including from cyber attacks

Main risks

The Group operates multiple, interconnected and complex information systems (databases, servers, networks, applications, etc.) that are essential to the conduct of its commercial and industrial activity, the preservation of its human, industrial and commercial assets, and the protection of personal data (of customers and employees) and that must adapt to a rapidly changing context (digital transition, development of working-from-home, new ways to share work in extended companies with suppliers, changes in regulations, etc.).

The facilities and assets operated by the Group or its employees may be the target of external attacks or malicious acts of any kind. An attack or malicious act committed on these facilities could have consequences such as injury to persons and/or damage to property, the Group being held liable on the grounds of measures judged to be inadequate and interruptions to operations. The Group would also be

forced to contract additional investments or incur additional costs in the event of greater stringency in laws and regulations relating to the protection of sensitive sites and critical infrastructures.

The frequency and sophistication of information system hacking and data corruption incidents are increasing worldwide. The impact of a malicious attack or any other failure resulting in the unavailability of information systems may have a negative impact on the Group's operating activity, financial, legal and asset situation or reputation.

Control actions

The EDF group has defined its Security of Assets against Malicious Acts policy and an Information System Security policy to prevent this risk and limit its impact in the event of an attack. These policies are supplemented by guidelines on the protection of personal data.

A charter regarding the use of IT resources is annexed to the Company's internal regulations. IS security training courses are adapted to the different profiles (users, project managers, application developers, IS security managers, etc.) are offered to employees. The Executive Committee and Audit Committee of the Board of Directors receive reports on cyber security risk management. Several dozen security audits are carried out each year by external IS security audit companies (IS security audit providers), which are PASSI qualified by the ANSSI (French National Agency for Information Systems Security), both on IT infrastructures and on business information systems. In addition, the EDF group SOC (Security Operational Centre) reports on IS security incidents on a monthly basis. This centre is now qualified as a PDIS (security incidents detection service provider).

In 2022, the main actions deployed in the areas of cyber security, protection of intangible assets and, more generally, the Company's resilience to the risks of damage to information systems were:

- the definition of cyber security goals for the Group entities, their achievement being measured via cyber security reviews;
- the deployment of an e-learning "Cyber Security Passport" module accessible to all (including in subsidiaries) and rendered compulsory for all Group senior executives and managers in France;
- deploying phishing awareness campaigns within the Group's entities (96,000 people targeted in 2022);
- the continued strengthening of the cyber security operational function that guarantees an efficient response in the event of a security incident: strengthening the specialist teams, promulgation of a cyber security incidents management policy;
- the opening of the Rennes site. The opening of this site completes the EDF cyber system within a relevant European reference territory (graduate schools, research centres, companies, start-ups, the Ministry of the Armed Forces and the National Agency for the Security of Information Systems);
- the creation of the Vulnerability Operation Centre aimed at detecting areas of vulnerability through regular scans and audits conducted on all types of IS;
- continued deployment and assessment within the entities of a security reference framework based on the rules of the Agence Nationale de la Sécurité des Systèmes d'Information (French National Agency for Information Systems Security);
- the periodic publication of a dashboard intended for the Executive Committee, reflecting the Group's cyber security level, and also adapted for each reporting entity, addressed to each of the Executive Committee members.

In addition, IS crisis and cyber security drills are regularly carried out to test the various measures put in place.

4E - Hydraulic safety violations

Summary: The hydroelectric facilities operated by the Group present risks with potentially serious consequences for people, property and the environment that could have a financial and reputational impact on the Group.

Criticality: ●● Intermediate

Hydropower safety comprises all the measures taken when designing and operating plants to reduce risks and hazards to people and property associated with water and the presence or operation of facilities.

a) Main risks

The Group's hydraulic structures present specific risks with potentially very serious consequences: breakage, overflow during floods, operating manoeuvres.

b) Control actions

Hydropower safety is the major and permanent concern of the producer. It falls under the purview of the Group's CSR "nuclear safety, health and security" issue (see section 3.3.1 "Security, health and safety for all"). It involves three main activities:

- measures to address the major risk associated with dam or reservoir failures, through the regular monitoring and maintenance of facilities under the supervision of public authorities, mainly the French regional environment, land use and housing authorities (*Directions Régionales de l'Environnement, de l'Aménagement et du Logement* – DREAL). Of the largest dams, 67 of them are subject to a special administrative procedure implemented by the competent prefect;
- the management of facilities during periods of exceptionally high water levels, in order to ensure safety at the facilities and for the surrounding communities;
- control of operational risks: changes in the level of the water bodies or the flow of watercourses downstream of the works.

EDF regularly monitors and maintains its dams, including through continuous monitoring. The real-time readings and analysis, at each site, of multiple data (settlement, pressure, leakage measurements, combined with the visual inspection of the concrete and an inspection of the mechanical parts, etc.) enable EDF to conduct a regular assessment on the state of its dams. In Grenoble and Toulouse, EDF teams can analyse the largest dams or those dams that are the hardest to access, remotely and in real time, using a series of sensors.

Furthermore, for each of the large dams, a danger study, including an exhaustive examination, is conducted every ten or fifteen years (for one class A dam and one class B dam respectively). This examination requires draining or an inspection of the submerged parts with sub-aquatic equipment. These operations are carried out under the strict control of the French State authorities (*Service de Contrôle et de Sécurité des Ouvrages Hydrauliques* [Hydraulic Works Control and Safety Department] within each DREAL [French regional environment, land use and housing authority]).

At the organisational level, the Hydropower Safety Inspector prepares an annual report for the Chairman and CEO of EDF, to whom he or she reports directly, as well as reporting to those involved in hydropower safety (See section 1.4.1.3.1.3 "Hydropower Safety"). Issued after analyses, inspections and assessments carried out by the Hydropower Safety Inspector, this report aims to give an opinion on the level of hydropower safety of the Group's installations and provide a basis for reflection and progress to ensure its improvement and consolidation. This report is made public on the Group's website.

4F – Risk of supply/demand imbalance within EDF

Summary: A reduction in the production of nuclear power, combined in particular with a massive return of alternative suppliers' customers to EDF, could create an imbalance between the supply of and demand for electricity within EDF's scope, which could result in significant purchasing requirements on the wholesale markets. Such a situation could have financial consequences for the Group.

Criticality: ●● Intermediate

a) Context

The risk of imbalance between electricity supply and demand at EDF for the winter of 2022-23 and following winter is greater than usual, particularly due to a lower winter availability of the EDF nuclear power stations and the return of many customers of alternative suppliers to EDF. This situation of reduced availability arises from the combination of an intensive *Grand carénage* industrial programme, with unfavourable events due to the Covid crisis in 2020, and the stress corrosion identified. In the event of a production shortfall, high market prices would increase the cost of EDF buying back the missing production. Moreover, high market prices push private customers to choose the regulated sales tariff.

Given the thermal sensitivity of the consumption of some of EDF's customers, such a situation could mainly occur during a major cold and it would be worsened, should circumstances dictate, in a situation of low wind affecting wind power generation and the liquidity of the short-term markets. This risk cannot therefore be anticipated beyond a few days, depending on the weather forecasts.

b) Main risks

In the event of a proven imbalance, EDF may be compelled to purchase very sizeable energy volumes on short-term markets, at very high prices. The consequence for EDF is therefore financial. If market liquidity is insufficient to allow EDF to make the purchases necessary for balancing, the financial risks are increased because they depend on the settlement price of imbalances, which can be much higher than market prices.

c) Control actions

As part of preparations for winter, EDF has implemented numerous preventive actions and actions to control that risk, working on both production and demand.

In order to maximise available production in winter, EDF has in particular conducted a detailed review of the scheduling for halting nuclear units, anticipating or delaying stoppages to free as much capacity as possible for weeks of heavy demand. Operating waivers have been obtained to increase the authorised operating limits for the Cordemais coal-fired units.

On the demand side, EDF has formalised by contract new load-shedding volumes with its customers, conducted communication campaigns to foster energy restraint, re-launched at the Government's request the TEMPO option of the TRVE charging scheme, making for lower consumption on days of heavy strain on the supply and demand equilibrium.

Finally, if the imbalance is such that the French electricity system is no longer able to balance itself, RTE will have to implement the various contracts and back-up mechanisms available to it in real time (contracted load shedding with large consumers, temporary lowering of the electricity network voltage plan, temporary and targeted load shedding).

The communication exercise conducted by the government authorities with RTE and EDF has had considerable effects since an appreciable drop (by some 10%) has been observed in French consumption adjusted for temperature variation.

4G – Risk of blackout

Summary: A blackout, *i.e.* a widespread power grid incident, in a territory served by the Group, could have consequences for the Group's activities, financial position and reputation.

Criticality: ● Moderate

a) Main risks

The Group may be faced with a blackout, a widespread network incident of considerable scale, or be involved in such incident, even if the triggering event occurred on a network not operated by EDF or was attributable to a third party.

Unlike the risk of imbalance between supply and demand, the potential causes of a blackout are due to rapidly-occurring phenomena: accidental power-supply or transmission failure, cascade failures on the transmission network, interconnection problems. The initiating event is usually a major failure in an essential equipment item for transport or, more rarely, for production, in specific, aggravating circumstances which, by triggering automatic protective devices, cause the rapid shutting down of a significant portion of the electrical system.

Unforeseeable supply breaks of this kind could create major disruption in all or part of the country, potentially lasting several hours. Thus, a blackout may negatively impact the Group's reputation among its customers and all its stakeholders, as well as impacting its financial position.

b) Control actions

Controlling this risk is at the heart of RTE's mission, as it is responsible 24 hours a day for managing the French electricity system, and balancing electricity supply and demand in France, particularly in real time. The resources implemented by RTE fall within the framework defined by the public authorities and they comply with the policies ordinary to European TSOs and established within the framework of ENTSOE (European Network of Transmission System Operators for Electricity).

EDF's contribution to risk management, over and above its regulatory obligations and in accordance with the public service contract and its responsibility as a balance manager, lies in its commitment to:

- respond to RTE's calls for tenders for the constitution of reserves;
- contract with RTE to enable coordinated planning of generation unit shutdowns and network interventions;
- guarantee compliance of the performance of its power plant and the automated mechanisms associated with the standards and formalised by contract commitments between EDF and RTE.

4H - Industrial safety violations and impact on environmental assets, including biodiversity

Summary: The Group operates facilities, accidents in which could, in the event of an industrial safety failure, have serious consequences on the human or natural environment, particularly as regards biodiversity and environmental capital (air, soils and water).

Criticality: ● Moderate

a) Main risks

The Group operates or has operated facilities which, as part of their day-to-day operations, can be, may be, or may have been the cause of industrial incidents or accidents having environmental impacts (air, soil and water pollution risks) or health impacts.

Furthermore, all the Group's facilities and projects are concerned with biodiversity issues and, more generally, ecosystems, with particular reference to the issues of temperature and water extraction connected with climate change, especially in France where EDF is a major landowner and natural resource manager.

The stakes are all the higher since the energy transition introduces new or enhanced requirements in terms of biodiversity protection, pollution control and control of impacts on the environment as a whole.

The Group's facilities may be located in industrial areas where other activities subject to similar risks exist, which means that the Group's own facilities may be impacted by accidents occurring at neighbouring facilities owned by other operators and not under the Group's control.

The Group owns 40 facilities classified as Seveso under the European Directive for the prevention and management of major industrial risks. These are essentially storage or warehousing facilities for oil, gas or chemicals.

Measures taken for industrial safety and the control of these risks may not be fully effective, which could have consequences for people, property and immediate surroundings. The Group may be held liable.

In case of a major accident, insurance policies for civil liability and damage taken out by the Group could prove to be inadequate, and the Group cannot guarantee that it will be able in the long run to maintain a level of cover at least equal to current cover levels.

Risks specific to nuclear facilities are further developed in section 2.2.5 "Specific risks related to nuclear activities". Risks specific to hydraulic facilities are set out in 4E above.

An industrial safety failure may have a negative impact on the Group's operational activity, its financial or legal position regarding its duty of vigilance, environmental assets, or its reputation, and may affect the Group's ability to achieve its Corporate Responsibility goals pertaining to biodiversity (see section 3.2.1. "Issues, commitments and governance of EDF as regards Nature").

b) Control actions

The risk management studies carried out on each industrial site integrate potential health or environmental impacts: compliance with regulations, monitoring, prevention and protection of soil, water, and air, and potential health effects. In addition, they include avoidance measures for accident situations. In this respect, feedback from the fire that occurred on 26 September 2019 at the Seveso-classified Lubrizol plant in Rouen was included in the analyses. The Group's French Seveso sites all implement the regulatory requirements applicable to this type of facility. In addition, those sites all responded to the requests of the Prefects following the fire at the Lubrizol plant. The additional post-Lubrizol decrees on the storage of flammable liquids and toxic materials are applicable and therefore integrated into the Group's ICPE (facilities that are classified for the protection of the environment) industrial facilities.

The industrial and natural risks (RIN) network within EDF ensures that the new requirements are monitored, appropriated and integrated on the sites.

Furthermore, the Group is committed to biodiversity through its corporate social responsibility concerns relating to the preservation of the planet's resources (see section 3.2 "Preserving the planet's resources").

2.2.5 Specific risks related to nuclear activities

5A - Failure to comply with the objectives for operation and/or for extending the operating life of nuclear power plants (France and United Kingdom)

Summary: The Group may not be able to meet its nuclear power plants' operating objectives in terms of safety and availability, notably in the case where controls or defect detection would lead to modifications on the nuclear French fleet. It may also not be able to continue operating its reactors beyond the current planned expiry date, or even be authorised to operate them until that date in both France and the United Kingdom. In addition, the Group may not be able to control costs and deadlines for upgrading its operating fleet (*Grand carénage*), which constitutes a major risk for the Group.

Criticality: ●●● Strong

a) Context

The fleet of nuclear reactors that the Group currently operates in France is highly standardised (see section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation"). This enables the Group, in particular, to achieve economies of scale, to apply improvements made to its newest reactors to all reactors and, in the event of a reactor malfunction, to anticipate the measures to be taken with the other reactors. The Group has been aiming for several years to continue operating its nuclear power plants in France beyond 40 years.

On 15 December 2021, EDF announced the occurrence of the phenomenon known as "stress corrosion" near welds in the safety injection system (SIS) pipes as part of the ten-year inspection of reactor No. 1 at the Civaux plant. Similar defects have been detected in other plants. Dealing with these phenomena may involve checks and repairs leading to unscheduled shutdowns and have an impact on nuclear generation.

During the periodic reviews carried out during the ten-yearly inspections (VD) and following the Fukushima accident in Japan, the Group drew up a major work programme, called "*Grand carénage*", the principle of which was approved by the Board of Directors.

In the United Kingdom, the operating period currently planned for the reactors in EDF Energy's existing nuclear fleet ranges from 41 to 47 calendar years for advanced gas reactors (AGRs) and is 40 years for the Sizewell B pressurised water reactor (PWR). Since EDF Energy acquired them, the operating lifespan of the AGR power plants has been extended by 6 years on average and the objective is to increase the operating life of the PWR power plant by 20 years in addition to the 40 years currently planned (see section 1.4.5.1.2.2 "Nuclear generation"). The two reactors at Dungeness B were permanently shut down in June 2021, those at Hunterston B in November 2021 and those at Hinckley Point B in July and August 2022.

b) Main risks

Nuclear fleet in France

- This standardisation of the fleet has a potential parallel risk of the dysfunction being ordinary to several reactors or to a generation or series of reactors (see section 1.4.1.1.2 "Nuclear power generation in France").
- The Group may be required to make significant or costly repairs or modifications to all or some of its plants. Events may occur that could have an impact on the operation of the fleet or on its output, which could lead to a temporary shutdown or closure of all or part of the fleet.

In particular, the detection of indications (termed "stress corrosion") discussed above brought about the shutting-down of the reactors of the N4 series. The preventive inspections carried out revealed similar defects in other reactors.

Checks could be further extended within the nuclear fleet, in close consultation with the ASN. They could result in further investigations and entail potentially lengthy and costly repairs.

- During the periodic ten-year reviews, the ASN decides on the measures taken by the operator and may give additional instructions for each reactor. Solutions are being studied to demonstrate the capacity of non-replaceable equipment such as the containment building and reactor vessels, to ensure their operation up to 60 years. These studies, which are based on data available in France but also internationally ⁽¹⁾, make it possible to confirm the safety margins available for the operating periods under examination but may also incur the need to adopt additional protective measures, if necessary, for the existing fleet, which could have consequences on its performance.
- In its decision of 23 February 2021 on the conditions for continued operation of EDF's 900MWe reactors beyond their fourth periodic review, the ASN found that the measures planned by EDF, supplemented by the responses to the requirements formulated by the ASN, will make it possible to achieve the objectives of the review and that these safety improvements open up the prospect of continued operation of the 900MWe reactors for a period of ten years beyond their fourth periodic review, subject to the implementation of additional measures. These new requirements lead to an increase in investments and an additional industrial load of around 25% compared with the already very ambitious initial programme, increasing the risk affecting the ability of industrialists to make the necessary investments within the stipulated deadlines.
- In accordance with the French Environmental Code, the measures proposed by EDF during reviews after the 35th year of operation will be submitted for each reactor individually to the ASN for authorisation, after a public enquiry. For Tricastin 1, whose VD4 (head of series) culminated in recoupling on 23 December 2019, the periodic review conclusion report (RCR) was transmitted in February 2020, and was the subject of a public enquiry from 13 January to 14 February 2022, after publication of the generic ASN opinion regarding the VD4. The ASN's opinion on the Tricastin 1 RCR is expected to be issued in 2023. At the end of 2022, the VD4s were completed for the following reactors: the Tricastin 1; Tricastin 2; Tricastin 3; Bugey 4; Bugey 5; Dampierre 1; Dampierre 2; Gravelines 1; and Gravelines 3 reactors, and the VD4 of Blayais 1 is under way. Each ASN opinion may include site-specific requirements in addition to the requirements of the generic opinion, impacting industrial load and costs.

- In 2016, the Board of Directors approved the extension in the consolidated financial statements of the depreciation period for the 900MWe PWR plants, except Fessenheim, from 40 years to 50 years, without prejudice to the decisions of the ASN on the measures proposed by EDF for each reactor individually, after each 10-year inspection. The risk cannot be ruled out that the extension of the operating life of certain 900MWe reactors may not be authorised, but an important step forward was taken with the generic opinion issued by the ASN on 23 February 2021.
- The continuing in operation of the other series of France's nuclear fleet (1,300MWe and 1,450MWe), which are more recent, remains an industrial objective for the Group. In 2021, the Board of Directors approved the extension in the consolidated financial statements of the depreciation period for the 1,300MWe PWR plants from 40 years to 50 years (see note 1.4.1 to the consolidated financial statements for the fiscal year ended 31 December 2022). This accounting estimate does not assume that continued operation will be authorised; such authorisation will be granted unit by unit by the Safety Authority after each ten-year inspection, as required by law.
- The potential uncertainties regarding the *Grand carénage* programme include a possible delay in the processing of the authorisations required to start operations, especially as regards the authorisations expected from the French Nuclear Safety Authority (ASN). Such uncertainties may also concern the manufacture and delivery on site of new equipment or work carried out on-site in a situation where a large number of industrial operations are being carried out at the same time. Furthermore, the Group may not receive the expected operating lifespan extension from the competent authorities. Such extensions could also be obtained under certain conditions, the financial impact of which, in particular in terms of investments, could affect the Group's strategy with respect to extending the operating life of its reactors or the Group's ability to pursue its global investment strategy. These events could have a significant negative impact on the Group's financial position.

Nuclear facilities in the United Kingdom

- Given the nuclear safety rules applicable in the United Kingdom and AGR reactor technology in particular, EDF Energy may not obtain the necessary authorisations from the ONR when the time comes to operate its existing nuclear reactors until the currently planned (AGR) or potential (Sizewell B) end of operation date, or may obtain such authorisations under conditions involving significant expenditure or investment by the Group.
- The ongoing analysis of graphite ageing in the AGR (Advanced Gas Reactor) may lead to prolonged unavailability or early shutdown of the reactors. The cracking of graphite subjected to irradiation must be carefully monitored, with inspections carried out regularly, and controlled by the Office for Nuclear Regulation (ONR), to ensure that there is sufficient knowledge of the core to justify continued operation. Following decisions taken in August 2020 and November 2020, Hunterston B was permanently shut down in January 2022, and Hinckley Point B permanently ceased production in July 2022. Following a life review of the AGRs in December 2021, the projected final shutdown dates for Heysham 2 and Torness have been brought forward from 2030 to March 2028.
- An accelerated fuel withdrawal strategy would be implemented in the event of any risk of an early shutdown of the other AGR plants. If this strategy were to be adopted, a re-examination of the value of the assets may be required.
- Given the ageing of the British fleet and the many technical difficulties encountered, the future level of output of the AGRs currently in service is very uncertain.

Other nuclear facilities

- For nuclear reactors where EDF is not in charge of operation but has financial interests (Belgium, China), the Group is also financially exposed to some risks. The Group may need to contribute up to the amount of its share to costly repairs or modifications to be carried out on these units or to events that may have an impact on their operating lifespan, production or availability. As in France and the United Kingdom, the nuclear safety authorities in these countries may take decisions that require additional work or controls, in particular as regards exploiting feedback from international experience and anticipating potentially precursory events. The Group is also exposed in terms of the value of its assets.

(1) Four reactors in the US have been licensed to operate for up to 80 years. For six others, the licence application is currently being processed: The Nuclear Regulatory Commission (NRC) staff has defined subsequent license renewal (SLR) to be the period of extended operation from 60 years to 80 years (www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html).

Other risks

- Furthermore, despite the quality of operations and the changes made by the Group to its nuclear facilities, it cannot be ruled out that some of these facilities will be subject to special operating conditions to reinforce the operating safety margins at the initiative of the nuclear operator responsible for nuclear safety or at the request of the Nuclear Safety Agency.
- Finally, a potential serious nuclear accident not involving the Group but with widespread consequences worldwide could lead the safety authorities to require new reactor upgrades applicable to the Group's reactors, and to those in which the Group has a stake.

c) Control actions

The action plans for this risk are carried out by all the operational engineering and operating teams of the nuclear fleet, particularly in the context of the Start 2025 and *Grand carénage* projects (see section 1.4.1.1.2.1 "EDF's nuclear plant in France and its operation").

During the ten-year inspections, the safety assessment makes it possible to increase the level of safety by taking into account, on the one hand, international best practices and, on the other hand, the condition of the facilities, the experience acquired during operation and the developments in the knowledge and rules applicable to similar facilities.

The increase in the number of VD4s completed each year (1 in 2019, 1 in 2020, 4 in 2021 and 5 in 2022) and the increase in the load on the industrial fabric are covered by an approach involving the main suppliers of the plant in operation, in order to have a multi-year vision of the load, and to enable the entire nuclear industry to implement the necessary measures (in terms of resources, contractual terms, standardisation, etc.) so as to secure the success of the industrial programme for the plant in operation.

Since December 2019 the Group has been implementing the Excell plan, which aims to enable the French nuclear industry to return to the highest level of rigour, quality and excellence in order to keep up with major projects and meet the needs of existing nuclear power plants in France and the United Kingdom (see section 1.4.1.1.1 "The excell plan").

Concerning stress corrosion, out of the 16 reactors most sensitive to this occurrence (reactors of the N4 and P'4-1300 series), 10 were treated in 2022 or are

undergoing treatment. EDF initiated a plan for inspections across the nuclear fleet, with the aim of completing them by the beginning of 2025, during scheduled-maintenance and fuel-renewal outages of all the reactors. In the case of the reactors of the P'4-1300 series, EDF adapted its treatment strategy for the series as a whole. This strategy, presented in 2022 to the ASM, is aimed at treating the CSC issue on all the 1300-P'4 reactors by the end of 2023. For these reactors, EDF is contemplating full preventive replacement of the pipes for the safety injection lines of which the welds could be affected by CSC.

At the beginning of 2023, as part of the inspection and assessment program initiated by EDF, a defect was detected on a weld in the safety injection circuit of the Penly 1 reactor, which has the particularity of having been repaired twice during the initial assembly of the circuit during construction. On 10 March 2023, EDF proposed to ASN a change in its stress corrosion control strategy and accelerated the control of the RIS and RRA welds concerned, in order to take account of the elements identified on the repaired weld at Penly 1⁽¹⁾.

The ASN announced to have taken note of this evolution in the strategy and to continue the technical dialogue with EDF. As of 16 March 2023 and on the basis of the control strategy proposed by EDF, the estimate of nuclear generation in France for 2023 remains within the range 300-330 TWh.

See also section 1.4.1.1.2.1 "Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors".

In the United Kingdom, risk control is also based on:

- ongoing interactions with the regulator on safety cases relating to the life cycle of facilities, assessment by the regulator and licensing requirements;
- the graphite management and ageing monitoring programme for the AGR fleet, with frequent graphite inspections, in particular at Heysham 2 and Torness;
- Sizewell B's long-term operating programme to manage the production of the business case in support of the decision on the investment programme required for extending the operating life;
- reviews, where necessary, of the life cycle of the AGRs and actions to prepare for fuel retirement in the event of early closure;
- strategies for preventive monitoring and maintenance of facilities to enable early consideration of problems that could lead to loss of generation.

5B - Control of radioactive waste treatment and decommissioning of nuclear facilities, and ability to meet related commitments

Summary: The provisions set aside by the Group to cover the expenses relating to the decommissioning of nuclear facilities in France and for the treatment, decommissioning and ultimate disposal of radioactive waste, including long-lived waste from spent fuel treatment and decommissioning, may be exposed to technical, cost and planning risks which could make them insufficient. In order to control these risks, EDF has instituted a dedicated organisation to carry out decommissioning and waste management projects covered by these provisions. The 2020-2021 audit by the DGEC on the decommissioning of halted facilities and the ASN inspection in 2021 on the management of projects for decommissioning NUGG reactors, lent strength both to the scenarios examined and to the relevance of the organisation and management for the projects instituted by EDF. However, several exogenous factors remain, with a likely impact on the expenses of decommissioning and long-term waste management, particularly the following: the inflation risk, the uncertainties regarding the tax treatment of the CIGEO waste management project, the tensions on the industrial fabric and skills shortages, etc. These risk factors could unfavourably impact the estimated expenses, requiring upward revision of the related provisions and of the assets dedicated to covering them, with a negative impact on the Group's cash flow, earnings and prospects. In addition, these operations must address the CSR challenge of waste management and the circular economy.

Criticality: ●● Intermediate

a) Decommissioning of finally shut-down power plants

In France, the law (Environmental Code) requires every basic nuclear plant operator to prudently evaluate the expenses for decommissioning their facilities and the expenses for managing spent fuel and radioactive waste, including expenses of transport away from the site. The law also requires the setting aside of provisions corresponding to these expenses and the exclusive allocation to covering these provisions of the necessary assets also termed "dedicated assets". This obligation also applies both to installations that have already been halted, where their

decommissioning has not been completed and the authority has not pronounced them to be declassified, and to installations currently in operation, in anticipation of their future decommissioning.

Currently, the operations for decommissioning EDF nuclear installations in France (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity") chiefly concern reactors that were constructed, operated then finally shut down. These operations cover four different reactor technologies: heavy water reactor (Brennilis), sodium-cooled fast-neutron reactor (Superphenix at Creys-Malville), graphite-moderated and gas-cooled reactors (NUGG reactors at Chinon, Saint Laurent and Bugey) and the pressurised water reactors ("PWR") at Chooz A and Fessenheim.

(1) See EDF's press release of 16 March 2023 "Clarification on the stress corrosion phenomenon detected on parts of the auxiliary circuits of the main primary circuit of several nuclear reactors".

In the United Kingdom, the two reactors at Dungeness were permanently shut down in June 2021, those at Hunterston B in November 2021 and those at Hinckley Point B in June and August 2022. Under the agreements concluded in connection with the restructuring of British Energy, the costs of decommissioning EDF Energy Nuclear Generation Group Ltd.'s existing nuclear power plants will be paid by the Nuclear Liabilities Fund (NLF). If the assets of this Fund prove insufficient, these costs will be borne by the British Government (see section 1.4.5.1.2.2 "Nuclear generation"). In 2019, EDF Energy and the UK Government (BEIS) began discussions with a view to clarifying the conditions for implementing the above-mentioned agreements, in particular as regards determining the decommissioning costs to be recovered by EDF Energy from the Nuclear Liabilities Fund and the conditions under which the British authorities may exercise their option to acquire the nuclear power plants at the end of the defuelling phase. In June 2021 an agreement was reached with the government, which specifies EDF Energy's role in the fuel disposal phase, how and when costs will be recovered, and the terms under which the plants will be transferred to the government. This agreement updates the Nuclear Liabilities Fund Agreement (NLFA).

Main risks

- The decommissioning operations under way in France are a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no feedback internationally. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists.
- It will be construed that any provision relating to a future expense presents a risk which may in particular relate to changes in the administrative, regulatory, technical, economic, etc. context.
- These uncertainties and contingencies may lead to revisions of the amounts provisioned for decommissioning installations and for the long-term management of their waste.
- These uncertainties and contingencies could lead to a significant revision of the amounts provisioned. The provisions set aside may not cover the costs actually incurred in due course. Accordingly, in the United Kingdom, the agreements in force provide that the expenses related to the unloading and evacuation of the fuel, to be covered by the NLF, must be evidenced by EDF Energy and approved by the French government; failing this, they would remain the responsibility of EDF Energy.
- For nuclear power plants which EDF does not operate, but has financial interests in (China and Belgium), the Group is exposed financially in proportion to its shareholding in its contribution to future decommissioning costs.

Control actions

- For the present and future decommissioning of nuclear installations in France, and for the long-term management of waste, EDF has set up a dedicated organisation for defining the project covered by the legally-prescribed provisions, in technical terms and in terms of cost and lead times.
- The feedback from the virtually-completed decommissioning of the Chooza PWR reactor, and the information derived from the Fessenheim studies, together with the early information on the preparation for decommissioning of that site's reactors, render as robust as possible the studies and the estimate for the future cost of decommissioning the currently operational EDF nuclear fleet.
- The Group regularly conducts an update of the key assumptions underpinning the provisions (see note 15 to the consolidated financial statements for the fiscal year ended 31 December 2022). These information items are set out in particular in the triennial report drawn up by EDF pursuant to the French Environment Code, describing the evaluation of the expenses of decommissioning and waste management, the methods applied for calculating provisions corresponding to those expenses, and the options adopted regarding the composition and management of the assets assigned to cover these provisions. This report, together with its annual updating document, is submitted for assessment by the competent authority (DGEC).
- The 2020-2021 audit by the DGEC on the decommissioning of halted facilities (excluding PWR) and the ASN inspection in 2021 on the management of projects for decommissioning NUGG reactors, lent strength both to the scenarios examined and to the relevance of the organisation and management for the DP2D projects (Directorate for decommissioning and waste projects), which inspection found that *"the process for estimating and for annual review is robust, and allows for good traceability of the assumptions used and the original data"*. *"The provisions are consistent with the baseline scenarios of the projects and cover the full scope of the expenses of the audited scope"*.
- Governance in terms of securing the financing of nuclear expenses has been strengthened through the development of a Group policy, validated by the

Board of Directors on 30 June 2021, and the creation in 2021 of a Nuclear Expense Assessment Control Function in accordance with Decree 2020-830 of 1 July 2020.

- The amount of these provisions, in accordance with the French Environmental Code, is subject to control by the administrative authority (DGEC – the French General Directorate for Energy & Climate), which verifies in particular the adequacy of the provisioned expenses and imposes a cap on the discount rate for the provisions.
- In the United Kingdom, the risk of decommissioning cost recovery has been significantly reduced by the agreement with the government. Additional risk control actions are:
 - > maintaining the quality of relations with the government and the NDA (Nuclear Decommissioning Authority);
 - > strengthening monitoring and contractual compliance arrangements, as well as reporting and performance management.

b) Waste management

In France, EDF is responsible for all radioactive waste produced during:

- the operation of the nuclear facilities operated by the Group;
- processing operations for spent fuel from reactors operated by EDF;
- decommissioning operations at the nuclear facilities operated by the Group (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity – storing conditioned ultimate waste").

In this regard, EDF has allocated provisions for the long-term management of such waste (see legal framework as set out in § a above). For each category of waste (high, medium, low or very low activity) a specific management channel is identified.

Most of the provision for the long-term management of waste concerns high-level waste (HLW) and intermediate-level long-lived waste (LLW). It is based on the assumption of geological disposal, which is the international benchmark for the ultimate disposal of high-level and intermediate-level, long-lived radioactive waste, and on the work carried out in 2006 with ANDRA, the public authorities and other producers of radioactive waste (see note 15.1 to the consolidated financial statements for the fiscal year ended 31 December 2022 and see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

The reference cost of the storage/disposal project for High-Level Waste (HLW) and for Long-Lived Intermediate-Level Waste (LLW-LL), which enables the associated provisions to be drawn up, is laid down in the Order of 15 January 2016.

Law no. 2006-739 dated 28 June 2006 provides for a dedicated storage centre for Low-Level Long-Life waste (LLW-LL), such as the graphite of the NUGG reactors. The overall industrial scheme for the management of all LLW-LL is being defined within the framework of the PNGMDR (French National Plan for the Management of Radioactive Materials and Waste) (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity").

In the United Kingdom, under the terms of agreements entered into with the authorities, the liability and certain costs associated with the management of certain radioactive waste are transferred to the UK Government. The supplementary agreement entered into with the government in 2021 clarifies how the costs associated with waste management will be recovered.

Main risks

- As a nuclear operator, the Group is liable for assuring the safety of its own waste treatment and disposal facilities.
- As a producer of radioactive waste, the Group is liable for identifying the appropriate waste management processes. When the waste management processes are operated (within the meaning of a nuclear operator) by other players, the Group may be liable particularly in the event of an accident with damage to third parties or to the environment due to nonconformities of such waste with the specifications defined by the operators of the facilities concerned.
- A challenge to the specifications used as the assumption for accepting waste for geological disposal could lead to reassessing certain waste management methods and the related financial assumptions.
- The reservations that remain, and the supplementary investigation being carried out by ANDRA to obtain approval for the construction of the geological storage area starting, could lead to a revision of the provisions for long-term radioactive waste management.

- For the geological disposal centre project developed by ANDRA to accommodate high-level waste and intermediate-level long-lived waste (CIGEO), the risks of overcosts persist at both design phase and construction phase. Moreover, the policy directions for the tax treatment of this project were modified in late 2020 by a legislative amendment (instituting a storage levy) without specifying the terms and procedures for implementation, and hence they continue to pose a risk of upward revision of the applicable tax charge. All these items, and the supplementary investigation being carried out by ANDRA to obtain approval for the construction of this geological storage area, could lead to a revision of the provisions for long-term radioactive waste management.
- It may be necessary to update the provisions on the basis of the conclusions of studies conducted in connection with the PNGMDR (French National Plan for the Management of Radioactive Materials and Waste) relating to the storage of Long-Lived Low-Level Waste (LLW-LL), or the results of the end of the preliminary and final draft design study optimisation cycle for the design of the future geological disposal site developed by ANDRA.
- Pursuant to the restructuring agreements of British Energy, EDF Energy Nuclear Generation Ltd. remains financially, technically and legally liable for the management, storage and reprocessing of waste that does not come within the scope of the aforementioned agreements.
- Failure to control the costs and time-frames for completion with respect to the solutions for the treatment and ultimate storage of waste for which the Group is liable would have a negative impact on the Group's financial position and reputation.
- For nuclear power plants which EDF does not operate, but in which it has financial interests (Belgium, China), the Group is exposed financially in proportion to its shareholding to contributing to future expenditures related to the management of spent fuel and waste.

Control actions

- The control strategy consists in developing and securing radioactive waste treatment channels to meet the present and future needs of the Group's nuclear facility decommissioning and operating projects. To this end, the structuring of the Cyclife subsidiaries has in particular been consolidated in order to offer a range of appropriate waste treatment solutions.
- For CIGEO (the geological disposal centre project developed by ANDRA for high-level waste and intermediate-level long-lived waste), the control strategy consists in securing the project by proposing to ANDRA and support for the development strategy and implementation of the disposal, in order to meet the target cost of €25 billion ⁽¹⁾ (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity"). To this end, a cooperation agreement was signed at the end of 2020 between EDF and ANDRA.
- The Group participates, as a producer, in the various working groups on the storage of graphite waste. In addition, EDF is very actively involved in the PNGMDR steering Committee.
- In the United Kingdom, arrangements are in place for the management of spent fuel from AGR and PWR reactors:
 - > through its safety and sustainable development policies, EDF Energy implements actions to continuously improve and minimise the quantities of spent fuel and waste generated;
 - > the arrangements for the management of spent fuel from the AGRs were defined at the time of the restructuring of British Energy. Spent fuel from AGRs is disposed of at the Sellafield reprocessing site for long-term storage. EDF Energy finances this storage (as well as the reprocessing carried out in previous years);
 - > the Sizewell B PWR spent fuel is stored on site in a dedicated dry storage facility. This facility will provide safe storage for all spent fuel produced during the lifetime of Sizewell B. At the end of this long-term surface storage, the Sizewell B PWR spent fuel will be transferred to the future UK geological disposal facility. This strategy is approved by the NDA and financed by the Nuclear Liabilities Fund.

c) Provisions and management of dedicated assets

Context

Note 15.1.2.4 "Nuclear provisions in France" to the consolidated financial statements as at 31 December 2022 sets out the amounts of expenses under the economic conditions at the end of 2022 as well as the corresponding provisions relating to:

- the future decommissioning of the nuclear electricity generation fleet in France and of the currently-halted facilities;
- the management of the last fuel cores;
- the long-term management of waste and the recovery and packaging of waste present in the facilities.

This note also provides analyses of the sensitivity of the Group's provisions and income to a change in the discount rate for the various categories of provisions. All these provisions represent several tens of billions of euros.

Note 17.1 "Other provisions for decommissioning" to the consolidated financial statements for the fiscal year ended 31 December 2022 presents the same items for Framatome and Cyclife France (formerly SOCODEI) and their basic nuclear facilities in France.

Note 15.1.2.4 to the consolidated financial statements for the fiscal year ended 31 December 2022 sets out the realizable value of EDF's portfolio of dedicated assets to cover the costs of long-term nuclear commitments (radioactive waste and decommissioning) at 31 December 2022.

In the United Kingdom, the funds for nuclear liabilities are managed by a body independent of EDF set up by the British Government (Nuclear Liabilities Fund – NLF) for the existing nuclear fleet. For HPC-related liabilities, the funds will be managed by FundCo, a body (Trust) independent of HPC's shareholders (EDF Energy and CGN) and the UK Government. Operators therefore have no assets to manage for this purpose (see section 1.4.5.1.2.2 "Nuclear generation").

Main risks

- All of the contingencies and uncertainties regarding these provisions may have a material adverse impact on the Group's financial position (see note 15.1 to the consolidated financial statements for the fiscal year ended 31 December 2022).
- In the event of a significant change in the provisions determining the reference base of the dedicated assets, it might prove necessary to make additional allocations to adjust the value of these assets, which could have a material adverse impact on EDF's financial position. Moreover, stricter regulations at the national level (in particular those that might impact the base for determining the dedicated assets to be constituted by EDF ⁽²⁾) or European level may lead to more stringent requirements regarding the constitution of dedicated assets and have a significant impact on EDF's financial position.
- Although these assets are constituted and managed in accordance with strict prudential rules, price fluctuations in the financial markets or changes in valuation may have a material adverse impact on the value of these assets (for a sensitivity analysis, see section 5.1.6.1.6 "Management of financial risk of EDF's dedicated asset portfolio"), which could require EDF to allocate additional amounts to restore the value of these assets. Such events could have a material adverse effect on the Group's financial position.
- The unavailability or insufficient amount of the dedicated assets to hedge the expenditure schedules of the Group's long-term commitments could have a negative impact on the Group's financial position and reputation.

Governance arrangements

In order to ensure the control of provisions and the management of dedicated assets, the Group has put in place specific governance arrangements:

- the Nuclear Expense Assessment Control Function, in accordance with Decree 2020-830 of 1 July 2020;
- the Dedicated Asset Portfolio Operational Management Committee;
- the Nuclear Commitments Monitoring Committee (CSEN) of the Board of Directors.

(1) 2011 economic cost (see note 28.2 to the corporate financial statements for the fiscal year ended 31 December 2022).

(2) The report of the French Cour des Comptes to the Senate Finance Committee on the decommissioning and dismantling of nuclear power plants, published on 4 March 2020, recommends that the costs of all decommissioning preparation operations, post-operational expenses and the cost of taxes, levies and insurance premiums directly attributable to decommissioning sites should be phased into the long-term expense categories.

5C – Nuclear safety violations during operation resulting in nuclear civil liability

Summary: In addition to controlling industrial performance and given the importance of nuclear generation within the EDF group, the way EDF exercises its responsibility as a nuclear operator – with nuclear safety being the number one priority – determines the Group's overall performance. As a result of its nuclear activities, the Group is exposed to nuclear civil liability risks.

Criticality: ●● Intermediate

a) Context

The primary responsibility for nuclear safety lies with the nuclear operator throughout the operating cycle of nuclear reactors. This principle, along with the principle of control, is reaffirmed in the EDF group's nuclear safety policy. Liability as a nuclear operator falls under the "nuclear safety, health and security" aspect of the Group's CSR policy (section 3.3.1 "Security, Health & Safety for all"). The Chairman and Chief Executive Officer delegates this responsibility to the Group Senior Executive Vice-President, Nuclear and Thermal and the Group Senior Executive Vice-President, New Nuclear Projects and Engineering, who then sub-delegate it to the Directors of the Divisions involved, who in turn sub-delegate it to the Unit Managers.

b) Main risks

Control of nuclear safety

The top priority is nuclear safety, as defined in the Group's Nuclear Safety Policy, and this is a factor in the industrial performance of the nuclear business as a whole. Nuclear safety takes into account the design by the nuclear operator and the operation by the designer. Failure to control operating safety could have major or even vital consequences on the value of the Group's industrial assets, its financial position and its development outlook, or even on the continuation of its industrial activity.

Any serious event related to the Group's nuclear activities, with a potential or proven impact on the population, the environment or on a territory, could lead to a significant increase in the operating constraints of the Group's industrial sites, or even the partial or total interruption of the Group's nuclear activities. Such an event could have a significant negative impact on the Group's activities, financial position, strategy and reputation.

Nuclear civil liability

The nuclear civil liability scheme that applies to nuclear facility operators of States, which are parties to the Paris Convention, and the insurance applicable thereto, are described in section 2.1.3.7 ("Insurance"). This scheme is based on the principle of the operator's strict liability. Accordingly, if an event occurs that causes nuclear damage, the Group would be automatically liable up to a monetary maximum set by the law applicable in the country, regardless of the source of the event that caused the damage and any safety measures that may have been taken.

In countries where the Group operates nuclear facilities, statutory liability limits may be increased or repealed. For example, the protocols amending the Paris Convention and the Brussels Convention, in force since 1 January 2022, provide for these maximum amounts to be increased and a substantial expansion of the loss to be covered. The operator's liability in France amounts to €700 million for nuclear damage caused by each nuclear accident, and €80 million in the event of transport of nuclear substances for a given nuclear accident. The entry into force of the other amendments introduced in these protocols is likely to further increase the cost of insurance, and insurance covering this liability may not always be available or maintained. Insurance coverage for the Group's nuclear operator's civil liability and for the transport of nuclear substances is described in section 2.1.3.7 "Insurance".

Property damage to EDF's nuclear facilities is covered by insurance programmes (see section 2.1.3.7 "Insurance"). Despite this cover, any event that may cause significant damage to a nuclear facility of the Group could have an adverse impact on the Group's business and financial position.

Lastly, the Group cannot guarantee that the insurers that cover both its liability as a nuclear plant operator and property damage to its facilities will always have available capacity or that the costs of cover will not significantly increase, particularly in light of the impacts on the insurance market of events such as the nuclear accident in Japan that occurred in March 2011.

c) Control actions

In view of these risks, and pursuant to the Group's policy, each Group company operating nuclear facilities acts within the framework of legal and regulatory requirements specific to the country in which it operates and is obliged to comply with them. Each one ensures the nuclear safety of its facilities and constantly improves the level of this safety, based on its methods, skills and values. The Group develops ordinary principles aiming to obtain the best level of prevention of incidents and protection of workers, the public and the environment. These principles apply to all stages of the activity, both for new projects and for the existing power plants or sites being decommissioned. The Group closely involves its industrial partners in the achievement of these objectives.

Each company is responsible for the proper conduct of its nuclear activities and sets the appropriate delegations at each decision and action level. The Group guarantees the allocation of the necessary resources for nuclear safety.

An internal entity in charge of an independent safety evaluation is put in place at the level of each site, each company and of the Group. Each one reports to the manager concerned, independently of other managerial functions; furthermore, each one has the duty to alert the superior hierarchical level if the reaction of the level directly involved is not what is expected.

The Group's nuclear operating companies regularly receive international evaluation teams (WANO ⁽¹⁾, Peer Review and OSART from the IAEA ⁽²⁾).

Clear and honest information communication on the events and their possible impacts are promoted within the Group. This high standard of dialogue is sought and maintained with the salaried personnel and their representatives, subcontractors, the supervisory authorities (Nuclear Safety Authority in France, Office for Nuclear Regulation in the United Kingdom), local government and all other nuclear safety stakeholders.

The Nuclear Safety Council, which the Chairman and Chief Executive Officer of EDF chairs, meets several times a year and, periodically reviews the annual assessment of nuclear safety for the EDF group. A General Inspector for nuclear safety and radiation protection (IGSNR) is appointed by the Chairman and Chief Executive Officer to whom he/she reports. He/she carries out inspection assignments regarding all of the nuclear activities of the EDF group. Each year, he/she issues an opinion on safety within EDF. The report is presented to and discussed by the Nuclear Safety Council. It is then made public (see section 1.4.1.1.4.3 "Nuclear facilities and safety").

(1) WANO: World Association of Nuclear Operators.

(2) OSART: Operational Safety Analysis Review Team; IAEA: International Atomic Energy Agency.

5D – Control of the fuel cycle

Summary: In addition to the control of nuclear safety (risk 5C), the operation of existing nuclear facilities (risk 5A) and new nuclear projects (risk 4A), the Group is exposed, in the context of nuclear activities, to the control of the nuclear fuel cycle.

Criticality: ●● Intermediate

a) Context

The Group's operating costs include nuclear fuel purchases.

EDF is supplied with uranium, conversion and enrichment services, fuel assembly supplies and spent fuel reprocessing operations for its nuclear fleet in France and the United Kingdom.

In France, EDF has set aside provisions for spent nuclear fuel management operations (transport, processing, conditioning for recycling) (see note 15 to the consolidated financial statements for the fiscal year ended 31 December 2022) based on the price and volume conditions of the master agreement signed with Orano in December 2008 and broken down in the successive implementation agreements (see section 1.4.1.1.2.3 "Issues relating to the nuclear activity"). These provisions amount to approximately €10 billion.

Note 15.1.1.5 "Inflation rate, discount rate and analyses of sensitivity" and note 15.1 "Nuclear provisions and dedicated assets in France" to the appendix to the consolidated financial statements for the fiscal year ended 31 December 2022 set out the connection between "costs based on year-end economic conditions", which represent estimated amounts as at 31 December 2022 and "provisions made at present value".

b) Main risks

Nuclear fuel supply

Prices and volumes are subject to fluctuations that depend on factors beyond the Group's control, including political and economic factors (in particular, profitability outlook for mining investments, supply/demand imbalance or supply-side shortage, associated, for example, with the occurrence of an operating incident in a uranium mine or cycle plant, a delay in commissioning a new mine, or an event leading to institutional instability in a producing country, or restrictions/sanctions/embargoes, etc.).

Nuclear fuel logistics

The storage and transport of new or spent nuclear fuel is an industrial activity that requires specific safety and security measures. These requirements could become more stringent, generating additional difficulties and costs for the Group.

In the event of the collapse of this industrial logistics system, the Group could reduce or even interrupt all or part of the electricity generation at the affected sites, either due to the non-delivery of new assemblies or to the saturation of storage facilities, which could have a negative impact on the Group's financial position (see section 1.4.1.1.2.3 "Issues relating to the nuclear activity").

Transport of nuclear materials continues to be highly constrained, particularly having regard to the increase in security and regulatory requirements; in line with the management of the "yellow vests" (*gilets jaunes*) crisis, the Covid-19 pandemic was well anticipated and did not disrupt transport, but reminded us that the situation remains precarious.

In view of the saturation of the existing storage pools, and of the risk of the long-term impossibility of implementing multi-recycling in its 3rd-generation pressurised water reactors, or of recycling in 4th-generation reactors termed "GEN IV" (abandonment of the ASTRID rapid-neutron reactor), the fuel cycle could be jeopardised. This would have both operational and financial consequences.

Provisions for spent fuel disposal

The amount of provisions currently booked to cover the period not covered by the current agreement with Orano should be reassessed if the terms under which this agreement is renewed prove more costly than those currently applicable.

The contracts entered into in France and abroad may not sufficiently protect the Group from sudden or significant price increases. When these contracts expire, the Group may not be able to renew them, in particular at an equivalent price. This could have an adverse impact on the Group's financial position.

c) Control actions

The supply risk management strategy consists of progressively securing the portfolio through competitive, diversified and long-term contracts in line with the objectives for covering requirements presented to the Board of Directors. Fixed-price contracts are preferred, or contracts including a limited market-price component, the latter systematically including ceilings/floors to reduce exposure to the market.

In the field of transport, the control actions implemented by EDF include strengthening the unpredictability of transport and ties to the authorities (HFDS/IRSN/ASN), the prevention and reduction of potential impacts on the fleet, as well as the development of alternative drivers (anticipation of deliveries, inter-unit transfer, etc.).

The control of spent fuel storage capacity is essential to preserve the balance of the closed cycle. A new large-capacity spent-fuel storage pool will be commissioned by EDF in 2034 at the site at La Hague (see section 1.4.1.1.2.3 "Issues relating to the nuclear activity"). In the meantime, Orano plans to densify its existing pools on the site and is developing a dry storage solution for spent fuel.

Lastly, EDF's strategy for the fuel cycle is to maintain the long-term perspective of a closed cycle based on GEN IV reactors.



3



NON-FINANCIAL PERFORMANCE

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Corporate social responsibility issues and commitments

In line with its *raison d'être*, strategy, business model and related risk factors ⁽¹⁾, the EDF group presents in this chapter 3 its non-financial performance issues, commitments, policies, actions and results.

16 priority CSR issues

The EDF group's priority CSR issues underpin the action it takes in respect of ESG performance ⁽²⁾, whilst preserving the management independence of network operators. They are seen as key sustainability issues, *i.e.* ones that involve risks and/or opportunities for the Group and its stakeholders. EDF has used a materiality analysis to map them over the last six years. This analysis included enabling identification, selection and ranking of the main sustainability issues, by combining the points of view of both external stakeholders (customers, investors, non-financial rating agencies, public authorities, etc.), and the Group itself.

Against a changing backdrop, the initial dual materiality analysis carried out in 2014 was updated in 2018. The analysis was prepared with the support of a specialist firm and underpinned by international standards based on documentary studies, interviews and workshops conducted with about one hundred people forming a representative cross-section of the Group's stakeholders ⁽³⁾. External stakeholders included internationally-recognised qualified individuals as well as representatives of the Group's main stakeholders (authorities, administrations, shareholders, banks, customers, partners, subcontractors, suppliers, NGOs, etc.). Internally, members of the Executive Committee participated in the development process, as did managers from the Group's main departments and subsidiaries. The

conclusions were approved by the Group Senior Executive Vice-President for Innovation, Corporate Responsibility & Strategy. In 2019, the Sustainable Development Council ⁽⁴⁾ met to examine the Group's materiality analysis and, based on current best practice, recommended reducing the number of issues.

On 7 May 2020, EDF established its *raison d'être*, which was adopted by 99.99% of the Shareholders' Meeting and added to its bylaws: "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development". More than 4,000 employees ⁽⁵⁾ contributed to developing this statement. In accordance with the EDF Sustainable Development Council, these 16 high-priority CSR issues have been ranked and categorised into four key issues in line with EDF's *raison d'être*:

Carbon neutrality and the climate

Preserving the planet's resources

Well-being and solidarity

Responsible development

The EDF group's dual materiality matrix has remained unchanged since 2020, with the priority CSR challenges mapped out as follows:



(1) For details of the EDF group's *raison d'être*: see the introduction to the URD; for details of the EDF group's strategy, see section 1.3 "Group strategy and objectives"; for details of the EDF group's business model: see section 1.1 and section 1.4; for details of the EDF group's risk factors: see Chapter 2 "Risk factors and control framework".

(2) Measuring a business's ESG performance consists of assessing the extent to which Environmental, Social & Governance (ESG) impacts are taken into account in its strategy and management. This process is based on environmental, social and governance criteria that structure the business's non-financial performance analysis.

(3) For a detailed description of the various methodological stages in its preparation, see section 3.6 "Methodology".

(4) Known as the EDF group Stakeholder Advisory Panel (*Conseil des parties prenantes*) since 2021; see section 3.4.1.1.1.1 "EDF – a pioneer in the implementation of stakeholder panels". The materiality matrix remained unchanged in 2021.

(5) Through the "Let's talk about energy" dialogues, cf. section 3.4.1.1.2 "An open dialogue with all, involving all of the Group's businesses and subsidiaries".

Focus: Group action in response to the energy crisis

The global post-Covid recovery and the geopolitical tensions following the Russian invasion of Ukraine have led to sharp increases in the price of oil, gas, and electricity. At the same time, the availability of EDF's nuclear fleet was affected for a period of several months by the discovery of signs of stress corrosion on some reactors. In addition, the 2022 drought resulted in historically low levels of water availability at EDF dams.

In this environment, the Company has remained active to ensure the supply of electricity to its customers throughout the winter of 2022. To ensure maximum availability of its production fleet, the Group has leveraged all resources available to it, starting with the maintenance of all its nuclear, hydro, thermal, wind and solar power facilities being anticipated and scheduled before and after winter wherever possible.

Furthermore:

- fuel savings have been achieved for 4 nuclear reactors; the maintenance schedule was altered for 15 scheduled reactor shutdowns so as to keep them in production over the winter;
- water reserves for hydro dams have been managed with extreme caution;

- stocks of thermal fuel (coal, fuel oil, and gas) have been carefully managed;
- the stock of replacement parts for wind and solar farms has been increased.

At the same time, EDF has ramped up its actions in favour of better energy use:

- providing further support to customers to help them control their electricity and/or gas use, in particular through the Tempo option within the Regulated Sales Tariff (*Tarif réglementé de vente*, TRV) ⁽¹⁾ promoted at the request of national government to eligible consumers, as well as by leveraging industrial and other customers' capacity for load balancing and launching awareness-raising and communications campaigns as of autumn 2022;
- by rolling out an internal "energy sobriety" plan on 29 August 2022, EDF aims to reduce the Company's main energy use by 10% through pro-active measures and employee engagement. This plan further amplifies and supplements the commitments made by the Company over the past few years. To address the crisis, it is putting forward new measures and encouraging the everyday implementation of "energy-saving tips" with three main levers: workspaces, digital practices, and ongoing travel optimisation initiatives. For details of this plan, see section 3.2.4.3.3 "Optimisation of internal consumption".

Focus: nuclear issues

Several of the Group's most practical challenges relate to nuclear power, both for the optimisation of its positive impacts and for the mitigation of its negative impacts. Several key components of this are outlined below, with further details in the main body of the statement of non-financial performance.

	2020	2021	2022	\$ DPEF
Contribution to climate change mitigation				
LCA studies concerning nuclear power generation (<i>in gCO₂/KWh</i>)	-	-	4	3.1.1.2.13.3
Adaptation of nuclear power plants				
Adaptation to Climate Disruption (ADAPT) policy and CEMA action plan: proportion of completed local "monographs" (target: 100% in 2025)	-	-	8	3.1.2.5
Nuclear safety				
Significant level-2 events on the INES scale* (<i>in nb</i>)	1	1	0	3.3.1.1
Solid radioactive waste				
France: volume of long-lived high and intermediate level solid radioactive waste (<i>in m³</i>)	283	287	225	3.2.4.1
United Kingdom: volume of low-level solid radioactive waste disposed of (<i>in m³</i>)	352	471	498	3.2.4.1

* International Nuclear Event Scale.

16 Group CSR commitments

For each of the 16 high-priority CSR issues, the Group drew up a corresponding CSR commitment in the form of operational policies and actions designed, from an environmental, social and societal point of view, to minimise the negative impacts and maximise the positive impacts of each of these issues.

The following mapping lists these 16 CSR commitments and states for each of them the corresponding sustainability risk as described in the Group major risk mapping,

its contribution to the UN Sustainable Development Goals, and related performance measurements ⁽²⁾.

The Group's non-financial performance is a component of the Group's performance, designed to facilitate a just, inclusive energy transition.

For a just and inclusive energy transition

EDF's *raison d'être* is based on four key areas which, taken together, aim at ensuring that the Group's engagement in the energy transition is fair and inclusive. In 2021, after validation of the principles of its "Just Transition" plan by the CSR Strategy Committee (an Executive Committee committee) and by the Corporate Responsibility Committee (a Board of Directors committee), EDF published them in

the form of a report ahead of the COP26 summit. In 2022, the report was updated on the occasion of the COP2027 summit. For a detailed description, see the publication "Just Transition commitments, from strategy to action" on the edf.fr website ⁽³⁾.

(1) See section 1.4.2.1.2 "Regulated electricity sales tariff contracts".
















































(2) For the methodology used for these indicators, see section 3.6 "Methodology".

(3) www.edf.fr/sites/default/files/contrib/groupe-edf/engagements/rse/transition-juste-et-inclusive_principes_vf.pdf

Methodology and links with other public documents

The methodology for the key indicators cited in the Statement of Non-Financial Performance (DPEF) is set out in section 3.6 "Methodology".

The Pack ESG, a public document recognised at "the Finance Transformation Awards", sets out all the EDF group's sustainability indicators ⁽¹⁾. The EDF group's Impact report ⁽²⁾ is a public document that draws inspiration from the guiding principles of the Impact Management Project (IMP), and details how the Group aims to maximise its positive impacts to facilitate the energy transition and minimise its negative impacts.

Major non-financial risks resulting from the Group's risk mapping	CSR commitments	Contribution to the SDGs
CARBON NEUTRALITY AND CLIMATE		
Adaptation to climate change - transition risks (3B)	Ambitious carbon trajectory	 
Adaptation to climate change - transition risks (3B)	Carbon offsetting solutions	 
Adaptation to climate change - physical risks (3B)	Adapting to climate change	 
Transformation capacity in the face of disruptions - Downstream transformation (3A)	Developing electricity use and energy services	 
PRESERVATION OF THE PLANET'S RESOURCES		
Industrial safety risk and impact on environmental assets and biodiversity (4H)	Biodiversity	   
Management of large industrial projects - risk of conflict in the use of land (4A) / Industrial safety risk and impact on environmental assets and biodiversity - risk of soil pollution (4H)	Responsible land management	 
Industrial safety risk and impact on environmental assets and biodiversity - risk of water pollution (4H) / risk relating to adapting to climate change - Risk of conflict in the use of resources (3B)	Integrated and sustainable water management	     
Risk relating to control of radioactive waste treatment and decommissioning of nuclear facilities (5B)	Radioactive and conventional waste, and circular economy	   
WELLBEING AND SOLIDARITY		
Nuclear safety risks during operation (5C) / Risk relating to hydro power safety (4E) / Risk relating to occupational health or safety (employees and service providers) (4C)	Safety, health and security for all	  
Ethics and compliance risk (1D) / Risk relating to the duty of care : Risks related to supply chains (4B) and management of large industrial projects (4A)	Ethics, compliance and human rights	   
Risk related to the development of employees skills - professionalisation action and inclusive employer approach (3C)	Equity, diversity and inclusion	 
Risk related to insufficient compensation for missions of general interest (1A)	Energy poverty and social innovation	 
RESPONSIBLE DEVELOPMENT		
Risks related to the management of large industrial projects - consultation of stakeholders and acceptability aspect (4A)	Dialogue and consultation with stakeholders	 
Risks related to the operational continuity of supply chains and contractual relations - responsible procurement approach (4B) / Risk related to the management of large industrial projects - local development of projects (4A)	Responsible regional development	     
Risk relating to management of large industrial projects (4A) - Risk related to the development of employees skills - professionalisation action and inclusive employer approach (3C) / Risks relating to skills of the nuclear industry and associated reinforcement actions (3C)	Development of industrial sectors	 
Risk related to attacks against assets, including cyberattacks (4D)	Data responsible company	 

* Data calculated in 2021 for EDF and Dalkia, on a smaller scope of services

** Indicator calculated on the basis of an average over the last five years

√ 2022 figures subject to reasonable assurance audit by Deloitte & Associés

(1) www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/reports-and-indicators/non-financial-kpis/esg-indicators

(2) www.edf.fr/en/the-edf-group/taking-action-as-a-responsible-company/corporate-social-responsibility/reports-and-indicators/2021-impact-report

Policy, actions, results	Key performance indicator	Scope	Unit	Target	2020	2021	2022
Section 3.1.1	Carbon intensity : specific CO2 emissions from electricity generation and heat √	Group	gCO ₂ /kWh	35 by 2030	51	48	50
Section 3.1.1.6	Deployment rate of the framework guidelines on carbon offsetting solutions	Group	%	100 by 2023	-	50	50
Section 3.1.2	Deployment rate of new climate change adaptation plans within concerned entites	Group	%	100 by 2022	-	47	100
Section 3.1.4	Avoided CO ₂ emissions thanks to sales of innovative goods and services	Group	Mt	> 30 by 2030	-	4.4*	11.4
Section 3.2.2	Achievement rate of "act4nature international" commitments	Group	%	100 by 2023	44	67	89
Section 3.2.2	Implementation rate of innovative solutions encouraging multifunctional land use	Group	%	100 by 2026	-	20	40
Section 3.2.3	Water intensity : water consumed /electricity generated by fleet √	Group	l/kWh	< 0.95**	0.87	0.86	0.83
Section 3.2.4	Annual rate of conventional waste directed towards a waste recovery industry	Group	%	> 90	91.9	92.7	88.4
Section 3.3.1	Global LTIR	Group	Ind	< 1.8 by 2023	1.9	2.1	1.9
Section 3.3.2	Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure	Group	%	100	-	-	100
Section 3.3.3	Gender balance index: percentage of women in the Management Committees of the Group's entities	Group	%	33 by 2026	28.7	29.8	30.8
Section 3.3.4	Advisory actions carried out with customers within the framework of the Energy Support Service	EDF	Nb	600,000 - 1,000,000	905,017	642,482	476,638
Section 3.4.1	Annual rate of projects for which a dialogue and consultation procedure is engaged	Group	%	100	-	100	100
Section 3.4.2	Annual rate of procurement from SMEs in France	EDF and Enedis	%	22 - 26	23.4	24.9	23.2
Section 3.4.3	Achievement rate of supporting actions backed by EDF, encouraging relocation and maintaining nuclear industry skills ("France relance" programme)	EDF	%	100 by 2023	-	28.6	71.4
Section 3.4.4	Achievement rate of EDF commitments towards French Responsible Digitalization institute (INR)	EDF	%	100 by 2024	-	18.8	52.5

3.1 Carbon neutrality and the climate

Group accountability and commitment to cut CO₂ emissions

In the first section of its sixth assessment report published in August 2021 ⁽¹⁾, the Intergovernmental Panel on Climate Change (IPCC) established that the warming of the atmosphere, oceans, and land observed since 1750 is “unequivocally” caused by human activities. Confirming the conclusions of the 2018 special report on global warming of 1.5°C ⁽²⁾, the IPCC calls for a swift, durable, significant reduction in CO₂ and other greenhouse gas emissions and achievement of net zero anthropogenic CO₂ emissions to stabilise the human-caused increase in global temperatures.

The EDF group is committed to combating climate disruption and to playing its role to the full in this respect. It has aligned its ambitions with the Paris Climate Agreement, the aim of which is to keep global warming well below 2°C, preferably at 1.5°C, compared to pre-industrial levels.

The Group’s CO₂ emission reduction trajectory has been validated by Science Based Targets. The EDF group has set up dedicated governance, in accordance with best practices as recommended by the Taskforce on Climate related Financial Disclosure (TCFD) ⁽³⁾.

The Group’s climate strategy, aligned with its CAP 2030 strategy, is accompanied by four CSR commitments: an ambitious carbon trajectory, solutions to contribute to carbon sinks, adaptation to climate change, and the development of innovative energy practices and services. These commitments, together with reinforced climate governance for the Group, form the EDF group’s climate transition plan, adopted at the May 2022 Shareholders’ Meeting with a majority of 99.87%.

The EDF group is engaged in an accountability process focusing on the 10 Recommendations by the United Nations High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (UN HLEG) ⁽⁴⁾.

(1) *Climate change 2021: scientific components. Contribution of Working Group I to the sixth assessment report of the French Intergovernmental Panel on Climate Change (IPCC), August 2021.*

(2) *Impacts of global warming of +1,5°C and related global greenhouse gas emission trajectories, special report by the French Intergovernmental Panel on Climate Change (IPCC), October 2018.*

(3) *See also the EDF group press release of 10 December 2020.*

(4) *Report from the United Nations High-level Expert Group on the net zero emissions commitments of non-state entities, integrity matters: net zero commitments by businesses, financial institutions, cities and regions (2022): un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf*

50_{gCO₂/kWh}

CARBON INTENSITY

50%

**DEPLOYMENT RATE OF THE
FRAMEWORK GUIDELINES
ON CARBON OFFSETTING
SOLUTIONS**

100%

**DEPLOYMENT RATE OF
CLIMATE CHANGE
ADAPTATION PLANS**

11.4_{Mt}

OF AVOIDED CO₂ EMISSIONS

3.1.1 Group carbon trajectory

EDF, the world’s number one producer of direct CO₂ emissions-free electricity

According to the IPCC, electricity production technologies can be classified in one of two categories:

- so-called “low-carbon” technologies, with no direct ⁽¹⁾ emissions of CO₂ (such as hydro, nuclear, wind and solar power);

- “high-carbon” technologies based on fossil fuels (such as gas and coal) in the absence of any carbon capture and storage systems; these generate CO₂ emissions directly.

According to the most recent rankings by ENERDATA ⁽²⁾, the EDF group is the world’s leading producer of electricity free from direct CO₂ emissions, in particular due to the size of its hydro and nuclear power fleets, which in 2021 produced 476TWh of electricity without direct CO₂ emissions.

3.1.1.1 Group policy

In line with its *raison d’être*, which aims to build a net zero energy future, the EDF group has set itself the goal of becoming carbon-neutral across all its business lines by 2050.

This goal includes greenhouse gas emissions for the entirety of Scopes 1, 2 and 3 ⁽³⁾ and all geographies ⁽⁴⁾.

Carbon neutrality by 2050	Reducing greenhouse gas emissions to zero or virtually zero by 2050
	Reducing emissions as much as possible within the framework of national policies
	Implementing negative-emission projects to offset the Group’s residual emissions by 2050

Initiatives

(1) Does not include emissions relating to the fuel supply chain and the life cycle of other components of the production system.

(2) The annual benchmark for electricity producers: power-producers-ranking.enerdata.net/

(3) For definition of the three scopes, see section 3.6.3.5 “Further details on social, environmental and societal data from the Statement of non-financial performance”.

(4) For more details of the scope adopted, see the section on methodology, section 3.6.3.5. For definition of the three scopes, see section 3.6.3.5 “Further details on social, environmental and societal data from the Statement of non-financial performance”.

Business Ambition for 1.5 degrees	In February 2020, the EDF group signed up for the "Business Ambition for 1.5 degrees: our only future" initiative launched by the United Nations Global Compact, We Mean Business and Science Based Target Initiative. This coalition has now been joined by more than 300 companies committed to achieving carbon neutrality by 2050, in order to limit the rise in global temperatures to 1.5°C with respect to pre-industrial temperatures.
Race To Zero	Through this commitment, the EDF group is also part of the United Nations "Race To Zero" initiative and has joined the "Climate Ambition Alliance" ⁽¹⁾ alongside more than 120 countries, 450 cities, 45 investors and 1,000 companies.

3.1.1.1.1 2030 targets recognised by the SBTi initiative

In 2020, the EDF group set new targets to cut its greenhouse gas emissions by 2030, covering both its direct emissions (Scope 1) and its indirect emissions (Scopes 2 and 3). On 7 December 2020, the Science Based Targets initiative ⁽²⁾ confirmed based on its recently-published methodology specially developed for the electrical sector ⁽³⁾ that these goals are in line with the "Well Below 2°C" trajectory.

The EDF group defined the following 2030 targets:

2030 targets recognised by the SBTi ⁽⁴⁾	50% reduction, compared with 2017 levels for Scope 1 and Scope 2 emissions, also including emissions from non-consolidated assets and emissions associated with electricity purchased (i.e. not generated by it) to be sold to end customers.
	28% reduction, compared with 2019 levels of emissions from combustion of gas sold to end customers (Scope 3).
Additional 2030 targets ⁽⁵⁾	25MtCO ₂ e for Group Scope 1 emissions in 2030.
	35gCO ₂ /kWh for the carbon intensity of electricity and heat produced by the Group in 2030.
	28% reduction, from 2019 levels, of all Scope 3 emissions by 2030.

In line with the recommendations of the High-Level Expert Group set up by the United Nations with the Science-Based Targets Initiative (SBTi) method, these "short-term" goals do not include any use of voluntary carbon offsetting or carbon storage.

3.1.1.1.2 2023 interim targets and trajectory

In order to reach these targets, a greenhouse gas emissions reduction trajectory has been developed for the three Scopes of the EDF group. This trajectory contains a 2023 milestone with the following interim targets:

2023 interim targets ⁽⁶⁾	28 to 30MtCO ₂ e for Group Scope 1 emissions in 2023.
	23% reduction compared with 2017 levels for Scope 1 and Scope 2 emissions, also including emissions from non-consolidated assets and emissions associated with electricity purchased (i.e. not generated by it) to be sold to end customers.
	10% reduction compared with 2019 levels for emissions associated with the combustion of gas sold to end customers and an 8% reduction compared to 2019 for the entire Scope 3 of the Group.

These 2023 and 2030 Group direct and indirect emissions targets were used to determine emission trajectories for all the Group's business lines and entities (see section 3.1.3 "EDF climate governance").

3.1.1.1.3 Objectives in line with the SNBC strategy

The National Low Carbon Strategy (*Stratégie nationale bas carbone*, SNBC) is France's roadmap to combatting climate change. The SNBC was introduced by the Energy Transition for Green Growth Act (*Loi de transition énergétique pour la croissance verte*, LTECV) in 2015, and comes up for review once every five years. It was revised in 2020; France's next SNBC is due to be finalised by the end of 2024. The SNBC aims for national carbon neutrality to be achieved by 2050.

This section presents a summary overview of the EDF group's carbon trajectory in the light of the SNBC. EDF's trajectory for reducing its direct emissions is fully in line with SNBC goals.

Indicator	Emissions reduction goals for 2023 vs 2015	Emissions reduction goals for 2030 vs 2015	Emissions reduction goals for 2050 vs 2015
SNBC target – France not including LULUCF*	-13%	-32%	-86%
SNBC target – Energy industries	-23%	-34%	-96%
SNBC scenario – Electricity production	-32%	-37%	-100%
Projected change in the EDF group's direct emissions in France	-34%	-45%	-100% (near-zero emissions)

* LULUCF: Land-Use Change, and Forestry.

(1) Alliance set up in September 2019 at the UN Secretary-General's Climate Action summit by Sebastián Piñera, President of Chile.

(2) Initiative launched in the wake of the Paris Agreement in 2015 by the following four organisations: CDP, UN Global Compact, World Resources Institute and World Wild Fund.

(3) "Setting 1.5°C aligned science – based targets – quick start guide for electric utilities", CDP, June 2020.

(4) For further methodological details, see section 3.6.3.5 "Further details on social, environmental and societal data from the Statement of non-financial performance".

(5) Id.

(6) Id.

3.1.1.2 The Group's results

The Group's results with respect to the climate were achieved in 2022 despite a range of negative factors including the war in Ukraine, threats to gas and oil supplies, the stress corrosion (CSC) crisis seriously impacting nuclear production, and repeated heatwaves and related impacts on production.

3.1.1.2.1 Carbon performance for the climate

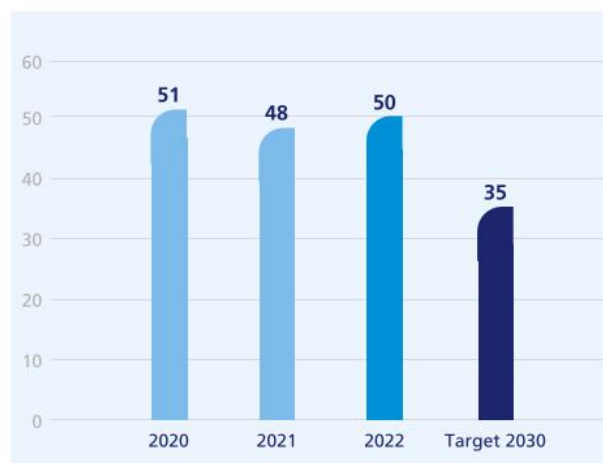
3.1.1.2.1.1 Carbon intensity

GROUP KEY PERFORMANCE INDICATOR

The Group's carbon intensity is a key indicator of performance with respect to its carbon trajectory.

The carbon intensity of the electricity and heat produced by the EDF group is around five times lower than the European average (275gCO₂/kWh ⁽¹⁾) and more than nine times lower than the global average (437gCO₂/kWh ⁽²⁾).

Carbon intensity: specific CO₂ emissions from electricity generation and heat (in gCO₂/kWh) ✓

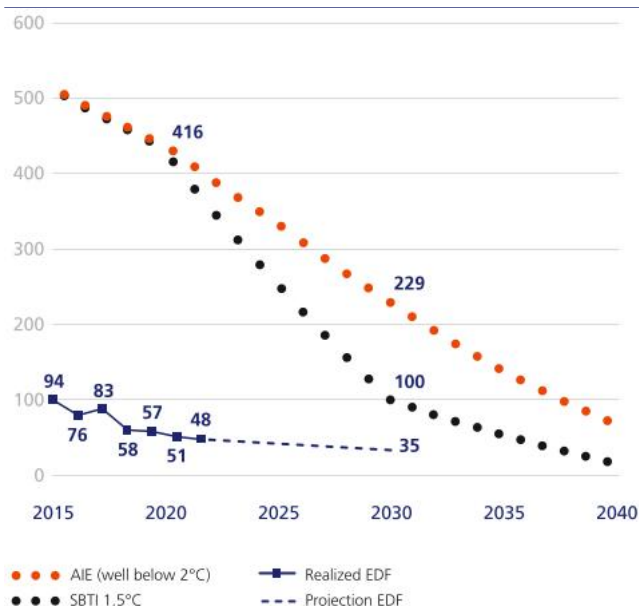


✓ 2022 indicator subject to reasonable assurance audit by Deloitte & Associés.

(1) 2021 data, EU-27, European Environment Agency, Greenhouse gas emission intensity of electricity generation by country, Oct. 2022.

(2) 2021 data, International Energy Agency, World Energy Outlook 2022.

EDF group CO₂ trajectory, gCO₂/kWh



The EDF group's carbon intensity increased slightly in 2022 (up 5% compared to 2021). This increase is not due to any increase in the Group's CO₂ emissions (these fell by 13% compared to 2021, in line with the Group's carbon trajectory), but to an unanticipated fall in the low-carbon production (i.e. with no direct CO₂ emissions) of EDF's nuclear fleet in 2021. This decrease in the output of EDF's nuclear fleet was caused by the outages due to the control and repair programme of the stress corrosion phenomenon.

The speed at which the Group aims to reduce its carbon intensity is ambitious. If it were to be extrapolated beyond 2030, it would theoretically result in zero CO₂ emissions by 2040, in other words electricity and heat being produced without any direct CO₂ emissions.

As the graph opposite shows, the EDF group's carbon intensity reduction trajectory is fully in line with the 1.5°C scenario derived from IPCC research; this scenario is based on average carbon intensity for the electricity sector of 100gCO₂/kWh in 2030.

The EDF group has engaged in discussions with SBTi to have the fact that its trajectory is aligned with the 1.5°C goal recognised. However, the sector-based methodology used by SBTi, which essentially sets identical carbon intensity reduction goals for all electricity companies irrespective of their initial carbon intensity (approximately -77% between 2017 and 2030) penalises those players who had already made progress in decarbonation ⁽¹⁾. Discussions are underway within SBTi and more broadly within the framework of the application of the EU CSRD Directive to define more robust alignment methods that recognise companies already engaged in decarbonation.

(1) Moreover, this point has been acknowledged by the TCFD (TCFD, "Measuring Portfolio Alignment", Oct. 2021) and GFANZ (GFANZ, "Measuring Portfolio Alignment", August 2022) which explicitly advises against using the "absolute contraction" approach to assess investor profile alignment.

3.1.1.2.1.2 Emissions avoided in electricity production

If this performance is compared with average carbon intensity of power generation in Europe (including France), taking into account direct and indirect emissions of power generation, the EDF group's electricity generation worldwide in 2022 resulted in 102MtCO₂ avoided.

3.1.1.2.1.3 Focus: Nuclear LCA

Life Cycle Analysis (LCA) of each KWh of nuclear electricity produced in France has been carried out by EDF R&D on the basis of 2019 data ⁽¹⁾. Published in 2022, this complied strictly with ISO 14040 and ISO 14044 standards and was the subject of a critical review by a panel of independent experts.

The LCA evaluates the potential impacts of the nuclear fleet in operation on the environment. The method involves taking an inventory of the material and energy flows during the various life cycle phases of the product, from the extraction of raw materials through to waste management.

The approach uses an exhaustive inventory of the various stages in the production of each KWh by EDF's nuclear fleet in France, and covers every stage in the life cycle of EDF nuclear KWh:

- the mining and processing of uranium ore;
- conversion, enrichment, and fuel manufacture;
- the production of electricity (including construction, operation, and decommissioning of nuclear power plants);
- spent fuel processing;
- the storage of all VLLW, LLW/ILW, and HLW/ILW-LL radioactive waste ⁽²⁾.

The study fits within an environmental management objective. It aims to provide a better understanding of contributions at each stage of the process, and allows the best possible environmental improvement actions that can be implemented within the value chain to be identified. The study shows that each nuclear KWh from EDF's fleet in operation on French soil emits 4gCO₂e.

3.1.1.2.2 Climate performance for integrated performance

EDF promotes integrated performance, combining financial and CSR performance. The Company's value creation is expressed by a combination of financial and CSR indicators.

Emissions to turnover ratio

EDF believes that this indicator accurately reflects integrated performance only if all direct and indirect emissions are taken into account (Scopes 1, 2, and 3). In the space of two years, this ratio has decreased by 57%. In 2022, the figure stood at 837tCO₂e per million euros of turnover.

Emissions to turnover	Unit	2020	2021	2022
Scopes 1,2,3	tCO ₂ e	134,661,021	129,474,942	120,123,567
Group sales	M€	69,031	84,461	143,476
Scopes 1,2,3/Group sales	tCO ₂ e/M€	1,951	1,533	837

3.1.1.2.3 Summary of the Group greenhouse gas (GHG) report

The following table presents trends in the Group's GHG reports between 2020 and 2022.

EDF group greenhouse gas report (in MtCO ₂ e)	2020	2021	2022
Scope 1 emissions	28	27	24
Scope 2 emissions	0.3	0.3	0.4
Scope 3 emissions	107	102	96

The following table presents the 3 most significant Scope 3 items:

Significant Scope 3 items (in MtCO ₂ e)	2020	2021	2022
Emissions from electricity purchases to be sold on to end customers (not including upstream emissions)	18	17	18
Combustion emissions from gas sold to end customers (use of products sold)	50	45	41
Emissions from Scopes 1 and 2 of equity accounted assets (investments)	10	10	8

The EDF group's detailed GHG report is published on the EDF website (edf.fr ⁽³⁾).

The EDF group's carbon footprint (all scopes) continued to decrease in 2022 with a reduction of over 9MtCO₂e, a decrease of approximately 7% compared to 2021.

- The decrease in the EDF group's Scope 1 emissions has been even faster, with a fall of 13% compared to 2021, a reduction of 3MtCO₂e. Therefore, the Group's initial direct emissions target of 28-30MtCO₂e by 2023 has been met, two years ahead of schedule. Going forward, the Group is considering reviewing its 2030 emissions target.

- The decrease in the EDF group's indirect emissions (Scope 3) continued in 2022 (down 6% compared to 2021). This fall is due in particular to the emissions reduction strategy implemented by the Group in North America for its gas sale and purchasing businesses, as well as the strategy of withdrawing from coal-fired electricity production implemented by the Group for its non-controlled assets in China (with the end of the Shiheng I&II joint venture with Shandong on 1 January 2022).

(1) R&D study published in June 2022: https://www.edf.fr/sites/groupe/files/2022-08/edfgroup_acv-4_synthese-etude_20220823.pdf

(2) VLLW: Very Low-Level Waste; LLW: Low-Level Waste; ILW: Intermediate-Level Waste; HLW: High-Level Waste; LL: Long-Lived.

(3) [edf.fr/sites/default/files/contrat/groupe-edf/engagements/rapports-et-indicateurs/](https://www.edf.fr/sites/default/files/contrat/groupe-edf/engagements/rapports-et-indicateurs/)

3.1.1.2.4 SBTi indicators

The following table shows progress on the EDF group's trajectory towards achieving its 2030 targets, as validated by SBTi:

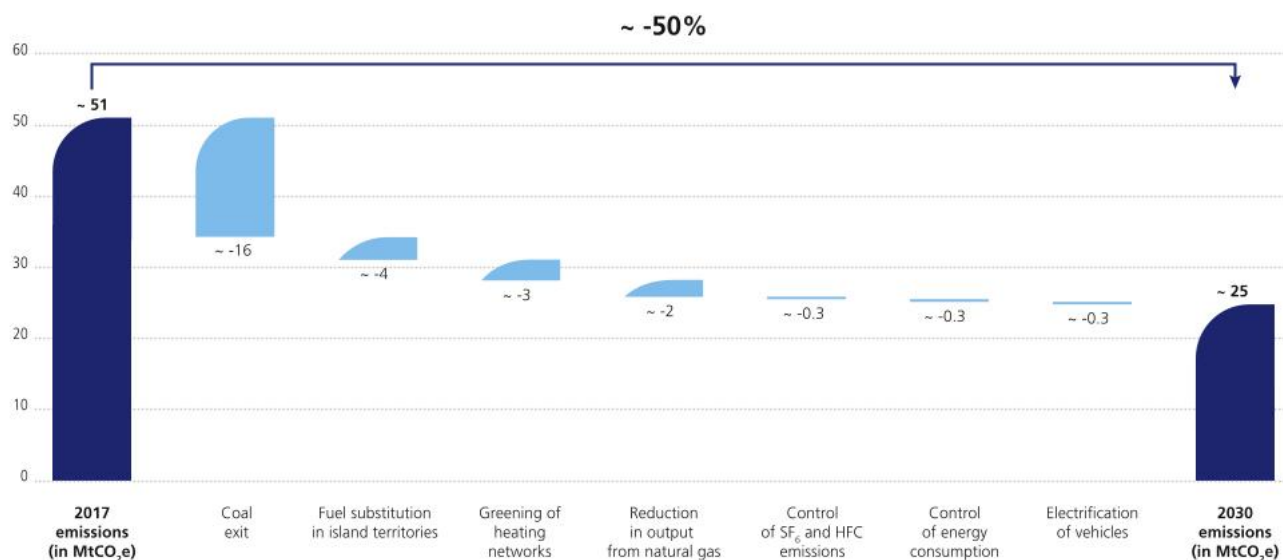
SBTi Indicators	2021	2022	2030 target validated by SBTi
Rate of reduction in emissions relating to the sale of electricity (emissions in Scopes 1 and 2, also including emissions from non-consolidated assets and emissions relating to electricity purchased for sale to end customers, baseline year: 2017)	-28%	-33%	-50%
Rate of reduction in emissions relating to the sale of gas (emissions from the combustion of gas sold to end customers, baseline year: 2019)	-24%	-32%	-28%

The EDF group's emissions reduction trajectory (for both direct and indirect emissions) is not only in line with the 2030 targets validated by SBTi in December 2020, it actually does better. These targets are scheduled to be updated in 2023.

3.1.1.3 Roadmap for reducing the Group's direct GHG emissions

To achieve the greenhouse gas emission reduction goals it set itself (see section 3.1.1.1 "Group policy"), the EDF group implements an action plan in line with its CAP 2030 strategy ⁽¹⁾. This action plan is coordinated by the EDF group Carbon Neutrality Strategy project (see the description of climate governance in section 3.1.3.1 "Governance bodies").

The following diagram shows an estimation of the impact of the actions undertaken to reduce the EDF group's Scope 1 direct GHG emissions.



The following table details the actions implemented by the EDF group:

Action*	Description	URD Section
Coal phase-out	Closure of all coal-fired electric power plants operated by the EDF group by 2030.	3.1.1.3.1
Replacement of fuel oil in island regions	Replacement of light and heavy fuel oil used in non-interconnected zones by liquid biomass, in coherence with multi-year local energy programme.	3.1.1.3.2
Greener heating networks	Greening of Group-managed heat networks thanks to biomass, free heat recovery, geothermal and ocean thermal energy conversion	3.1.1.3.3
Reducing natural gas-fired power generation	Reducing network demand for natural gas-fired power generation resources by means of priority dispatch of renewable energy and the imposition of strict criteria on the development of any new gas projects by the Group.	3.1.1.3.5
Controlling SF ₆ and HFC emissions	Measures to manage and reduce uncontained SF ₆ emissions from electrical transmission and distribution systems as well as uncontained HFC emissions from air-conditioning units	3.1.1.3.6
Controlling energy use	Actions to control Group site and installation energy use	3.1.1.3.7
Vehicle electrification	Fully electrifying the EDF group's light vehicle fleet in accordance with the EV100 commitment	3.1.1.3.8

* Note that Enedis is also experimenting with Local Zero Emission Generators (GE ZE), an alternative solution to conventional generators. The diesel engine is replaced with a battery or a hydrogen fuel cell, the use of which locally emits no noise, CO₂, or pollutants. These GE ZEs will supply customers during outages for works on the public electricity distribution network, while reducing the impact on the environment and maintaining the collection of local renewable energies connected to the network. They will contribute to the zero carbon objective.

These actions make use of tried and tested technology, with good visibility in terms of the economic and regulatory environments.

(1) See section 1.3 "Group strategy".

3.1.1.3.1 Coal-fired power generation, currently representing 0.4% of the total power generation, to be reduced to 0 by 2030

For some twenty years now, the EDF group has been implementing and supporting the closure of as many units powered by coal across Europe as possible. Since 2017, the EDF group has been engaged in the Powering Past Coal Alliance ⁽¹⁾, which promotes the phasing out of coal in EU countries by 2030 and in the rest of the world by 2050 in the wake of the Paris Agreement. The EDF group supports the Global Coal to Clean Power Transition Statement ⁽²⁾ that was recently signed at COP26.

Commitment

In 2019, the EDF group set itself the goal to stop coal-fired power generation by 2030 in all geographical areas.

Pending closures of coal-fired units operated by EDF

Closure schedule for the remaining coal-fired units operated by the EDF group	
Cottam (4 units, 2,000MWe, United Kingdom)	September 2019
Le Havre (1 unit, 580MWe, France)	April 2021
West Burton A (units 3 and 4, 1,000MWe, United Kingdom)	September 2021
West Burton A (units 1 and 2, 1,000MWe, United Kingdom)	March 2023
Cordemais (2 units of 580MWe each, France)	To be determined
Results of the coal phase-out policy	
Number of coal-fired carbon units shut down since 1995	33
Coal-based electricity production capacity withdrawn since 1995 (in GWe)	10.8
Estimated reduction in annual emissions (in MtCO ₂ e)*	40
Coal-based electricity and heat production capacity, 2022 (in GWe)	2.8GW
Ratio of coal-based electricity and heat production to total production, 2022 (in %)	0.5%

* Conservative estimate, assuming an average load factor of 45% for coal-fired power plants.

Additional information

40Mt reduction in CO₂e emissions

This coal phase-out policy resulted in an estimated reduction of the European electrical sector's annual greenhouse gas emissions by more than 40MtCO₂e.

Tightly controlled and ultimately limited operation

In 2022, coal-fired heat and electricity generation accounted for 0.5% of the EDF group's total in 2022 output. These production assets are used only during "peak" periods or in the event of an energy market crisis ⁽³⁾, as was the case for 2021-2022 and the coming winter of 2022-2023.

In France, pursuant to Article R. 311-7-2 of the French Energy Code (*Code de l'énergie*), coal-fired electricity generation facilities are subject to an emissions cap. To address temporary supply difficulties, Article 36 of the French Act no. 2022-1158 of 16 August 2022 on emergency measures to protect purchasing power and its Decree of Application no. 2022-1233 of 14 September 2022 temporarily raised the emissions caps for these production assets. As part of this scheme, any increased use of thermal, coal-fired power generation entails an obligation on the operators in question to offset any surplus emissions produced as a result of the cap being raised. This offsetting obligation involves a one-off payment of €40/teqCO₂ emitted being made to a carbon offset fund. The purpose of this fund is to provide finance for greenhouse gas reduction and storage in France. See also section 3.1.1.6.1 "Policy".

Pending closures of coal-fired units operated by EDF

As of April 2023, the EDF group will be operating only two coal-fired units in Europe, located at the Cordemais power plant in the Loire-Atlantique region. The final closure of the Cordemais power plant, initially planned for 2022, has been

postponed in view of the needs expressed by RTE ⁽⁴⁾. A partial conversion to biomass has been commenced. See section 1.4.1.2.2 "Issues relating to thermal generation".

High-capability heavy fuel oil boilers

As well as closing coal-fired boilers, the EDF group closed all of its high-capability fuel oil boilers between 2000 and 2018, corresponding to installed capacity of 6.8GWe. These fuel oil boilers with individual capacity of between 250 and 700MWe were kept in operation solely for electricity production spikes.

Support during closures

All of these closures are accompanied by employee redeployment measures and initiatives within the Group to develop new local economic activities. See section 3.4.3.3.1 "Declining activities and territories".

3.1.1.3.2 Energy transition in island regions

Corsica and the French overseas territories, as Non-Interconnected Zones (NIZ) in terms of the mainland power grid, are covered by specific Multi-Year Energy Programme (PPE), which set ambitious low-carbon and energy independence goals for them (energy independence of overseas territories by 2030 and Corsica by 2050).

Fossil fuel-fired facilities, mainly oil or diesel generators and combustion turbines (CT), have historically played a major role in these zones. They contribute to the safety of the electricity system and the production of electricity in certain areas, being capable of addressing major seasonal effects in electricity consumption and dealing with the intermittent nature of renewable energy in electricity systems that cannot import in the event of a spike in demand or a shortfall in production.

(1) poweringpastcoal.org/members

(2) ukcop26.org/global-coal-to-clean-power-transition-statement/

(3) The French Constitutional Council (Conseil constitutionnel) has ruled that the raised emissions cap for fossil-fuel-powered electricity generation facilities must only apply in the event of a serious threat to the security of supply of electricity (Decision no. 2022-843, DC dated 12 August 2022).

(4) According to the provisional supply/demand balance for electricity in France published by RTE in 2021, keeping the Cordemais power plant in operation until 2024-2026 provides valuable security in the event of nuclear power not being highly available, no change in the trajectories for renewables, and/or the commissioning of the Flamanville EPR being postponed.

To achieve low-carbon electrical production in the Non-Interconnected Zones (NIZ), the EDF group has put the following actions in place:

Replacement of fuel oil

Gradual replacement of fuel oil with liquid biomass between 2023 and 2028 in EDF IES and EDF PEI thermal power plants, in line with the PPE for various territories.

Shutdown of the oldest combustion turbines (TAC) and generators

Gradual shutdown of the oldest oil-fired combustion turbines (TAC) and generators as and when new generation resources with lower emissions become available. As a result, the future Larivot plant in Guyana designed by EDF PEI will be powered with liquid biomass, replacing the Dégrad-des-Cannes fuel plant. Operation of the new power plant with liquid biomass was included in the French Guiana PPE in August 2021.

Energy management systems

Voluntary implementation of an energy management system (ISO 50001 certification) at 7 of the 8 most important IES fossil fuel-fired generation sites and output optimisation work and energy efficiency initiatives on EDF PEI facilities.

100% renewable projects

The development of 100% renewable energy projects for isolated microgrids (e.g. in French Guiana's interior municipalities and Mafate in Réunion Island). Other actions are undertaken by EDF in the islands in question, such as measures to manage energy (e.g. solar water heaters), plans to increase the production capacity of active hydroelectric facilities, development of networks compatible with the integration of renewable energy (e.g. batteries, synchronous condensers, Energy Management Systems, etc.) (see section 1.4.4.3 "Island Energy Systems").

3.1.1.3.3 Greener heating networks

The EDF group, through its subsidiary Dalkia, manages over 330 district heating and cooling networks. It is France's number one energy service provider. Dalkia has set itself the goal of achieving 65% renewable and recovered energy (R&RE) in its heating networks in France by 2026, and achieved 60.3% in 2021 ⁽¹⁾.

In particular, this commitment has led to development of the use of biomass, energy from waste, the recovery of fatal heat, and geothermal and oceanic thermal energy conversion. For more illustration, see section 3.1.4.3 "Developing efficient, low-energy, innovative energy services".

Globally, coal accounted for 2.42% of 2022 heat production by Dalkia, which has committed to no longer use this fuel for its heating activities in France, in line with the provisions of the Multi-Year Energy Programme.

Use of renewable energies and energy efficiency services enabled Dalkia to reduce its customers' greenhouse gas emissions and allowed 4.2 million tonnes of CO₂e to be avoided in 2022 (see section 1.4.6.1.1 "Dalkia").

3.1.1.3.4 Low-carbon thermal energy

3.1.1.3.4.1 Management of gas business

Gas activities account for a significant share of the EDF group's GHG report, particularly through three activities: production of electricity from natural gas, production of heat from natural gas, and sale of natural gas to end customers.

Because natural gas emits approximately two times less CO₂ than coal, and enables the production of electricity that can be managed ahead of time, it can play a role in the energy transition of some countries, like Italy where it replaces coal.

The EDF group has defined a set of internal criteria in order to align its gas business with its climate-related commitments:

- All the EDF group's gas activities fit into the carbon trajectories (covering both direct and indirect emissions) set for each of the Group's entities in line with the Group's 2030 goals. All development projects must demonstrate a contribution to the energy transition of the relevant regions and their business plan must ensure compliance with the Group's 2050 carbon neutral target.

- No development of new gas projects (Combined Cycle Gas CCG), unless the project contributes to reducing the carbon intensity of the country's electrical system or further secures its supply. When technically and economically feasible, the project uses solutions enabling reduction of its direct emissions, such as green gas, hydrogen or CO₂ capture and storage (see section "The EDF group's low-carbon thermal energy project" below).
- In its capacity as gas supplier, the EDF group helps its customers to shift towards more restrained energy use and achieve energy efficiency and lower emissions through its offers, expertise, and specialised subsidiaries. It develops and encourages alternative solutions to fossil fuels whenever available (low-carbon electricity, heat pumps, renewable gas, renewable heat etc.).
- The EDF group supports the development of the biogas sector whenever a project's business model is viable in the long term.
- Finally, the EDF group is constantly working to optimise the energy and environmental performance of its fossil fuel-fired fleet in order to reduce its CO₂ emissions, as well as to provide more services to the electricity system.

3.1.1.3.4.2 The EDF group's low-carbon thermal energy project

In line with the EDF group's *raison d'être* and its commitment to becoming carbon-neutral by 2050, and in order to prepare the EDF group's ability to provide controllable, low-carbon production resources for various European energy systems, a Strategic Project for "low-carbon thermal energy" spanning the entire Group has been launched, coordinated by the Thermal Expertise and Multi-Sector Industrial Support Division (*Division thermique expertise et appui industriel multi-métiers*, DTEAM).

Its goal is to identify the various decarbonation measures and techniques used for thermal generation resources (combined-cycle, combustion turbines, generators) currently using natural gas and fuel oil (fossil fuels) for which the construction of new low-carbon thermal generation resources in response to grid operators' calls for tenders or capacity auctions can be envisaged.

The following far-reaching decarbonation solutions have been identified as being mature in the short to medium term:

- upstream: use of "low-carbon" fuel (biogas, bioliquids, hydrogen, synthetic fuels);
- downstream: CO₂ capture and storage (CCS), capture and use of part of the CO₂ emitted (CCU), in particular for the manufacture of synthetic fuels.

At the same time, carbon sink solutions are being studied to help offset residual emissions and thus achieve carbon neutrality goals (see section 3.1.1.6 "Carbon offsetting solutions").

3.1.1.3.5 Reduction of SF₆ emissions

Fluorinated gases such as sulphur hexafluoride (SF₆) and hydrofluorocarbons (HFC), used as refrigerating fluids, are powerful greenhouse gases. Their emissions in 2022 were estimated for the entire EDF group at a total of 133ktonnes of CO₂e, i.e. approximately 0.5% of EDF group direct emissions (Scope 1). Emissions are produced by leaks during both the production process and lifecycle. Wherever technologically and economically possible, the EDF group uses alternative technologies to SF₆. All EDF group business lines are working to cut the carbon impact of HFCs wherever technologically possible.

Existing nuclear fleet

Based on a proactive policy, EDF managed to reduce its SF₆ emissions by 86% between 2008 and 2021 and since 2019 has set up a plan of specific actions designed to restore all its facilities to their initial leakage rate, i.e. 1% per year. Investments by EDF over the past three years have achieved a 45% reduction in the nuclear fleet's SF₆ emissions. EDF is rolling out a range of technological innovations to maintain control of its emissions in the long term, including alternative coatings to help protect against corrosion and innovative SF₆ recovery and leak plugging solutions. EDF's procedure in this respect forms part of an As Low As Reasonably Achievable (ALARA) policy that is appropriate in view of unit safety issues and network security. The rate for the overall fleet ⁽²⁾ was 1.45% in 2022 compared to 1.57% in 2021 and 1.83% in 2020.

(1) 2021 data from Dalkia networks listed with the French National Union for Urban Heating and Air Conditioning (*Syndicat National du Chauffage Urbain et de la climatisation urbaine*, SNCU)

(2) Leaks, anomalies, and maintenance for the entire fleet, including EPR reactors.

New Nuclear Projects and Engineering

The air insulation technology adopted for the EPR2 project's Energy Removal Platform ⁽¹⁾ means that equipment liable to contain SF₆ can be kept to a minimum.

For the Flamanville EPR, it has been decided to locate the equipment in question indoors in order to protect it from sea wind corrosion. EDF has also committed to an R&D programme (Project Zero SF₆) to monitor and test alternatives to SF₆ for its installations.

Distribution

SF₆ emissions by distribution network operator Enedis⁽²⁾ amounted to approximately 390kg in 2022. The action plan implemented by Enedis to reduce these emissions has focused in particular on the deployment, since July 2021, of a new technical series of high-voltage vacuum breakers (with no SF₆) for new high-voltage switchgear fitted in primary medium- and high-voltage substations. Over 90% of SF₆ from obsolete breakers is recovered and regenerated. Following on from this initial success, Enedis is entering into partnerships with suppliers to evaluate alternative solutions based on alternative gas sources for secondary substations.

3.1.1.3.6 Reducing HFC emissions

HFCs are used as refrigerating fluid in industrial refrigeration units and air conditioning in the service sector. To reduce fluorinated gas emissions, Regulation (EU) No. 517/2014 on fluorinated greenhouse gases (known as F-Gas) is progressively implementing a reduction in HFC emissions within the EU through a

quota system and a schedule for a gradual reduction in the quantity of HFCs that importers and producers can market each year. This EU Regulation is currently being amended. The Regulation aims to reduce HFC volumes present on the market by 95% (in CO₂e) by 2030 compared to 2015 levels.

Following the regulatory prohibition on using CFCs and subsequently HCFCs (R11, R12, and then R22), from 2014 onwards EDF has engaged in a programme to replace refrigerating fluids with high Global Warming Potential (CFCs and HCFCs) by less harmful refrigerating fluids (HFCs), resulting in a significant reduction in CO₂e emissions. Presently, the most-used refrigerating fluid in EDF's production fleet (approximately 90%) has a GWP of 1,430 or less. EDF has commissioned studies to evaluate the possibility of converting existing refrigerating units to operate with refrigerating fluid with a lower GWP (< 600).

3.1.1.3.7 Consumption of the EDF group's own installations

See section 3.2.4.3.3 "Optimisation of internal consumption".

3.1.1.3.8 The EDF group's light vehicle fleet

See section 3.1.4.3.6 "Decarbonisation solutions for transport".

3.1.1.3.9 Employee travel

See section 3.2.4.3.3 "Optimisation of internal consumption".

3.1.1.4 Roadmap for increasing the Group's decarbonised generation

To achieve the low-carbon power production goals it has set itself (see section 3.1.1.1 "Group policy"), the EDF group is implementing an action plan in with line its CAP 2030 strategy ⁽³⁾. This action plan is coordinated by the EDF group Carbon Neutrality Strategy project (see the description of climate governance in section 3.1.3.1 "Governance bodies").

EDF, Europe's biggest investor in low-carbon energy

The EDF group is investing massively to prepare for the future and build a CO₂-neutral energy future. The Group's electricity generation mix in 2022 was 76.0% nuclear, 8.2% hydro, 5.7% other renewable energies, 8.5% gas, 1.2% fuel oil and 0.4% coal ⁽⁴⁾ (see section 1.1 "Key figures and business model").

By 2030, and in line with the CAP 2030 projects, the main actions enabling the EDF group to achieve its targets relating to decarbonised generation are as follows:

ROADMAP FOR INCREASING THE EDF GROUP'S LOW-CARBON POWER PRODUCTION		
Topics	Actions	URD Sections
Grand Carénage	Continued operation of France's nuclear power plants beyond 40 years thanks to the <i>Grand Carénage</i> programme.	3.1.1.4.2
New Nuclear	In February 2022, the French President announced the aim of building 6 new EPR2 nuclear power reactors with commissioning from 2035 onwards, and for studies for 8 additional reactors to be engaged. The President also announced the development of the modular NUWARD™ reactor and other innovative reactors.	3.1.1.4.3
Development of renewable energies	Doubling of installed renewable energy capacity, including hydro, between 2015 and 2030, to reach 60GW net in 2030.	3.1.1.4.4
Flexibility and management of intermittency	Development of electrical storage to improve system flexibility and management of the intermittency of non-controllable renewable energies.	3.1.1.4.5

Applying Group EDF roadmaps to reduce Scope 1 direct emissions and increase low-carbon production by 2030 should result in the EDF group achieving its carbon intensity reduction goal of 35gCO₂/kWh by 2030.

The following diagram shows the estimated impact to date of the climate transition action plan on the EDF group's carbon intensity.

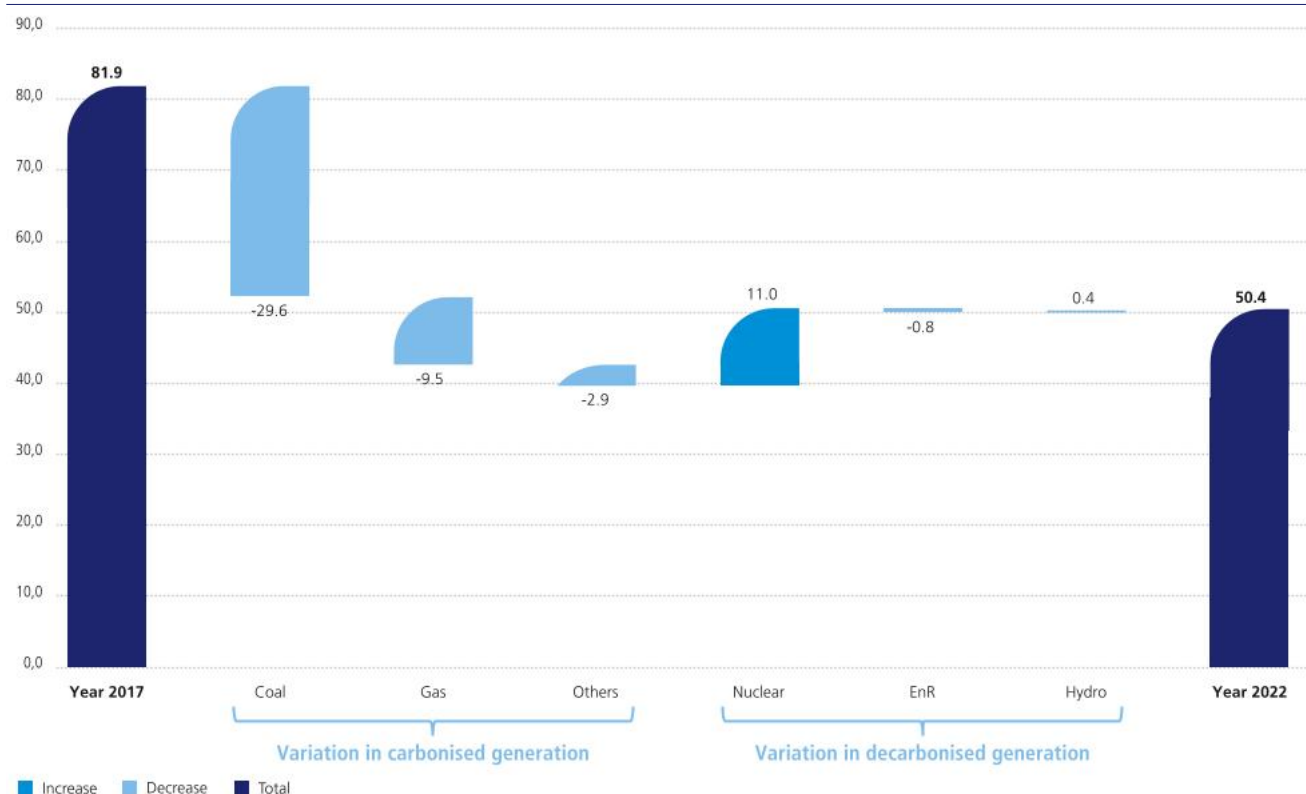
(1) See section 1.4.1.1.3.2 "Other "New Nuclear" projects".

(2) A distribution operator managed in accordance with the rules of managerial independence.

(3) See section 1.3. "Group strategy and objectives".

(4) In consolidated data.

Evolution of EDF group's carbon intensity (in gCO₂/kwh between 2017 and 2022)



The gradual withdrawal from coal power is the main factor in the decrease of carbon intensity. The decrease in nuclear power production, including through the closure of the Fessenheim power plant 2020⁽¹⁾, has slowed this reduction.

3.1.1.4.1 Low-carbon investments

The Group is by far the biggest investor in the energy transition in Europe, accounting on its own for more than 20% of industrial investments in the electrical sector⁽²⁾.

In 2022, almost 94% of Group EDF investments were in low-carbon technologies (94% in 2021); 50% of these were in the nuclear sector. 66% of the Group's investments are aligned with the European sustainable taxonomy in effect since 31 December 2022 (see note 20.4 to the consolidated statements at end December 2022 and section 3.8.4 "Details on the taxonomy").

3.1.1.4.2 Grand Carénage programme

See section 1.4.1.1.2.1 "EDF's nuclear fleet in France and its operation".

3.1.1.4.3 New Nuclear projects

See section 1.4.1.1.3 "New Nuclear projects".

3.1.1.4.4 Doubling of installed renewable energy capacities between 2015 and 2030

The EDF group is today the second biggest renewable energy producer in Europe⁽³⁾, with a global production in 2022 of 60.2TWh of electricity and 8.8TWh of renewable heat through hydroelectricity, wind turbines, photovoltaic solar power and other renewable energies.

In accordance with its CAP 2030 strategy, it set itself the goal of more than doubling its net installed renewable capacity between 2015 and 2030, increasing it to 60GWe by 2030. In 2022, the Group's net installed renewable capacity was 36.0GWe.

	2030 Target	2020	2021	2022
Net installed renewable capacity (in GWe) ⁽⁴⁾	60	33	35	36

(1) Pursuant to the multi-year energy programme (PPE).

(2) 8th European energy company financial ratings "Watt's Next Conseil", October 2022: <https://wattsnext.fr/wp-content/uploads/2022/10/8eme-barometre-Watts-Next-Conseil-oct2022.pdf>

(3) "Climate Change and Electricity, European carbon factor, Benchmarking of CO₂ emissions by Europe's largest electricity utilities", PwC, October 2022. PwC's 2022 survey, based on 2021 data, benchmarked Europe's top 23 electricity producers, accounting for 60% of total generation.

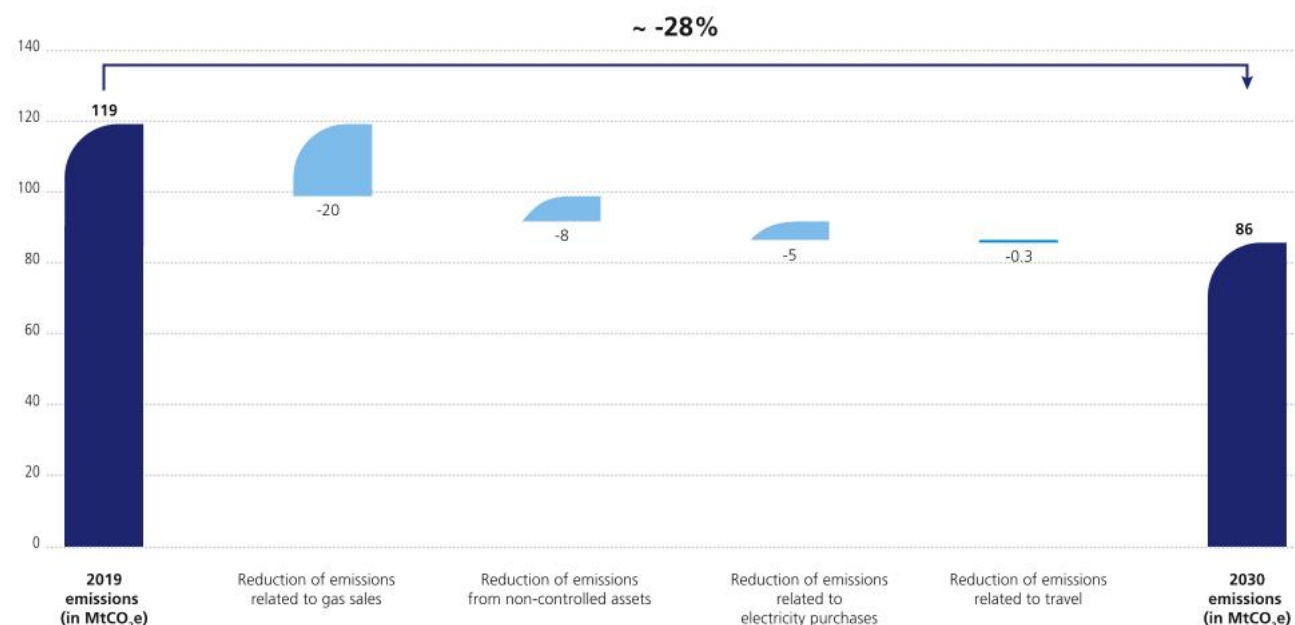
(4) For details of methodology, see section 3.6.3.5 "Further details on social, environmental and societal data from the Statement of non-financial performance".

3.1.1.4.5 Management of intermittence and flexibility

See section 3.1.4.2.2 "Better management of intermittence, flexibility and storage development".

3.1.1.5 Roadmap for reducing the Group's indirect GHG emissions

The following diagram shows the estimated impact of the main actions taken to reduce the EDF group's Scope 3 indirect greenhouse gas emissions.



The following table sets out the actions implemented by the EDF group.

Action	Description	URD Section
Reduction in emissions relating to the sale of gas	Gas customer portfolio management; Support to consumers in their transition towards energy sobriety, energy efficiency, and the reduction of their emissions <i>via</i> Group offers, expertise, and subsidiaries, in particular by promoting alternative solutions to fossil fuels; increasing the rate of dispatch of biogas into the natural gas distribution network, in line with national strategies.	3.1.4
Reduction in emissions relating to the purchase of electricity	Greening (use of renewable energy <i>PPA</i> 's) of purchases of electricity for sale to end customers, including in countries where electricity has a high carbon intensity; portfolio management for customers for whom EDF sells but does not produce electricity.	3.1.4.2.3
Reducing travel emissions	Reducing emissions from employee travel, particularly in view of the roll-out of the EDF group's travel policy	3.2.4.3.2
Reduction of emissions from non-controlled assets	Divestment by 2030 from coal-fired electrical power generation located in China, in which the EDF group has a minority stake.	

These actions make use of tried and tested technology, with good visibility in terms of economic and regulatory environments.

3.1.1.6 Carbon offsetting solutions

3.1.1.6.1 Policy

For the EDF group, use of carbon offsetting is the final stage of a process to achieve neutrality, based on the "Avoid-Reduce-Compensate" approach. Therefore, carbon offsetting must not under any circumstances take the place of a strategy designed to drastically reduce the Group's emissions, whether direct or indirect.

The EDF group is focusing on the use of "negative emissions" projects to offset its residual emissions by 2050, compared to "avoided emissions" projects. This can include technological solutions, such as Bio-Energy with CO₂ Capture and Storage (BECCS), or natural solutions, such as carbon storage in forests and soil.

In accordance with current carbon compatibility rules ⁽¹⁾, emission credits from carbon offsetting are not deducted from the EDF group greenhouse gas report and are accounted for separately.

EDF's offset fund

Increased use of thermal coal and fuel-oil-fired power generation to address temporary energy supply difficulties ⁽²⁾ entails an obligation for the operators in question to offset any surplus emissions produced as a result of the emissions cap being raised following a decision by the authorities. For more details, see section 3.1.1.3.1.

(1) GHG Protocol Corporate Accounting and Reporting Standard, WRI-WBCSD, 2015.

(2) See the paragraph on "Tightly controlled and ultimately limited operation" in section 3.1.1.3.1.

3.1.1.6.2 Group key performance indicator

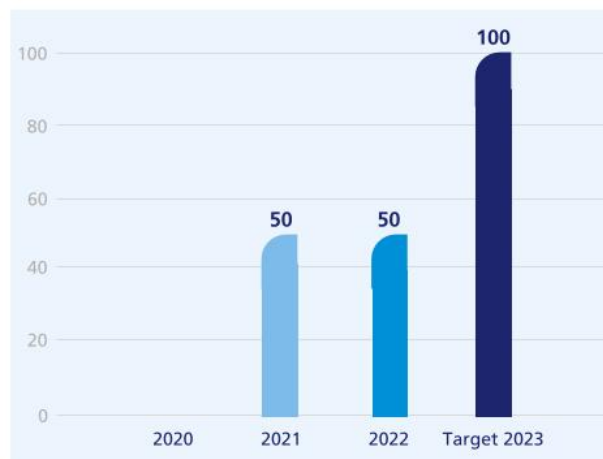
GROUP KEY PERFORMANCE INDICATOR

EDF is working with SBTi on methodology to align the performance indicator with SB methodology.

In the meantime, the Impact Department has finalised an internal memorandum of application for all Group entities with the aim of establishing EDF group governance principles for carbon offsetting, more specifically carbon credit redemption. It also establishes reporting methods for entities using offsetting practices (reporting on Sustainable Development Committee ⁽¹⁾).

The Group has decided to use a “transitional KPI” between the end of 2021 and the end of 2023: the rollout rate for the guidance on carbon offsetting solutions within Group entities.

Deployment rate of the framework guidelines on carbon offsetting solutions (in %)



3.1.1.6.3 Research and development

The EDF group R&D Division is implementing the Group's strategy to achieve carbon neutrality by 2050. Based on an approach combining digital simulation and experimental resources, it evaluates the technical and economic maturity of CO₂ emissions reduction solutions for industrial sources belonging to EDF and its customers and explores negative-emissions technologies:

3.1.1.6.3.1 CO₂ capture and storage (CCS)

The EDF group has solid skills in this area, having participated in several international research projects and created a capture demonstrator at its Le Havre site. This €22 million demonstrator (25% co-funded by ADEME, *i.e.* the French Environmental & Energy Management Agency) has captured 1,900 tonnes of CO₂. The research underway aims to adapt the post-combustion capture solution being tested at Le Havre (the most mature) for combined-cycle gas plants and industrial processes (cement works, steelworks, aluminium works), all of which have different smoke effluent characteristics. A CO₂ Capture lab is currently under construction in Chatou; this will allow small-scale testing of the most appropriate capture procedures for these targets.

R&D is also examining the possibility of recovering the carbon dioxide captured in a different chemical form (*e.g.* fuels or materials). A laboratory to investigate CO₂ recovery in the form of e-fuels is under construction at Renardières alongside the existing hydrogen platform.

3.1.1.6.3.2 Negative emissions, Bio-CCS and Direct Air Capture

Applied to bioenergy, CCS is becoming a way to generate negative CO₂ emissions (BECCS) and could play a major role by 2050. EDF group R&D has begun initiatives to evaluate the potential of these technologies and adapt them to a range of industrial processes.

Techniques to capture CO₂ from the atmosphere (Direct Air Capture, DAC) are seen as vital if the 1.5°C target is to be achieved by 2050. To progress in the understanding of these developing technologies, R&D draws on scientific partnerships and experimental methods. The Chatou CO₂ capture lab will include a DAC technology test facility. In the United Kingdom, EDF Energy continuing to investigate setting up a direct air CO₂ capture demonstrator on the site of the Sizewell C nuclear power plant project.

3.1.1.6.3.3 Solutions based on nature

Afforestation, reforestation, or proper management of pastures and wetlands now appear among the most promising potential ways to increase carbon storage in soil and forests, and accordingly generate negative emissions.

The EDF group is the third biggest land manager in France, with more than 40,000 hectares of land featuring not only production sites but extensive countryside (including 7,000 hectares of forests). To further enhance the position of the Company in this respect, R&D is working to evaluate the potential of the Group's land resources for carbon storage, as well as the additional and temporal realities of offsetting actions and the synergies and potential contradictions between carbon offsetting and other ecosystem services, including the preservation of biodiversity.

3.1.2 Adapting to climate change

The climate change we are witnessing is unprecedented on such a short timescale. The average temperature of the planet has already increased by 1.1°C since 1750 ⁽²⁾. This global warming triggers the rise of sea levels and an increase (to varying degrees in different regions of the world) in the frequency and magnitude of natural disasters; it also contributes to an erosion of biodiversity worldwide. Climate risk is already a tangible reality, the effects of which will become more pronounced in the coming years.

EDF's facilities have a technical lifespan potentially easily exceeding 40 years, making it, among non-nationalised companies, one of the major firms most exposed to the physical effects of climate change. This is why the EDF group identified climate risk as a priority in 2018.

Adapting to climate change refers to a procedure to adjust to the current climate, its changes, and its consequences. This means mitigating the harmful effects of climate change and making the most of any beneficial effects and resulting opportunities.

(1) See section 3.5.2 “CSR governance bodies”.

(2) Climate change 2021: scientific components. Contribution of Working Group I to the sixth assessment report of the French Intergovernmental Panel on Climate Change (IPCC), August 2021.

3.1.2.1 Policy

The Paris Climate Agreement assigns the same level of importance to the goal of adapting to climate change as to mitigation. However, it must be acknowledged that given the lack of simple, shared indicators, the regulatory framework for adapting to climate change is still considerably less developed than that for mitigation.

The National Adaptation Plan for Climate Change ⁽¹⁾ makes France one of the most advanced countries in the world in terms of planning for adaptation to climate change. France aims to effectively adapt to a regional climate in Metropolitan France and overseas territories by the middle of the 21st century consistent with a temperature increase of 1.5-2°C worldwide compared to 19th century temperatures. However, this plan does not establish any regulatory requirements that are directly applicable to businesses.

The EDF group has therefore taken a responsible, proactive approach by establishing a set of integrated commitments in the Group's Corporate Social Responsibility (CSR) policy.

EDF group commitments

Pursuant to this policy, the EDF group undertakes to:

- evaluate the impacts of climate change on future and existing activities;
- adapt existing installations to make them less sensitive to climatic conditions and more resilient to extreme weather events;
- incorporate climate change scenarios in the design of new installations;
- adapt the Group's solutions, internal operations and know-how in light of climate change;
- take into account the ecosystemic dimension of climate change.

In particular, this policy states that entities most exposed to the physical consequences of climate change should draw up a climate change adaptation plan and update it every five years.

It is important to note that adaptation and mitigation actions are both vital and complementary. Unquestionably, the EDF group's foremost climate change adaptation action consists in striving to produce electricity and heat without emitting greenhouse gases.

3.1.2.2 Key performance indicator

GROUP KEY PERFORMANCE INDICATOR

In addition to the priority actions which have long been undertaken by the Group, the rollout rate for new climate change adaptation plans aims to ensure the structuring, prioritisation, and industrialisation of actions undertaken in Group entities exposed to the physical risks of climate change, in compliance with TCFD requirements.

Depending on the entities concerned ⁽²⁾, this involves producing an adaptation plan by a qualitative and/or quantitative approach, to be integrated into the environmental management system by the end of 2022.

This target has been achieved.

Deployment rate of new climate change adaptation plans within concerned entities (in %)



3.1.2.3 From climate disaster plan to global resilience strategy

By 1999, the storms Lothar and Martin had already led EDF to work on mitigating the physical impact of climate change on its activities. The EDF group developed a climate disaster plan in 2004, followed by a climate change adaptation strategy in 2010.

The EDF group adaptation strategy covers production facilities with a lifespan of over 40 years, such as nuclear power plants and hydroelectric dams. All EDF group entities are required to take account of climate risks (including both physical risks and "transition" risks) when mapping their risks ⁽³⁾.

3.1.2.4 High-level, internal Climate Department

Immediately after the publication of the IPCC's first report in 1990, the EDF group resolved to develop internal skills focusing on climate issues, in collaboration with key organisations such as Météo France (*i.e.* the French meteorological office).

EDF R&D's Climate Department acts as an interface between scientific knowledge about the climate and the EDF group's business lines. It provides the Group's different business lines with climate data that can be used to quantify climate-change-related risks and develop appropriate adaptation plans. For its impact and dimensioning studies, the EDF group systematically takes into account the IPCC's worst-case scenario in terms of global warming; currently, this is the RCP 8.5 scenario.

The EDF group has a team of some fifteen permanent researchers investigating the consequences of climate change on its existing and future production fleets for nuclear, hydro, wind, and solar power, etc., changes in production potential from renewable energy and trends in energy demand. The Group has developed an operational unit to monitor meteorological phenomena and forecast their impact on water catchment sources.

(1) National Adaptation Plan for Climate Change (*Plan national d'adaptation au changement climatique*) for 2018-2022, known as PNACC-2.

(2) DPNT, EDF Hydro, PEI, IES, EDF UK, Dalkia, Luminus, Edison, DIPNN, EDF-R, DTEO.

(3) See section 3.1.3.2.2 "Identifying climate change risks and opportunities".

3.1.2.5 The ADAPT programme and the CEMA action plan ⁽¹⁾

Coordinated by the Nuclear & Thermal Fleet Division (DPNT), the ADAPT programme aims to secure the production of thermal and nuclear power generation facilities in anticipation of the consequences of climate disruption.

3-strand action plan

The approach is structured around 3 strands:

- understanding climate disruption and its effects at local level, taking into account its systemic nature in predictions of future climate conditions in various localities;
- evaluating the impacts of climate disruption on facilities and on power plants' local ecosystems;
- taking action to mobilise internal and external stakeholders in view of the changing, systemic nature of climate disruption and its consequences, and taking action to adapt and contribute to the habitability of localities.

A systemic approach

ADAPT is developing a systemic approach to adaptation to climate disruption:

- taking into account stakeholders and involving them in the definition of resilience criteria and adaptation measures;
- incorporating contractual and non-contractual contacts.

Local habitability

The programme is structured around the habitability of localities. It does this by looking at biodiversity, carbon storage, and the adaptation of environments. It seeks to address the resulting effects on the social and societal acceptability of its activities. ADAPT is already in the process of identifying commitments and investments described as "immediately worthwhile". These are aimed at addressing identified risks, ensuring subsequent decisions take adaptation properly into account, and beginning to prepare any further-reaching transformations that may be necessary.

Integration of ADAPT work in all processes

The approach aims to incorporate the issue of climate disruption in all processes, in particular in forthcoming ten-year inspections of the units in question. The idea is for ADAPT work to be incorporated into engineering processes in coherence with the Group's commitments in terms of "energy sobriety", innovative office buildings, etc.

Long-term integration

ADAPT seeks to ensure that attenuation and adaptation measures are long-term and not "maladaptations" ⁽²⁾. Over and above engineering works, the analysis also considers the systemic and changing nature of the consequences of climate change.

Chooz 2050

The ADAPT programme has launched Chooz 2050 on the basis of a detailed study of a site chosen specifically for its lifespan (2050) and water-related issues. This study allows a life-size analysis of all aspects of the project, from industrial installations to binding and non-binding ecosystems. ADAPT examines issues relating to the inhabitability of the planet, water, temperature, energy, farming, transportation, and industry in a complex ecosystem. Chooz 2050 will publish a "climate monograph" to offer decision support in preparing regional adaptation strategies.

Indicator

The monograph on the Grand Est region of France was completed in late 2022, taking the number of completed local monographs to 8%, with a target of 100% being completed by 2025 ⁽³⁾.

3.1.2.6 Summer and winter operation ⁽⁴⁾

3.1.2.6.1 Summer operation

Lessons learned from the exceptional summers of 2003 and 2022:

- In 2003, some power plants had to reduce output so as not to further heat river water, leading to a production loss of 5.5TWh, equivalent to 1% of EDF's production that year. The aim of the adaptation actions launched by EDF, has been to increase the safety margin and maintain production levels during such periods.
- The need to have legislation that is more geared to climate change has emerged, in particular in respect of discharge water temperature thresholds, either in terms of values (the mean temperature of watercourses has increased by approximately +2°C in France since 1970) or in terms of the application period. For most watercourses, dry spells are becoming longer, starting earlier and finishing later.

Measures taken:

- The "Grands Chauds" ("Heatwaves") plan launched in 2008 resulted in EDF making improvements to cold water source cooling efficiency for some of its power plants, and hardening reactor building electronics so that they can withstand temperatures in excess of 50°C.
- All EDF group power plants currently under construction (including Flamanville 3 and Hinkley Point C) have been designed taking into account the most recent climate scenarios; in particular, this has involved revising the rise in sea levels upwards.
- For the first time in 2022, temporary changes to temperature limits on discharges were requested (and agreed to) by the ASN and the Ministry for the Ecological Transition (*ministère de la Transition écologique*, MTE) for the Blayais, Bugey, Golfech, Saint Alban and Tricastin nuclear power plants. The first feedback from the enhanced environmental monitoring implemented by the operator to accompany these temporary changes did not reveal any significant changes in physical/chemical or microbiological parameters, and no exceptional fish mortality was observed.

3.1.2.6.2 Winter operation

The extreme weather in 2022 and tensions on the energy market entailed a range of actions being taken to preserve water and natural gas reserves in order to get through the winter, in particular derogations to legislation for some nuclear power plants, prudent management of reservoirs, deferred maintenance, and targeted use of local consultation to derestrict some hydro power plants and wind farms ⁽⁵⁾.

3.1.2.7 Adaptation of hydroelectric facilities

In order to reinforce resilience to extreme climate events and risks relating to the massive inflow of water into reservoirs, the EDF group is implementing the following actions:

Reassessment of extreme flooding

A regular reassessment of extreme flooding shall be carried out to ensure the capacity of flood evacuation infrastructure is maintained. Carried out by EDF-DTG ⁽⁶⁾, this reassessment takes place every 10 years for Class A dams and every 15 years for Class B dams. The studies provide input data for Dam Danger Studies (*études de dangers barrage*) required by legislation on the safety of hydro infrastructure, and are passed on to French regional environment, land use and housing authorities (DREAL). In 2022, 8 reassessments of extreme flood flows were performed.

"Piano Key Weir" Technology

Development and installation in 9 of EDF's hydroelectric facilities of an innovative technology known as a Piano Key Weir (PKWeir), allowing a far greater quantity of water to flow through without increasing the dimensions of the dam.

(1) CEMA: Comprehend – Evaluate – Mobilise – Act.

(2) "Maladaptation" refers to the situation in which strategies to adapt to climate change produce harmful, undesirable effects for certain populations and/or their environment, in particular when their implementation makes populations even more vulnerable to climate change.

(3) For details of how this indicator is calculated, see section 3.6.3.5 "Further details on social, environmental and societal data from the Statement of non-financial performance".

(4) In respect of extreme phenomena, see in particular section 3.1.3.2.3.1 "Physical risk scenarios".

(5) See also section 3.2.3.3.1 "Impact of climatic conditions on electricity generation".

(6) EDF Hydro's General Technical Division (*division technique générale*, DTG).

3.1.2.8 Adjustment of distribution networks

Enedis, in its capacity as network operator ⁽¹⁾, is working to reduce the vulnerability of its networks, experimenting with local zero emission generators, and has set up a Rapid Intervention Force.

Reducing network vulnerability

Enedis is also working on reducing the vulnerability of its 1.4 million kilometres of networks. This mainly consists in burying high-voltage overhead lines to avoid risks of falling trees, wind, snow and frost, beginning with the most exposed facilities. In 2022, 1,057km of high voltage overhead lines and 4,170km of low voltage overhead lines were removed ⁽²⁾.

Electricity Rapid Intervention Force (*Force d'intervention rapide électricité, FIRE*)

Enedis set up ⁽³⁾ the Electricity Rapid Intervention Force (*Force d'intervention rapide électricité, FIRE*), enabling resources and staff to be redeployed nationwide to restore power as quickly as possible. FIRE is one of the EDF group's key measures to respond to extreme weather risks. FIRE currently has 2,500 technicians trained for crisis situations and 11 logistics storage facilities across the country, allowing the deployment of 1,800 high-power generators (over 60kVA) and 1,000 low-power generators (10kVA), meeting the power needs of low voltage networks during significant climate incidents.

In Corsica and French Overseas Territories, EDF IES draws on solidarity between Corsica and Overseas territories and on FIRE as and when weather events have a major impact on the network.

In 2022, FIRE intervened on six occasions. Island territory examples include:

- Between 3-4 February, a Category 4 Cyclone (Batsirai) affected Réunion Island for 38 hours, causing extensive damage to the grid and leaving over 72,000 customers without power. In addition to the 200 local employees, some 20 service providers, a dozen or so employees of IES Corsica and 3 FIRE teams from Enedis (some 50 people in all) were mobilised within 24 hours, allowing power to be restored quickly.
- On 18 August, Corsica was hit by an exceptionally violent storm (with gusts of over 200-220km/h, the equivalent of a Category 3 cyclone), resulting in major damage. Up to 45,000 customers lost power as a result. Some 100 members of IES Corsica staff and some thirty contractors got to work immediately, allowing power to be restored to 80% of customers that same evening. In view of the extent of the repairs required, 3 squads of Enedis FIRE teams (almost 40 employees) were mobilised, arriving on 19 August and allowing normal service to be resumed on 21 August.

3.1.3 EDF climate governance

3.1.3.1 Governance bodies

The EDF group's climate strategy governance forms part of its sustainable development governance (see section 3.5.2 "CSR governance bodies"). This is supervised, in accordance with the independent management of the network's infrastructure managers, at the top Group-level.

3.1.3.1.1 Governance reinforced recently

For two years, to bolster its climate governance, and in line with the highest TCFD standards, the EDF group have been appointing Climate point persons within its Executive Committee and its Board of Directors ⁽⁴⁾.

COMEX Climate Point person

The Group Senior Executive Vice-President, in charge of Innovation, Corporate Social Responsibility & Strategy is the Climate point person within the Group Executive Committee. In this capacity, he presents the Group's carbon-neutrality ambition to the Board's Corporate Social Responsibility Committee and the Board itself;

Board of Directors Climate Point person

The Chairwoman of the Corporate Responsibility Committee is the Climate point person within the Board. She ensures, in liaison with the Chairman of the Board of Directors and the Executive Committee's Climate point person, that the Board identifies all impacts of climate change for the Group and that the work undertaken by the Board as well as the latter's strategy include considerations pertaining to climate change.

Climate resolution

For the first time ever, EDF brought a "Say on Climate" motion before its Shareholders' Meeting. The EDF group's climate transition plan was adopted by a 99.87% majority at the Shareholders General Meeting of 12 May 2022 (see also section 4.2.2.9 "Activity of the Board of Directors in 2022").

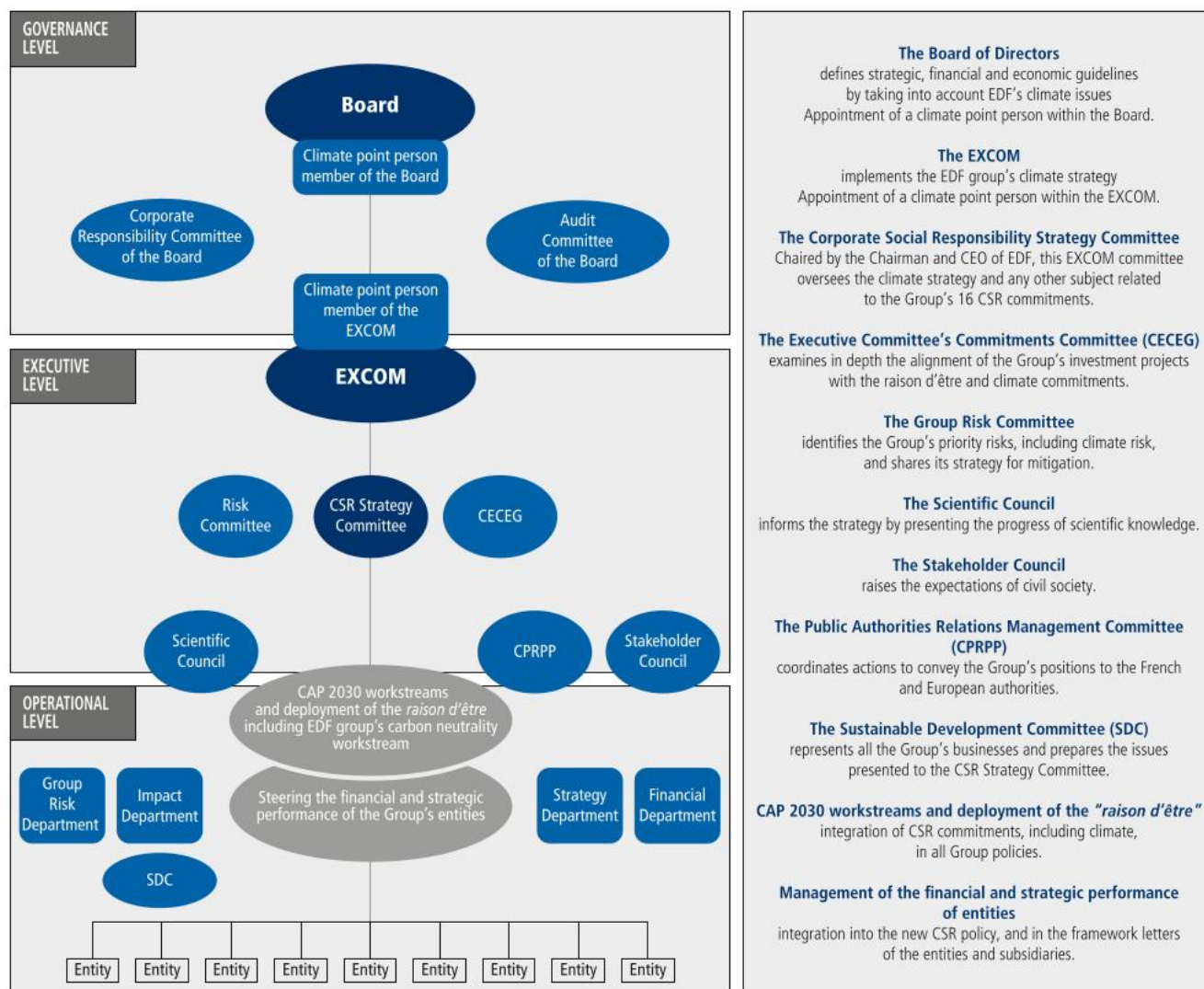
(1) A distribution operator managed in accordance with the rules of managerial independence.

(2) Furthermore, new medium voltage (HTA) lines are installed underground, while low-voltage (LV) lines are installed underground or unobtrusively. See also section 3.2.2.1.1.1 "Changing land and sea use".

(3) Following the 1999 storms.

(4) The EDF group press release, 10 December 2020.

3.1.3.1.2 Climate governance map



3.1.3.2 Implementation of Task Force on Climate-related Financial Disclosures (TCFD) recommendations

3.1.3.2.1 The EDF group and the TCFD

3.1.3.2.1.1 "TCFD Supporter"

The TCFD (Taskforce on Climate-related Financial Disclosures) is a G20 Financial Stability Board (FSB) working group set up after the 2015 COP 21 conference with a view to improving companies' financial transparency in climate-related matters. The EDF group was one of the world's first organisations to support this approach and is officially listed as a "TCFD supporter" ⁽¹⁾.

3.1.3.2.1.2 TCFD Reporting

The TCFD ⁽²⁾ recommendations set out the climate reporting components that companies are expected to provide in their Universal Registration Documents, in four broad areas: governance, strategy, risk management, and indicators.

(1) fsb-tcfd.org/tcfd-supporters

(2) Recommendations of the Task Force on Climate related Financial Disclosures, TCFD, June 2017.

3.1.3.2.1.3 Alignment of the EDF group

For its reporting commitments, the EDF group is in line with TCFD recommendations, as detailed in the report "Implementing the Recommendations of the Taskforce on Climate related Financial Disclosures", TCFD, June 2017:

	URD Sections
Governance	
a) Role of the Board of Directors in oversight of climate-related issues within the organisation	3.1.3.1.1
b) Role of Management in oversight of climate-related issues within the organisation	3.1.3.1.1
Strategy	
a) Climate-related risks and opportunities over the short, medium, and long term	3.1.3.2.2 and 2.2.3
b) Impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	3.1
c) Évaluation of the resilience of the organisation's strategy, taking into consideration different climate-related scenarios	3.1.3.2.3
Risk management	
a) Processes for identifying and assessing climate-related risks	3.1.3.2.2, 2.1 and 2.2.3
b) Processes for managing climate-related risks	3.1.2 and 3.1.3.2, 2.1 and 2.2.3
c) Integration into the organisation's overall risk management processes	2.1
Indicators and goals	
a) Financial and non-financial metrics used by the organisation for its climate-related strategy	3.1.3.3 and 3.6
b) Reporting of Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas emissions	3.1.1.2.4
c) Climate-related targets used by the organisation and performance against targets	3.1.1.1 and 3.1.1.2 3.1.2.1 and 3.2.2.2

3

3.1.3.2.1.4 Non-financial rating

The EDF group responds every year to questionnaires from non-financial rating agencies specialised in analysing corporate strategies to combat climate change. Section 3.7 "Non-financial rating" features all the EDF group's 2022 reporting results.

3.1.3.2.2 Identifying climate change risks and opportunities

The EDF group identified climate risk as a priority in 2018, addressing it in a report from the Group's Scientific Council in March 2019, as well as in the detailed analysis presented to the EDF group's Executive Committee and the Board of Directors Audit Committee in October 2019.

In its analysis of climate risks, the EDF group has adopted the classification put forward by the TCFD, which draws a distinction between physical risks and transition risks⁽¹⁾.

3.1.3.2.2.1 EDF group physical risks

Risk category	Description	Potential impact for the EDF group
Risks related to extreme events	Increase of heatwaves and droughts	Production: drop in nuclear production due to heat sink; low water flow for dams in southern countries; accelerated wearing of materials. Transmission and Distribution: drop in network capacity; fire risk. All business lines: rise in the cost of insurance; deterioration of working conditions for employees and service providers.
	Increase of strong wind events, storms, tornados and floods	Production: slow-down or potential temporary halt of production facilities, impacts of higher flood waters. Transmission and Distribution: Power outages.
Risks related to chronic events	Increase of average temperatures/Increase of sea levels	Production: change and drop in hydropower production, decreased yield of nuclear and thermal power facilities, risk of submersion of infrastructures on seacoasts (particularly island regions), proliferation of organisms that plug water intake, risk of microbial growth in cooling circuits. Transmission and Distribution: diminished capacity of transmission lines. Marketing: drop in heating demand, increase in air-conditioning demand.

(1) These risks are also listed in section 2.2.3 "Group transformation and strategic risks", risk factor 3B, "Adaptation to climate change: physical and transition risks".

3.1.3.2.2 Transition risks and opportunities for the EDF group

Risk category	Description	Potential impact for the EDF group
Legal risks	Climate-related litigation	Risk of cancellation of licences, risk of litigation following exceptional climatic events, risk of litigation related to the EDF group publications, particularly as regards the duty of vigilance.
Political and regulatory risks	Tension over uses of water	Risk involved in the sharing of water resources due to multiple uses and multiple stakeholders in a context of increasing water scarcity.
	Tension over access to land and use of soils	Risk involved in the necessary land resources for renewable energy due to regulation (biodiversity, agricultural lands) and the legitimacy of sharing with numerous stakeholders.
	Political difficulties to achieve the objectives of the Paris Agreement	Opportunity: as a low-carbon leader*, the EDF group is called on to play a key role in decarbonisation of the European economy.
Customer – market risks	Change in customer expectations	Opportunity: increased demands of own consumption, energy efficiency, electric mobility, green deals and low carbon.
	Change in uses of electricity	Opportunity: decarbonised electricity is recognised as an indispensable means to decarbonise the economy.
Technological risks	Stability and security of electricity networks	Risk/Opportunity: risk of instability to the system in case of a high penetration rate of renewable energies; key role of nuclear energy usable together with renewable energies to ensure stability of the network.
	Transition technologies	Risk/Opportunity: potential emergence of technologies such as CCSU, thermal solar, small modular reactors, storage or in the area of negative emissions.
Financial risks	Access to competitive financing	Risk/Opportunity: risk of non-alignment of investors with the 1.5°C criteria. Opportunity to provide the EDF group with sustainable financing (Green Bonds, positive incentive loans).
	Stranded assets	Risk of stranded thermal assets after regulatory changes or carbon price increases.

* See section 3.1.1 "Group carbon trajectory".

3.1.3.2.3 Climate risk and opportunity scenario analysis

3.1.3.2.3.1 Physical risk scenarios

To quantitatively assess the physical risks of climate change (chronic and acute), the EDF group uses scenarios developed by the IPCC. This refers mainly to RCP (Representative Concentration Pathways) scenarios from the fifth evaluation report, which are progressively being updated using SSP-RCP (Shared Socioeconomic Pathways – Representative Concentration Pathway) scenarios from the sixth evaluation report. These scenarios are based on values of radiative forcing due to combined greenhouse gas emissions and aerosols by 2100, as well as changes in land use: the higher the radiative forcing, the more energy enters the earth-atmosphere system, which warms and changes as a result. Only the most ambitious scenarios for greenhouse gas emission reductions (SSP1-2.6 and SSP1-1.9) give a better than 50% probability of limiting the rise in global mean temperatures by the end of the century to less than 2°C and 1.5°C (respectively) more than during the pre-industrial era. The trending scenario (SSP5-8.5) shows a more than 50% likelihood of an increase in excess of 4°C by 2100 compared to the pre-industrial era.



Scenarios used	EDF recommends the priority use of two reference scenarios in climate studies for the Group's facilities: SSP2-4.5 (the median scenario) and SSP5-8.5 (the scenario with the highest impact). The choice of scenario/model combination is crucial. EDF is currently using CMIP-5 models and is planning to migrate to the new database for CMIP-6 models in the very near future.
Scope	Global climate projections with adapted downscaling used in each study with respect to the installation under consideration.
Main variables taken into consideration	Air temperature (performance of nuclear and thermal power plants, distribution network transport capacity, risk of fire). River flow rates and temperatures (producible hydro and nuclear power, risk of flooding). Sea levels (submersion of infrastructures). Wind and cloud cover (producible wind and solar power). Storms (damage to production and distribution resources). Some of these variables are not generated directly by climate forecasting and call for specific calculations.
Timeframe considered	Long-term (2040-2100) due to the long technical lifespan of EDF's electricity production and distribution infrastructures. It should be noted that the emissions scenarios only result in significantly differing impact evaluations from 2050 onwards, due to the inertia of the climate system and the foreseeable impact of historic emissions.

ADAPT scenarios

EDF R&D's climate department has carried out an initial study on future climate scenarios for Chooz and Civaux for ADAPT. The scenario/model combinations were chosen for their ability to cover the broadest possible extent of risks, including extremes. A first study was conducted for the Chooz and Civaux nuclear power plants ⁽¹⁾.

Examples of results obtained

EDF group nuclear power plants under construction (Flamanville 3, Hinkley Point C and Sizewell C) have all been designed taking into account the findings of climate impact studies, in particular the prospect of rising sea levels and exceptionally large waves. For instance, for Hinkley Point C power plant in Somerset, UK, a 13.5m sea wall has been built to address an estimated increase in wave heights to 4.6 metres within the next 100 years. This time horizon covers both the operation and decommissioning of the facility. For Sizewell C in Suffolk, UK, the sea wall height has been set at 10.2 metres due to the lower tidal range in the North Sea compared to the Bristol Channel.

Climate impact studies for EDF group facilities have also quantified the risk of reductions in producible nuclear and hydro power due to the increased frequency and intensity of heatwaves and drought during the summer. However, these periods do not coincide with problematic periods in terms of electricity supply and demand, and in the long term the development of solar power should mitigate the risks to the electrical system in this respect.

With respect to exposure to extreme events such as storms, cyclones, flooding and fires, EDF group activities identified at being most at risk are firstly, power distribution networks (Enedis) and secondly EDF's island activities (IES and PEI), especially in the most pessimistic scenarios such as SSP5-8.5. Nuclear power plants already have very high levels of safety and their adaptation to the most extreme physical events is reviewed every ten years.

The impact of climate change on electricity demand has been modelled, in particular at national level with the *Futurs énergétiques 2050* ("Energy Futures 2050") study carried out by French grid operator RTE. The study confirms the relevance of nuclear and renewable energy, seen as complementary, and reveals an increase in electricity demand in summer (with the increasing use of AC) and a decrease in winter (less heating), tending to suggest that demand for electricity will fluctuate less on a seasonal basis.

3.1.3.2.3.2 Transition risk scenarios

To evaluate legal, technological, market, and reputational transition risks, the EDF group has adopted scenarios developed by the IEA for its 2022 World Energy Outlook (WEO). The scenarios in question have been selected due to their extensive use, particularly in the energy sector, and their level of detail at regional and national scales. In line with the recommendations of the WBCSD and the TCFD, the EDF group uses three scenarios: one based on 1.5°C, one based on "Well below 2°C" and one assuming "Business as usual". In 2021, the EDF group and WBCSD were involved in the setting up of an analysis platform allowing these scenarios to be compared with each other and with other scenarios including NGFS, UN PRI, BNEF and IRENA and put them in the context of the scenarios used by the IPCC.

Scenarios used	"Aligned 1.5°C": IEA's "Net Zero" (NZE) scenario aiming for carbon neutrality in 2050 and resulting in a temperature increase of +1.5°C in 2100. "Well below 2°C" scenario: IEA's "Announced Pledges" (APS) scenario, resulting in a temperature increase of +1.7°C in 2100. "Business as usual" scenario: IEA's "Stated Policies" scenario (STEPS), resulting in a temperature increase of +2.5°C in 2100.
Scope	World energy-climate scenarios detailed at regional (EU) or national level.
Variable Principles considered	Final energy use, share of electricity and gas demand. Development of electric mobility and hydrogen power. Discounted cost of various means of electricity production (renewables, nuclear, gas, CCUS). Global CO ₂ emissions, CO ₂ sinks and the price of CO ₂ .
Time horizon considered	Medium term (2030–2050): Europe and most of the countries in which the EDF group operates have committed to achieving carbon neutrality by 2050.

(1) For ADAPT, the study looked at all the CMIP5 models available in the climate department and selected 4 climate variable model/scenario pairs to 2050 to test the fleet's resilience: an upper scenario (GFDL-CM3/RCP8.5), a lower scenario (MRI-CGCM3/RCP2.6), and two intermediate scenarios (NorESM1-M/RCP4.5) and (BNU-ESM/RCP4.5). In 2023, the study will be updated with CMIP 6 data.

The table below presents a qualitative evaluation of the financial impact of the main risks inherent in transition on the EDF group's business model.

Scenario assumptions	World data, 2021	IEA global scenarios for 2030 compared to 2021			Comments
		STEPS +2.5°C in 2100	APS +1.7°C in 2100	NZE +1.5°C in 2100	
Share of electricity in final energy mix	20%	22% in 2030 28% in 2050	24% in 2030 39% in 2050	28% in 2030 52% in 2050	
Share of natural gas in final energy mix	16%	16% in 2030 15% in 2050	15% in 2030 10% in 2050	14% in 2030 5% in 2050	
Price of CO ₂ in developed countries	€55/tCO ₂ (EU ETS)	\$90/tCO ₂ in 2030 \$113/tCO ₂ in 2050	\$135/tCO ₂ in 2030 \$200/tCO ₂ in 2050	\$140/tCO ₂ in 2030 \$250/tCO ₂ in 2050	
EDF group business model	EDF data, 2021	STEPS +2.5°C in 2100	APS +1.7°C in 2100	NZE +1.5°C in 2100	
Production and sales of low-carbon electricity	477TWh	↗	↗↗	↗↗↗	Market opportunities
Production of thermal electricity	47TWh, < 9% of total electricity production	↘	↘↘	↘↘↘	Regulatory risk: gradual decrease in the operation of combined-cycle gas power plants, assigned to strategic reserves
Sales of natural gas	243TWh	↘	↘↘	↘↘↘	Market risk and technological opportunity: replacement of natural gas by heat pumps
Regulated business (island distribution and activities)	Approximately 30% of EDF EBITDA	↗	↗↗	↗↗↗	Technological opportunity: role as a distribution network for decentralised energy
Energy services and district heating networks	< 3% of EDF EBITDA	↗	↗↗	↗↗↗	Technological and market opportunity
Nuclear engineering and equipment	< 2% of EDF EBITDA	↗	↗↗	↗↗↗	Technological and market opportunity
New business lines (H2, electric mobility)	ND	↗	↗↗	↗↗↗	Technological and market opportunity

Low-carbon electricity: the main vector towards carbon neutrality

The IEA has shown that achieving carbon neutrality at the global level requires an increase in the electrification of uses, combined with an acceleration in the decarbonisation of electricity ⁽¹⁾. In all scenarios compatible with the Paris Climate Agreement, the share of electricity in end energy use will have doubled by 2050 (compared to 20% in 2021) and become the leading form of energy worldwide. The IEA anticipates that end electrical energy use worldwide will have doubled by 2050, at a time when end energy demand is falling due to the development of energy efficiency and behavioural changes. The most ambitious climate/energy scenario, NZE, is also the scenario in which the increase in absolute electricity demand rises the fastest worldwide.

Key advantages held by the EDF group in the energy transition

Worldwide, the electricity and heat production sector is the number one greenhouse gas-emitting sector, accounting on its own for 25% of global emissions ⁽²⁾. In France, as a result of the EDF group's carbon performance, the electricity and heat production sector accounts for approximately 5% of national man-made greenhouse gas emissions ⁽³⁾.

As the world's leading producer of electricity with no direct CO₂ emissions ⁽⁴⁾, the EDF group has an atypical risk profile when it comes to transition risks. For the EDF group, tougher policies designed to achieve carbon neutrality faster are in fact powerful opportunities to promote its low-carbon mix based on nuclear energy and renewables. For instance, the increase in CO₂ prices visible in the most ambitious climate/energy scenarios does not have a negative impact on the EDF group's financial performance and could even be construed as an opportunity for the Group, favouring its investments in new, low-carbon production facilities.

Examples of strategic decisions taken by the EDF group to mitigate transition risks

The EDF group has set itself the goal of contributing to the fight against climate change ever since its first environmental policy in 2005. Integration of this issue at the heart of the Group's strategy has become much faster in the wake of the Paris Agreement (2015), the recommendations of the TCFD (2017) and most recently, the adoption of the Group's *raison d'être* (2020). In particular, this policy has resulted in the following strategic decisions and commitments on the part of the EDF group: achieving net zero emissions by 2050 for all greenhouse gas emission scopes, withdrawing from carbon-based electricity production by 2030, the goal of 60GW of installed capacity in renewables energies by 2030, the *Grand Carénage* programme to extend the lifespan of existing nuclear power plants, the launch of the Group's solar power plan, storage plan, and electric mobility plan, Hydrogen plan, the creation of the Innovation and Pulse Programme Department (DIPP), the creation of Dynamics, etc.

(1) [iea.org/reports/net-zero-by-2050](https://www.iea.org/reports/net-zero-by-2050)

(2) IPCC, AR5

(3) CITEPA SECTEN 2022

(4) <https://power-producers-ranking.enerdata.net/>

An analysis of the risks and opportunities inherent in transition (see section 3.1.3.2.2) is carried out annually by the EDF group. This confirms that the EDF group's CAP 2030 strategy is fully in line with the political goals set out by the Paris Agreement, as well as the resilience of the EDF group's business model to the various scenarios envisaged.

3.1.3.2.4 Use of carbon price to guide investments

The EDF group's investment projects were analysed based on the CAP 2030 strategy and its commitment to achieve carbon neutrality for all its direct and indirect emissions by 2050.

For all countries covered by the EU-ETS (European greenhouse gas emissions trading system), through which the majority of EDF group investments are made, the sensitivity of the profitability of projects in terms of production is also assessed based on medium- to long-term scenarios using different 2050 emissions price trajectory forecasts.

These scenarios and the related carbon price trajectories are developed taking account of various parameters, particularly GDP growth, raw material prices, technology costs, and climate and energy regulations. Pursuant to the 2022 CDP 2022, the range of carbon prices used by EDF in its scenarios is €50-160/tCO₂ by 2040, with a median price of €90/tCO₂.

By enabling identification of project risks and opportunities and testing their climate change resilience, this analysis, based on scenarios integrating different carbon price trajectories, contributes to guiding the Group's investments.

3.1.3.3 Financing to promote decarbonisation

3.1.3.3.1 Alignment with European taxonomy

For full details, see section 3.8.4 "Details on the taxonomy" and 3.1.1.2.2 "Climate performance for integrated performance".

3.1.3.3.2 Issue of Green Bonds

For full details, see chapter 6.7 of the URD.

3.1.3.3.3 Use of credit lines indexed on the Group's ESG indicators

For full details, see note 18.4 « Unused credit lines » of the appendices to the consolidated accounts in chapter 6.1.

3.1.3.4 Commitment to ambitious climate policies

The EDF group promotes public policies that encourage actual carbon reduction in the economy.

3.1.3.4.1 On a national level

The EDF group is working to hasten France's energy transition and end its dependency on fossil fuels. In particular, EDF is a member of the French Electricity Union (*Union française de l'électricité*, UFE). In its white paper⁽¹⁾ "Energy transition to benefit the French", it presents a series of reforms to prepare the future of the energy system with a view to "zero emissions", for instance through the introduction in investment decisions (calls for tenders) of criteria pertaining to carbon footprints and location.

In August 2019, EDF joined MEDEF's "French Business Climate Pledge"⁽²⁾ initiative. EDF supports the implementation of an ambitious national legal and regulatory framework to see France become carbon-neutral by 2050.

3.1.3.4.1.1 Developing the French Energy-Climate Strategy (SFEC)

EDF is involved in the development of the French Energy-Climate Strategy (*Stratégie française sur l'énergie et le climat*, SFEC), which begun in 2021 and is due to be completed by the end of 2024. The SFEC constitutes France's roadmap to achieve carbon neutrality by 2050 and ensuring that our society can adjust to the impacts of climate change. In particular, EDF submitted a stakeholder brief (no. 66) in February 2022 as part of its contribution to the work to end the use of fossil fuels by 2050.

3.1.3.4.1.2 Calls for "energy sobriety"

Jean-Bernard Lévy, EDF's Chief Executive Officer in 2022, signed two opinion pieces on "energy sobriety" in French weekly magazine *Le Journal du Dimanche* in June and July 2022, one jointly with a collective of 84 French company heads advocating the adoption of a holistic approach to energy sobriety, with the economy committed to a deliberately chosen model.

3.1.3.4.2 On a European level

EDF's EU lobbying means the promotion and defence of the Company's interests by its representatives to EU institutions, in line with EDF's *raison d'être* and with the aim of influencing proposals and decisions that may have an impact on the climate and on the business of the Company.

3.1.3.4.2.1 EDF's commitment to transparent, responsible lobbying⁽³⁾

EDF's European Affairs Department coordinates EDF entities' engagement with professional associations and think-tanks, and examines their alignment with EDF's *raison d'être* and consistency with the principles of Just Transition and the goals of the Paris Agreement.

The examination process put in place triggers follow-up actions where necessary. In particular, it consists in reviews and annual evaluations of EDF's professional association partners on the basis of their alignment with EDF's *raison d'être*, the Paris Agreement, and the principles of Just Transition. If a gap is detected between the principles of an association and what the Group promotes in its *raison d'être*, the goals of the Paris Agreement and the principles of Just Transition, EDF provides an analysis of the degree to which it can continue to promote its values whilst remaining a member of the association in question.

Once this analysis has been completed, if it reveals material misalignments, EDF's position is to encourage the association in question to adopt a more proactive approach in terms of climate advocacy. EDF firmly believes that it can be more effective in bringing about change from within than from without. However, if EDF deems the probability of any positive change to be low, the review process may lead to the Group reconsidering its membership of certain organisations and/or considering joining new ones⁽⁴⁾.

At the start of 2023, the entire scheme was presented to the directors on EDF's Board of Directors' Corporate Responsibility Committee (see section 4.2.3.4 "Corporate Responsibility Committee").

(1) ufe-electricite.fr/transition-energetique-au-service-des-francais/

(2) medef.com/fr/communique-de-presse/article/french-business-climate-pledge-les-entreprises-francaises-engagees-pour-le-climat

(3) edf.fr/sites/groupe/files/2022-05/edfgroup_2021_lobbying-process_review_va.pdf.pdf

(4) For further actions in respect of transparency, see section 3.3.2.2.1 "Anti-corruption programme".

3.1.3.4.2.2 The EDF group is particularly active in the EU

The EDF group participates both in its own name (through its permanent office in Brussels) and through Eurelectric, the association representing the ordinary interests of the electricity industry in Europe. The EDF group's commitment to a robust EU greenhouse gas trading system and to an ambitious long-term climate and energy strategy led by the European Commission is recognised by all stakeholders, including NGOs such as InfluenceMap ⁽¹⁾ which has repeatedly ranked EDF as one of the companies most actively promoting climate issues in EU negotiations ⁽²⁾. EDF engages in transparent, responsible lobbying (see section 3.3.2 "Ethics, compliance, and human rights").

3.1.3.4.2.3 The EDF group fully supports the European "Green Deal"

During his Chairmanship, Jean-Bernard Lévy has worked to promote the Green Deal as a social, industrial, and strategic opportunity for all Europeans structured around four pillars; adopting an affordable, low-carbon electric lifestyle whilst combatting discriminatory energy taxation; ensuring that a full range of technology with low-carbon emissions contributes to profitable decarbonisation, encouraging the deployment of renewable energies, smart grids, and the use of electrolytic hydrogen; demonstrating the resilience and flexibility of electricity as a key asset for the Green Deal, whilst promoting smart integration and highlighting the benefits of digitalisation.

Support for the RePowerEU plan to accelerate the energy transition and reinforce energy security

In his capacity as President of the EURELECTRIC association, Jean-Bernard Lévy sent a letter to all EU Heads of State and governments ahead of the meeting of the European Council in March 2022 to encourage the European Union to reduce its dependency on fossil fuels and move more quickly towards becoming carbon-neutral.

EDF joined the appeal on the part of 120 leaders coordinated by the NGO Corporate Leaders Group EU in May 2022 calling on the EU to strengthen energy security and resilience by hastening the green transition through the vector of the RePowerEU plan.

3.1.3.4.3 On an international level

As the world's leading producer of electricity without direct CO₂ ⁽³⁾ emissions, the EDF group is one of the leading non-state actors in international discussions on climate change.

Race To Zero

In February 2020, the EDF group joined the "Business Ambition for 1.5 degrees: our only future" initiative, thereby joining the United Nations Race To Zero ⁽⁴⁾ movement, which seeks to achieve net zero carbon emissions by 2050 at the latest (see section 3.1.1.1.1).

Promoting the coal phase-out

Since 2017, the EDF group has been engaged in the Powering Past Coal Alliance ⁽⁵⁾, which promotes the phasing out of coal in EU countries by 2030 and in the rest of the world by 2050 in the wake of the Paris Agreement. Since 2021, the EDF group lent its support to the Global Coal to Clean Power Transition Statement ⁽⁶⁾ launched during the UK presidency of the COP26 summit; this statement has already been signed by 23 countries.

Promoting fair carbon pricing

EDF supports the Carbon Pricing Leadership Group (CPLG) initiative: that brings together businesses, governments, academics, and NGOs to promote carbon

pricing as a means of achieving a low-carbon world economy. At the Climate Action Summit organised by the Secretary General of the United Nations in September 2019, the EDF group signed the CPLC's appeal recommending a price per tonne of carbon of \$40-\$80 by 2020 and \$50-\$100 by 2030, in line with the 2017 Stern-Stiglitz report, in order to enable countries to abide by the Paris Agreement.

Aiming for 1.5°C

EDF is one of the 200 companies which joined the We Mean Business association appeal on the occasion of the COP27 summit in November 2022, calling on leaders to maintain their commitment to keeping global warming to a maximum of 1.5°C and act swiftly to implement this commitment.

The EDF group at the COP27

The EDF group was present at the COP27 summit held at Sharm El Sheikh, from 6 to 20 November 2022. EDF was represented by a small delegation consisting of representatives of the Impact Department, the International Division, the DPNT and EDF Renewables. This allowed the Group to be among those taking the floor to address strategic issues such as nuclear energy, hydropower, renewables, and developments in the electricity market on half a dozen occasions.

3.1.3.4.4 Acting in a consistent manner with external stakeholders

The EDF group set up specific governance to ensure the consistency of the positions promoted by the Group. The EDF group makes sure not to support initiatives promoting positions not in line with its own aims in terms of combating climate change. EDF ceased to be a member of Business Europe on 1 November 2020.

Development and validation of Group positions

All the Group's key positions on climate issues are approved by the Public Authorities Relations Management Committee, whilst preserving the management independence of network operators. This Committee, co-chaired by the General Secretary and the Group Senior Executive Vice-President in charge of Innovation, Corporate Social Responsibility and Strategy, meets every week and features, among others, the Public Affairs Division, the European Affairs Division, the Regulation Division, and the Legal Affairs Division.

3.1.3.4.5 Raising awareness and providing information to the general public

See also section 3.5.4.10 "Responsible communication".

3.1.3.5 Involvement of employees and executive officers in carbon neutrality

The EDF group implements actions to enable all its employees and corporate officers to adopt the Group's *raison d'être* and climate commitments. These actions involve employee training ⁽⁷⁾, remuneration and collective intelligence.

3.1.3.5.1 Remuneration linked to combatting climate change

Executive officer bonuses for 2022

The chosen climate criterion is the carbon intensity ⁽⁸⁾ of the Group's heat and electricity production, corresponding to 30% of the Group share ⁽⁹⁾. See section 3.5.4.8 "CSR and remuneration policy for group executives".

(1) influencemap.org.

(2) The EDF European Business Affairs Department's business reports are available online: mupedef.fr/groupe-edf/agir-en-entreprise-responsable/rapports-et-indicateurs/rapports

(3) See section 3.1.1 "Group carbon trajectory".

(4) racetozero.unfccc.int/

(5) poweringpastcoal.org/members

(6) ukcop26.org/global-coal-to-clean-power-transition-statement/

(7) See section 3.3.3.6.6 "Skills development in the area of sustainable development".

(8) See section 3.1.1.2.2 "Climate performance for integrated performance".

(9) Including EDF, Edison, EDF in the UK and Luminus.

2022 Employee profit-sharing agreement

The 2022 profit-sharing agreement signed by EDF's management and its social partners includes, in addition to business, health & safety and gender diversity criteria, one climate-based criterion relating to electrifying the EDF's vehicle fleet in accordance with the EV 100 commitment. See section 3.3.3.7 "Remuneration"

3.1.3.5.2 Innovation and collective intelligence focused on climate action

EDF is implementing initiatives directly focused on combating global warming. At the start of October 2022, an "energy sobriety" plan was implemented to increase the Group's engagement with these issues entailed by the crisis. The plan is directed

at employees and seeks to help them reduce their own electricity use in order to set an example.

Via VEOL, the EDF group intranet community, employees have been invited to "Fight CO₂"; "carbon neutrality passports" and "energy sobriety challenges" and have also been provided with information about energy-saving tips and actions. This involves quizzes focusing on 15 energy-saving tips referred to as *écogestes*. A best practice challenge, taken up individually or in teams, was also launched in November 2022 to garner new ideas.

3.1.3.5.2.1 The "Carbon neutrality passport"

Launched at the end of 2020 as part of the "Combatting CO₂", it starts with us" programme, the "carbon neutrality passport" was intended to test knowledge on climate change, assess the carbon footprint, and take action based on challenges in the fields of energy use, housing, power supply, transport, responsible digital development, or energy savings.

Carbon neutrality passports	2022
Number of passports obtained	36,872
Number of challenges taken up	76,487

3.1.3.5.2.2 The "Climate Fresk"

The EDF group committed to raise awareness among as many of its employees as possible on climate issues through the "Climate Fresk", a collective intelligence-based tool that makes it easy to understand the key conclusions of the Intergovernmental Panel on Climate Change (IPCC) report ⁽¹⁾. Due to the health

crisis, most of the initial deployment took place digitally, following which face-to-face sessions gradually resumed as the various waves of the crisis allowed. Feedback indicates that participants were very much in favour of the latter format. Seeking to be attentive to its employees, the Group has therefore decided to focus on face-to-face sessions and adjust the pace of the roll-out accordingly.

Climate Fresk	Target	2020	2021	2022
Number of employees who participated to the Climate Fresk	171,490*	3,200	22,000	60,000
Number of employees who animated the Climate Fresk		170	780	1,600
Number of sessions		330	3,500	6,000

* Group workforce at the end of 2022; see section 3.3.3.9 "Detailed information on the Group's workforce".

2022 highlights 24-hour Fresk, 2022 edition

One thousand people in the EDF group took part in a Climate Fresk event running from 8am on 9 June to 8am on 10 June. Workshops were organised in several Group entities worldwide (Belgium, Brazil, Chile, China, Colombia, France (Metropolitan France and Overseas French *Départements* and Regions), Italy, New Caledonia, UK) in such a way that the Fresk ran continuously, either virtually or in-person, in French, English, Spanish, and Portuguese. A new development in 2022 was that the project was organised jointly with other companies using the Fresk: ABB, Société Générale, Groupe Bouygues, La Poste, Groupe Atlantis, Aperam and BNP Paribas. In all, some 2,000 people took part in the event.

Structuring the Company network

For 2 years, EDF has provided feedback for companies planning their own rollouts through a discussion network coordinated by the Climate Fresk NGO. In 2022, major rollouts were launched in several of these companies with the help of feedback from EDF.

Fresk platform

EDF has co-developed a coordination platform for rolling out the Climate Fresk together with the Climate Fresk NGO for their mutual benefit. The platform has been designed to be usable in other organisations and has already been offered to other companies in the network.

3.1.3.5.2.3 "Eco2" conferences

In 2021, the Group launched its "Eco2 conferences". This series of scientific talks focuses on the issues surrounding a carbon-neutral economy. These online talks have been followed by several thousand people. Based on collective intelligence, the initiative has brought together a collective of 65 people, half of them from EDF and half from elsewhere (including members of the Alumni for the Planet network) ⁽²⁾, who attended all of the talks with the aim of identifying lessons that could be shared. In 2022, this work gave rise to the publication of a white paper providing practical details of the multi-stakeholder economic system devoted to the climate, wellbeing, and development ⁽³⁾.

3.1.3.5.2.4 "Employer sustainable mobility plans" developed by employees

Sites concerned

Through the France-wide EDF group agreement on sustainable mobility unanimously signed in November 2019, a commitment was made to develop an "Employer sustainable mobility plan" for sites with more than 100 employees. As of the end of 2022, 113 employer mobility plans had been finalised across the EDF group in France.

Involvement of employees

Employees are involved in producing and implementing these employer mobility plans.

Schemes to develop sustainable employee mobility

- Encouraging the use of low-carbon transportation: trialling electric bikes and cars, a "sustainable mobility allowance" for ride-sharers, negotiated discounts for the purchase of electric vehicles.
- Adapting infrastructures to new travel modes: installation of charging stations, creation or extension of bike parks, reserved parking places for ride-sharing.

(1) This tool developed in 2015 by Cédric Ringenbach has already been used to train more than 230,000 employees worldwide.

(2) Alumni for the Planet is a network of higher education graduates who have committed to actions in favour of the climate and the environment: alumnifortheplanet.org

(3) edf.fr/groupe-edf/inventer-l-avenir-de-l-energie/edf-se-transforme-avec-ses-collaborateurs

3.1.3.6 Innovation and R&D for the energy transition

As of the end of 2022, EDF R&D had a headcount of 1,747 in France; most of its budget is earmarked for energy and climate transition ⁽¹⁾.

Breakdown of R&D investments by technology

99% of EDF R&D's operating budget in France is dedicated to decarbonation and the energy systems transition. In particular, expenditures covered energy efficiency, uses of electricity as a substitute for fossil fuels, renewable energies and their insertion into the grid, energy production and storage, low-carbon hydrogen and its applications for decarbonising the economy, the local impacts of climate change and other environmental issues such as biodiversity, water quality, and the mitigation of disturbances. Nuclear power accounts for 42% of EDF R&D; renewable energies account for 14%.

3.1.4 Developing low electricity consumption and innovative energy services

A key source of leverage for decarbonisation

With largely low-carbon electricity, the development of uses of low-energy, innovative electricity uses and services is a key vector for work to combat global warming.

Developing appropriate offerings

The EDF group is contributing to this goal by means of offers tailored to various markets, including promoting the use of heat pumps, electric mobility, and energy

Action undertaken in respect of decarbonation and energy sobriety

EDF R&D is working on the issue of far-reaching decarbonation in industry. Following the application of France's new RE2020 energy legislation in 2021, EDF R&D has been engaged in co-development work on heat pump solutions with manufacturers in order to broaden this offering. EDF R&D is also actively engaged in supporting the Group's business units as they address household demand for construction and renovation to produce lower-carbon homes.

The energy transition also involves exploring innovative solutions within the EDF Pulse ecosystem (see section 3.3.3.6.7 "Developing a culture of innovation: the EDF Pulse ecosystem"),

efficiency solutions. See section 3.1.4.3 "Developing efficient, low-energy, innovative energy services".

Establishing the conditions for the development of innovative and effective low-energy uses

Electrifying sectors that produce the most CO₂ entails having conditions that are favourable to this development. See section 3.1.4.2 "Setting the conditions for the efficient development of sober electricity uses".

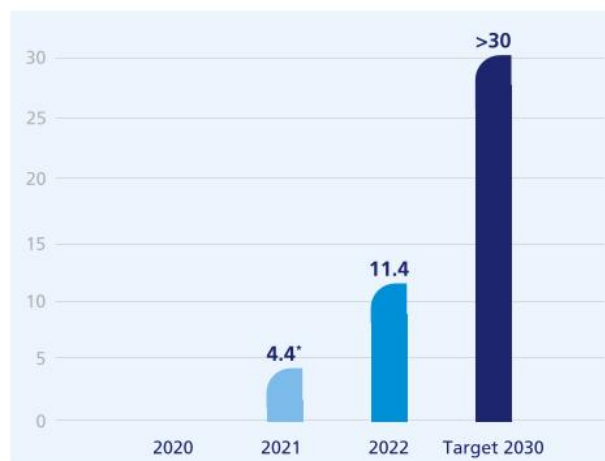
3.1.4.1 Commitment to supporting customer decarbonisation

GROUP KEY PERFORMANCE INDICATOR

One of the key indicators in combatting global warming is the quantity of CO₂ emissions avoided. To date, there is no recognised external reference that can be used to determine the amount of emissions avoided by customers thanks to the products and services EDF sells. However, EDF can follow principles for such calculations according to the most frequently observed practices in this respect. At the same time, EDF is engaged in French and international research seeking to develop this type of benchmarking method. The aim is to avoid 30 million tonnes of CO₂ emissions by 2030 ⁽²⁾.

The 2022 results cover only some of the products and services marketed by EDF. The figures should increase in the coming years, subject to possible changes in method in order to remain in line with third-party practices.

Avoided CO₂ emissions thanks to sales of innovative goods and services (in MtCO₂)



* Data calculated in 2021 for EDF and Dalkia for a smaller scope of services.

(1) See section 1.5 Research & development, patents and licences.

(2) The target has been doubled compared to 2021 due to the increase in both geographical and functional scopes; for more details, see section 3.6.3.4 "Details of performance indicators (KPI)".

3.1.4.2 Setting the conditions for the efficient development of sober electricity uses

3.1.4.2.1 A more robust, intelligent and flexible network

Thanks to renewal programmes, scheduled renovation and use of underground lines rolled out by network operators in high-risk climate zones, the frequency of power outages has lowered, leading to a reduction in the average outage time per customer.

	2020	2021	2022
SAIDI (min.)*	52	56	59.5
CAIDI (min.)	76	92.5	85.9
SAIFI (min.)	0.68	0.61	0.69

* SAIDI: System Average Interruption Duration Index; CAIDI: Customer Average Interruption Duration Index; SAIFI: System Average Interruption Frequency Index.

In 2022, the average outage time, excluding transmission incidents and exceptional incidents, was 59.5 minutes (figures are not final). This good result is in line with the target of 62 minutes set in incentive legislation as part of the Tariff for Using the Public Electricity transmission and distribution Networks (TURPE), despite several events that put the resilience of networks to the test. Indeed, the year began with several storms: Eunice (classified as an exceptional event in Nord-Pas-de-Calais and Somme) and Franklin in February, followed by Diego in April. The summer saw thunderstorms (with an impact on aboveground networks) and several high-intensity heatwaves of unprecedented duration (with an impact on underground networks).

3.1.4.2.1.1 More “intelligent” (smart)

In terms of smart grid technology, the 20kV high-voltage network is already smart since it is supervised and equipped with automated power restoration. It has been further improved with the incorporation of smart fault detectors on the aboveground network and remotely operated control mechanisms. These devices are now continuously monitored to ensure they are working properly; software updates can now be carried out remotely. For the LV network, the deployment of smart meters by Enedis now enables us to have a real-time vision of the characteristics of the electricity at the individual customer level. In areas not interconnected with continental Metropolitan France, and outside Europe, Enedis and EDF are continuing to install connected electricity meters, allowing consumers to monitor their electricity consumption.

	2020	2021	2022
Number of smart meters installed (in millions of units)*	32	37.6	40.6

* For the methodology used for this indicator, see section 3.6 “Methodology”.

As of the end of 2022, 40.6 million meters had been installed, including almost 36.6 million in France⁽¹⁾ as well as in the United Kingdom and India.

3.1.4.2.1.2 More flexible Roadmap

In 2020, Enedis, in its capacity as distribution network operator, published its roadmap for the transformation of network scaling methods and integration of flexibilities.

Flexibility contracts

The new version of the Contract for Access to the Public Distribution Network (*contrat d'accès au réseau public de distribution*, CARD) for production installations connected at medium voltage (HTA)⁽²⁾ was finalised in late 2022 and came into effect on 1 January 2023. It takes into account network flexibility and availability, thus allowing a maximum amount of energy to be dispatched while also factoring in operating constraints and public grid maintenance.

“Smart Connection” offer

Since end-2021, Enedis may offer an alternative connection offer with power modulation, also known as the Smart Connection Offer, to all high-voltage producers on request.

Regional plans for the grid connection of renewable energies

Enedis is testing a new method for the scaling of renewable energy Regional Network Connection Plans in real-life conditions at 8 source substations in the Landes and Somme regions, the immediate effect of which has been to free up over 200MW of connection capacity as a result of greater flexibility (ReFlex Project).

Enedis ranked no. 1 in the global Smart Grid Index

For the second consecutive year, Enedis has topped the world rankings out of 80 network operators in the Smart Grid Index (SGI) international benchmark, which assesses how “smart” electricity networks are worldwide⁽³⁾.

3.1.4.2.2 Better management of intermittence, flexibility and storage development

3.1.4.2.2.1 Innovative solutions for load balancing

Customers receiving high-voltage supply are invited to sign up to a load balancing contract, under the terms of which customers reduce their electricity use as requested by EDF in return for compensation.

The EDF group has several load balancing offers, operated by its subsidiary Agregio:

- the “Capacity Commitment” offer allows customers to commit to reducing their power use on terms defined on the basis of their capabilities (time periods, notice periods, etc.);
- the “Load-balancing Bonus” offer available since late September 2022 is more flexible for customers, with a lesser degree of commitment allowing them to consent or refuse to reduce their power use with 2 days’ notice;
- bespoke offers are also made for the most sophisticated industrial and service customers for whom load balancing issues require a tailor-made offering;

3.1.4.2.2.2 Innovative solutions for self-consumption and storage

Storage plan

The storage development strategy launched in 2018 has led to approximately 1.2GW of projects being secured or completed by the end of 2022. In 2022, the Group commissioned battery installations totalling 62MW in Non-Interconnected Zones (NIZs), the UK, and the USA, started construction work on new projects, and expanded the development of projects in the UK and the USA. EDF group storage projects involve pumped-storage hydropower plants (STEPs), hybridisation of batteries with renewable energies, batteries directly connected to the network, and storage with customers.

(1) Scope: Enedis and IES.

(2) Enedis.fr/media/1895/download

(3) www.spgroup.com.sg/sp-powergrid/overview/smart-grid-index

EDF Store & Forecast

The EDF Store & Forecast subsidiary develops and markets smart hardware and software solutions to maximise the value of renewable energy. With these solutions, the subsidiary supports its customers throughout their energy optimisation projects with consultancy, the supply of energy management storage systems and software, and production and consumption forecasting services.

DREEV

DREEV is a joint venture between EDF and NUVVE operating in the field of electric mobility and developing solutions for smart charging, including the two-way vehicle-to-grid (V2G) charging solution. As well as providing electrical charging for compatible vehicles, the solution can also dispatch energy stored in their batteries into buildings when they are parked at a V2G charging station. The technology has been certified by RTE in recognition of its contribution to balancing the electricity system. Indeed, by activating charging or discharging of a large number of batteries in electric vehicles all over the country, DREEV can help adjust the electricity production and consumption balance; this is a first in France.

DREEV is also part of the EVVE project alongside EDF and a consortium of companies. Supported by the European Innovation Fund, which aims to promote innovative decarbonation technologies, the demonstrator is contributing to the goal of carbon neutrality set by the European Union for 2050. With 800 V2G charging stations installed by the end of 2024 providing total storage capacity of 8MW, almost 25,000 tonnes of CO₂ will be avoided during the first ten years of operation of the project.

3.1.4.2.2.3 Using artificial intelligence to promote restrained, effective development

Yxir

Yxir is a new EDF group subsidiary that uses Artificial Intelligence (AI) to allow industrial players to control product and service quality by processing and analysing data from their quality management systems. EDF's aim with Yxir is to address the issue and costs of non-quality in industry, thus improving performance, energy management, and resilience.

Enerbrain

Enerbrain is an Italian start-up that specialises in smart building solutions which was added to EDF Pulse Holding portfolio in 2021. It has developed a solution to optimise energy efficiency in service sector buildings, based on IoT technology incorporating artificial intelligence. Without replacing their existing systems, Enerbrain customers can thus achieve sustainability and digital transformation goals whilst also reducing their energy costs and CO₂ emissions.

Dalkia Analytics

Dalkia Analytics provides an energy and environmental performance coordination service for industrial facilities. Deployed on over 100 sites, the service captures new sources of energy savings by using AI to analyse production and consumption data. It can also be used to support ISO 50001 and decarbonisation certification procedures.

3.1.4.2.3 Technical and financial innovations

One of EDF's goals is to supply sustainable electricity at a reasonable price. Based on its strong public service values, EDF considers that electricity, as an essential asset, must be accessible to all and in all areas. In France, over 20 million homes and 1.5 million businesses have chosen to adopt the regulated sales tariff (*tarif réglementé de vente*, TRV). In an increasingly competitive market in which over 2 million domestic customers have already opted for EDF market offers, the Group has diversified its range to address demand ⁽¹⁾.

Contractual and financial innovations ⁽²⁾ help leverage the affordability of electricity. They include:

3.1.4.2.3.1 Fixed-rate electricity contracts

EDF Entreprises offers customers a single contract and invoice for the entirety of their sites. This "fixed-rate electricity contract" is directed at companies.

3.1.4.2.3.2 Power Purchase Agreement (PPA)

A PPA is an agreement between an electricity purchaser and a renewable-origin electricity producer (which can also be a customer) at a price agreed for the entire duration of the contract. This form of contract encourages the development of renewable energies, and represents an additional commitment on the part of customers to the development of renewable energies alongside Renewable Energy Guarantee of Origin certification. The EDF group subsidiary Agregio uses its expertise to support buyers seeking to commit to this type of contract.

EDF can offer its customers supply contracts that directly incorporate part of the supply via a PPA. For instance, in the energy supply contract entered into with Bouygues Telecom, EDF has included 203GWh of renewable electricity supply between 2022 and 2024, equivalent to the output of six wind farms operated by its subsidiary EDF Renewables. Established for a three-year period, the supply contract thus guarantees that these wind farms will continue to operate after the purchase commitment ends. Agregio, the EDF group subsidiary specialising in the optimisation of renewable energy production, will be responsible for supply via a PPA as part of the overall Bouygues Telecom supply contract.

Another PPA covers some 25% of the electricity requirements of l'Oréal's main sites in France, for a total of 42GWh. This is a direct power purchase agreement entered into with EDF Renewables by virtue of which l'Oréal can benefit from a guaranteed purchase price throughout the lifetime of the agreement.

3.1.4.2.3.3 Financial support

EDF Entreprises' "Energy Savings Bonus" (*prime économies d'énergie*) can help fund renovation and energy efficiency works for equipment and buildings.

3.1.4.2.4 Earning trust through quality of service

The customer satisfaction surveys have been rolled out to all departments and relevant subsidiaries. They allow offers and processes to be adjusted to customer requirements and contribute to continuous improvement action plans.

Domestic customer complaints are treated as opportunities to restore confidence and improve processes. Customer service staff are trained to detect and deal with customer complaints. If a customer is still not satisfied, they can approach the consumer affairs department, where a satisfaction officer becomes their single, go-to point of contact until their complaint is resolved. Complaints analysis allows processes to be improved and handling quality to be maintained.

3.1.4.2.4.1 Customer relations

EDF's customer service quality is acclaimed. More than 9 out of 10 customers are satisfied with their contact with EDF advisers. According to the most recent French National Energy Ombudsman reports, EDF had one among the lowest rate of disputes of any energy supplier in France. Since 2021, EDF became the first energy supplier to obtain Relation Client France certification, awarded to French companies that decide to locate all of their customer service facilities in France. See section 3.4.2.1.4 "Focus on customer service lines of business".

3.1.4.2.4.2 Digital accessibility

EDF & Me: The EDF & Me application is viewed as one of the best on the energy supplier market, with over 16.6 million downloads. Already in 2021, EDF & Me was nominated for a Webby Award. The app is regularly the highest-ranked of all apps made available by energy suppliers.

Turning consumers into engaged stakeholders: The EDF group's action to develop digital resources has provided greater access to information. The rapid rise in the number of consultations of online energy use monitoring platforms illustrates the cultural change underway, even more so in 2022 with the sharp increases in energy costs.

(1) One example is the launch of the "energy sobriety" challenge in 2022 for domestic customers as a market offering: edf.fr/groupe-edf/espaces-dedies/journalistes/tous-les-communiqués-de-presse/edf-lance-un-challenge-sobriete-energetique-pour-ses-clients-particuliers-en-offre-de-marche.

(2) See also section 1.4.2.2 "Activities of the Customer Division".

	2020	2021	2022
Number of customer visits on digital consumption monitoring platforms (in millions)*	73	74.3	157.5

* For the methodology used for this indicator, see section 3.6 "Methodology".

On the basis of recent statistics, almost 6.2 million customers logged on to these solutions at least once during the year. Over 800,000 of them are "hyperactive" users in the sense that they have logged on at least 6 times over the past 6 months. On average, users connected a little over 11 times. Visits are relatively seasonal in nature: consultation spikes are mainly observed in the winter, during periods of cold weather. They are more frequent at the start of the week, between Monday and Wednesday. Two third of visits are via a mobile terminal, nearly a third are from a computer, and 5% from a tablet. During each visit, users view 12 pages on average, for an average period of 2.5 minutes (nearly 4 minutes when using a computer and 2 minutes when using a mobile phone).

3.1.4.3 Developing efficient, low-energy, innovative energy services

The development of different uses of electricity and their expansion constitute a major source of leverage to assist customers towards carbon neutrality. With this in mind, the EDF group has committed to developing a broad range of offers suitable for different markets ⁽¹⁾.

3.1.4.3.1 Decarbonisation solutions for housing

The new legislation will come into effect on 1 January 2022 for new residential houses and apartments, as well as for office buildings and educational establishments. EDF is fully persuaded of the urgent need to make the construction industry low-carbon through electrification and the promotion of virtuous heating networks; it took part in all the consultation sessions organised by the authorities. Going forward, support for the various outstanding issues is required, in particular life cycle analysis, more especially for heat pumps, and in respect of questions relating to certification, a pressing concern at present. Of note is the fact that the development of different uses of electricity is not being accompanied by a sharp increase in demand, because insulation and the use of high-performance heating and sanitary hot water solutions such as heat pumps results in measured demand, compatible with the expected push for energy sobriety.

Decarbonisation solutions for customers in houses and apartments (including insulation, heat pumps, thermodynamic and solar-powered water heaters, and water consumption and energy management solutions) are developed by EDF and its affiliates ⁽²⁾.

3.1.4.3.1.1 Energy renovation

EDF's local services platform IZI by EDF is constantly expanding its high-performance energy renovation offering, supporting consumers and retailers in the energy transition. Offers in its new range now include externally mounted wall insulation, air/heat pumps, etc.

3.1.4.3.1.2 Heating and hot water

The IZI Confort group is present throughout France with a workforce of over 1,000 people providing installation, maintenance and repair of heat pumps, boilers, and other heating and hot water equipment.

3.1.4.3.1.3 Maintenance, repairs, and installation

The Cham group operates nationwide in France, providing maintenance, repairs, and installation of boilers and heat pumps. Cham is redirecting its aim towards becoming the leading specialist in heating and hot water solutions ⁽³⁾.

3.1.4.3.1.4 Leader in self-consumption in France

The EDF ENR subsidiary enables customers to use the energy generated by their own solar panels and store some of it for use when needed. The solution enables customers to maximise their self-produced energy rate, monitor their energy use online in real time, meaning they can control their energy spending (see section 1.4.1.3.3 "EDF Renewables activities"). EDF ENR is a leader in the domestic segment with market share covering over 20% of installations of less than 9kW.

3.1.4.3.2 Decarbonisation solutions for industry

3.1.4.3.2.1 Decarbonisation consultancy

In 2022, the EDF group launched a decarbonation consultancy offering consisting of Décarb'On (destined for SMEs and LEs) and Décarb'On Expert (for Large Enterprises and Major Account customers). This allows the EDF group to support these customers in the review and analysis of their Scope 1, 2 and 3 carbon emissions, the definition of targets, emissions reduction strategies, and the implementation of an operational roadmap for the actions to be put in place. The EDF group positions itself as a leader in decarbonation.

3.1.4.3.2.2 Process electrification

The priority for the decarbonisation of industry involves switching from fossil-fuelled heating to mature electrical solutions. EDF is deploying high temperature and very high temperature industrial heat pumps for its customers, as well as resistance furnaces, conduction furnaces, infrared furnaces, induction and arc furnaces (to replace fuel oil or gas), and mechanical steam compression.

Transpac Very High Temperature Heat Pumps (PAC THT)

Dalkia was responsible for the first turnkey installation of a transcritical heat pump for paper manufacturers WEPA Greenfield SAS. This heat pump uses technology patented by EDF R&D to recover heat from the moisture given off by the paper machine, allowing energy savings of 4.6GWh per year and annual reduction of CO₂ emissions totalling 1,000 tonnes. Dalkia has also been entrusted with operation and maintenance of the installation for a period of 5 years.

3.1.4.3.2.3 Low-carbon heat

Dalkia is a leading player in low-carbon heat. The EDF group was the successful bidder for a number of boiler projects to replace fossil fuels with biomass as part of the French post-pandemic recovery plan.

Biomass boilers

With Swiss Krono France, Dalkia and Meridiam are finalising the conclusion of the Green Energy project. This major undertaking will make it possible to replace almost all of the gas used at Swiss Krono France's manufacturing facility in Sully-sur-Loire by biomass obtained from the production process. The target is to avoid 35,000 tonnes of CO₂ fossil fuel emissions per year whilst also improving productivity. The Green Energy project has received €3.8 million of support as part of the France Relance plan and €11 million from French research agency ADEME's BCIAT decarbonation programme.

3.1.4.3.2.4 Energy efficiency

Aerofreecooling

At STMicroelectronics' site in Rousset, the customer's energy use has been reduced by Dalkia implementing an "aero free cooling" system to produce cold water, replacing five chillers with energy recovery. Total energy reduction is expected to be 4,500MWh per year, an improvement of 20% compared to the initial installation.

(1) For France, see also section 1.4.2 "Sales and supply activities in France".

(2) See also the "My sustainable heating" (*Mon chauffage durable*) offer in section 3.3.4.2 "Combating energy poverty".

(3) See also the "Solution Dépannage Confiance" (Reliable Repair Solution) offer in section 1.4.2.2.1 "Residential customers", more especially "Features and services".

Compressed air

Dalkia Air Solutions is working with Triniture to develop its vegetable processing and freezing facility in Blaringhem, Nord (France). For Triniture, the teams suggested a responsible solution geared to the food industry that uses food grade oil and incorporates a compressed air generator, together with the construction of an air network for the production area.

3.1.4.3.2.5 Full-scope support Stellantis

As the energy supplier for over 150 PSA sites, EDF is helping the carmaker identify sources of energy savings, in particular by implementing an energy performance plan.

EDF subsidiaries are assisting PSA as it improves its energy performance and decarbonises its practices:

- Dalkia: in Charleville-Mézières, Dalkia is recovering waste heat from Stellantis factory furnaces and reinjecting it into the district heating network. Dalkia is providing support to six PSA sites as they address issues relating to the supply and recovery of heat and connection to local heat networks, as well as providing a variety of other technical services;
- Perfesco: identifying every possible avenue for energy optimisation, ranging from lighting to process equipment, for a number of PSA sites and projects in France and elsewhere. This redesigning is generating energy savings of over 10GWh per year;
- IZIVIA: Stellantis has chosen IZIVIA to equip the carmaker's office and industrial sites with charging stations in eight European countries.

3.1.4.3.3 Decarbonisation solutions for agriculture

To support the sector as it combats climate change, the EDF group has introduced offers such as the installation of solar panels, the production of electricity and heat using biogas, the improvement of agricultural equipment energy efficiency, the heating of environmentally-friendly greenhouses by recycling household waste, and the use of a hydrogen fuel cell to power milking machines.

Pulse, the new Innovation Division of the EDF group (DIPP) whose remit includes developing the strategic framework for innovation vectors and key projects, has studied the issues facing the food industry. To do so, it has produced analysis to prepare the way for a new approach to agriculture depending on the type of farming and food production concerned (pre-targeting) and the type of action in question (efficiency, decarbonation, local power production, financing).

3.1.4.3.4 Decarbonisation solutions for the tertiary sector

The EDF group offers customised services to companies and professionals that wish to optimise their energy flows to improve their economic performance and reduce their environmental footprint.

Developing heating and cooling networks

The Futuroscope theme park has set itself the ambitious target of becoming carbon-neutral by the end of 2025. To support it in this project, it has enlisted the services of its historic partner Dikeos, a subsidiary of the Dalkia group, for the design, construction and operation of a virtuous heating and air conditioning network. New heating and cooling installations using renewable energy will be introduced from 2025, further "greening" the theme park's energy mix. This holistic environmental approach will reduce the park's CO₂ emissions by some 3,500 tonnes annually. Ultimately, Futuroscope's environmental programme and the energy performance improvement works will result in an 80% reduction in its greenhouse gas emissions; the remaining 20% will be stored in carbon sinks. By the end of 2025, the park will no longer use any fossil fuels.

Energy efficiency decarbonation solutions for healthcare

Dalkia and the Medeos group have entered into an energy performance agreement (*contrat de performance énergétique*, CPE) for around ten nursing homes. There are several strands to the agreement: performing a technical audit of each nursing

home; setting up decision support software to refine the choice of energy performance actions; handling funding request applications in relation with energy savings certificates (*certificats d'économie d'énergie*, CEE) and a suite of optimisation works. Overall, potential energy savings of 20% for the Medeos group are forecast.

3.1.4.3.5 Decarbonisation solutions for local authorities

The EDF group is extensively engaged in the energy transition as it applies to cities and local authorities.

Virtuous heating networks using heat recovery: Maubeuge

To provide the town of Maubeuge with a responsible and economically viable heating solution, Dalkia teams have implemented the recovery of fatal heat from the existing energy-from-waste facility, dispatching it into a district heating and sanitary hot water network. The result is 83% renewable and recovered energy (R&RE) in the network's energy mix and 10,100 tonnes of CO₂ avoided every year.

Bois Energie provides a 100% renewable energy heating network for Lunéville

The town of Lunéville entrusted Dalkia with the construction and operation of its future district heating network, wholly powered by renewable wood energy. This is a first in France for a heating network of this size. An 8.5MW biomass boiler will be built for the project; it will use almost 16,000 tonnes of wood energy in the form of wood chips from forests within a radius of less than 100km.

This district heating network is helping the town ramp up its fight against global warming and energy poverty and bring down atmospheric emissions, with over 8,000 tonnes of CO₂ avoided each year.

The €21.8 million investment will be overseen by Dalkia, with French research agency ADEME's Heating Fund contributing €6.9 million.

Energy and environmental performance of lighting

In Paris, Citelum France, a subsidiary of Dalkia Electrotechnics, has won a contract with Paris City Council in a consortium with Eifage Energie Systèmes Ile-de-France for street lighting, traffic lights and illuminations worth €704 million in total; to date, this is the largest such contract awarded in this field in France. The contract is designed to improve structural quality, performance, and resilience of the city's installations, with a 30% reduction in public lighting energy use and a total of 240GWh in energy savings.

Collective self-consumption

EDF is developing its service offering for collective self-consumption with the Communitiz digital platform, dedicated to collective self-consumption operations. This facilitates the integration of renewable energy projects and optimised sharing of energy produced for self-consumption at local level within a single building (such as social housing or condominiums), for multiple buildings (such as local authority built assets) or facilities (such as heating networks), or for local stakeholders such as companies in a business park.

3.1.4.3.6 Decarbonisation solutions for transport

3.1.4.3.6.1 Goals of the electric mobility plan

With the electric mobility plan, launched in October 2018, EDF is aiming for a 30% market share in the supply of electricity to electric vehicles in the Group's four major markets (France, the United Kingdom, Italy and Belgium), the deployment of 400,000 charging points and the operation of 20,000 smart charging points by 2023. By the end of 2022, the EDF group had deployed nearly 270,000 charging points, including over 230,000 in the UK and almost 25,000 in France, as well as 17,000 smart charging points.

3.1.4.3.6.2 Development of recharging infrastructure

As part of the electric mobility plan, the EDF group provides a full-scope range of offers for every type of use: residential customers in houses and flats, companies, and local authorities.

Izivia Réseaux

Izivia, a French market leader, is one of the leading operators of charging stations network.

In 2022, Izivia won major calls for tender for the rollout of charging stations on sites open to the public:

- the sole player listed nationally by the Mousquetaires supermarket group;
- QPark, for the installation of 4,000 charging stations.

Izivia has also launched the Izivia Express project, a new national network of over 300 50kW-150kW fast charging stations covering the whole of France and targeting high-traffic areas in particular.

Services supporting the advanced management of charging devices

With the support of the European Innovation Fund, which seeks to promote innovative low-carbon technologies, the EDF group will be deploying 800 two-way Vehicle-to-Grid (V2G) charging stations across Europe and more particularly in France. Dubbed EVVE for Environmental Valorization of Virtual Electricity storage, the project will highlight the contribution of V2G to the decarbonation of transport and the promotion of low-carbon energy.

Solar power and charging stations

EDF, ENR and Izivia offer an integrated solution to companies and local authorities to install solar canopies fitted with charging stations.

IZI by EDF

EDF's local services platform IZI by EDF installs charging solutions for small business premises, private homes and blocks.

United Kingdom

Pod Point, a leading charging solutions provider for domestic customers in the UK, has continued to expand in 2022 with growth in sales of 65% between H1 2021 and H1 2022. Pod Point is thus helping the EDF group achieve its targets.

3.1.4.3.6.4 EDF's commitment for its vehicle fleet (EV100)

The EDF group is the first French group to sign the "EV100", which aims at having a fleet of 100% electric light vehicles by 2030. This project covers almost 45,000 vehicles and charging infrastructures on almost 2,000 sites worldwide, around 56.3% of which had already been equipped by the end of 2022.

EV100 commitment	2030 target	2020	2021	2022
Proportion of electric vehicles in the EDF group's light vehicle fleet (in %)*	100	12.2	17.3	22.6

* For the methodology used for this indicator, see section 3.6 "Methodology".

Electrification is clearly visible across the whole of the EDF group with significant levels of electrification by the end of 2022 at Luminus (35%) and EDF (36.6%), as well as 22.5% in the UK and 11.9% in Italy.

3.1.4.3.7 Focus on hydrogen solutions ⁽¹⁾

The use of renewable hydrogen and low-carbon electrolytic hydrogen is an essential tool to decarbonise sectors for which direct electrification is not possible. Such sectors include refining, chemicals, and heavy-duty transport. In 2019, EDF created Hynamics, a new fully-owned subsidiary, with the aim of becoming a leading producer of low-carbon hydrogen through electrolysis of water. Hynamics markets

United States

The September 2019 acquisition of PowerFlex Systems (PowerFlex), a pioneering company in the field of electric vehicle charging technologies, based in Los Altos in California, enables the creation of a unique decentralised energy ecosystem combining smart charging solutions for electric vehicles or building energy charging solutions, as well as solar energy production and storage systems.

3.1.4.3.6.3 Partnerships

Since 2018, a number of partnerships have been developed with stakeholders in the sector (manufacturers, equipment manufacturers, leasers, leasing companies, charging station manufacturers) to propose custom electric mobility solutions. The new partnerships entered into in 2022 were:

IVECO, Pod-Point and Izivia

Preferred partners of IVECO Pod Point and Izivia have entered into an agreement for the supply of charging solutions on the manufacturer's sites and for its customers.

Nissan and IZI

Nissan has chosen IZI by EDF for the supply and installation of electric vehicle charging solutions for its domestic customers.

Renault Mobilize and Sowee

Renault Mobilize & Sowee have joined forces to provide owners of Renault electric vehicles with an innovative supply offering that brings down charging costs using smart home charging.

decarbonation solutions based on hydrogen for industry and transport, both sectors that emit large quantities of CO₂ for which decarbonation via electricity is more difficult or impossible (refining, the chemicals industry, buses, trains, river and sea ferries, aerospace). Based on its investor and operator/maintainer model, it offers turnkey solutions to its customers in France and more generally in Europe. For details of action undertaken in this respect, see section 1.4.6.3 "EDF's Hydrogen Plan".

(1) Currently, 95% of hydrogen is manufactured using fossil fuels; since this process generates CO₂, it is referred to as "grey" hydrogen. Hydrogen (H₂) can either be created from methane by means of steam reforming, or by splitting a water molecule (H₂O) by electrolysis, i.e. by means of an electric current. Hydrogen is considered to be "green" if the electrolysis in question is produced by renewable energy, or low-carbon energy if it is produced using nuclear electricity. "Green" or "low-carbon" H₂ is thus an attractive way of decarbonising sectors in which direct electrification is not possible. Such sectors include refining, chemicals, and heavy-duty transport.

3.2 Preserving the planet's resources

EDF is committed to limiting its environmental footprint throughout the life cycle of its facilities and activities by optimising the use of natural resources. The four main CSR commitments identified in this set of issues concern biodiversity, responsible land management, integrated and sustainable water management, the circular economy and waste management.

89%

ACT4NATURE ACHIEVEMENT RATE

40%

INNOVATIVE LAND SOLUTION IMPLEMENTATION RATE

0.83l/kWh

WATER INTENSITY

88.4%

ANNUAL RATE OF CONVENTIONAL WASTE FOR RECOVERY

Nature (land, water, air) is home to "environmental assets" comprising living and non-living natural elements. Ecosystems are an important part of these assets and enable the provision of ecosystem services, such as fresh water supply. The Company has both positive and negative impacts on nature. Short-term impacts on nature can lead to changes in the quality and resilience of environmental assets, which in turn give rise to medium- and long-term risks for organisations due to their

reliance on those assets. This is the subject of the four upcoming sections (3.2.1 "EDF's Nature issues, commitments and governance"; 3.2.2 "Biodiversity and responsible land management"; 3.2.3 "Integrated and sustainable water management"; 3.2.4 "Radioactive and conventional waste, and circular economy").

3.2.1 EDF's Nature issues, commitments and governance

The Group's or EDF's policy guidelines regarding the preservation of natural resources are based on an analysis of physical and transition risks, and take the form of public commitments ⁽¹⁾.

3.2.1.1 Physical and transition risks related to nature

The Group organised an assessment of "Nature" issues along the full value chain, including upstream and downstream from its activities (scope 3).

This biodiversity risk assessment, carried out using the double materiality method on dependencies and impacts, was based on the ENCORE database (Exploring Natural Capital Opportunities, Risks and Exposure). The main issues concern not only operations but also activities upstream from the EDF group value chain, particularly fuel and material supply operations, which feature dependency issues relating to nature (resources, regulation services) and pressures (e.g. on ecosystems and water resources). It appears from the risk materiality assessment (physical and transition risks) that risks are correctly identified and covered with some room for improvement.

3.2.1.1.1 Physical risks

Risk category	Description	Potential impacts for the EDF group
Risks related to extreme events	Decline in water resources due to increased severe droughts	Production: drop in generation capacity for hydro and nuclear power in connection with the orders regarding prevention of effluent discharge.
	Increase of strong wind events, storms, tornados and floods	Production: degradation or even temporary stoppage of production resources, impacts of more frequent and more intense abnormal natural events (floods, storms). Transmission and Distribution: slow down or power outages
Risks related to chronic events	Scarcity of natural resources (metals, minerals)	Risks: Difficulties in sourcing the resources needed to build new energy infrastructure (production, transport and distribution) and to maintain it, rising costs. Opportunities: Increased resource efficiency <ul style="list-style-type: none"> ● Optimisation of land resources (recycling of industrial land, rooftop solar PV, agrivoltaics and floating solar PV) ● Ecodesign and sustainable procurement

(1) See section 3.2.1.2.1 "Nature commitments for 2020-2022".

3.2.1.1.2 Transition risks

Risk category	Description	Potential impacts for the EDF group
Political and regulatory risks	Tension over uses of water	Risk involved in the sharing of water resources due to multiple uses and multiple stakeholders in a context of increasing water scarcity. Regulatory constraints on water flows/withdrawals (particularly in periods of water stress – resource sharing) Risk of an increase in the water agency fee. Water reuse: additional requirements for reuse of industrial wastewater (additional cost). Risk of restriction of operating permits and increase in litigation.
	Tension over access to land and use of soils	Risk associated with access to land and use of land required for renewable energy resulting from regulations (ZAN) ⁽¹⁾ and sharing for different uses. Risk of increased pressure on land belonging to the Group by external players (notably local authorities).
	Enhanced environmental regulation of mineral resources (e.g. restricting access by defining protected areas)	Difficulties in sourcing the mineral resources needed to build new infrastructure, manufacture modules/turbines (PV/wind) and uranium and gas fuel.
	Environmental regulatory developments	Regulatory compliance of the Group's facilities
	Enhanced REACH regulations	Difficulties in the supply of essential chemicals and production stoppages.
Market risks	Access to competitive financing	Risk in case of failure to adapt to the TNFD ⁽²⁾ or to the future CSRD ⁽³⁾ reporting regulation. Opportunity to provide the EDF group with sustainable financing (Green Bonds, positive incentive loans).
Reputational risks	Environmental impact of projects and uncontrolled media impact	Difficulties in developing new projects which are being challenged in public debates

3

3.2.1.2 The Group's public commitment

The EDF group has a long-standing commitment to minimising the impact of its activities on biodiversity ⁽⁴⁾ through a dedicated policy. This goal is currently reflected in the Group's participation in two schemes: "Entreprises engagées pour la nature" (EEN) and "Act4nature International".

3.2.1.2.1 Nature commitments for 2020-2022

Nature Commitments for 2020-2022	In France: the "EEN" (<i>Entreprises engagées pour la nature</i> , i.e. companies committed to nature) initiative organised by the OFB (<i>Office français de la biodiversité</i> , i.e. French biodiversity office).	Commitment themes: Reducing the contribution to IPBES pressure factors ⁽⁵⁾ ; protecting and restoring natural areas, strengthening and sharing scientific knowledge; awareness raising and governance.
	Internationally: Act4nature International initiative set up by the French non-profit EpE (<i>Entreprises pour l'environnement</i> , i.e. Enterprises for the Environment).	

These commitments cover several Group business lines, various geographical regions, and the scope of operational activities with biodiversity issues.

3.2.1.2.2 Environmental footprint

Methods testing

EDF is committed to protecting the planet's natural resources and strives to have credible and recognised biodiversity footprint tools to quantify its performance and to engage in dialogue with stakeholders, the general public and the financial world.

As part of the Production Environmental Footprint (PEF) R&D project launched in 2021, one approach has been to select and test the Product Biodiversity Footprint (PBF) method involving experts in life cycle assessment (LCA) and ecological fields, while at the same time participating in its development. Through an application case study that assessed and compared the potential impacts on biodiversity of the life cycle of Photovoltaic (PV) kWh of electricity generation and Gas (GCC) kWh of

electricity generation, the work made it possible to introduce the method to the power generation sector, to test its robustness and to ensure appropriate developments for this sector.

In 2022, the PEF project was associated with the RECORD association's study on the biodiversity footprint of companies through the mapping of different evaluation methods and the development of a decision support module.

This work, supplemented by active monitoring and other test case studies, particularly at the site level, aims to define, in collaboration with the business lines, a company's position on credible biodiversity LCA indicators with the aim of continuously improving its environmental management.

In 2022, EDF tested two methods on nuclear and thermal sites: the Global Biodiversity Score (GBS) and the Product Biodiversity Footprint (PBF).

(1) Zero net land development.

(2) Taskforce on Nature-related Financial Disclosure (TNFD).

(3) Corporate Sustainability Reporting Directive (CSRD).

(4) In 2006, EDF adopted a policy to promote biodiversity (provide a reference, such as a public press release).

(5) IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

SBT for Nature (SBTN)

EDF is mindful to use a science-based action methodology and, along with a collective of French businesses, is testing the first stages of the SBT for Nature method. A report on these works has published by the collective in 2022 ⁽¹⁾.

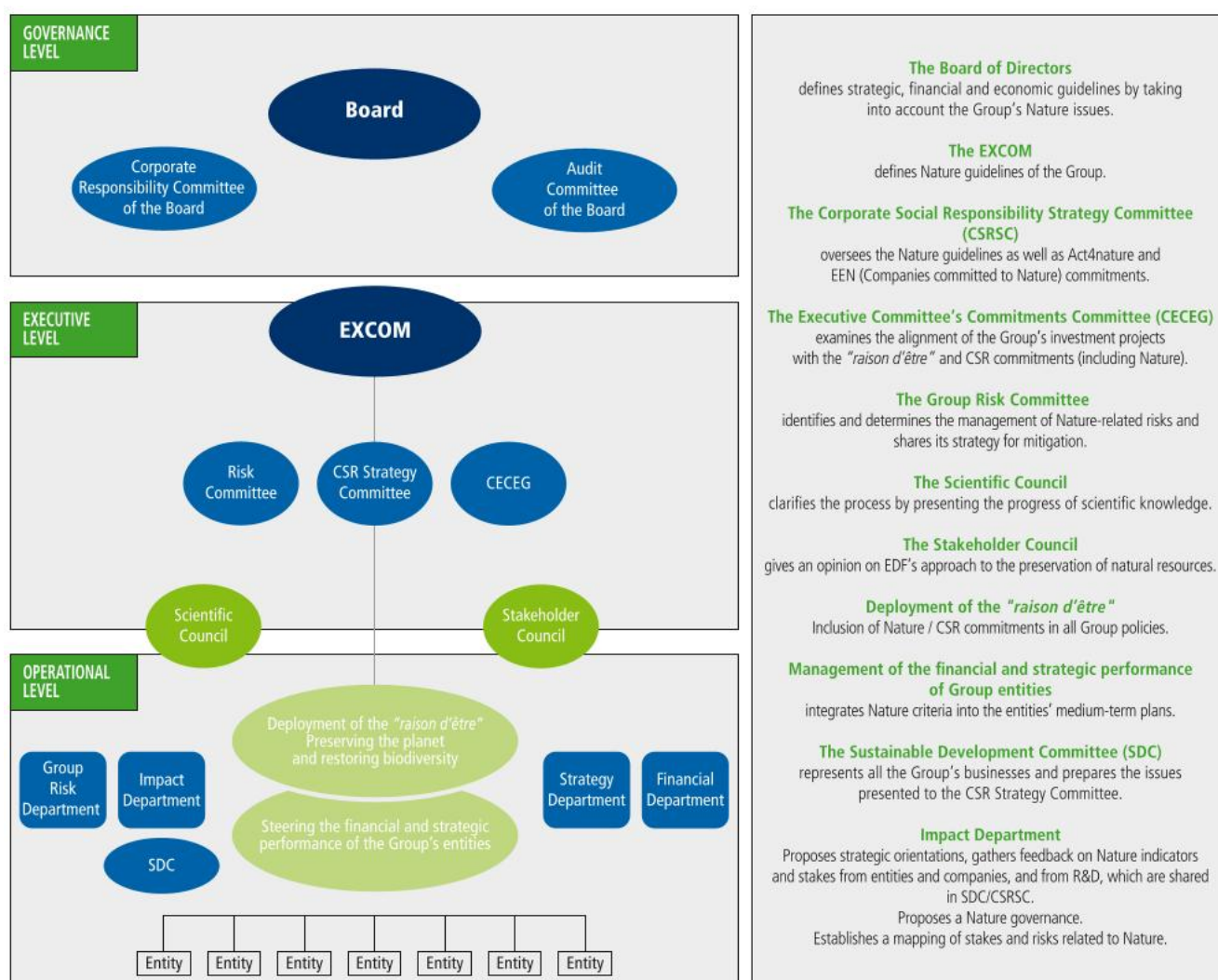
3.2.1.3 Governance

In 2022, EDF group formally established nature governance and dialogue with stakeholders in the field.

3.2.1.3.1 Governance bodies

The EDF group's Nature governance forms part of its sustainable development governance (see section 3.5.2 "CSR governance bodies"). This is supervised, in accordance with the independent management of the network's infrastructure managers, at the top Group-level.

3.2.1.3.2 Nature governance mapping



At the operational level, nature-related risks are integrated into the Group's Environmental Management System (ISO 14001 standard) (see section 3.5.4.2 "Environmental Management System (EMS)").

3.2.1.3.3 EDF's attendance of the Taskforce on Nature-related Financial Disclosures (TNFD) Forum

In 2021, EDF's attended the Taskforce on Nature-related Financial Disclosures (TNFD) Forum, which aims to provide better information enabling financial institutions and businesses to take account of nature-related risks and opportunities in their strategic planning, risk management and asset allocation decisions.

(1) <https://www.bl-evolution.com/publication/science-based-targets-for-nature-retours-dexperience-de-la-phase-pilote/>

TNFD

EDF took part in a cross-company pilot project in 2022 designed to assist in the development of the TNFD requirements.

Green Bonds

For a full discussion on the use of Green Bonds for natural resource conservation purposes, see chapter 6.7 of the URD.

3.2.1.3.4 Certifications

Several certification systems have been set up at national or local level, such as the AFNOR NFX 32-001 standard covering the biodiversity approach of organisations.

AFNOR NFX 32-001

EDF La Réunion is AFNOR-certified for all its in-situ activities, except for post-operating activities.

"Positive biodiversity project" standard

The Saint Romain en Gal photovoltaic project (Rhône) was certified as a "Positive biodiversity project" via the *Rives du Rhône* (i.e. banks of the River Rhône) SCOT (*schéma de cohérence territoriale*, i.e. territorial coherence plan).

3.2.1.3.5 Enhancing dialogue with stakeholders

Dialogue with biodiversity stakeholders is based on setting up partnerships and taking part in relevant think tanks. This is supplemented with in-field dialogue with local bodies.

3.2.1.3.5.1 Partnerships

Partnerships make up a significant share of the actions carried out in favour of biodiversity.

Nationwide (France)

The Group prioritises the Company's historic partners and major players in the sector: MNHN (*Muséum national d'histoire naturelle*, i.e. National Natural History Museum), LPO (*Ligue pour la protection des oiseaux*, i.e. League for the Protection of Birds), French Committee of the IUCN (International Union for Conservation of Nature), FCBN (*Fédération des conservatoires botaniques nationaux*, i.e. Federation of National Botanical Conservation Bodies), FCEN (*Fédération des conservatoires d'espaces naturels*, i.e. Federation of Natural Site Conservation Bodies), INRAE (*Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture*, i.e. National Institute for Scientific and Technological Research for the Environment and Agriculture) and IFREMER (*Institut français de recherche pour l'exploitation de la mer*, i.e. French Research Institute for Exploitation of the Sea). These partners meet as a group every two years to scrutinise EDF's commitments on biodiversity.

At the local level

Locally, more than hundred partnerships aim to help sites in their approach conducted in favour of biodiversity. The partnership with the FNPF (*Fédération nationale de la pêche en France*, i.e. National Federation of Fishing in France) continues through the financing and management of actions in favour of aquatic environments (one framework agreement and nearly 50 local agreements with departmental federations). Numerous actions are also carried out within the nuclear fleet in partnership with local players.

3.2.1.3.6.2 For the general public

Via its Foundation or business lines, the Group supports biodiversity-related philanthropic actions.

For example:

- the Civaux nuclear power plant signed two agreements with the CEN Nouvelle Aquitaine and the CPIE Val de Gartempe concerning the implementation of a voluntary management plan to preserve the remarkable biodiversity of the Font d'Orveau, a 30-hectare land reserve that is part of the Civaux nuclear power plant that has undergone very little modification by man over the past 30 years;
- the Saint-Laurent CNPE signed an agreement for testing differentiated management on a pilot site with the *Hommes & Territoires* association, which is responsible for the regional implementation of the National Plan for Pollinating Insects and Pollination in the Centre-Val-de-Loire region.

United Kingdom

EDF is one of the 5 companies to have met the Wildlife Trusts' Biodiversity Benchmark. EDF has been collaborating for more than 20 years with the Suffolk Wildlife Trust in Sizewell, the Lancashire Wildlife Trust in Heysham, the Wildfowl & Wetlands Trust in Hinkley Point C and with the Romney Marsh Countryside Partnership in Dungeness.

3.2.1.3.5.2 Think Tank

EDF has regular discussions with think tanks like OREE ⁽¹⁾, EpE ⁽²⁾, CILB ⁽³⁾ WRI ⁽⁴⁾, RECORD, and the working group of CDC *Biodiversité* ⁽⁵⁾ for the definition of the global biodiversity score.

3.2.1.3.5.3 Local governing bodies

The EDF group is involved in local biodiversity governing bodies, such as: River Basin Committees, River Committees and Regional Biodiversity Committees in France. It develops a policy for cooperation with non-profits, scientific organisations, and institutions.

3.2.1.3.6 Training and awareness raising

3.2.1.3.6.1 For the employees

For nature, environment and sustainable development training in general, see section 3.3.3.6.6 "Skills development in the area of sustainable development".

The EDF group is setting up an awareness and training programme for its employees to improve its business practices in light of biodiversity issues. Each company manages its own training and awareness-raising activities, which are often in partnership with naturalist associations. From 2020 to 2022, the health crisis did not always make it possible to hold the training courses initially planned in person. However, this context fostered the use of collaborative tools and accelerated the use of digital tool for remote training. These new methods make these awareness-raising and training activities accessible to a larger number of employees and enable a more diverse audience to be reached. An e-learning course presenting the environmental issues of the Nuclear Fuel Division (DCN) was designed to provide employees with the means to challenge suppliers and service providers on their knowledge on environmental and biodiversity issues.

Eight business line-specific guides have been produced, describing. They describe the biodiversity issues specific to their operational activity, highlight regulatory changes, explain the terms and conditions of partnerships agreed by the businesses, and give examples of replicable actions.

Based on a concept similar to the "Climate Fresk" (see section 3.1.3.5.2 "Innovation and collective intelligence focused on climate action"), the "Biodiversity Fresk" raises awareness of the causes of biodiversity erosion. The goal of providing training for or raising awareness among 1,000 employees on the theme of biodiversity by the end of 2022 ⁽⁶⁾ was exceeded.

(1) oree.org/objectifs-et-missions.html
(2) epe-asso.org/
(3) cilb.fr
(4) World Resources Institute.
(5) cdc-biodiversite.fr
(6) Taken with Act4NatureInternational.

3.2.2 Biodiversity and responsible land management

3.2.2.1 Group action

3.2.2.1.1 Reducing the activities' contribution to major pressure factors

Most of the pressures applied to biodiversity are strictly governed by regulations. The IPBES report in 2019 identifies five major pressure factors: changing use of land and sea, overexploitation of resources, climate change, pollution and invasive alien species. EDF group has developed its action programme to limit its impact on each of these factors.

3.2.2.1.1.1 Changing land and sea uses

All segments included

PMO doctrine

The Group applies the principles of the mitigation hierarchy ⁽¹⁾ or the regulations of the country where it is located, if these are more stringent (particularly in Europe). Group companies apply the PMO (Prevent, Minimize, Offset) hierarchy for all projects and facilities in operation ⁽²⁾. The environmental and societal impact assessments are completed prior to projects, pursuant to the current regulations and best practices (such as IFC Performance Standards if they are more restrictive).

Projects

For its new projects, the Group optimises its footprint and positions new industrial developments preferably on sites that have been subject to soil artificialisation. Appraisal and site restoration operations are carried out by the Group's internal engineering entities with the assistance of external service providers. Regarding investment decisions, 100% of the projects presented to the CECEG ⁽³⁾ are screened for risks related to biodiversity.

Structures currently in operation

Impacts of structures currently in operation, in particular nuclear structures, on the environment and biodiversity are the subject of monitoring conducted by EDF teams and scientific organisations such as IFREMER or IRSN.

Offsetting proposal

The EDF group conducted an experiment in the Isère department on the offsetting proposals with the "Initiative Biodiversité Combe-Madame" ⁽⁴⁾ non-profit organisation and key community players. The experiment came to an end with the presentation of the project to the stakeholders in 2021. Dialogue on the actions that could be jointly carried out in the future on this site of both ecological and scientific interest is continuing.

In the field of centralised production systems

Nuclear and traditional thermal sector

Mapping and zoning of land areas for industrial use are systematically carried out on nuclear and thermal facilities in France. In the context of the post-Fukushima works, the built-up areas for the 56 buildings housing the emergency diesel generators are located on existing land take. The EPR under construction in Flamanville stands alongside the pre-existing Flamanville 1-2 facilities.

The land strategy put in place at the DPNT (Nuclear & Thermal Fleet Department) assists with the conversion of old thermal sites for new industrial uses. Two old thermal power plant sites were converted into EDF Renewables photovoltaic plants: the zone of the old plant block of the former Ambès plant (Gironde) and a damaged

area of the old Artix plant (Pyrénées-Atlantiques). Construction on the Ottmarsheim PV Farm (Haut-Rhin) began in 2022.

Sobriety and recycling of rehabilitated land

To meet its industrial needs, EDF must have access to land without increasing soil artificialisation. This is why its land strategy is driven by the need for sobriety and recycling of rehabilitated land. Therefore, EDF is committed to monitoring the level of soil waterproofing during the conversion of former continental thermal sites in order to limit it in the long term.

Therefore, in 2020, a first assessment of waterproofed land was carried out based on waterproofing rate data from the Corine Land Cover database ⁽⁵⁾. Approximately 20% of this land is estimated to have a waterproofing rate of over 50%. In 2021, works continued to compare options to assess land takes on thermal land undergoing conversion. Studies were carried out on different decommissioning activities at old thermal plants to identify operations liable to have a positive impact on the level of soil waterproofing (removal of coverings, backfilling). Exploratory R&D works were begun in partnership with BRGM ⁽⁶⁾ to carry out an initial assessment on a site of soil functions after rehabilitation (rehabilitation based on a management plan approved by the administrative authorities).

In 2022, EDF continued to implement its commitment:

- taking into account the feedback from the decommissioning of several legacy thermal power plants, which led to the initiation of a process of capitalising on and banking data on the soils following these operations (in order to better qualify their impermeability in the context of new projects);
- R&D is undertaking thesis work in partnership with BRGM, the University of Lorraine and the Insa Centre Val de Loire (in order to develop a methodology for assessing soil functionality in different contexts).

Removal of waterproofing

Three sites can be considered to have had their waterproofing freshly removed in 2022: temporarily, 8ha of the old coal storage yard at Vitry sur Seine power plant (Seine-et-Marne); permanently, nearly 10ha of the old Ambès thermal power plant (Gironde) reconverted into a photovoltaic plant; and approximately 4ha at the old Artix thermal power plant (Pyrénées-Atlantiques) reconverted into a photovoltaic plant.

Hydropower sector

Hydropower facilities can affect ecological continuity in aquatic environments. The Group has implemented over 260 schemes to facilitate fish migration on sites with ecological implications (specifically on listed waterways). These include dam crossing facilities (such as "fish passes"), dismantling of trapping/transportation river weirs and targeted turbine shutdowns.

Poutès

This project allows access to spawning grounds upstream from the structure that are home to 47% of the Allier basin's spawning salmon, i.e. the majority of the Loire basin's spawning pool ⁽⁷⁾. Between 2020 and 2022, in addition to local press events and a visit for the national press, the project set up an environmental monitoring system shared with the partners. This monitoring is organised and set out in the concession's water regulations, defined by decree in 2021 ⁽⁸⁾. This monitoring is discussed each year by the Scientific Committee for Fish. After the dam is commissioned at the beginning of 2022, the restoration of continuity, made possible in the spring by the structure's transparency, will be monitored using innovative techniques previously defined and included in the concession's water regulations: monitoring by acoustic camera, telemetry, genetic analysis, etc.

(1) Principles based on Performance Standard 6 of the International Finance Corporation (IFC, a World Bank organisation) dedicated to Biodiversity Conservation and Sustainable Management of Living Natural Resources.

(2) The French biodiversity law of 2016 requires companies to implement offsetting measures regarding harm to biodiversity designed to avoid a net loss, and, preferably, even make a net gain in biodiversity

(3) Group Executive Committee Commitments Committee (CECEG)

(4) ecologie.gouv.fr/sites/default/files/ERC%20-%20Exp%C3%A9rimentation%20Combe%20Madame.pdf

(5) Biophysical inventory of changing land cover in 44 classes

(6) Bureau de recherches géologiques et minières (Geological and Mining Research Bureau BRGM)

(7) Expertise saumon – Barrage de Poutès pour MEEDDAT, Jean-Claude PHILIPPART, FNRS/Université de Liège: rivernet.org/general/dams/decommissioning_fr_poutès/pdfetdocs/20091104_Rapport_Philippart_complet.pdf

(8) See Annex 3 of Order No. BCTE/2021-124 of 15 October 2021

Romanche-Gavet

This project significantly improves the state of the Romanche valley's natural and aquatic environments. It consists of replacing six old power plants and five old dams with a new dam and a new, more efficient underground power plant. The new dam is equipped with an upstream and downstream fish and sediment ladder. Until 2024, the project is continuing with the decommissioning of the dams to allow fish to move freely, taking account of the river's specific hydromorphological characteristics. When all the old structures will have been decommissioned, 4 hectares of industrial land will have been returned to the natural environment, including 1 hectare to the river.

Vezins and La Roche-Qui-Boit

On the River Sélune, EDF launched the Roche Qui Boit dam decommissioning phase. These actions should lead to the restoration of the river's natural functions, opening it up to the return of diadromous migratory fish (salmon, eels, shad, lamprey).

Malause

In July 2022 was inaugurated the longest fish crossing system in France (an artificial river of 450 metres for crossing a height of 8 metres) at the Malause hydroelectric dam. The system will contribute to the free movement of diadromous migratory fish (Atlantic salmon, eel, sea lamprey, large shad and sea trout) on the Garonne. The structure was designed in collaboration with the French Office for Biodiversity (OFB).

Belgium

Luminus and its partners (University of Liege and Namur, Profish, EDF R&D) have continued a programme to model the behaviour of migrating fish and reduce their mortality during the passage of hydroelectric facilities. In 2022, Luminus successfully validated the eco-sustainable concept of the two new turbines of the Monsin hydropower plant for both benchmark species (eels and salmon). The results were especially remarkable for salmon. The "Life4Fish" programme (2017-2023) is supported by the European Commission thanks to €1,913,000 in funding as part of the "Life" programme and with an overall budget of €4 million.

Wind and Solar sector

Even if, like any electricity generation infrastructure, the construction and operation of wind and photovoltaic power plants are not without impact on biodiversity, they contribute to the fight against climate change by reducing greenhouse gas emissions and, ultimately, help to protect the environment. All the Group renewable activities are thus part of a proactive approach aimed at mitigating and controlling impacts, and seeking and implementing the best technical and technological solutions to preserve the environment.

Guidelines

The EDF group, the IUCN (International Union for Conservation of Nature), EDP and Shell worked together to develop and publish guidelines ⁽¹⁾ to prioritise mitigation measures and the best available measures to reduce impacts on biodiversity from onshore and offshore wind projects and photovoltaic projects.

EDF Renewables

EDF Renewables is committed to implementing an environmental management plan in France for all its ground-mounted photovoltaic power plants with biodiversity implications. In 2022, 100% of fleets with biodiversity implications have this plant management plan in place.

Luminus

In 2021, Luminus launched a "Wind Biodiversity Journey" in order to take better account of biodiversity aspects throughout the life of wind projects. To this end, exchange days were organised with the authorities and certain environmental associations. The results of the voluntary bird monitoring carried out at certain fleets were presented at these days. In addition, over the last five years, thirty field visits have made it possible to observe a large number of species living in the compensatory measures located near the fleets, demonstrating their attractiveness to lowland fauna.

Luminus drafted a Green Charter that aims to minimise the impact of wind farms on biodiversity during the construction phase. This charter incorporates the recommendations of the international IUCN guidelines published in 2021. The aim is to test this charter on a construction site. The pilot project has been identified and discussions have been initiated with the construction companies to ensure that this charter forms an integral part of the overall Health, Safety and Environment plan for the project. Lessons learned will be reviewed in 2023 for possible improvement of the charter, after which the charter is scheduled to be rolled out on all wind farm sites.

Priority installations on Group properties and degraded sites

When it comes to new renewable energies, the plants prioritise the Group's properties as well as derelict sites. Photovoltaic panels have been installed on the roofs of facilities or car park shaded areas belonging to EDF (most recently in Bouchain).

EDF Renewables prioritises derelict sites and develops all its projects based on the "Prevent Minimize Offset" (PMO) hierarchy plus systematic impact assessments. However, to achieve the goals set by the Multi-year energy programme in France, derelict sites will not be sufficient. On specific sites presenting biodiversity issues, environmental management plans and accompanying measures will be implemented, which will meet the requirements to protect species and biodiversity and promote positive impacts (differentiated management, late mowing, etc.) ⁽²⁾.

Other facilities

Compatibility with crop or livestock farming activities

The French "climate and resilience" act ⁽³⁾ states that natural or agricultural spaces occupied by a photovoltaic fleet do not count as land take if the ecological functions of the soil are not lastingly affected and if the facility remains compatible with a crop or livestock farming activity ⁽⁴⁾. For EDF Renewables projects, the feasibility of grazing is systematically assessed based on the type of site, biodiversity issues, or the presence of interested farmers.

Agri-PV

Agri-photovoltaics (or AgriPV) is an installation concept that refers to the combination of photovoltaic electricity production and agricultural production on the same surface, which implies a sharing of light between these two types of production. In 2022, EDF R&D continued the operation of its AGRI-PV demonstrator installed on its Renardières site by diversifying the crops (alfalfa has been replaced by wheat). In addition, an AgriPV project was launched in New Aquitaine at the end of 2021 on vineyards with the Vitisolar project.

With regard to the development of ground-based photovoltaic projects involving agricultural land within the territories, EDF Renewables, the French Chambers of Agriculture and the FNSEA signed a charter of best practices on 19 January 2021, focusing on responsible and coordinated land use. It is to the same end that EDF Renewables also joined the French Agri-photovoltaics Producers Federation (*Fédération française des producteurs agrivoltaiques*, FPPA) in 2022.

Floating photovoltaic plants

Floating solar is developing internationally and nationally and is now a promising technology for the entire photovoltaic industry.

(1) portals.iucn.org/library/node/49283

(2) In addition to not using phytosanitary products on all the fleets it manages.

(3) French Act 2021-1104 of 22 August 2021 combating climate imbalance and increasing resilience faced with its effects (JORF (i.e. Official Journal of the French Republic) number 0196 of 24 August 2021).

(4) Article 194 "(...) 5° For the purposes of this article, the consumption of natural, agricultural and forestry areas is understood to be the actual creation or extension of urbanised areas on the territory concerned. For the tranche mentioned in 2° of this paragraph III, a natural or agricultural space occupied by a photovoltaic energy production facility is not counted in the consumption of natural, agricultural and forestry spaces as long as the terms of this facility ensure that it does not have a lasting impact on the ecological functions of the soil, in particular its biological, hydric and climatic functions, as well as its agronomic potential, and, where applicable, that the facility is not incompatible with the exercise of an agricultural or pastoral activity on the land on which it is located (...)" . A decree is pending to specify the terms of the Act.

On 9 May 2022, EDF Renewables commissioned the Group's first floating solar power plant in Hogla (Israel) on the northern coastal plain. With a capacity of 2MW, the Hogla facility is located on an irrigation reservoir that covers an area of 2 hectares. Hogla is the first connected project of the tenders won by EDF Renewables in the country. Two other projects are under construction in the country, including the Lohamei Hagetaot plant, with a capacity of 20MWp, on 9 basins of a large fish farm.

The first floating photovoltaic power plant on a hydroelectric reservoir in France, the Lazer plant, is scheduled to be commissioned in the first half of 2023. Other sites are currently being studied. Furthermore, several EDF hydro entities are currently developing innovative initiatives and participating in Research & Development programmes in this field.

Electricity grids

In the geographical areas operated by Enedis, new medium-voltage (MV) lines are being built underground, using underground or discrete techniques for low-voltage (LV) in compliance with local regulatory requirements and taking into account as much as possible the CO₂ impact.

Service sector

The "BiodiverCity"⁽¹⁾ certification, a streamlined approach for players involved in sustainable construction⁽¹⁾, was awarded to the EDF La Grande Halle site in Lyon.

3.2.2.1.1.2 Overexploitation of resources

EDF's activity is partially dependent on the availability of fresh water. EDF has worked for years to reduce its water footprint. See section 3.2.3.2.3 "Water quality and reduction of pressure on the environment". The same applies to raw materials and rare-earth metals (see section 3.2.4 "Radioactive and conventional waste, and circular economy").

Forest resources

In terms of forest resources, EDF reviewed its Group-wide biomass policy, to include new biodiversity commitments, particularly specifying that neither direct nor indirect deforestation were permitted to meet the Group's biomass-energy needs.

3.2.2.1.1.3 Climate change and biodiversity

To enable the Group to achieve carbon neutrality by 2050, EDF R&D began work focused on carbon offsetting. The challenge was to favour solutions that promote CO₂ sequestration in natural ecosystems. The Group's initial initiatives are described in section 3.1.1.6 "Carbon offsetting solutions".

3.2.2.1.1.4 Pollution

For a full overview of the pollution theme (air, water, soil), see sections 3.2.4 "Radioactive and conventional waste, and circular economy", 3.2.3.2.3 "Water quality and reduction of pressure on the environment" and 3.3.1.6 "Air quality".

Prevention of soil and subterranean water impacts

Chemical pollution

The environmental policies of the Group entities aim to optimise the use of land and protect soils and subterranean water against any impacts. Land use and subterranean water use is monitored as part of groundwater monitoring (see 3.2.3.1 "Sustainability of water use") and biodiversity actions (see section 3.2.2 "Biodiversity and responsible land management").

An "in-depth defence" approach

The prevention of impacts relies on an "in-depth defence"⁽²⁾ approach, including several levels of security built into the protection methods in place at all industrial sites.

Among the protection methods in place: maintaining the integrity of protection methods; control of effluent and waste management operations; maintaining and inspecting ultimate structures such as retention systems; ensuring that the soil surface remains free from radiological and chemical contamination; reinforcing safeguard measures when transporting fuel or waste; ensuring the availability of emergency kits and carrying out the corresponding drills. EDF also carries out physicochemical and radiological monitoring of the quality of subterranean water at sites by means of a dense network of piezometers (see section 3.2.3.2.3 "Water quality and reduction of pressure on the environment").

Management plans

For years, EDF has adopted a proactive approach to checking the quality of soil, sub-soil and subterranean water on different production fleet sites (thermal and nuclear).

Actions taken

The actions undertaken include: identifying activities likely to have an impact on the quality of soil and groundwater; setting up a piezometric monitoring network on and around the installations, and carrying out management measures if necessary.

Organisation and dedicated tools

Contributing to the work of the ministry in charge of the environment as well as in standardisation bodies; centralised technical support for the different entities of the Group on soil and groundwater issues; annual training on soil management and groundwater sampling; research and development actions with institutional partners (concrete management, use of soil data, etc.), organising meetings to pool experiences, and for the nuclear sector, setting up shared practices for soil and groundwater.

In the field of phytosanitary products

Source substations

Ahead of its goals, and since July 2022, Enedis will no longer use phytosanitary products to maintain Source Substations⁽³⁾, except for zones where treatment is necessary for security reasons (HVB zones). For new Source Substations, experiments are ongoing in the Aude, Aveyron, Drôme, Puy de Dôme and Lozère with a view to building Source Substations using Zero Phytosanitary products.

Industrial sites

By the end of 2022, EDF had stopped using phytosanitary products on all areas of the mainland industrial sites, on areas that are not sensitive to safety and security issues (DIG). Other entities no longer use these products⁽⁴⁾.

Preventing light pollution

- EDF group R&D has developed a methodology assessing and comparing night-time lighting and biodiversity on EDF sites that was tested in 2021 on its Les Renardières R&D site. The studies continued in 2022 by transposing this methodology to the Blénod plant.
- Partnership: EDF and MNHN (*Muséum national d'histoire naturelle*, i.e. French National Museum of Natural History) work together to define the approach and protocols to be applied to identify the groups of species or habitats sensitive to light pollution on the sites, identify pollution and monitor the impact of the actions implemented. In 2022, the species groups studied in this framework were extended to include terrestrial mammals.
- Public lighting: as part of the city of Paris' new public lighting contract, Citelum France, a subsidiary of Dalkia Electrotechnics, incorporated a lighting plan to meet the needs of Parisians and a dark grid to promote biodiversity along certain less-lit roads.

(1) cibi-biodiversity.com/biodiversity/

(2) This involves three levels of protection: prevention, to avoid failures. Monitoring, to anticipate failure or detect it immediately, and control, to limit the consequences of a failure.

(3) Industrial electrical structure at the junction of high and medium voltage power lines.

(4) Cyclife, Edison, Luminus, EDF Norte Fluminense; ES no longer uses any glyphosate-based products.

3.2.2.1.1.5 Invasive Alien Species (IAS)

Invasive alien species are usually detected during surveys carried out on sites. The use of local plants when re-naturalising sites can be a resilience factor limiting the future development of invasive alien species.

EDF IES and EDF PEI

In Corsica and French overseas departments and territories, where the issue is particularly important, EDF IES and EDF PEI are intensifying the fight against invasive alien species on their projects. All EDF IES investment files going through the Commitment Committee were screened, including, if necessary, requests for a diagnosis of invasive alien species and, if necessary, a diagnosis of the fight against invasive alien species. 4 IAS diagnoses were carried out in 2022 at EDF IES covering large areas or linear lines, i.e. 13 diagnoses carried out in total. Other assessments are scheduled for 2023 based on project timetables. Three eradication measures were taken by EDF IES on highly-invasive species (Mauritius hemp on La Réunion or *Ailanthus altissima* in Corsica) in conjunction with competent local structures. EDF IES also implemented biosafety protocols and hydroseeding of endemic cover species (IES Reunion) to prevent the risk of colonisation during and after works.

EDF PEI carried out IAS diagnostics on the 2 remaining production sites (4 sites in total), with detection of IAS on both sites. Measures to manage the latter are planned from 2023 onwards.

"Local Plants"

Since 2015, EDF is a partner of the "Local vegetation" programme organised by the OFB ⁽¹⁾ and French Botanical Conservation Bodies. EDF is committed to the preferential use of locally sourced wild plants in all of the Group's projects. Between 2020 and 2022, 17 revegetation operations using local plants or seeds were carried out over more than 20 hectares.

On new projects, local plants were used to renaturalise sites in Romanche-Gavet, covering more than 10 hectares, or to plant a line of hedges at the Beaurepaire photovoltaic power plant. Local plants are also used after on-site work or to restore old industrial sites such as the old Bouchain power plant.

The creation of the longest fish crossing in France at the Malause dam was accompanied in 2022 by the renaturation of 3 hectares of the site using seeds certified as *Végétal local* (Local vegetation), with the aim of restoring key habitats (dry grasslands and wetlands) and combating invasive alien species (IAS). Two monitoring programmes were developed to preserve a protected butterfly species (the Serpolet Azure), its host plant (oregano) and a species of ant that participates in its life cycle, and to limit the proliferation of IAS. These actions were carried out in partnership with the Conservatories for Natural Areas of the Midi-Pyrénées and Occitanie regions.

3.2.2.1.2 Recreating spaces and conditions conducive to biodiversity

Environmental preservation and restoration

Positive ecological management

The Company manages natural sites belonging to the land it owns in partnership with local associations. EDF employs positive ecological management practices such as late mowing or eco-grazing. Part of the land owned is allocated to spaces dedicated to the protection or recreation of biodiversity, via management plans tailored to the site's issues.

To consolidate the approach, EDF relies on several levers such as the certification of sites in whole or in part, or the signing of Real Environmental Obligations ⁽²⁾, for example on the former site of Ambès (about 42ha).

Extending consideration of biodiversity to third parties

For years, EDF has been committed to an approach to sustainably manage land and respect its biodiversity. The Company takes account of issues specific to natural environments and the animal and plant species present, and since 2020 has more systematically included these in its conceded land agreements (with local owners, municipalities, non-profits, etc.).

In 2022, 89% of the new agreements on the concession area include requirements in favour of biodiversity. An educational booklet presenting the ecological interest of the proposed measures has been drafted in conjunction with the *Fédération des conservatoires d'espaces naturels* (Federation of Conservatories of Natural Areas – FCEN).

Specific programme on nuclear sites

The French and English nuclear sites are engaged in a programme to preserve and restore environments in partnership with local stakeholders:

France

Since 2020, four nuclear sites along the Rhone have been involved in concrete actions to promote biodiversity in conjunction with a local partner:

- The Bugey site made a commitment by contributing to the Life La Valbonne programme on the La Valbonne military camp to preserve dry grasslands, wetlands and woodlands. This project is carried out in partnership with the CEN Rhône-Alpes.
- The Saint-Alban site made a commitment to the Malessard wetland in partnership with the Isère *conservatoire d'espaces naturels* (Conservatory of Natural Areas – CEN) to preserve the biodiversity of fauna and flora and the diversity of natural habitats. A management partnership has been set up for 2020-2025.
- The Cruas site set up and inaugurated in 2022 a biodiversity trail, the result of a collaboration between EDF and the Drôme Ardèche League for the Protection of Birds (LPO).
- In 2022, the Tricastin site signed a partnership agreement with the LPO Auvergne-Rhône Alpes in favour of the little bustard.

United Kingdom

Each site has a Biodiversity Action Plan with performance indicators that are reviewed annually. The results are analysed and recommendations are made for future action. Since 2016, more than 80% of the indicators assessed each year have met their target (except in 2020 where the Covid-19 restrictions impacted the 2020 survey programme).

Protected areas and endangered species

Europe

Several EDF sites contribute to achieving the preservation targets in the Natura 2000 areas and to implementing the Natura 2000 contracts. The Group takes action via multiple programmes dedicated to preserving biodiversity (e.g. Life+). EDF Hydro has been committed to protecting the Pyrenean desman since 2010 (currently via the 2021-2030 National Action Plan), Luminus migratory fish, and Enedis bearded vultures (Life Gypconnect 2015-2021). In the summer of 2022, the European Commission validated two new LIFE projects to limit the impact of power lines on birds: SafeLines4Birds, which concerns a dozen priority species over most of mainland France, and GypAct, which focuses on the protection of the Bearded Vulture in the Massif Central and the Pre-Alps. The Group also contributes to developing regional versions of these plans (dragonflies, otters, etc.).

Asia

In Laos, NTPC is maintaining its policy of protecting biodiversity in the river basin in conjunction with the Nakai-Nam Theun National Park (formerly WMPA, Watershed Management Protection Authority), the authority managing it. The stakeholders are committed to having Nakai Nam Theun National Park put on the IUCN ⁽³⁾ Green List of Protected Areas by the end of 2025. The park's candidacy to be added to the Green List was officially announced at the IUCN Congress in Marseille in 2021.

(1) OFB: *Office français de la biodiversité* (French Biodiversity Office).

(2) Codified in Article L. 132-3 of the French Environmental Code, Real Environmental Obligations are enshrined in a contract under which the owner of a property establishes environmental protection attached to the property, for a period of up to 99 years. As the obligations are attached to the property, they continue even if there is a change of ownership. The purpose of the contract must be the maintenance, conservation, management or restoration of biodiversity or ecosystem services.

(3) International Union for the Conservation of Nature.

NTPC also committed to training local communities in natural resource management and use by 2022. Cassava plantations are expanding rapidly in Laos, which is highly damaging to the environment. To counter this trend, NTPC has initiated several actions with central and local authorities, research partners and local communities. In 2022, NTPC initiated a high-level seminar under the auspices of the Prime Minister's Office to explore solutions to stop deforestation and promote a green economy through public-private partnerships. Following the seminar, it was decided to set up a pilot project around NTPC's infrastructure, which provided financial resources and know-how to raise awareness of the project's objectives and the regulations on the use of natural resources (as well as the creation of control patrols).

More than 1,700 people from 9 villages participated in this campaign. NTPC signed a cooperation agreement with the Institute of Research for Development (IRD) to establish an environmental research centre in Nakai focusing on the One Health concept and aiming to boost the capacity of Lao academic institutions.

America

Since 2009, the Group is a sponsor to the *Associação Mico Leão Dourado*. The initiative aims to involve, train and support farming families in the rural communities living near the plant, to adopt agricultural practices and to encourage the production of native species so as to ensure the social, economic and environmental sustainability of the region. The partnership has already resulted in the recovery of the Atlantic Forest, contributed to the preservation of the Golden Lion Tamarind species (considered endangered), as well as stimulating the socio-economic movement of small farmers in the region.

3.2.2.1.3 Improving and sharing knowledge

Research and biodiversity

For over 50 years, EDF has had a dedicated R&D and engineering department working on the environment (currently around 40 people with a budget of €10 million), in partnership with outside organisations.

2025 BIODIV Project

The BIODIV Project brings together most of EDF's research activities in favour of biodiversity; the associated commitment has mobilised €25 million between 2018 and 2021 and has led over four years to research carried out within the framework of 8 theses and 5 post-docs. This project has also produced 50 publications, including one in the journal *Nature Communication*, and 52 conference papers. It has been supplemented since 2022 by the BIODIV'2025 programme, with a budget of €25 million for the 2022-2025 period.

REES Project

The new Renewables Environment and Sustainability (REES) project is led by EDF Renewables and carried out by the R&D department. It aims to develop innovative and effective solutions to reduce the impact of wind (both onshore and offshore) and solar energy on the environment and biodiversity, while optimising yield.

HYNES team

Since 2009, EDF's R&D and INRAE ⁽¹⁾ have set up the joint HYNES team in order to collaborate on the development of ecological approaches to aquatic environments. Renewed in 2019, the themes of the HYNES team have been extended to land environments.

Since 2019, 4 post-docs have been completed, 3 theses have been defended, 5 theses and 1 post-doc have been started. The topics covered are diverse: response of aquatic communities to climate change, ecological continuity, ecological impact of modifications to hydro-sedimentary regimes, ecological effectiveness of restoration, greenhouse gas emissions in river systems. This work has led to scientific publications.

It should also be noted that new collaborative projects have been initiated with this partner on agri-voltaics.

Using data to protect biodiversity

- **Knowledge and decision support tools:** in partnership with the MNHN ⁽²⁾, INRAE and its other research partners, EDF contributes to the development of knowledge and decision support tools such as the "Biodiversity Toolbox" (BOB) and "Ecoval" (ecological equivalence evaluation). The digital interface of the Ecoval application, developed within EDF's R&D department, has been put online, along with tutorials to make it easier to use the tool. Training sessions and external communications have been carried out.
- **Monitoring surface water:** Since the end of the 1990s, EDF has been conducting studies to understand the influence of water temperature on aquatic organisms in the context of climate change. As a continuation of this work, a *Thermie-Hydrobiologie* research programme has been carried out over 2016-2020. The main results of this programme were summarised in a report published in July 2021 and presented at a seminar in November 2022 to 160 internal and external participants. Since 2020, EDF has produced 9 scientific publications related to this programme, published a summary of the programme in 2021 and organised a feedback seminar in 2022 leading to a jointly developed action plan.
- **Sentinel lakes:** contribution to the long-term scheme to monitor high-altitude lakes in the face of global change.
- **Offshore wind power:** pursuant to the Dunkirk offshore wind project, EDF Renewables is committed to conducting a data acquisition programme on the conservation status of species, environmental quality and ecosystem services in the Strait of Dover.

Awareness of the ecological quality of land

The Company integrates biodiversity as one decision-making criterion in its industrial choices. The vast majority of EDF production sites are located close to protected sites and remarkable natural areas.

Industrial sites

Mandated by the Company, UNEP – WCMC carried out a vast study to assess the ecological sensitivity of places where the Group's 1,000 industrial sites are located ⁽³⁾.

In Italy, Edison carried out an ecological sensitivity analysis on all its grid-scale sites ⁽⁴⁾ (including the thirty or so new EnR sites that will join Edison's scope in 2021-2022). A biodiversity project has been implemented near the Palestro hydroelectric plant, which will be inaugurated in 2022, including the reintegration of native herbaceous species and shrubs favourable to pollinators, as well as actions to combat invasive exotic species.

Land inventories

EDF has a clear overview of the ecological status of its land, via a dedicated database, populated via both regulatory and voluntary inventories. EDF has also contributed to developing and implementing the French National Museum of Natural History EQI and EPI indexes ⁽⁵⁾.

In the field, a number of sites have prepared and regularly updated an inventory of the ecological quality of the land on which they are located. Management records are drawn up to assess and compare biodiversity issues and prospective land uses (project, decommissioning, rehabilitation).

Voluntary contribution to the INPN

In France, EDF voluntarily transmitted to the INPN ⁽⁶⁾ some of its data from inventories collected, i.e. approximately 50,000 occurrence data, in addition to the 15,000 occurrence data stemming from EDF's mandatory contribution.

(1) inrae.fr

(2) MNHN: *Muséum national d'histoire naturelle* (i.e. French National Natural History Museum).

(3) Analysis carried out in September 2018 by the World Conservation Monitoring Center (WCMC) for EDF, EDF Renewables, EDF in the UK, Edison, EDF China and the International Division (Luminus, MECO, Nachtigal, EDF Norte Fluminense, NTPC, SLOE, and SNOP).

(4) Grid-scale: production facilities connected to the grid.

(5) Ecological Quality Index and Ecological Potential Index

(6) The National Inventory of Natural Heritage (INPN) is the portal of French biodiversity and geodiversity, both in metropolitan and overseas France. It disseminates knowledge on animal, plant and fungal species, natural environments, protected areas and geological heritage. All of this reference data, validated by networks of experts, is available to all, professionals, amateurs and citizens.

3.2.2.2 The results in 2022

3.2.2.2.1 Key Performance Indicator for biodiversity

GROUP KEY PERFORMANCE INDICATOR

The key indicator for the Group is based on the fulfilment of actions taken in accordance with Whistleblowing system Act4nature international.

This fulfilment rate focuses on six of these actions, meeting Group's commitments to reduce the contribution of activities to major pressure factors; further improving and sharing knowledge; enhancing governance of biodiversity issues and raising employee awareness.

This indicator continues into 2023 in order to finalise the Nature governance.

Achievement rate of "Act4nature international" commitments (in %)



Indicator extended until 2023.

3

3.2.2.2.2 Key Performance Indicator for Land Management Issues

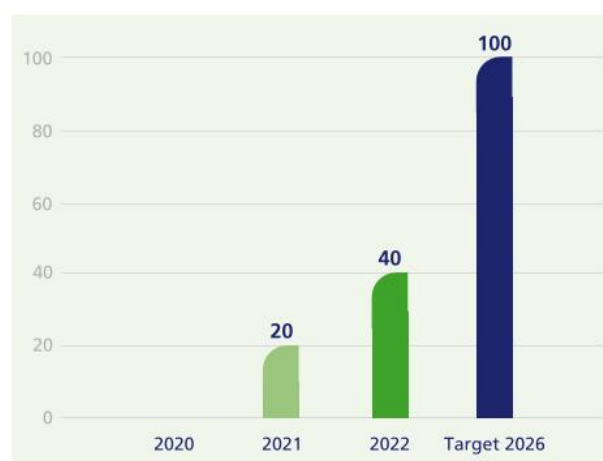
GROUP KEY PERFORMANCE INDICATOR

The key performance indicator selected for the commitment to responsible land management relates to the installation of solutions in favour of multiuse of land.

This indicator more specifically focuses on the issue of reconciling agriculture and the development of carbon-free power generation, as well as setting up floating photovoltaic fleets.

For details of the implementation of these innovative solutions, see 3.2.2.1.1.1 "Change of land and sea use, other Agri-PV and floating PV sites".

Implementation rate of innovative solutions encouraging multifunctional land use (in %)



3.2.3 Integrated and sustainable water management

3.2.3.1 Water, a resource for energy production

Water is an essential resource for the production of most energies, either for the cooling of nuclear and thermal power plants, or as a driving force for hydroelectric power plants. It is an issue identified in the Group materiality matrix. Under the terms of the French Environmental Code, water is the "nation's ordinary heritage". Water management therefore requires that collective rules be drawn up based on mutual support between upstream and downstream. This is why the Group is committed, in its CSR policy, to protecting and managing water in an integrated and sustainable manner, both quantitatively and qualitatively ⁽¹⁾ and to consulting with the territories in which it operates, by fully integrating the local dimension of water, including various water uses under increasing climatic constraints ⁽²⁾. Sharing of water for multiple uses is an intrinsic characteristic of hydropower and the dams operated by EDF allow billions of cubic metres of water to be stored. They play an essential role in certain basins during periods of drought and heat waves.

Expertise

Since 1946, EDF has been developing cutting-edge expertise in meteorological and hydrological monitoring and forecasting. A department has been set up to measure, model and forecast hydro-meteorology for the EDF fleet, drawing on more than 1,000 measuring stations and 75 years of data.

Offshore Coordinator

Even if current concern is focused on freshwater resources, there is only one water cycle, from source to sea. Because of its strategic, geopolitical and economic stakes, the Ocean, following on from Climate and Biodiversity, has become the third major environmental and international issue. The EDF group has also built a historic link with major stakeholders linked to marine issues, particularly with the construction of the Rance tidal power plant in the 1960s, with coastal thermal and nuclear production facilities, and more recently with the development of offshore wind turbines or reduction of the carbon impact of ports. The EXCOM named an EDF group "Offshore Coordinator" to define a strategy and coordinate the Group's different entities on this theme.

3.2.3.2 Water, a resource to be preserved and saved

The Group is committed to preserving and protecting water in terms of both quantity and quality. The Group is also committed to continuing to improve performance in terms of water withdrawal and consumption at existing power plants and to researching the most efficient way to use water across regions and major river basins.

3.2.3.2.1 Exposure to water stress

The evolution of water stress is one of the criteria used to evaluate the water component of any new project presented to the Investment Committee (CECEG).

3.2.3.2.1.1 Nuclear and thermal power generation Various assessments

The water stress exposure of the Group's production facilities was assessed (in 2018 with an update in 2022) with 4 different international reference tools (WFN's Blue Water Scarcity ⁽³⁾, WRI's Aqueduct ⁽⁴⁾, WULCA's AWARE ⁽⁵⁾ and EEA's ⁽⁶⁾ WEI+ ⁽⁷⁾) at annual and monthly time steps. These tools do not identify freshwater withdrawals from stressed areas in France, with the exception of Aqueduct.

Aqueduct results

According to Aqueduct and as an annual average, three nuclear power plants (NPPs), including one using seawater, are located in areas of high-water stress ($40\% < BWS < 80\%$) and seven NPPs face a medium high risk ($20\% < BWS < 40\%$). One fossil-fired plant (CCGT) is located in an extremely high-water stress area ($BWS > 80\%$) and two sites are located in a high-water stress area ($40\% < BWS < 80\%$). The latter three plants are used on an *ad hoc* basis to meet the peak demands of the grid, especially in winter, and therefore not necessarily during periods of water stress. The results provided by Aqueduct give a first assessment which must be viewed with caution due to the accuracy of the tool, both in terms of time (the step is monthly at best) and in spatial terms (10 x 10km unit).

EDF has a hydro-meteorological centre that records local data in real time for all its power plants in order to have greater accuracy in measuring water stress. Reviewing this data does not confirm the indications provided by Aqueduct. Changes in water stress up to the year 2040 have also been studied using the three scenarios proposed by Aqueduct. There is no trend towards a general increase in water stress across the nuclear and thermal fleet, nor is there a site-specific alert (e.g. from a high to an extremely high stress level).

3.2.3.2.1.2 Hydropower generation

In 2022, a test conducted on twelve hydropower plants confirmed that the Aqueduct tool is not relevant for dam reservoirs, as it does not take into account the possibility of storing water during periods of high rainfall, nor the possibility of releasing water during dry periods or water stress. EDF therefore relies here again on its hydrometeorological centre, with its own evaluation and forecasting tools at the local level; regular reassessments of site yields are made on the basis of changes in hydrology and temperature due to climate change. Prospective studies, looking ahead to 2030 and 2050, and taking into account local societal changes (water uses for example), have been carried out in several basins with the support of R&D and the assistance of external players. This is notably the case for the Garonne and Durance basins.

3.2.3.2.2 Water withdrawal, consumption and intensity

3.2.3.2.2.1 Group water withdrawals

At the Group level, around 39 billion cubic metres of water are used for cooling thermal power facilities, of which 99% is reusable and returned virtually instantaneously to the natural environment. As such, EDF is a significant user, but negligible consumer, of water. Main water is not used for cooling systems but only for various forms of water process for a share lower than 0.1%. The bulk of the water withdrawn by its installations is in France (79%) and the United Kingdom (19%) in areas where water stress is limited (low to medium, see section above). The Group's water withdrawals are down by 8% compared to 2021, mainly due to the significant decrease in nuclear generation.

A significant number of nuclear and thermal facilities are located by the sea and therefore do not use fresh water for cooling but sea water (without any quantitative constraints). 69% of the water withdrawn for cooling purposes by the Group comes from marine or estuary environments. This percentage is almost 61% in France, over 99% in the United Kingdom and close to 93% in Italy. For the remaining 31% (fresh water), the quantity of freshwater sourced from groundwater is marginal and amounts to 2hm³, about 0.01% of the freshwater surface.

(1) See section 3.2.3.2 above.

(2) See section 3.2.3.3 above.

(3) WFN: Water Footprint Network.

(4) Aqueduct, developed by the World Resources Institute, is a mapping tool for determining the risk associated with water resources on a global scale. Aqueduct researchers calculated 12 indicators including access to water, water stress, drought, pressure on groundwater, etc.

(5) WULCA: Life Cycle Initiative project on the assessment of water use and depletion in the context of life cycle assessment (LCA).

(6) EEA: European Environment Agency.

(7) WEI+: Water Exploitation Index.

3.2.3.2.2.2 Water consumption

99% of the water withdrawn is returned to the natural environment, the remaining 1% is the volume of water evaporated which, in absolute terms (324hm³), is a clear decrease of 24% compared to 2021.

3.2.3.2.2.3 Water intensity

GROUP KEY PERFORMANCE INDICATOR

Water intensity is the specific consumption of evaporated water per kilowatt hour of electricity generated.

The stated aim is to remain below the target of 0.95l/kWh on average over the five past years, by progressively reducing specific water consumption by 2030 (the benchmark being the 2015 level, 0.96l/kWh).

Taking account of the expected variation in power generation resources and actions taken to optimise water, total Group-wide freshwater withdrawal and consumption should fall in the coming years.

The water intensity for the year 2022 alone is 0.75l/kWh.

Water intensity (in l/kWh) ✓



* On average over the past five years.

✓ 2022 indicator subject to reasonable assurance audit by Deloitte & Associés.

3.2.3.2.3 Water quality and reduction of pressure on the environment ⁽¹⁾

3.2.3.2.3.1 Monitoring around industrial sites

EDF monitors land and aquatic ecosystem quality parameters, including subterranean groundwater around its industrial sites, particularly by measuring, controlling and analysis effluents on all sites. Monitoring the temperature of water upstream and downstream from thermal power plants (Cordemais, Blénod, Martigues) is an important parameter with regard to biodiversity. The pH of water, its conductivity, chemical oxygen demand (COD), biochemical oxygen demand (BOD5), nitrogen and phosphorus are also controlled and measured according to a regulatory environmental monitoring plan for each site. Hydrobiological monitoring is carried out each year at certain sites posing substantial environmental issues (e.g. Cordemais and Martigues) in order to ensure long-term monitoring of the receiving environments.

3.2.3.2.3.2 Specific monitoring for nuclear power plants

Each nuclear power plant has a specific authorisation defining, based on its characteristics and its environment, the water withdrawal conditions, and chemical, thermal and radioactive effluent discharge limits (mainly tritium and carbon-14). All these effluents are collected, treated, then transported to storage tanks where they are analysed, before being disposed of, in accordance with regulations to prevent any potential impact on aquatic ecosystems. Annually, more than 10,000 control analyses are carried out at each nuclear power plant, by both EDF and non-EDF laboratories. The results of this monitoring are provided to the relevant local authorities and used in documents available to the public.

There were no significant water-related environmental events or new dispute in 2022.

3.2.3.2.4 Optimising water usage

The optimisation of water used in EDF's generation activities serves to ensure management of water resources and to honour the Group's commitment to

guarantee multipurpose water resources (drinking water, water for irrigation, tourism, etc.) and to meet the needs of local authorities. The EDF group is working on several factors to optimise its water use and reduce pressure on the environment, by reducing its water consumption, reusing and/or recycling it, and using seawater desalination processes.

3.2.3.2.4.1 Water consumption reduction and withdrawal limitation measures

Dry air cooling systems

EDF R&D teams have designed "dry air cooling" systems for engine cooling, which reduce water withdrawal. EDF IPE's new plants are now no longer cooled with seawater, and the same will be true for the Larivot plant. A plan for a second combined cycle power plant near Norte Fluminense is under consideration, featuring an air- rather than water-based cooling system from the design phase.

Dry cleaning of photovoltaic panels

At onshore photovoltaic power plants operated by EDF Renewables in France, rain is generally sufficient to clean the panels. However, the level of dirt and grime that builds up over the years on panels can require cleaning. Cleaning frequency may vary from plant to plant. In these cases, no products are added to the water used. Dry cleaning solutions are available and can be considered for use in cleaning panels in overseas zones facing strong water stress.

Modernising the demineralisation chain

In Angleur (Belgium), demineralised water, extracted from the River Ourthe, is used to both reduce NOx emissions and increase turbine output. By modernising the demineralisation process, the site's water intensity has been reduced by approximately 20%.

Reducing process water needs

In Chile, following a long drought that caused the water table to fall by 1m in less than a year, specific measures were taken for the combined cycle power plant in Nueva Renca, enabling halving of process water, which plummeted from 12t/h in 2020 to below 4t/h in 2022.

(1) Regarding the regulatory framework for water quality monitoring, see the complete guide "Power plants and the environment, water withdrawals and discharges, 2020" available on the edf.fr website: [edf.fr/groupe-edf/produire-une-energie-respectueuse-du-climat/energie-nucleaire/nous-preparons-le-nucleaire-de-demain/la-maitrise-de-limpact-environnemental-des-centrales](https://www.edf.fr/groupe-edf/produire-une-energie-respectueuse-du-climat/energie-nucleaire/nous-preparons-le-nucleaire-de-demain/la-maitrise-de-limpact-environnemental-des-centrales).

3.2.3.2.4.2 Water reuse and recycling

The recycling of process and cooling water is implemented throughout the Group, where appropriate.

Design of new nuclear reactors

In order to reduce the impact on freshwater withdrawal, the possibilities of using water from wastewater treatment plants and rainwater as a source of complementary water are studied as early as the design stage of new nuclear reactors. Moreover and by way of example, it is planned to pool the existing demineralisation plant between Penly 1/2 and the two future EPR2 units for the production of industrial water and demineralised water using wastewater from the treatment plant, rainwater collected via stormwater basins and water from a drain at the foot of the cliff.

Cordemais and Martigues

EDF's thermal power plants in Cordemais and Martigues recover rainwater and recycle their effluents. The Blénod thermal power plant has also studied a system for recycling rainwater and process effluents to be implemented by 2023.

West Burton

At West Burton A, effluent from the sewage treatment plant is no longer discharged into the river but is diverted for reuse in the cooling water circuit. As a result, up to 100,000m³ of water is no longer taken from the River Trent each year.

Fuzhou

In China, the ultra-supercritical power plant of Fuzhou reuses all its process water sequentially and depending on the quality of water (from cooling to watering ash to gardens).

Dalkia

In Dalkia's large biomass combustion facilities, process wastewater is used to cool bottom ash to limit the volume of liquid effluent to be treated.

3.2.3.2.4.3 Desalinating sea water

In Flamanville, a desalination unit has been in operation since 2016 to produce demineralised water. EDF is also conducting several desalination experiments for process water at its sites:

- in Guadeloupe, the power plant in Jarry Sud has a sea water desalination facility, which has made it possible to stop using tap water and save around 50,000m³ of fresh water per year;
- in order to optimise the use of water in areas of high-water stress such as southern Italy (Candela in Puglia, Altomonte in Calabria and the new Presenzano plant in the Campania region), Edison's thermal power plants are equipped with an air cooling system for condensation of the power plant's steam or, if necessary, the use of desalinated seawater as a substitute for fresh water (Simeri Crichi in Calabria).

3.2.3.3 Water as a shared resource and a powerful marker of climate change

According to the World Meteorological Organization (WMO), the period from 2015 to 2022 corresponds to the eight warmest years ever recorded in the world ⁽¹⁾. In France, 2022 was the hottest year ever recorded and the second hottest (meteorological) summer after 2003, with an average of +2.3°C compared to the average for the 1991-2020 period, and a record 33 days of heatwave (in 3 waves). Locally, it was even the hottest summer (in Chamonix for example). Moreover, 2022 was one of the years with the least amount of water, with a 22% rainfall deficit compared to normal. Some months even broke records, such as May (-60% deficit) and July (-85%), which were the driest since measurements began in 1959. These temperatures combined with the significant hydrological deficit led to a drought that was more intense and more extensive than those of 1976 and 2003, the most intense ever recorded in France, with surface soil moisture values breaking records for low humidity. This underscores the importance of balanced and sustainable water management.

3.2.3.3.1 Impact of climatic conditions on electricity generation

The early drought of 2022 affected hydropower generation in France. The summer of 2022 broke the 1976 record, with a summer hydraulic deliverability coefficient of 0.59 (1 being the 1960-2022 average) and a 20% drop in production over the year (to be confirmed at the end of the year) compared with 2021 (but no historical minimum). Many reservoirs were under exceptional management throughout the summer, up to 23 simultaneously, and 10 were still under exceptional management. In contrast to Metropolitan France, French Guiana and Reunion experienced surplus regimes (even experiencing flooding) and reached high production levels.

The heat waves with 3 successive heat waves and severe low water levels had no impact on nuclear safety and had a limited impact on the production of the nuclear fleet (500GWh, i.e. less than 0.2% of the annual production in 2022). Due to the extreme weather situation and tensions on the energy market, temporary modifications to the thermal discharge limits were granted to the Blayais, Bugey, Golfech, Saint Alban and Tricastin nuclear power plants to maintain the security of the power grid (as requested by RTE), and then to preserve natural gas and water reserves for the winter.

In total, about 400GWh were saved through temporary changes to the thermal discharge limits:

- 200GWh as part of requests to meet the safety needs of the grid operator which were granted by the Nuclear Safety Authority and the Ministry of Energy Transition (granted for 4 nuclear power plants: Bugey, Golfech, Saint Alban and Tricastin);
- 200GWh owing to the specific terms and conditions set out in the nuclear power plant operating provisions for "exceptional weather conditions".

The initial feedback from the enhanced environmental monitoring implemented by the operator as part of the temporary modifications does not show any significant changes in physico-chemical and microbiological parameters and no unusual fish mortality has been observed.

Studies of water consumption are underway for all the thermal sites in order to refine the procedures to be followed in the event of a drought alert in 2023 ⁽²⁾.

3.2.3.3.2 EDF met its commitments to stakeholders thanks to good management

EDF does not own the water stored in its dams; it uses it as part of a public service mission to generate energy on the basis of the available resource while incorporating other uses as best as possible.

The water in these reservoirs is not only used to generate hydropower, but depending on the reservoir, it can be used for drinking water supply, irrigation, navigation, tourism, recreation and the preservation of biodiversity. This availability of water for other uses can have an impact on hydropower generation, a renewable and carbon-free energy that contributes to climate change mitigation.

A balance must therefore be sought through close and continuous consultation with local stakeholders, including governmental services, which are the last resort in the event of arbitration on the prioritisation of water uses.

3.2.3.3.2.1 Management of water resources

EDF constantly ensures that its hydraulic facilities are managed in consultation with the stakeholders (the French government, local authorities, water agencies, associations, etc.). As such, EDF plays a part in national and local water governance and management bodies (national water committee, basin committees, local water commissions, etc.).

Water authorities

In France, EDF is represented by the French Electricity Union ⁽³⁾ at meetings of each of the river basin water governing authorities.

(1) public.wmo.int/en/medias/communiqu%C3%A9s-de-presse/c%E2%80%99est-official-the-eight-derni%C3%A8s-ann%C3%A9es-are-well-the-warmest

(2) edf.fr/groupe-edf/produire-une-energie-respectueuse-du-climat/energie-nucleaire/nous-preparons-le-nucleaire-de-demain/la-maitrise-de-limpact-environnemental-des-centrales

(3) *Union française de l'électricité* (i.e. French electricity union).

EDF participates in several international works on water (IHA Board of Directors, Board of Directors of the *Partenariat français de l'eau* (French Water Partnership), member of the World Water Council, etc.), and is also directly involved, as UFE representative to Eurelectric, in working groups at the European level (for example, on the Water Framework Directive).

Water coordination

Since 2003, EDF has had an internal water coordination body headed by the Group Executive Director in charge of renewable energies, who has delegated this mission to EDF Hydro's management. The operational management of water is ensured at the national level by the Water Management Group (GGE) responsible for ensuring the regular, weekly or daily monitoring, if necessary, of water stocks in order to coordinate various production constraints and the management of the multiple uses of water.

3.2.3.3.2.2 Keeping commitments

Water balance and back-up in case of low water levels

Given the unusual climatic conditions mentioned above, the summer and autumn of 2022 were particularly tense from the point of view of water management in most basins, with reservoirs that were less full and the need for low water support greater than usual. In several valleys, water restrictions were decided by the support structures (EPTB ⁽¹⁾). EDF was able to manage this particular summer thanks to its expertise in anticipating and then managing tense situations and maintaining dialogue with the government services (arbitrator) and the other stakeholders.

Most of the commitments with the various stakeholders have been kept to the best of our ability in view of the exceptional hydrometeorological situation in 2022:

- to meet the various needs of water users within the framework of the specifications of hydropower concessions or water sharing agreements, EDF has released very large volumes from its reservoirs with 808hm³, i.e. +60% compared to the 2015-2021 average (a particularly hot period), with this moreover constituting a record for the period. The volume of low-water support in the Adour-Garonne basin has reached a record level at 117Mm³ (with the previous record being 91Mm³ in 2019 and 2020). At Serre-Ponçon, the withdrawal for agricultural purposes ultimately remained within its envelope of 200Mm³ (184Mm³ delivered) under drastic reductions;
- in Corsica, highly prudent management of the reservoirs made it possible to reach the tourist coasts and to adhere to the agreed commitments to the detriment of production. For the Durance-Verdon complex of facilities, which recorded the largest hydrological deficit since their commissioning in 1964, the

levels of the Serre-Ponçon, Castillon and Sainte-Croix reservoirs remained below the minimum tourist levels from 1 July and throughout the summer.

The CGEED-CGAAER appraisers ⁽²⁾ recognised during the *Varenne de l'Eau* meeting EDF's important role in the water balance of the Adour-Garonne basin and concluded on the need to preserve potential hydroelectric flexibility.

3.2.3.3.2.3 Access to water in international projects

With regard to water access, hygiene and sanitation, better known as "WASH" (Water Access to Sanitation and Hygiene) and as it constitutes the main target of the SDG6 for water, EDF guarantees such access to all employees and workers on 100% of its facilities or offices. In 2013, EDF was one of the first companies to sign the WBCSD's advocacy ⁽³⁾ to make a pledge to WASH. EDF goes beyond this pledge by applying it to temporary sites such as remote mobile hydropower worksites (e.g. Nam Theun 2 in Laos).

Cameroon

The Nachtigal Hydropower Project strives to improve access to water for the people in the project area, as was successfully done for the Nam Theun 2 project in Laos. An invitation to tender was recently launched to renovate existing boreholes and drill new ones in zones where access to clean water is an issue for local people. This initiative is part of the programmes to support local infrastructure, and was developed in conjunction with the local population and authorities in charge of community development.

Chile

The "Good energy to improve the quality of life of the Los Burros Sur cove" initiative won first prize in the "Good practices for a more sustainable electricity future" competition organised by Generadoras de Chile. This initiative is organised by EDF and Latin American Power in collaboration with a selection of local stakeholders in the municipality of Freirina. The project features more than ten actions, including installing solar power generation systems, supplying drinking water, and supporting diversified production in the zone, such as diving lessons for fishermen and women or delivery of appropriate equipment. The community received funding to build a desalination plant (with expert technical support from both businesses), as well as additional funding to increase drinking water production.

On the theme of integrated and shared water management, please also refer to section 1.4.1.3.1.4 "Issues relating to Hydropower generation" and particularly "water management and access".

3.2.4 Radioactive and conventional waste, and circular economy

Optimising the use of the natural resources consumed by the Group's value chain is an essential component of the Group's corporate responsibility.

The Group undertakes to:

- assume its responsibilities with regard to radioactive waste;
- promote a circular economy approach;
- avoid the production of conventional waste and promote, in order of priority, the reuse, recycling and recovery of products/materials throughout the value chain (energy or materials recovery);
- use waste by reallocating uses internally within the Company in case of new developments, or via certified recovery centres.

3.2.4.1 Assuming its responsibility for radioactive materials or waste

Nuclear power plants generate radioactive waste from the operation of power plants, recycling of spent fuel, or decommissioning of permanently shut-down plants:

- 95% of the volume of radioactive waste produced by EDF is "short-lived" waste (period less than or equal to thirty-one years). It mainly comes from

filtration systems, and maintenance and servicing operations. The majority of radioactive waste from plant decommissioning works is also short-lived waste;

- "long-lived" waste (period greater than thirty-one years) is generated by processing spent nuclear fuel, disposing of certain metal parts from reactors, and waste from decommissioning of metal parts close to the core, as well as graphite from natural uranium graphite gas nuclear reactors. This "long-lived" waste accounts for approximately 5% of the volume of radioactive waste eventually produced by EDF.

(1) Basin Territorial Public Establishments

(2) These are the General Council for the Environment and Development (CGEED) and the General Council for Food, Agriculture and Rural Areas (CGAAER). They were entrusted with proposing a shared vision of the relationship between agriculture and water by 2050 in the context of climate change

(3) WBCSD: World Business Council on Sustainable Development.

In addition, the operation of nuclear power plants generates spent fuel (potentially recoverable radioactive materials), the quantity of which is limited due to the implementation of treatment-recycling.

EDF has created the Cyclife Group, a group of subsidiaries specialising in decommissioning and waste management. In particular, Cyclife offers melting and incineration solutions to reduce the volume of short-lived radioactive waste and, depending on local regulations, to recycle very low-level metal waste. Cyclife has three plants, in France, Sweden and the United Kingdom, and mobile machines that work directly on operating nuclear power plants. Cyclife is also working on developing innovative waste treatment technologies alongside industrial partners.

3.2.4.1.1 France

In France, EDF, in its capacity as a nuclear operator, is responsible for what happens to its spent fuel and how it is processed and for the related waste, without any possibility of transfer of responsibility or limitation in time. Orano is responsible for processing spent fuel and ANDRA for the storage of final waste, in accordance with the Article L. 542-12 of the French Environmental Code. More generally, the safe and sustainable management of radioactive materials and waste is coordinated by the French government through the National Radioactive Materials and Waste Management Plan (PNGMDR). Updated every five years ⁽¹⁾ with contributions from industry, associations, the general public, authorities and governmental representatives, it incorporates the provisions of the Multi-Year Energy Programme (PPE), which is itself regularly updated. EDF actively participates in all the working groups associated with the PNGMDR.

EDF sets aside provisions to cover future waste management expenses (see Note 15 to the consolidated financial statements for the fiscal year ended 31 December 2022 in Section 6.1), in accordance with Article L. 594-2 of the French Environmental Code and its implementing regulations. This regulation specifies which liabilities are not associated with the operating cycle and must therefore be covered by dedicated assets (see section 6.1, note 15.1.3 "Coverage of EDF's long-term nuclear obligations").

EDF has set up a system for managing waste from the operation and dismantling of its power plants which now allows all waste from nuclear power generation to be handled in dedicated, operational and secure industrial facilities, with due respect for the environment and the health of the populations and personnel concerned, under the control of the French Nuclear Safety Authority.

Regulatory changes resulting from the PNGMDR ⁽²⁾ (regulatory texts published on 14 February 2022) set up at the beginning of 2022 the legal framework allowing for the recycling and recovery of very low activity metals from nuclear installations, thereby bringing French regulations into line with those of other European countries. The aim of this development was to save natural resources and storage capacity at Cires. In partnership with Orano, EDF is studying a project, named the Technocentre project, for an industrial facility to recover metallic VLLW materials for reuse in conventional industry. The aim of this facility is to produce, after treatment, melting and testing, ingots whose radiological characteristics guarantee that they can be used without any impact on health and the environment, regardless of how they are used. In addition, the Cyclife subsidiary is continuing to develop in order to expand its range of waste treatment solutions.

As regards long-lived waste of the HLW and HLWM type (see glossary), the Group is committed to working alongside Andra, the project owner for the Cigéo project, to ensure the success of this geological storage centre, which will provide future generations with a safe management option for the very long term, freeing them from any active waste management constraints. This project consists of storing the waste in galleries built 500 metres underground in a clay layer that has been stable for over 150 million years and has the required containment properties. The decree declaring Cigéo to be in the public interest (DUP) and the decree making Cigéo an Operation of National Interest (OIN) were signed in July 2022 ⁽³⁾. On 17 January 2023, Andra submitted the application for authorisation to create Cigéo to the French Ministry of Energy Transition.

As for the management of spent fuel, EDF's operation of its nuclear power plants in France currently results in the storage of approximately 100 additional tonnes of spent fuel each year. This level is limited compared to the quantity of spent fuel discharged from reactors (1,200 tonnes per year), due to the implementation of spent fuel processing-recycling. Most of the spent fuel (about nine-tenths) is processed by Orano at La Hague for reuse in reactors, and the remaining tenth, which is not processed in the short term because it is already derived from reprocessed fuel, must be stored for several decades pending its later recovery (or, failing that, pending its final disposal). EDF currently recycles spent fuel once in its reactors (mono-recycling) and is considering the possibility of further recycling in the future (multi-recycling in current reactors, or in future 4th generation reactors).

Against this background, EDF is developing a project for an underwater centralised spent fuel storage facility in order to meet the need for long-term storage of spent fuel already generated through initial recycling. This project also aims to meet the more general need for new spent fuel storage capacity by 2030. The commissioning of this facility, which is planned to be located in La Hague, is scheduled for 2034. This project was the subject of a preliminary consultation under the auspices of the National Commission for Public Debate (CNDP), which was held over three months in two phases, from 22 November 2021 to 2 February 2022 and, after that, from 20 June to 8 July 2022 (see section 1.4.1.1.2.3). This stage initiates a phase of ongoing consultation with the territory until the Public Inquiry scheduled for 2025.

Furthermore, in order to meet medium-term storage needs, Orano and EDF are studying transitional solutions in conjunction with ASN: densification of existing pools at the Orano La Hague site, dry storage solutions for certain fuels, etc.

For more details, see Note 15.1.1 Nuclear provision in France in the notes to the consolidated financial statements for the year ended 31 December 2022 – section 6.1. See section 1.4.1.1.2.3 "The issues relating to the nuclear activity": A - "Dowstream", "Processing of spent fuel from EDF's nuclear power stations", - "Storing conditioned final radioactive waste", et C - "Issues related to the decommissioning of nuclear power plants".

Risks related to waste management are described in chapter 2 risk 5B "Control of radioactive waste treatment and decommissioning of nuclear facilities, and ability to meet related commitments".

3.2.4.1.2 United Kingdom

In the UK, radioactive waste is classified into several categories:

- Low Level Waste (LLW);
- Intermediate Level Waste (ILW);
- High-level waste (HLW), which is radioactive waste (excluding spent fuel) that has a significant capacity to generate heat and therefore cooling, which must be taken into account in its handling and storage.

EDF UK's radioactive waste strategy is in line with the UK and Scottish Governments' commitment to the hierarchical principles of waste management (reduce, reuse, recycle, recover).

LLW accounts for about 94% of the volume of radioactive waste in the UK, but only 1% of the total radioactivity. This waste is mainly made up of old machine components, filters, plastic, cloth and paper. The waste is recycled or incinerated via high temperature incinerators, so that LLW sent for disposal is minimised. All remaining waste is compacted (where possible), sealed in containers, then cemented and disposed of in the LLW depot in Cumbria.

ILW accounts for about 6% of the UK's radioactive waste volume, derived mainly from the operation and maintenance of power stations. The waste is safely stored in shielded areas within power stations, pending the introduction of a government-planned long-term geological disposal process (GDF) in England and Wales (or other disposal channels in Scotland) following a period of decay.

(1) Decree No. 2022-1547 of 9 December 2022 provided for by Article L. 542-1-2 of the French Environmental Code establishing the requirements of the PNGMDR.

(2) Decree No. 2022-174 of 14 February 2022 on the implementation of 1333very operations for low-level radioactive substances and Decree No. 2022-175 of 14 February 2022 on the radioactive substances eligible for recovery operations mentioned in Article R. 1333-6-1 of the French Public Health Code.

(3) Decree No. 2022-993 of 7 July 2022 declared CIGEO to be in the public interest and brought the territorial coherence plan of the Pays Barrois (Meuse), the inter-communal local urban planning plan of Haute-Saulx (Meuse) and the local urban planning plan of Gondrecourt-le-Château (Meuse) into line with it, and Decree No. 2022-992 of 7 July 2022 included the CIGEO project among the operations of national interest mentioned in Article R. 102-3 of the French Urban Planning Code.

HLW represents less than 1% of the UK's radioactive waste volume and accounts for about 95% of the total radioactivity. HLW is produced as a by-product of the reprocessing of spent fuel from nuclear reactors. HLW is usually in liquid form and a process called vitrification converts the liquid HLW into a solid product which is then safely stored in preparation for the planned GDF for waste in England and Wales. For Scotland, high level waste needs to be packaged and stored prior to the development of a near surface repository. EDF UK has no HLW on its sites as it does not reprocess spent fuel on any of its sites.

Spent fuel from the AGRs is transported to Sellafield nuclear reprocessing site (owned by Sellafield Limited, a subsidiary of the NDA ⁽¹⁾) for long term storage. PWR spent fuel from Sizewell B is stored on site in a purpose-built spent fuel dry storage

facility which will safely store all of the spent fuel that will be generated over Sizewell B's life. Following long-term surface storage, the Sizewell B PWR spent fuel will be disposed to a future UK geological disposal facility.

The AGR spent fuel arrangements were agreed at the time of the restructuring of British Energy and through them EDF Energy pays for long term storage (and in previous years reprocessing) of spent nuclear fuel. Sizewell B's fuel storage strategy is approved by the NDA as it is funded by the Nuclear Liabilities Fund. EDF Energy has policies to continually improve and minimise the spent fuel and waste arising through the Company's wider safety, sustainability and environmental policies (see section 1.4.5.1.2.2 "Nuclear generation": "Radioactive waste management and decommissioning").

3.2.4.1.3 Radioactive waste indicators

Solid radioactive waste indicator	2020	2021	2022
France: volume of long-lived high and intermediate level solid radioactive waste (in m ³)	283	287	225
United Kingdom: volume of low-level solid radioactive waste disposed of (in m ³)	352	471	498

In addition to the previous indicators, the generating plants in operation in France are concerned by very-low level solid radioactive waste (VLLW) and short-lived high-level and intermediate-level solid radioactive waste (LILW-SL). In France, the volume of very-low level waste in 2022 is 3,619m³, compared to 3,273m³ in 2021 and 2,597m³ in 2020. The volume of short-lived low-level and intermediate-level waste in 2022 is 4,916m³ compared to 6,329m³ in 2021 and 5,429m³ in 2020. Within the Group's scope in the United Kingdom, the intermediate-level radioactive waste generated is 196m³, compared to 161m³ in 2021 and 2020.

Waste from Framatome's industrial activities in Belgium and the USA is identified by the class A radioactive waste indicators. In the USA, the volume of Class A waste is 911m³ in 2022, compared to 215m³ in 2021 and 378m³ in 2020. In Belgium, decommissioning activities at the Dessel site are being completed and did not produce Class A waste in 2022, as in 2021 and 2020.

3.2.4.1.4 Radioactive waste and decommissioning

Waste resulting from the decommissioning of power plants and associated industrial activities is identified in France using the indicators of very-low level solid radioactive decommissioning and industrial waste (VLLW) and low-level and intermediate-level (LILW) radioactive waste. For the Group in France, the volume of very-low-level waste is 3,259m³ in 2022, compared to 2,707m³ in 2021 and 2,007m³ in 2020. The volume of low-level and intermediate-level waste is 349m³ in 2022, compared to 622m³ in 2021 and 251m³ in 2020.

3.2.4.2 Eco-design

The eco-design approach, the first phase of the circular economy ⁽²⁾, is integrated from the engineering phase for major new construction projects or major process modifications. Several measures have been taken, such as:

Deployment at the Nuclear & Thermal Fleet Department

The design of facilities by engineering entities is based on an eco-design approach taking account of their environmental footprint, waste management and recovery throughout their entire lifecycle. Implementing a Waste Organisation and Management Plan (SOGED) for major construction sites contributes to the implementation of the principles of the circular economy very early on in the construction process.

Deployment at EDF Hydro

Deployment of the eco-socio-design approach at EDF Hydro, e.g. by carrying out a GHG footprint assessment for projects going through the CECEG, co-financed projects, projects requiring an impact study and certain international development projects.

Raising awareness among stakeholders

Awareness-raising actions for staff and service providers, e.g. in the form of e-learning or competitions, participation in the European Week for Waste Reduction (EWWWR).

3.2.4.3 Reusing and optimising resources

The Group's entities and companies are committed to a process of continuous improvement according to the principle that the "best waste" is waste that is not produced.

Entity action plan

All entities have action plans to limit the production of conventional waste, which are incorporated into the environmental management system programmes and include corresponding indicators (quantity of waste avoided, quantity of equipment reused, savings made on waste management, monitoring of a waste recovery rate to encourage recycling and therefore foster savings of resources).

Waste and Circular Economy Group

This is integrated into EDF's EMS and is tasked with carrying out prevention, optimisation of resources and recycling actions with a view to preventing waste generation.

3.2.4.3.1 Optimisation of fuels and raw materials

For generating electricity and energy services, the Group uses raw materials, including a significant share of fuels: uranium, gas, coal, fuel oil and biomass. Consumption of different fuels varied to differing degrees in 2022: coal (-48%), heavy fuel oil (-1%), natural and industrial gas (-7%). In France, coal consumption decreased by 43% due to the decrease in coal generation. EDF's gas consumption fell by 7% due to reduced gas-powered energy generation. In terms of electricity consumption on industrial sites, electricity consumption for generation resource auxiliaries (approximately 20TWh/year) is mainly self-produced electricity.

(1) Nuclear Decommissioning Authority.

(2) There were many examples, including the free supply of warm water from the Gravelines power plant to the Aquanord fish farm, where by installing pipes to draw warm water from the drains, the fish farm collects 10m³ per second, without a water heating system (see the EDF "Circular economy and regions" guide); as well as the Dampierre power station, which uses its hot water to supply nearby agricultural greenhouses.

To optimise fuels and raw materials, the Group focuses on several factors:

Variation in the Group's generation mix

The development of renewable energies, the commissioning of high-efficiency combined cycle power plants ⁽¹⁾ (Edison's Marghera Levante project aims to be among the most efficient in Europe), the use of biomass by Dalkia, the conversion of the thermal fleet of the island systems with liquid biomass.

Optimisation of existing facilities

IES, Dalkia and EDF in the United Kingdom are carrying out actions to optimise existing facilities, such as improving energy efficiency or process performance, maintaining or modifying processes, prescribing fuel quality and enhanced monitoring of performance levels, or using cogeneration (e-monitoring). In addition, seven of IES's thermal sites are ISO 50001 certified in the island territories.

Real-time selection of the most effective generation resources

For example, Dalkia uses an energy management tool to optimise energy facility fuel use and is increasing its renewable energy use rate, replacing fossil fuels.

Implementation of a natural uranium savings strategy

EDF's control of each stage of the fuel cycle, the design of high-efficiency fuel and suitable management of that fuel within nuclear units all contribute to optimising natural uranium needs. Recycling of spent fuel currently generates a saving of approximately 10% natural uranium *via* the use of MOX fuel (for a balanced cycle), and ultimately up to 25% by relaunching the RPU (reprocessed uranium) sector (see in section 1.4.1.1.2.3 "Nuclear fuel cycle and related issues").

Life-cycle assessments (LCA)

EDF Renewables, which uses raw materials to manufacture equipment, carried out life-cycle assessments on its technologies (onshore wind turbines, photovoltaic solar, battery storage) to identify the main environmental impacts, and the life-cycle phases making the biggest contributions, and to study the technical & economic feasibility of possible improvements.

Development of zinc-air batteries

Zinium is a Group subsidiary dedicated to the development of zinc – air batteries. This technology uses easily accessible and non-polluting materials (for information on rare-earth metals, see also section 3.2.4.4.3 "Recycling in the field of new renewable energies").

3.2.4.3.2 Optimising material and equipment

The use of recycled materials (aggregates, earth, concrete, etc.) is encouraged during major projects related to networks and hydraulic, nuclear and thermal investments and the materials used are recovered. Many large-scale projects under the *Grand Carénage* programme recover a large amount of equipment and spare parts that can still be used.

EDF Reutiliz

EDF started "EDF Reutiliz", a digital platform to help equipment to be reused, with a view to reducing the consumption of resources and limiting the production of new goods. Its deployment began in the end of 2020 with the operational implementation phase, ramping up the reuse operations already deployed to the production fleet, and to the management of the property and IT fleet. EDF R&D estimated that the carbon impact of reuse not only contributed to reducing its own carbon footprint (scope 3), but also contributes to reducing the emissions of its stakeholders that reuse EDF equipment. A calculation methodology and database have been developed to calculate the GHG emissions avoided through reuse.

In 2022, reuse avoided the emission of 956 tonnes of CO₂e for EDF and its stakeholders.

3.2.4.3.3 Optimisation of internal consumption

On 29 August 2022, EDF adopted an internal energy efficiency plan aimed at reducing the Company's key consumption by 10% through proactive measures and the mobilisation of employees.

This plan amplifies and supplements the commitments the Company has made over the last several years. In order to deal with the crisis, it proposes new measures and encourages daily "eco-gestures" fostering energy savings, using three main levers: workspaces, digital uses and the continuation of actions to optimise travel.

Workspaces

- **Context:** EDF's real estate portfolio currently represents just over 3 million square metres, of which approximately 2/3 are tertiary buildings on industrial sites. Air conditioning and heating account for 20 to 40% of the energy consumption of tertiary buildings. The Group's Real Estate Department is working to reduce the consumption of workspaces through the optimisation of m², energy audits and efficiency measures (e.g. installing more efficient building management and heating equipment, switching off the air conditioning or ventilation at night and at weekends, representing a 4.5% saving in ventilation consumption, etc.). Buildings whose energy performance is too poor are gradually being abandoned in favour of new leases that include more demanding energy criteria. The use and development of data with Datanumia, in partnership with the Sales Department and R&D, enables consumption to be precisely managed for each site. In less than four years, the total energy consumption of the real estate portfolio has been reduced by approximately 12%.
- **New in 2022:** The internal energy efficiency plan is now proposing new measures for workspaces. These include limiting heating to 19°C as from this winter, automatically switching off collective lighting at 7pm, reducing the lighting periods for illuminated signs, etc.

Digital practices

- **Recent context:** EDF was the first major company to obtain the "Numérique responsable" ("Responsible Digital") label in April 2021. Among other actions that have been carried out and that have contributed to this label, the data centres have reduced their energy consumption by 10% since 2015 while doubling their computing power. The "virtualisation" of servers allows several applications to be hosted on a single device, whereas previously there was one device per application. For example, posts and communications on the Group's social networks have a "use by" date, and Teams conversations are automatically deleted after six months.
- Efforts have also been made with regard to the duration and life cycle of digital equipment: the IT and Telecom Services department, in partnership with associations and local authorities, is extending the life of PCs, screens, telephones and servers and is working to give them a second life. In conjunction with Dalkia, it is also working on recovering the "waste" heat from data centres and is studying the possibility of installing photovoltaic panels on the sites where the data centres are located to enable self-consumption.
- "Responsible Digital" eco-actions have already been identified and are recommended in terms of the use of the Internet, email, paper printing, smartphones, the creation and optimisation of a document, and the compression of multimedia files. They are available on the Responsible Digital site of the Group's intranet (VEOL).
- **New in 2022:** The internal energy efficiency plan activates several additional levers, either centrally or at the employee level, to save energy or, in the event of tension on the network, to contribute to "load shedding" by shifting consumption.

Further optimisation and reduction of travel

With the EV100 programme, the Company is committed to electrifying its vehicle fleet to reduce its carbon footprint. With one third of the Group's vehicles already 100% electric, fuel consumption has been reduced by 20% since 2019.

By reducing business travel in favour of remote meetings, employees have collectively reduced air travel by 20% and rail travel by 17% since 2019.

(1) Combined gas cycle, a type of power plant using a combination of gas and steam turbines.

The continuation of the EV100 programme ⁽¹⁾, the increase in the use of electric vehicles, as well as training in eco-driving, should enable the Group to make further progress in reducing the energy consumption of travel and its carbon footprint. Another avenue under study to contribute to this is the display by TRHIPS ⁽²⁾ of the CO₂ emissions for each trip, as well as the possibility of prioritising low-carbon travel proposals.

Reducing travel remains a major lever for saving fuel and achieving carbon neutrality. As part of the Group HRD's "Fighting CO₂ Starts With Us" initiative, many actions have already been proposed in this sense. An energy efficiency challenge has been added to the programme.

The Group's employees are increasingly aware of these issues, particularly as a result of networks set up by staff, for staff ⁽³⁾.

3.2.4.4 Conventional waste management and recovery

Conventional waste is the waste produced by the EDF group on its sites. It does not include radioactive waste, coal ash or gypsum derived from the process, which are managed and assessed separately. Waste stored on-site, waste awaiting disposal, materials reused on-site (e.g. spoil and rubble) and equipment that could be reused

3.2.4.4.1.2 Key performance indicator

GROUP KEY PERFORMANCE INDICATOR

Group's annual target for conventional waste recovery is at least 90%.

The decrease in the recovery rate of conventional waste observed in 2022 can be explained in particular as a result of actions adopted to reduce the production of the most recoverable waste, as part of EDF's strategy to prevent waste from operations, maintenance and new construction sites, in addition to increased reuse (particularly at the DPNT (Nuclear & Thermal Fleet Department) and Framatome).

Hazardous waste

In 2022, hazardous waste production totals approximately 73,000 tonnes Group-wide. This mainly consists of mixtures of water and hydrocarbons, sludge from flue gas treatment from the operation of facilities.

In France, new tracking tools have recently been put in place to further optimise the management of production of hazardous waste from industrial sector operations (including a dedicated quarterly tracking indicator).

3.2.4.4.2 Recovery of combustion products Use of ashes

Resulting from the combustion of coal to generate electricity, coal ashes have properties that enable them to be used in various applications (in particular cement and concrete). In 2022, EDF produced 52,755 tonnes of coal ash and used 19,408 tonnes, i.e. a use rate of 37%.

Research works

As part of its continuous improvement approach, EDF conducted research works to improve the use of ashes, sediment and sludge, particularly via works by the non-profit RECORD.

(sold or gifted) are not taken into account. Construction and decommissioning waste is included in this report, if its management falls under the responsibility of the EDF group.

3.2.4.4.1 Recovery of conventional waste

3.2.4.4.1.1 Group policy and commitment

The Group's CSR policy aims to develop the circular economy approach and improve the recovery of waste produced. This policy takes concrete form in various ways, including the development of the reuse of parts and materials, particularly during deconstruction work; the implementation of on-site pre-processing of various waste products, in order to limit the volume of waste produced and promote the recovery of the remaining fraction (concentration of hydrocarbons, separation of asbestos); the establishment of partnerships with players in the recycling field (RECYLUM for Citelum, Veolia and Suez for conventional waste, Ateliers du Bocage for printer cartridges); sorting and recovery of waste in authorised channels; for example, excavated earth or sediments from hydraulic dams are recovered as aggregates for civil engineering or during public works; sorting and recovery of certain waste in dedicated recovery channels (Soren or First Solar contracts from EDF Renewables for end-of-life panels). ⁽⁴⁾

Annual rate of conventional waste directed towards a waste recovery industry (in %)



3.2.4.4.3 Recycling in the field of new renewable energies

3.2.4.4.3.1 Recycling of wind turbines

98% recyclable wind turbines, including the concrete foundations

Composed essentially of concrete, steel/cast iron, copper and aluminium, the structure of a wind turbine is 90% recyclable. Including concrete foundations, this figure rises to 98%. The most difficult elements to recycle are the blades: they represent about 10% of the weight of a wind turbine (2% including the foundations). The most mature processing method is currently energy recovery, but alternative solutions are being developed (material recovery).

(1) See section 3.1.4.3.6.4 "EDF's commitment for its vehicle fleet (EV100)".

(2) TRHIPS (Travel, Risk Management, RH, Information Planification System) is the software available to employees, covering four areas of online booking: rail and air tickets, accommodation, and car hires.

(3) See Rhizome initiative (see section 3.3.4.3 "Social innovation for a just and inclusive energy transition").

(4) See in particular section 3.2.4.4.3.2 which sets out in detail these contracts.

Blades R&D

Wind turbine blades and components that are not currently recycled are the subject of a variety of experiments and pilot projects on which EDF Renewables is working, in conjunction with EDF R&D: recovery of fibre-glass blades and transformation into granules for integration into concrete or wood aggregate; reuse for street furniture (for example, the decommissioning of the EDF Renewables wind farm in Tenesa, Corsica).

Recyclable wind turbine blades for EDF Renewables' offshore wind farm

Unveiled by Siemens Gamesa in 2021, a new recyclable blade design will be used by EDF Renewables on 10 wind turbines at the Calvados offshore wind farm. This is a first in France. Made from a combination of materials cast together with resin, this new blade model allows the resin to be effectively separated from the other components at the end of the blade's life so that the materials can be reused in a wide range of applications (automotive, aeronautics, railways, etc.).

Support for the call to ban dumping

EDF Renewables, as a member of WindEurope ⁽¹⁾, supported the Europe-wide call to ban dumping of used wind turbine blades by 2025. The European wind turbine industry is actively committed to reusing, recycling or recovering 100% of used blades.

Rare-earth elements

Rare-earth elements pose a challenge for wind power, and only for technologies using permanent magnets, *i.e.* "PMG" (Permanent Magnet Generator) wind turbines. These may contain several rare-earth elements: neodymium, dysprosium,

praseodymium, or sometimes terbium in their permanent magnets. Magnets represent on average 600 to 700kg/MW in Direct Drive (mainly used for offshore wind turbines), and 80 to 160kg/MW in Gearbox (mainly used onshore).

Recycling of permanent magnets

Due to the low volumes, there is not yet an industrial process for recycling permanent magnets in order to reuse rare-earth elements. The recycling of permanent magnets is under study and the first projects are emerging. Manufacturers are working on creating permanent magnet wind turbines without rare-earth elements.

3.2.4.4.3.2 Recycling of photovoltaic panels

In Europe, the recycling of photovoltaic panels is governed by Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment, as amended, known as the WEEE Directive. Under this directive, producers are responsible for financing the management of waste from their own products, including the processing of products at the end of their life.

95% recyclable

In France, more than 95% of the components are recycled. Rare-earth elements are not used in the manufacture of photovoltaic panels.

Collection, reuse and recycling

In France, Soren provides end-of-life collection (the average eco-participation in the purchase of equipment is €0.70 per panel). There are currently 3 crystalline silicon panel recycling plants in France. The materials are separated and redirected to various industrial sectors: silicon to precious metal sectors, the aluminium frame to aluminium refineries, junction boxes and cables are crushed and sold as copper shot.

(1) windeurope.org/newsroom/press-releases/wind-industry-calls-for-europe-wide-ban-on-landfilling-turbine-blades/

3.3 Well-being and solidarity

Personal well being and solidarity development are key issues of EDF's *raison d'être*. This concerns both its employees and all its stakeholders. The four main CSR commitments identified in this respect are the health and safety of all individuals, ethics and human rights, the promotion of equality, diversity and inclusion and the prevention of energy poverty and promotion of social innovation.

1.9

GLOBAL LTIR

100%

RATE OF RESPONSE TO
WHISTLEBLOWERS WITHIN
ONE MONTH

30.8%

GENDER BALANCE INDEX:
WOMEN IN MANAGEMENT
COMMITTEES

476,638

ADVISORY ACTIONS
THROUGH THE ENERGY
SUPPORT SERVICE

The Group's objective, without overriding the managerial independence of the regulated infrastructure operators, is to sustainably transform the way it works and manages its activities, in order to provide the best possible conditions for employee involvement, with a view to increasing their well-being, performance and team mobilisation.

A pioneering system ⁽¹⁾ for listening to employees and recording their expectations: "MyEDF group"

The annual employee engagement survey "My EDF group" is sent to all Group employees to gather their opinions on their work life and their perception of the Company at both the local and Group levels. Areas of satisfaction and areas for improvement are identified, and the results of this survey are examined by the Executive Committee and the various Management Committees. They help guide priorities and feed action plans within the teams.

The 2022 survey took place over 4 weeks. It is conducted by IPSOS, which strictly guarantees the anonymity and confidentiality of responses. Participation rose once again to its highest level, 79%. The engagement index was at a satisfactory level, having gained a further 2 points (to 71%) on the previous year. The engagement results (engagement index ⁽²⁾) are integrated into the variable compensation of senior executives (see section 3.5.4.8 "CSR and remuneration policy for group executives").

3.3.1 Security, health and safety for all

EDF is committed to protecting the health and safety of all individuals. As part of this, the Group develops the highest standards in terms of nuclear and hydropower safety, health policies for its employees and subcontractors (reducing the number of accidents, eradicating fatal accidents, developing the management of psychosocial risks, adapting work organisation methods, guaranteeing a high level of social welfare, etc.), sales offerings related to comfort and well-being, improvement of air quality and reductions in noise, visual or light pollution.

INES Indicator

	2020	2021	2022
Significant level-2 events on the INES scale* (in number)	1	1	0

* For the methodology used for this indicator, see section 3.6 "Methodology".

3.3.1.1 Nuclear safety

The operational safety of nuclear facilities is taken into consideration from the initial design stage, and is regularly monitored, together with the implementation of an employee motivation policy and large-scale investment programmes. The Group's nuclear safety policy is incorporated into training for both EDF employees and subcontractors. Nuclear safety is subject to internal controls (annual reviews, internal control plans and nuclear inspection audits in France) and external controls (peer reviews between corporate members of WANO and OSART audits) conducted by experts from the International Atomic Energy Agency (IAEA).

In France, the safety of nuclear facilities is controlled by the ASN. In the UK, the Office for nuclear regulation (ONR) is the independent safety regulator in the civil nuclear sector. It monitors compliance with safety rules, including for the transport of radioactive materials. The "EDF group Nuclear Safety" policy was redefined in 2021 (see section 1.4.1.1.2.2 "Environment, nuclear safety, radiation protection").

Given the importance of the nuclear safety issue, clear and transparent information and communication on events and their possible impacts are promoted within the Group. This quality dialogue is sought and maintained with employees and their representatives, subcontractors, regulatory bodies (ASN and ONR), local authorities and all other stakeholders in nuclear safety.

The Nuclear Safety Council, chaired by the Chairman & Chief Executive Officer of EDF, meets several times a year and, periodically reviews the annual nuclear safety assessment for the EDF group. A General Inspector for nuclear safety and radiation protection (IGSNR) is appointed by the Chairman & Chief Executive Officer to whom he/she reports. He/she carries out inspection assignments for all of the nuclear activities of the EDF group. Each year, he/she issues an opinion on safety within EDF. The report is presented to and discussed by the Nuclear Safety Council. It is then made public (see section 1.4.1.1.4.3).

For developments in nuclear safety, see in particular sections 1.4.1.1.2.2 "Environment, nuclear safety, radiation protection", 1.4.5.1.2 "Activities of EDF Energy" and 2.2.5 "Specific risks related to nuclear activities".

(1) The first "My EDF group" internal engagement survey was begun in November 2012, covering all the Group employees.

(2) The engagement index is a descriptive and factual "employee engagement dynamics index" which, when used in a macro way, makes it possible to measure the quality of employees' commitment throughout the entity.

Focus on stress corrosion

See in 1.4.1.1.2.1 "Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors".

3.3.1.2 Hydropower safety

Hydropower safety aims to limit risks of structural failure, risks relating to the operation of facilities during times of flooding, as well as watercourse flow variations during operation. The hydropower safety policy aims for a high level of safety and continuous improvement. For developments related to hydraulic safety, refer to Section 1.4.1.3.1.3 "Hydropower safety".

3.3.1.3 Health and safety of employees and subcontractors

In an environment that is undergoing rapid, far reaching changes, the human aspect is a core component of the CAP 2030 strategic plan. To tackle the industrial and commercial challenges it faces, the Group must remain a socially responsible and committed employer and a benchmark in terms of health.

3.3.1.3.1 Health and safety policy

The Group's health and safety policy, adopted in April 2018, was updated in April 2021.

The Group strives to set an example in the area of Health and Safety. The policy is based on a commitment signed jointly by the Chairman and Chief Executive Officer and all members of the Executive Committee. The policy defines a consistent framework and all policies and action plans of the Group's different subsidiaries must comply with the policy. This Group policy applies to all the companies controlled by the EDF group, in all the countries in which EDF operates. It concerns both its employees and subcontractors.

Priorities and objectives

The priorities of the policy are primarily to eradicate serious and fatal accidents, and secondarily to reduce the number of accidents and to curb absence. The policy aims to anchor throughout the Group the foundation formed by the Group's key rules and the BEST health and safety management reference framework, enhanced with new practices. This policy is accompanied by a roadmap that mobilises the Group's entities to achieve the objectives set.

The Executive Committee reviews health and safety figures and monitors action plans regularly. A strategic Committee steers the deployment of the policy.

3.3.1.3.2 Health and safety management

The basis of health and safety management

The 10 key rules

The Group focused its commitment on the 10 key rules, identified on the basis of an analysis of the fatal accidents that have befallen the EDF group over the past 30 years.

The BEST reference framework

The Group entities regularly conduct self-assessment of their health and safety management systems based on the BEST reference framework. In October 2022, the Strategy Committee on Health and Safety conducted a specific assessment in the area of Health and Safety requirements governing relations with service providers, which pinpointed the progress achieved by the entities (featuring strong progress in categorising service providers and suppliers from the standpoint of level of risks). In particular, this review led to an action plan for thoroughly integrating health and safety in the procurement approach (see also section 3.4.2.3.2.4 "Responsible procurement process").

ISO 45 001/MASE or VCA certifications

The proportion of employees belonging to entities having a certified management system (ISO 45011, MASE or VCA) was stable at 35.4% at end 2022, as against 35.2% at end 2021.

This figure is published on the edf.fr website and on those of the certified entities.

"Safety Stop"

When safety conditions related to key rules are not met, a "NoGo" must be activated to correct the situation before starting. In the same way, when unforeseen circumstances no longer allow the safety rules to be respected, a "safety STOP" should be marked. A pause was observed throughout the Group on 13 October 2021 for each work team to discuss how to adapt the new policy to their own situation and ensure its adoption.

Sharing the analysis of "High Potential Events" (HPE)

In order to ensure the continuous improvement loop, and to maintain risk awareness, High-Potential Events (HPE) are collected, analysed, and shared throughout the Group. 72% of these HPEs are near-misses or dangerous situations. Particular emphasis is placed on those related to the Group's 10 key rules.

In 2022 the safety criterion of the EDF profit-sharing agreement focused on developing analyses of accidents involving halting, and reducing the number of HPE-classified accidents with or without halting.

Health & Safety audits

Audits are carried out each year throughout the Group, in particular in the form of site visits. These visits are written up in a site visit report shared locally with the audited teams.

See also section 3.9.1, "The EDF group's CSR commitment and its duty of vigilance framework" relating to its commitments and requirements with respect to the environment, human rights, health and safety.

3.3.1.3.3 Occupational accidents

Eradicate serious and fatal accidents

EDF is committed to improving the physical and mental health of its employees and subcontractors. The top priority is to protect them and, most importantly, to eradicate serious and fatal accidents.

There were two work-related fatal accidents directly in 2022. These fatalities concerned one employee who was electrocuted during removal of a line, and one employee who fell from a height during work in a mountainous area. In addition to these two fatal accidents, we are saddened to report eight deaths, of six of our employees and two of our service providers who reported feeling unwell, as well as a fatal accident to one of our employees while travelling.

	Target	2020	2021	2022
Number of fatal accidents	0	7	4	2

In line with the steps taken within the Group to eradicate serious and fatal accidents, the new policy aims to develop a collective safety requirement supported by both Group and subcontractor employees. The updated policy reinforces the progress made with the providers. Four action sheets or "strengths" have been developed for this purpose.

Reducing work-related accidents

In order to have comparable data between Group entities and measure accident rates directly related to the performance of activities, the EDF group set up a new "LTIR" (Lost Time Injury Rate) indicator corresponding to the calculation of the frequency rate according to Anglo-Saxon standards.

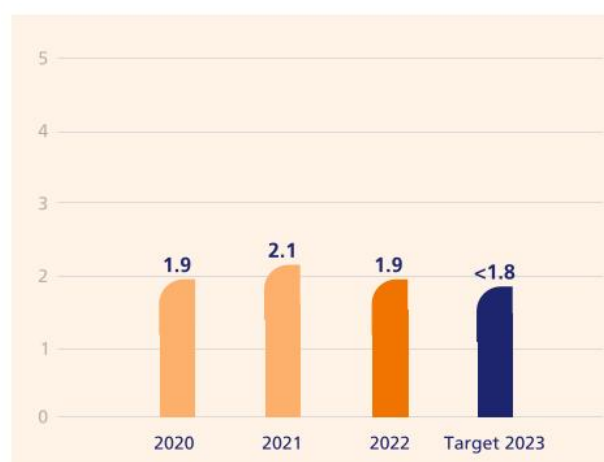
The Group's key performance indicator: Global LTIR ⁽¹⁾

GROUP KEY PERFORMANCE INDICATOR

Under the health and safety policy, the targets for the end of 2023 are 1.4 for Group employees and 1.8 for all contractors combined.

While 2020 was a highly uncharacteristic year, the Global LTIR has exhibited a steady downtrend since 2019, illustrating the improvement due to the deployment of preventive approaches for employees of both EDF and service providers.

Global LTIR



3

Further details on work-related accidents and occupational illnesses

	2020	2021	2022
Employees			
LTIR Group employees	1.4	1.7	1.6
Employee work-related accidents with at least one lost day	351	432	404
Accident severity rate	0.13	0.16	0.16
Occupational illnesses	41	40	52
Suppliers			
Supplier LTIR	2.6	2.6	2.2
Supplier work-related accidents with at least one lost day	483	513	450

The number of occupational illnesses reported in 2022 returned to the numbers recorded in 2018 and 2019, with a sizeable share of cases relating to muscular-skeletal disorders, warranting preventive actions to reduce the hardship of activities (introducing exoskeletons) and user-friendliness of workstations, including in the service sector.

(1) Lost Time Incident Rate.

3.3.1.3.4 Well-being and psychosocial risks

Combating absenteeism, preventing psychosocial risks and improving well-being at work

For 2020 and 2021, the impact of Covid is estimated at 0.3 day per employee and per year. For 2022, the impact of Covid was higher (estimated at 1 day per employee and per year). After deducting this impact, the level of absence due to sickness and accidents is in line with the findings for 2018 and 2019.

Prevention of anxiety- and depression-related disorders, stress and muscular-skeletal disorders (MSD), the three main causes of absenteeism, are regularly targeted by prevention initiatives.

The development of team empowerment projects also led to a significant drop in absenteeism among the employees of the teams involved, due to the positive health impacts of the improved quality of life in the groups and the increased levels of commitment and meaningfulness of work.

	2020	2021	2022
Number of days of absence per employee and per year (EDF group)	8.8	9.1	9.8

Health in the workplace and general health issues

The EDF group employs personnel who specialise in occupational health, as well as doctors who are experts in environmental health and public health. In addition to medical monitoring of employees, these healthcare workers are involved in setting up prevention programmes and are stakeholders on all the social dialogue bodies in the field of health at work.

The EDF group is also committed to public health issues such as addiction and cardiovascular risk prevention.

3.3.1.3.5 Well-being, organisation of work and working hours

Work time

For companies based in France, the duration of the working week is 35 hours, with shifts spanning for a minimum of 5 days. In order to meet the needs relating to each company's business and particularly to ensure continuous operation, the Group's employees may be required to provide a continuous service or be on call outside of regular working hours. These arrangements are according to the changing circumstances at each company, legislation and new authorised work organisation practices.

Fixed numbers of working days

By implementing "forfaits jours" agreements (which provide managers a fixed number of working days and have proved overwhelmingly popular among them) in most of the Group's companies, the Group has sought to modernise how working hours are structured in order to promote agility and employee empowerment.

Continued improvement in management methods and work organisation

Improvement of management methods and work organisation continued in 2022, particularly focusing on improvements to practices initiated during the Covid crisis, and the deployment of company-wide agreements laid down in 2021 in certain Group companies (EDF, the network manager Enedis, among others). These developments are aimed at striking a new balance between seeking performance gains, strengthening cohesion among the groups and enhancing the well-being of each employee. The coordination of this managerial and organisational transformation is now organised at the level of the EDF group in France, with the setting up of a network of local officers in the main Group companies in France. This France Group initiative was launched in October 2022 under the banner "Working Differently, Managing Differently".

"Working Differently, Managing Differently" (TAMA) project

For EDF, a *Travailler autrement, manager autrement* ("Work Differently, Manage Differently") agreement was signed on 15 November 2021. This global agreement includes a process of team empowerment, new working methods (updating the consistent framework for working-from-home with a maximum of 10 days/month of permitted working-from-home, new options for flexible working hours where necessary adjusting working hours to approximate as closely as possible to employees' needs, provided the level of work teams' performance is maintained, working directly on-site) and will be implemented through the co-construction of a team project to determine how the teams' operations will change. In order to support staff during these changes, the Group has also instituted 2 financial-

assistance schemes in connection with working-from-home: an indemnity of up to €20 per month. This is the employer's contribution to home occupancy expenses (rent, taxes, variable costs), and assistance for equipment to telework in satisfactory conditions.

For EDF and Enedis, the deployment of the "Work Differently, Manage Differently" agreement and the "Work Differently and Together to Transform our Management Methods" agreement allowed development of new working methods within the teams (updating the consistency framework for working-from-home, new scope for flexible working hours, working directly on site). Furthermore, the development of trust and empowerment is continuing, through the aforementioned agreements and through approaches set in motion in other companies (e.g. Framatome).

Work-at-home agreements in Group companies

In the context of the Covid crisis and its consequences, several Group companies have seen themselves compelled to institute or review their working-from-home agreements (Enedis, EDF Renewables, Électricité de Strasbourg, Framatome, among others).

Digitalisation and collaborative tools

This trend is becoming more pronounced with the computerisation of certain tasks, and the ever-massive recourse to remote-collaborative tools (electronic signatures, Teams, etc.)

3.3.1.3.6 Well-being and social welfare

Long-term social welfare policy

The Group's employee benefits policy is based on three main principles: a principle of responsibility, a principle of balance between competitiveness and sustainability, and a principle of appropriation by beneficiaries. Providing sustainable employee benefits that are adapted to local market conditions requires them to be financially sustainable in the long term, for both employees and employers.

A specific social welfare scheme: the status of the EGIs

In France, the majority of the Group's workforce are employed by companies descended from "historic operators" (EDF, Enedis⁽¹⁾, PEI) which have electricity and gas industry or "EGI" status. This status carries an entitlement to special social security schemes, including special sickness, disability and pension schemes. If employees with EGI status are unfit for work (sickness/maternity/disability), they thus benefit from a customised level of cover. In terms of healthcare costs, in addition to the basic scheme, their special scheme includes an additional mandatory part, which also covers retired employees. Employees with EGI status and EGI pensioners have access to centralised social activities, financed by the companies in the professional branch and managed independently by the unions. In addition to these schemes, there is a benefit in kind historically based on a company decision which covers gas and electricity supplied by historic operators to employees and which is maintained for retired employees.

(1) A distribution operator managed in accordance with the rules of managerial independence.

Significant changes over the last decade

EDF's IPO and the application of international accounting standards required the valuation and provisioning of commitments to retired employees. The maintaining of the industry's special welfare plans faced with this requirement was supported by the overhaul of their financing: affiliation with standard mandatory plans for pensions and strengthening of affiliation between current and retired employee plans for complementary health insurance cover.

Special pension plan

The special pension plan has, like other public sector special pension plans, been increasingly affected by efforts to reform mandatory pension plans launched by successive governments. Except for the pension calculation method (specific rate, applied to a salary at the end of career, with a reduced base), the main parameters (retirement age, required contribution period, etc.) tend to be in line with the standard compulsory plan. The definition of active service, enabling earlier retirements, has been revised and the way it is taken into account has been significantly overhauled for newly-hired employees, via the creation of a Retirement Days Savings Account.

The Covid crisis has caused postponement of the projected pension reform. A new reform project, arising from consultations in late 2022, has been presented by the Government to restore equilibrium to the pensions system's financial trajectory, with its measures scheduled to enter into force in late summer 2023. This project will include the following:

- parameterising measures: phased raising of the age of eligibility to the targeted age of 64 years in 2030 (63 years and 3 months in 2027) and acceleration of the timetable for prolonging the contribution period (to 43 years as at 2027 instead of at 2035 as provided by the previous, "Touraine" reform). These measures will target all the EDF group employees, on terms and to a timetable to be specified for the present employees with EGI status of the EGIs;
- a systematic discontinuance of the special EGI pension scheme and of other special schemes – the RATP Paris public transport authority, the Banque de France, notaries' clerks and the CESE (the French Economic, Social & Environmental Council) for all new hires as of 1 September 2023, according to terms and procedures to be specified. Note that none of the present statutory employees will be covered by this measure to discontinue the special EGI pension scheme;
- complementary measures, of a scope that will need to be specified, particularly concerned with maintaining the early-retirement measures, the employment of seniors, the prevention of occupational attrition and the upward revision of minimum pensions.

Whatever form it takes, a reform of pensions entails several challenges for the EDF group:

- employee acceptability: the special pension scheme is one of the pillars of the EGI status;
- financial: the need to guarantee over the long term the financing of the pension entitlements of statutory employees and to make that reform a driver for improvement in the financial situation of the EGI companies;
- social transformation, particularly as regards increasing mobility within and outside the Group, with the construction of a global framework for newly-hired statutory employees who are registered under the general pension regime.

Health, disability, and death

The level of employee health, disability and life cover appeared to need updating to meet that offered by other major groups, which led to a complementary cover in these three areas, in the form of an agreement at branch level.

An agreement on family rights was signed in 2017 at the level of the EGI branch with the trade union organisations, to modernise the social system.

In terms of health insurance, an in-depth consultation between the social partners of the EGIs and the government was carried out concerning a rebalancing of the accounts of CAMIEG⁽¹⁾, which have carried a surplus since its creation in 2007.

The rebalancing is specifically based on a reduction in employer and employee complementary health insurance contributions, a reduction in the solidarity contribution paid by the working population for the non-working population and an

improvement in optical benefits. These provisions have opened the way to a broader rethinking of how to monitor CAMIEG's balance of accounts and how to potentially increase responsiveness in order to recalibrate rates to the observed reality of financial balances.

In practice, employees from the EGIs could benefit from these measures which had a positive financial impact on their pay in 2022: the rate of employee complementary health insurance contributions is 25% less than in 2020 and, from 2023 onwards, this rate reduction will remain 5% less than the 2020 rate of employee contributions. Furthermore, the solidarity contribution paid by the working population for the non-working population has been permanently reduced by 17%, compared to 2020.

Lastly, as regards disability and death benefit, a strengthening of the system for supporting carers entered into force as from 1 April 2022. Financial assistance to employees on family solidarity leave and on parental attendance leave will be improved and will also be made open to employees on caregiver leave.

Thus, for several years, the strengthening of the financial steering of health, disablement and death schemes is a major goal, fostering closer tying of contributions with benefits, and responsibility is shared between employers and trade union organisations.

Social protection for non-statutory employees

The Group's other employees in France are covered by several collective bargaining agreements and can have fringe benefits provided by their own employer. Each employer must ensure that the benefits provided are consistent with the Group policy. For Group companies outside France, even if the regulatory context specific to each country must be taken into account, each entity is required to ensure that the capital paid out in the event of a death under death benefit contracts covers one year's salary at the very least.

3.3.1.4 Consumer health and safety

In addition to its long-standing commitment to the safe use of electricity⁽²⁾, the EDF group is also committed to consumer health. In the upstream branch of its activity, it has a positive impact on air quality because of its low-carbon production method. Downstream, with regard to the uses of electricity and its applications, it authorises the development of best practices in terms of mobility, cold chains, and home comfort.

The EDF group's policy covers a wide range of activities for promoting consumer health⁽³⁾.

Health and environment

For several years now, environmental issues have been linked to health issues out of a sense of limiting risk, anticipating future risks such as the health impacts of climate change, and promoting innovative services.

Detection of emerging issues

In order to detect emerging issues as early as possible, a meeting is held every quarter with all the environmental health correspondents of all the Company's departments. EDF is also a member of the French non-profit *Entreprises pour l'environnement* (EpE – Enterprises for the Environment), formed to analyse and anticipate environmental regulations, and share best practices.

Energy renovation and health

A study conducted by the *Service des études médicales* (SEM – Medical Studies Service) in collaboration with the University of Warwick (England) showed that energy renovation of heat sink buildings would generate savings for the public health system. This EDF study was adopted by the French Ministry for Ecological Transition (MTE), in a document published in 2022 on quantifying the economic evaluation of the benefits to health associated with energy renovation of housing⁽⁴⁾.

Noise pollution

Regarding noise pollution, acoustic studies are conducted from the initial design stage and are included in environmental impact studies. Acoustic measurement

(1) CAMIEG Caisse d'assurance maladie des industries électriques et gazières (health insurance fund for the electricity and gas industries).

(2) Various schemes have been set up in all relevant Group structures in France, Italy, the United Kingdom, etc. For example, EDF systematically sends a safety instruction booklet to all customers who take out a natural gas subscription. These instructions can be accessed on the edf.fr website. Enedis also develops partnerships with organisations representing the main high-risk groups to raise awareness of the risks of fishing near power lines, or to boost cooperation in the prevention of risks relating to firefighting work near power grids. Overseas, EDF in the UK informs its customers of the potential dangers of electricity in newsletters or on the back of bills. EDF in the UK also has a toll-free number to inform its customers about safety practices. Specific action is taken regarding the most vulnerable customers to promote their health, particularly during the winter period.

(3) Health is understood here within the WHO meaning as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

(4) strategie.gouv.fr/publications/evaluation-socioeconomique-effets-de-sante-projets-dinvestissement-public-0

campaigns are run in the area surrounding nuclear power plants.

EDF Renewables performs acoustic studies from the initial development phase of the wind turbines and the noise levels of turbines form part of the selection criteria for machinery. The same level of attention is given to noise pollution in the Group's international and French subsidiaries.

All new transformers purchased by Enedis now use low-noise air coolers.

Light pollution

With regard to the action taken to prevent light pollution, Citelum has implemented a system of sensors to adjust the intensity of lighting on the road network based on traffic density and driving speeds, which also improves car safety.

3.3.1.5 Actions to promote the practice of physical and sports activities

3.3.1.5.1 Actions targeting the Company employees

There are many initiatives to promote the practice of sports among the Company's employees, and they are varied and conducted as closely as possible at shop-floor level. As a recent example, the CIST-INGEUM alliance ⁽¹⁾ under the United Heroes programme designed to mobilise the unit around a number of activities contributing to employee well-being and health. This programme provides advice and workshops on topics concerning nutrition or sleep, as well as health/sport diagnoses, equipment, events, conferences, lectures and tutorials, or even live and replay coaching. The programme also offers a wide range of activities accessible to all according to their interests. Examples include yoga, pilates, meditation, swimming, hiking, cycling or table tennis. These possibilities are offered to each employee of the unit, on a voluntary basis. The programme also provides the opportunity, several times during the year, to contribute donations to voluntary associations, by taking part in group challenges in the unit.

3.3.1.5.2 Actions targeting the Company

EDF is partnering the 2024 Paris Olympics and Paralympics and launched in June 2022 its heritage programme "enJeux d'avenir 2024" (the Challenge for the

future in the 2024 Olympics). This programme is designed to vitalise the sport and energy of the 20-24 Olympics throughout France, and it seeks to mobilise the positive energies of sport to serve social and environmental causes through initiatives in metropolitan France and its overseas territories.

The heritage programme "enJeux d'avenir 2024" is addressed to all French citizens. The young generations are the prime target of this programme, and they are the best placed to contribute from today to transforming the world of sport. The programme initiatives were developed to go out and meet young people in order to raise their awareness of societal themes such as attitudes to handicap, eco-responsibility in sport, or learning to swim ⁽²⁾.

3.3.1.6 Air quality

3.3.1.6.1 Improving air quality by transforming the generation fleet

Modernisation of the thermal fleet

The EDF group is continuing its process of modernising and improving the environmental performance of its thermal fleet, until it meets the best available techniques in Europe. Regarding island systems, actions are taken to reduce NO_x, on a case-by-case basis: optimising exhaust gas processing, or reducing the number of hours of operation for certain turbines. In Brazil, the emission levels of the Combined Gas Cycle power plant in Norte Fluminense are below its NO_x limit of 25ppm, mainly due to the high standard of equipment maintenance.

In Italy, the Marghera Levante plant (780MW with 63% efficiency) is being substituted for less efficient resources, not only allowing specific gains in greenhouse gas emissions (up to 40%) but also significantly lowering nitrogen oxide atmospheric emissions (by more than half).

EDF is continuing to test biofuels, low-sulphur fuels to replace fossil fuels and is also developing an alternative fuel made from wood waste ⁽³⁾. At the same time, EDF is developing non-NO_x and SO₂ emitting technologies and proposes, in the island systems, isolated 100% renewable energy systems.

Change in SO₂, NO_x and dust emissions Group-wide:

SO ₂ and NO _x emissions due to heat and electricity generation (in kt)	2020			2021			2022		
	SO ₂	NO _x	Dust	SO ₂	NO _x	Dust	SO ₂	NO _x	Dust
EDF group	17	30	3	18	31	3	16	29	3
EDF	3	9	0.2	4	10	0.2	3	10	0.2

3.3.1.6.2 Improving air quality by supporting public initiatives in this area

France's "Climate and Resilience" Act strengthens outdoor and indoor air quality standards (mobility, heating, building renovation). As a responsible energy

company, EDF has developed unique skills in this field over many years, and works with partners to propose solutions to improve air quality.

EDF ⁽⁴⁾ has historical know-how on the understanding and modelling of atmospheric emissions and air-conditioning systems of buildings.

(1) This is the engineering unit providing service to the production fleet sites.

(2) See the press release dated 9 June 2022.

(3) Ecocombust project.

(4) More specifically, it involves the MFEED Department of EDF R&D.

Scientific contribution

With CERE⁽¹⁾, EDF R&D participates in the scientific effort by developing open source models⁽²⁾.

The 4Evlab laboratory⁽³⁾, run jointly by R&D, EDF, LaSIE⁽⁴⁾ and the CNRS, conducts studies on indoor air quality, humidity control, urban energy and building-front testing equipment. In 2022, a publication of their work, entitled "Assessment of the Water Vapor Permeability: effect of the total pressure" featured in the reference publication, International Journal of Heat and Mass Transfer.

Fleet equipped with air quality sensors

In Paris, Lille and the department of Haute Savoie, the vehicles used by Enedis – the French distribution network operator – are equipped with a network of air quality sensors called Pollutrack: 300 Enedis vehicles in Paris are equipped with laser sensors measuring PM 2.5 fine particles and transfer approximately two million daily readings to Airparif, which displays them on a map and marks the hotspots.

Mobility and air pollution

Airparif is one of Citelum's partners in Asnières-sur-Seine, part of the AIRLAB platform⁽⁵⁾. Installation of cameras and sensors on urban infrastructure makes it possible to measure mobility flows and atmospheric variations in sources of pollution in real time.

Prevention of health impacts

EDF contributes to preventive and research initiatives on the health impact of air pollution engaging in the Association for Prevention of Air Pollution (*Association pour la prévention de la pollution atmosphérique*, or APPA) and the Inter-professional Technical Centre for Studies on Air Pollution (*Centre interprofessionnel technique d'études de la pollution atmosphérique*, or CITEPA), and being an active member of the French Society for Health and Environment (*Société française de santé environnement*, or SFSE).

3.3.1.6.3 Improving the indoor air quality of buildings

EDF provides a range of innovative solutions to improve the indoor air quality of buildings.

Demonstrator in Villiers-sur-Marne

EDF and the town of Villiers-sur-Marne have joined forces to implement urban renewal and construction projects to improve and control indoor and outdoor air quality "from the street to the room". The deployment of a scientific approach carried by CERE⁽¹⁾ has resulted in the creation of a first digital demonstrator of air quality in a show flat.

ERP support offer

Dalkia is assisting healthcare facilities with operating blocks to comply with indoor air quality regulations, as well as operators of public buildings.

"NemoPool"

To develop solutions takes innovation and team work. Dalkia developed NemoPool with the startup ETHERA to make both swimmers and pool staff more comfortable. This tool regulates the level of trichloramines by controlling ventilation systems.

"Air Quality Challenge"

Covivio and EDF have joined forces with the Impulse Partners incubator to launch the Air Quality Challenge. This is a European call for projects aimed at startups, SMEs, laboratories, associations and large companies. The goal is to propose new innovative solutions in the field of monitoring and measuring indoor air quality, while positively impacting the energy consumption of buildings.

3

3.3.2 Ethics, compliance and human rights

The EDF group, while respecting the management independence of the regulated infrastructure operators, promotes a culture of integrity and applies a zero tolerance policy towards fraud and corruption. Ethical conduct in accordance with the law is the absolute rule for all Group employees, at all levels of the organisation, and without exception. The EDF group is committed to respecting and ensuring respect for human rights in all its activities and wherever it operates.

3.3.2.1 Organisation of ethics and compliance within the EDF group

3.3.2.1.1 Governance

The EDF Executive Committee is responsible for determining the orientations and priorities of the ethics and compliance programme, allocating the necessary resources and ensuring the monitoring and control of its implementation. The Board of Directors of EDF, through its Corporate and Social Responsibility Committee, oversees the Company's incorporation of ethical and compliance considerations into its works. Every year, the Executive Committee and the Governance & Corporate Responsibility Committee also receive an activity report drawn up by the Group Ethics and Compliance Department.

3.3.2.1.2 The Group Ethics and Compliance Department and its ethics and compliance network

Group Ethics and Compliance Department (DECG)

Reporting to the General Secretary, the Group Ethics and Compliance Department manages and coordinates, in liaison with the Departments concerned, the implementation of the Group's ethics and compliance programme.

Ethics and Compliance Officers (REC)

A network of around 50 Ethics and Compliance Officers within its entities and subsidiaries, both in France and abroad, share and deploy the Group's Ethics and Compliance Policy. The RECs participate in the Management Committees and report directly to the entities' senior management.

Associations and non-profits

EDF is a member of several anti-corruption groups and non-profits. In 2016, it joined Transparency International France, in which it participates in the Forum of Engaged Companies (*Forum des entreprises engagées*, or FEE), which promotes the highest standards of transparency and integrity.

(1) Atmospheric Environment Education and Research Centre, a joint laboratory at EDF R&D and the *École nationale des ponts et chaussées* ParisTech.

(2) Free access to source code.

(3) The *Laboratoire Efficacité énergétique et environnementale de l'enveloppe et des villes*, created in 2016.

(4) La Rochelle University's Environmental Engineering Science Laboratory.

(5) Airparif's laboratory of innovative air quality solutions.

3.3.2.1.3 Group Ethics Charter and its values

The Group Ethics Charter sets out the values shared by all EDF staff, places ethical requirements at the heart of corporate responsibility and, in accordance with the Chairman's commitment, promotes ethical behaviour in all professional activities. Updated in 2019, the Group Ethics Charter now focuses on the Group's three values "Respect, Solidarity and Responsibility", each featuring 4 requirements. It is available in French and English on the EDF group website ⁽¹⁾ and in eleven other languages in which the Group works.

3.3.2.1.4 Group Ethics and Compliance Policy (PECG)

Thirteen compliance programmes

The Group Ethics and Compliance Policy (PECG) which identifies the Company's compliance programmes as well as the main rules that Executive Directors should know, observe and enforce within their entities, strictly aligned with the risks of those entities, was updated and approved during an Executive Committee in January 2020.

The PECG includes thirteen compliance programmes: preventing the risk of corruption and influence peddling; preventing conflicts of interest; combating fraud; compliance with international sanctions programmes; prevention of harassment and discrimination; prevention of market abuse; prevention of the risk of money laundering and financing of terrorism; compliance with EMIR (European Market Infrastructure Regulation); compliance with the REMIT (regulation on Wholesale Energy Market Integrity and Transparency) regulation; preventing breaches of competition law; personal data protection; export control (dual-use goods); and the duty of vigilance (covering environmental, human rights and health and safety issues).

3.3.2.2 Anti-corruption and other compliance programmes

3.3.2.2.1 Anti-corruption programme

Programme

In accordance with the French Act of 9 December 2016 on transparency, the combating of corruption and the modernisation of the economy, known as the "Sapin II" Act, EDF set up an anti-corruption compliance programme taking account of legal requirements:

An ethics & compliance code of conduct included with the internal rules of procedure and a disciplinary mechanism

This code of conduct which was reviewed in July 2021, defines and illustrates, through practical cases, the different types of behaviour employees are likely to face as a result of the Company's business activities and organisation, and which should be prohibited given that they may constitute acts of corruption or influence peddling. It sets rules for all the themes identified during the corruption risk mapping process. It prohibits facilitating payments, and restricts gifts and invitations. Breach of any of its rules may result in disciplinary sanctions. It can be viewed by employees and third parties on EDF's site in French and English ⁽²⁾.

Whistleblowing system

The Group procedure for processing whistleblowing was reviewed during 2022, to factor in the developments entailed in the transposition in French law of the European Directive for whistleblower protection. See section 3.3.2.4 "The EDF group whistleblowing procedure".

Risk mapping

Ethics & compliance risk mapping is part of the Group Risk Department's annual internal control self-assessment process. Based on this, the entities draw up action

plans appropriate to their operational contexts to prevent and mitigate these risks. Since 2018, a specific "corruption" risk map was prepared, which identifies and prioritises, by business sector and country, risks of exposure to corruption. In 2020, the methodology used for the mapping was improved, to enhance its focus on the operational specificities of the Group's various business lines and geographical locations.

Third-party integrity control system

Under the Group Ethics and Compliance Policy, executives of the relevant Group entities are required to implement a system within their entities to control the integrity of any partners with which the Group plans to establish or continue a business relationship, mainly designed to check that there are no risks of exposure to international sanctions and that a clause is inserted in each contract entitling EDF or its subsidiary to terminate a business relationship with immediate effect in the event of a failure to adhere to an international sanctions programme. In 2021, this system was reviewed in line with the Group's corruption risk map.

Accounting controls

Control procedures, containing specific requirements for the detection and prevention of corruption, have been defined for the Company's various processes. Following a technical analysis, any anomalies likely to be characterised as fraud are, where applicable, forwarded to the entity's Ethics and Compliance Officer.

Internal evaluation system

A system enables the entities to assess the level of implementation and the control of each key requirement, and to identify the improvement actions to undertake.

A system to prevent conflicts of interest

The entities have put in place a system designed to prevent conflicts of interest and raise employee awareness of high-risk situations, provide a system for employees to declare their links to organisations in which they have a personal interest, and require managers to resolve conflicts of interest with respect for individual freedoms. A support guide, including case studies to help managers identify and deal with conflicts of interest, was introduced in early 2021, and is also being used by RECs and managers to raise awareness among employees during dedicated meetings.

Combating fraud

In accordance with the "Combating fraud" memorandum of instructions, revised in October 2022 in order to simplify it and make it more workable, executives shall set up systems within their entities to raise awareness among their staff, put in place checks to detect potential cases of fraud, investigate incidents, report proven cases and sanction those responsible.

Regulation of interest representatives

EDF is an interest representative within the meaning of the Sapin II Act. In this respect, it is registered on the list of interest representatives managed by the French High Authority for Transparency in Public Life (*Haute Autorité pour la transparence de la vie publique*, or HATVP). The network managers RTE, Enedis, and Dalkia are also registered: they each declare interest representation actions carried out during the year. The list of persons in charge of an interest representation identified in the register will be updated regularly. EDF also files with the HATVP an annual declaration relating to interest representation actions carried out that mentions actions aimed at influencing a public decision, with national public officials identified by the legislator. Lastly, lobbying has been added to the new version of the code of conduct.

At the European level, EDF is listed on the Transparency Register of the European Parliament and the European Commission (no. 39966101835-69), regularly updates its data, and applies the related code of conduct. In addition, in order to continue to raise awareness of ethical issues among interest representatives, the European Affairs Department has published its own internal ethics EU Lobbying Rules, available on the EDF website.

(1) https://www.edf.fr/sites/groupe/files/contrib/groupe-edf/engagements/Ethique%20Conformite/charte-ethique/20190416-edf_charte_ethique_fr_page_hd.pdf

(2) [avere.org/wp-content/uploads/2019/02/the_electrification_alliance_-_declaration-2017-030-0453-01-e.pdf](https://www.edf.fr/sites/groupe/files/contrib/groupe-edf/engagements/Ethique%20Conformite/charte-ethique/20190416-edf_charte_ethique_fr_page_hd.pdf) (The Electrification Alliance Electricity for an Efficient and Decarbonised Europe).

EDF presents its positions publicly via this transparency register ⁽¹⁾ and associations of which it is a member ⁽²⁾. Its main messages are also posted on social media (LinkedIn, Twitter). The European Affairs Department has introduced a regular internal control process for these associations to ensure that they match its mission statement, following which decisions may be taken (withdrawal or new membership) where necessary.

The estimated annual cost of the activities covered by the European Transparency Register since 2016 is around €2 million, with a downward trend. In 2022, the main actions were connected with: an ambitious revision of the EU ETS Directive and the implementation of the carbon adjustment at national boundaries; the development of low-carbon electricity generation sources, particularly for accelerating the permitting procedures for renewable energies; accelerating electrification of the economy, particularly in transport with the AFIR Directive promoting low-carbon hydrogen; and discussions around the forthcoming reform of the electricity market architecture.

Regulation for the financing of political parties

The EDF group complies with the laws and regulations in force concerning the financing of political parties. In accordance with the legislation in force in France, EDF makes no payments to political parties. The Group's Italian and UK subsidiaries have written directly into their codes of conduct the prohibition of financing political parties. In countries where it is allowed (such as the United States), EDF group companies may determine whether they wish to provide financial support. In such case, the financing shall comply with the principle of neutrality. Every year, the Group companies concerned must report any financing to their parent company.

In 2022, EDF Renewables made payments in the United States, consisting of US\$44,190 in the form of Political Action Committee contributions and US\$348,000 in the form of Corporate Contributions.

Training schemes

The Group Ethics and Compliance Department develops prevention measures and training for all employees of EDF and its subsidiaries, including:

- a dedicated community on the Group Intranet providing a range of training materials;
- the introduction of e-learning training modules, in particular an interactive training course on the code of conduct, in the form of two e-learning courses ("All employees" and "Exposed employees"), in French and English, enabling participants to deepen and test their knowledge (2,861 participants in 2022);
- targeted in-person training courses: generic training for new entrants to the ethics and compliance networks; for directors of subsidiaries or contract managers; and also to training courses, in French and in English, conducted by lawyers and targeting Group employees tasked with assessing third parties and with processing whistleblowing.

Additionally, the Group Legal Affairs Department and Ethics and Compliance Department are also providing a "Preventing corruption and influence peddling" e-learning module, accessible to all employees on the e-campus platform, that teaches about how best to behave in situations relating to business relations, conflicts of interest, and gifts. It became mandatory for all employees moving to a new position exposed to corruption risks to follow an anti-corruption e-learning module (e-learning module added to the standard training given to managers, project managers, buyers and contract managers, etc.).

3.3.2.2.2 Prevention of harassment and discrimination

Banning all harassment or discrimination, preventing and dealing with any physical or psychological violence as well as intolerance or injustice in the workplace are some of the requirements of the Group Ethics Charter. This commitment is part of the regulatory and judicial context which, in many countries, incriminates not only the actions and behaviours themselves, but also employers who fail to implement sufficient preventive measures. The executives must take all necessary steps to prevent discrimination, harassment and physical and emotional abuse within their entities by informing employees of these risks. They must provide regular information about the Group whistleblowing system and take appropriate disciplinary action in the event of proven wrongdoing.

Reference guides and training

Two reference guides designed to prevent and combat bullying and sexual harassment have been distributed, primarily to managers, the HR Department and the Ethics and Compliance Managers of entities. They have been published in a simplified format for all employees.

Several training modules are available for everyone on e-Campus:

- the first module covers identifying and understanding the links between stereotypes and discrimination, through a serious game called "*Vivre ensemble la diversité*" (Experiencing Diversity Together);
- the second is about understanding and preventing ordinary sexism in the workplace and is entitled "*Sexisme, pas notre genre*" (Sexism is not for us);
- the third is a training module on preventing and combating sexual harassment. It is also included in the manager training course, among the manager fundamentals on e-Campus Manager.

See also section 3.3.3.2 "Combating sexism".

3.3.2.2.3 Financial ethics

The Ethics and Compliance Policy sets out the requirements to be followed to prevent market abuse, the risk of money laundering and the financing of terrorism. An Ethical Code for Trading in Securities, recently updated, complements this Policy. The Group Ethics & Compliance Policy also sets out the requirements concerning compliance with the European EMIR regulation.

Support guide

The implementation of this EMIR regulation by the EDF group, the implications for entities as well as the related processes and controls are described in the EDF group EMIR Policy Paper support guide. An e-learning module is available on the e-campus, attended during the year under review by close upon 200 particularly-concerned employees.

3.3.2.2.4 Integrity and transparency of the wholesale energy market (REMIT regulation)

In accordance with the Group Ethics & Compliance Policy, entities concerned must put in place a compliance programme for the European REMIT regulation (on the integrity and transparency of the wholesale energy market). A Group Compliance Officer is tasked with preventing risks of non-compliance, by developing an appropriate control environment. The practical implementation of this REMIT regulation by the EDF group, the implications for entities as well as the related processes and controls are described in a memorandum of instructions.

Training

An online staff training tool has been set up since 2019. It is freely available on VEOL, the EDF group Intranet. Subsidiaries outside France, in particular EDF UK, Edison, Luminus, and EDF Trading, have also set up training and awareness-raising programmes for their employees. As far as EDF employees are concerned, 1,468 people have been trained by the end of 2022 through this scheme.

3.3.2.2.5 Preventing breaches of competition law

The EDF group has made the prevention of anti-competitive practices (cartels and abuse of dominant positions) a major issue for its employees. With this in mind, the Group has implemented a Competition Law Compliance Programme since 2010. The programme, which is binding on all employees, aims to ensure that all operations of subsidiaries and entities of the Group in France and worldwide comply with competition law. Any suspicion of anti-competitive practices may be reported under the whistleblowing system set up by the Group (see section 3.3.2.4).

(1) With the exception of RTE, transmission network operator, and Enedis, subsidiary independently managed within the meaning of the Energy Code.

(2) EDF and the companies it controls. Control is established, in particular, if EDF holds, directly or indirectly, a majority of the share capital or the voting rights within the governing bodies of the relevant companies. Excluding RTE and Enedis which are independently managed subsidiaries within the meaning of the provisions of the Energy Code.

Training

After having deployed from 2010 to 2015 an e-learning module which trained more than 5,400 employees, then between 2016 and 2021 a more general Serious Game entitled "Cap Antitrust" taken by about 2,300 employees, a new module on competition law awareness has been accessible since October 2021 to all employees on the internal training portal of the Group in two languages (French, English). This e-learning module was attended by 789 participants in 2022 and is integrated into the training programmes for the directors of the Group's subsidiaries, who also receive additional awareness training in the form of an in-person module. The Group regularly organises simulated investigations by competition authorities in order to raise awareness of the importance of complying with competition law.

3.3.2.2.6 Personal data protection

EDF, which appointed a Personal Data Officer (PDO) in France as early as 2006, appointed its Data Protection Officer (DPO) in 2018, pursuant to EU regulation 2016/679 of 27 April 2016 known as the General Data Protection Regulation (GDPR). The DPO is the Lead Manager for the Group.

Data Protection Officer (DPO)

Around twenty DPOs have been appointed in the French and European subsidiaries and Personal Data Contacts (*interlocuteurs informatique et libertés* (I2L)) are present in all EDF entities. The DPOs are ensuring compliance with regulations relative to the protection of personal data within the Group, whether with regard to the personal data of its customers, employees, service providers or partners.

3.3.2.2.7 Export control and international sanctions

In the course of its operations, particularly in the nuclear field, EDF and its subsidiaries carry out a range of operations to meet their own needs or the needs of third parties, requiring the use of goods and technologies including dual-use goods and technologies ("DUG"), i.e. civil and military, that can expose it to certain risks inherent in specific French, European and/or foreign regulations, some of which have extraterritorial scope, and can require the issuing by the competent authorities of a license/authorisation prior to any transfer, export, re-export, brokerage, and/or transit of such goods and technologies. Some regulations, particularly in the United States, have introduced restrictions on access to goods and technologies applicable to foreign entities that may affect both DUGs and any other commercial goods.

The Group, or some of its partners, may be exposed, directly or indirectly, to sanctions programmes, in particular (i) international sanctions adopted by the United Nations Security Council, (ii) sanctions adopted by regional organisations such as the European Union, and (iii) sanctions adopted unilaterally by certain States, some of which have extraterritorial scope.

A Group Export Control and International Sanctions Department was set up in August 2019 to strengthen the Group's ability to comply with these regulations. A memorandum of instructions describing the compliance procedures to be implemented was adopted by the Executive Committee on 4 May 2020. In April 2022, the Export Control and International Sanctions Department implemented to e-learning modules, "export control" and "international sanctions" in French and English, accessible for all Group employees on the e-campus platform. Almost 600 people attended these e-learning modules, in addition to the 300 people trained in-person or *via* Teams, as part of more closely-targeted deployments (in 2022, this applied to staff concerned in the DTEAM, the Audit Department, the Development Department, the DP2D, the Procurement Department, or for the project teams at Nuward and Sizewell C).

3.3.2.2.8 Duty of Vigilance

See section 3.9 "Vigilance Plan".

3.3.2.3 Human Rights

In 2020, EDF drew up a set of guidelines⁽¹⁾ listing the commitments of the Group and the fundamental requirements for its business relationships in terms of human rights and fundamental freedoms, environmental protection, protection of personal health and safety and business ethics.

3.3.2.3.1 Compliance with international standards

The EDF group does not tolerate any infringement of human rights or fundamental freedoms in its operations or in those of its business relationships for operations related to the relationship.

International Standards

EDF strives to comply, at least, with the international standards protecting and defending human rights and fundamental freedoms, including the United Nations International Bill of Human Rights and the fundamental conventions of the International Labour Organisation (ILO).

Conflicting standards

If the laws of a country where it operates conflict with these international standards, EDF endeavours to find a solution to render it compliant with both the spirit of the international standards and national laws.

Vigilance approach

To ensure that human rights and fundamental freedoms are respected in its operations, EDF has implemented a vigilance approach to identify, assess and prevent any potential infringement of human rights or fundamental freedoms. The vigilance approach has been designed to comply with the French Duty-of-Care Act and is based on the recommendations of the UN Guiding Principles on Business and Human Rights.

Vulnerable persons

The EDF group pays special attention to the impact of its operations on individuals recognised as vulnerable under international human rights law and investigates, in complete transparency, impartiality and good faith, any alleged infringements of human rights or fundamental freedoms connected to the operations of the Group's entities, providers and subcontractors.

Proven cases of injury

If an infringement of human rights or fundamental freedoms is proven in the operations of the Group's entities, EDF has agreed to engage in dialogue with the victims and/or their representatives to address the situation, pursuant to the OECD Principles for Multinational Enterprises with which the EDF group complies.

3.3.2.3.2 Rights of staff ILO

The EDF group is committed to the human rights and fundamental freedoms of its staff and complies, as a minimum, with the provisions of the standards published by the International Labour Organisation (ILO).

Combating discrimination

In terms of the prevention of discrimination, the EDF group guarantees equal treatment for its employees and is against any form of distinction, exclusion or preference, whether based on presumed race, skin colour, sex, age, religion, political beliefs, national origin, social origin, disability, family status, sexual orientation or gender identity. In the countries where it operates and for its own operations, the EDF group actively promotes equality in the workplace and equal treatment for equal work for the women and men working for the Group and strives to achieve balanced work teams at all levels of the Company. Diversity is encouraged at all staffing levels and employees must be protected from all forms of discrimination or retaliation.

(1) Human Rights Impacts Assessment and Management.

Combating harassment, sexism and violence

The EDF group does not tolerate any form of harassment or violence, whether within or outside the workplace, relating to the working relationships established in the workplace. The Group is committed to preventing and protecting its employees from all forms of harassment, sexism and violence in the workplace.

Refusal of all forced labour

The EDF group is against all types of forced labour, as defined in the ILO fundamental conventions as well as any form of human trafficking. In particular, for the projects and operations implemented by the Group, it ensures that all employees have given their free, informed consent for the performance of all their duties. In particular, the EDF group ensures that its intermediaries and recruitment agencies do not use any practices that could result in forced labour. The Group is committed to protecting the free movement of workers and, in particular, will not confiscate the travel documents, identity papers or any other personal belongings of workers in any circumstances whatsoever.

No child labour

The EDF group is against all types of child labour, as defined in the ILO fundamental conventions. The Group commits to not employ anyone under the age of 15 (subject to the exceptions set out in ILO Convention 138) or anyone under the age of 18 for work considered dangerous as provided for in the ILO convention.

Freedom of association, right to collective bargaining and trade union rights

The EDF group upholds an individual's right to freedom of association and the right to collective bargaining as defined by the ILO. The Group recognises that all employees are free to form and/or join the workers' organisation of their choice and will not interfere with that right.

In accordance with the Group's Global Framework Agreement on Corporate Social Responsibility, EDF is committed to respecting and protecting the autonomy and independence of trade unions, in compliance with applicable laws and regulations. It aims to guarantee the effective exercise of trade union rights and recognises the representative trade union organisations in the Company as contact people and partners. The EDF group respects strict neutrality as to whether or not its employees choose to belong to a trade union, and if so, which trade union they wish to be represented by. Employees are not discriminated against because of their union membership and/or activities. Facilities are granted to employee representatives in order to carry out their duties. In particular, EDF provides for a number of hours dedicated to the exercise of trade union functions and mandates, as well as a supervised training programme for employees exercising representative and/or trade union mandates. The EDF group will not tolerate any intimidation, harassment, sanction or discrimination against an employee due to union activities and does not discourage employees from joining the organisations of their choice. The Group respects the right to collective bargaining and the role of workers' organisations in the collective bargaining process.

Work time

The EDF group complies with the ILO standards and all applicable laws and regulations governing working time, based on the following principles, subject to the exceptions approved by the ILO: regular working weeks should not exceed 48 hours; working weeks are limited to 60 hours, including overtime; workers should have at least one day off for every seven days worked, except in emergencies or unusual situations; workers should have at least three weeks of paid leave for a full year of service; workers are entitled to at least 14 weeks of maternity leave.

Compensation, working conditions, and benefits

The EDF group strives to comply with the ILO standards on pay, working conditions and benefits. The Group is committed to paying a living wage, covering the basic needs of its employees and their families, and to providing adequate social security cover for all its employees. When employee accommodation is provided by the Company, the EDF group ensures that decent housing or accommodation is provided in compliance with the ILO standards.

Global agreement on CSR

In 2018, EDF and two global trade union federations (IndustriAll and PSI) along with 15 trade union organisations representing EDF group employees signed a global framework agreement on the Group's social responsibility, later extended for two years on 29 November 2021. This agreement automatically applies to all the Group's employees, warranties the right to collective bargaining and effectively reflects its commitment to "make upholding human rights a prerequisite to all its business activities, and not to tolerate any violation of these rights whatsoever, whether during the course of its business, or by its suppliers, subcontractors and partners". It confirms that, in the event of conflicting standards with applicable laws in countries in which it operates, the EDF group undertakes to apply the most protective human rights provisions while complying with the national laws. All controlled subsidiaries of the EDF group have now been informed of the agreement and are developing a social progress action plans.

3.3.2.3.3 Rights of local communities

The EDF group is committed to protecting the rights of the local communities affected by its operations and arranging, systematically and worldwide, transparent, debated discussions and consultations for each new project relating to a facility drawing on a budget of more than €50 million and having a significant impact on the territories or the environment.

The Group recognises the role of human rights and environmental defenders from all walks of life, both among its suppliers and in civil society. It is committed to protecting the exercise of their rights and ensures that it identifies the risks to human rights and environmental activists caused by its business operations and allows them to speak freely about its operations.

The EDF group identifies, for each project, the potential impact on the health, living conditions and environment of local communities, with reference to the performance standards of the International Finance Corporation (World Bank Group) and proposes suitable measures.

Indigenous Peoples

EDF is committed to respecting the specific characteristics and rights of indigenous peoples as defined in the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and ILO Convention 169, which provides, in particular, that "indigenous peoples shall not be forcibly removed from their lands or territories. No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation".

EDF is aware of the unique issues facing indigenous peoples and is committed to following the best international standards in this area and, more specifically, the UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples), ILO Convention 169 and World Bank standards. In particular, EDF recognises the criteria for characterising indigenous peoples included in these standards, including historical and geographic "pre-existence," "cultural distinctiveness," "self-identification," and "non-dominance." EDF upholds the individual and collective rights of indigenous peoples and communities, including their right to self-determination, their right to land, territories and resources, and their right to FPIC (Free Prior and Informed Consent) in its projects and activities, as defined by ILO Convention 169.

Whenever its operations threaten or affect the livelihood of a community, the Group implements compensation and/or restoration measures for their livelihood matching or exceeding the level prior to its operations.

The EDF group is committed to respecting and protecting or safeguarding, in agreement with the populations concerned, any expressions of their culture, religion or heritage present on the land used for its operations.

In terms of the use of security forces, the Group is committed to protecting the safety of its employees and sites in strict compliance with human rights, including those of local communities, and only authorises the use of force for preventive or defensive purposes in a manner proportionate to the nature and severity of the threat.

3.3.2.3.4 Implementation of human rights commitments

Human rights commitments are implemented as part of the Group's CSR commitments and requirements⁽¹⁾, based on the principles of action that apply to all Group operations, such as:

Principles of action

Management of E&S impacts

The initial and ongoing evaluation and the management of environmental and societal (E&S) impacts and risks, including those caused by the activities of its business acquaintances.

Dialogue and consultation

The organisation, worldwide, of a procedure of transparent, debated discussions and consultations for each new project relating to a facility drawing on a budget of more than €50 million, and having a significant impact on the territories or the environment.

Implementation and monitoring

The implementation and monitoring of these commitments and requirements is ensured under the Group's existing internal policies or agreements, in particular the sustainable development policy, the ethics and compliance policy, the purchasing policy, the health and safety policy, the global CSR agreement, the Ethics Charter and the roll-out of the vigilance plan.

Collecting and processing reports

Systems for collecting and processing reports of wrongdoing, that are accessible and notified to anyone who could be impacted by the Company's operations, guaranteeing the confidentiality of the reports and protecting internal whistleblowers (employees and external staff), have also been set up.

Consideration of human rights in projects

At the project management level

Depending on the context of the project, a Human Rights Impact Assessment (HRIA⁽²⁾) is conducted. It is based on the principles defined by the UN Guiding Principles on Business and Human Rights, as developed for example by the Danish Institute on Human Rights. These studies place the identification of impacted human rights at the centre of the analysis. They include an assessment of the state of human rights in the country as well as in the project area, a mapping of human rights-oriented stakeholders (listing "right-holders" and "duty bearers"), an analysis of the project's impacts on these rights, and the development of mitigation measures. This type of study identifies the activities at risk according to their importance and sensitivity. These studies are generally entrusted to national or international consultants specialising in the topic, and managed by EDF's internal Human Rights contacts. The conclusions of these studies are intended to be integrated into all development, construction, operation and end-of-life activities of the project, via an *ad hoc* management system (internal Human Rights policy, Human Rights contact and correspondents, contractual tools, audits and performance monitoring, reporting, etc.). They concern both the affected communities and workers, the use of security forces, the whistleblowing system and the protection of whistleblowers, etc.

At the level of investment decision-making processes

A component focusing on human rights, through the Group's commitments framework, is systematically integrated into each analysis of a project presented to the Group Executive Committee's Commitments Committee (CECEG), or to the Validation Committee for the Group's international development projects (CBDI). This consists of systematically identifying the human rights risks associated with the projects, both for the activities developed and for the supplier relationships envisaged. This identification will be facilitated by the construction of a screening grid, which will allow an analysis of projects that are consistent with the Group's *raison d'être*, CSR commitments, and guidelines, as well as with international standards. This grid takes into account environmental, health and safety, human rights, and ethical dimensions of a project. All of the Group's human rights commitments and requirements are addressed, such as compliance with the ILO's fundamental conventions (on child labour, forced labour, freedom of association, discrimination), the rights of local communities, and health and safety conditions for the populations in question.

In operational terms

Solar farm in Israel

The Gevim project, on which construction work was completed in March 2022, is located near the Gevim Kibbutz, a community-oriented village that is typical of Israel. The kibbutz representatives and the district committee environmental team identified a visual impact of the solar-energy plant for the kibbutz inhabitants, thereby affecting the unique landscape. Accordingly, it was decided that of vegetation buffer zone would be established between the facility and the kibbutz, and the facility would be assimilated as far as possible with its environment. A wide swathe of local vegetation and trees was planted between the plant and the kibbutz.

Wind power project in Chile

As part of the onshore wind power project in the Antofagasta region, EDF Renewables Chile drew up an anthropological reference document for the Changos indigenous community, based on interviews conducted with five Changos organisations. This community undertook a process for reconstituting its history. The information gathered will supplement the preliminary impact study conducted by EDF Renewables in connection with the project.

Biomass plant in Côte d'Ivoire

Concerning the BIOVEA Energie biomass power plant project in Côte d'Ivoire, a specific study was carried out on child labour in order to understand its nature and causes in the agro-industrial sector of the region in which the power plant will be located. On the basis of this study, BIOVEA Energie has chosen to act, in particular through a collaborative venture with the cooperative of the Toumangué region, which alone covers the vast majority of small planters in this area. The objective is to develop *Champs École Paysans* ("Farmer Field Schools" or CEPs), which allow the implementation of good agricultural and management practices based on 6 themes, including a specific one on child labour. A budget of €150,000 is planned for the first two years for the launch and development of the CEPs, followed by €24,000 of support per year for 14 years.

In this connection should be noted the operational implementation in 2022 of the committees for follow-up, shortlisting and for the mechanism to settle complaints of communities (11 complaints were recorded mid-year, with 7 settled, and 4 under investigation).

Hydroelectric project in Cameroon

In accordance with international environmental and social standards, the Nachtigal Hydroelectric Project in Cameroon has had a mechanism in place since April 2015 to manage requests and complaints. Anyone can submit them in writing, orally, or by proxy, in all local languages of the project area, as well as in the official languages of the country. Grievances are recorded in the project's query and complaint log. Once recorded, if the complaint relates to the project's commitments, activities, accountability or mandate, an investigation is initiated to determine the basis for the complaint. The project then proposes a treatment to the complainant. A Conciliation Committee can intervene if the complainant is not satisfied with the treatment applied. Finally, an Appeals Committee can be called upon if the complainant is not satisfied with the solution proposed by the Conciliation Committee.

See also section 3.9.6.1.2 "Main prevention, mitigation and monitoring measures implemented".

Modern Slavery Act in the United Kingdom

The EDF subsidiaries in the United Kingdom are implementing human-rights commitments in consistency with the Group's CSR commitments and requirements.

In accordance with the Modern Slavery Act, EDF in the United Kingdom is working to ensure that its activities, as well as those of its supply chain, are subject to an assessment of the risks associated with modern slavery, and that means of prevention and mitigation are put in place. EDF in the UK has a Modern Slavery Statement covering all its employees and procurement. This statement, in accordance with the Modern Slavery Act, is published on the subsidiary's website. EDF in the UK also contributed to the online "Modern Slavery Statement Registry".

EDF in the UK employs around 12,000 people, with a supply chain of around 3,500 suppliers. All staff are required to adhere to the EDF guiding principles (Staff code of conduct, and the Ethics & Business Conduct Policy) concerning ethics. EDF in the UK has published support guides to make employees aware of these principles and values and to provide the necessary tools to report any behaviour contrary to EDF's principles.

(1) [unglobalcompact.org/what-is-gc/mission/principles](https://www.unglobalcompact.org/what-is-gc/mission/principles)

(2) EIDH – Human Rights Impacts Assessment and Management.

With respect to the supply chain, the potential slavery and human trafficking risks are assessed to identify procurement areas of focus. Suppliers are required to comply with a set of standards, including the obligation to conduct a self-assessment of their risks aligned with the ten principles of the United Nations Global Compact. EDF in the UK is encouraging its supply chain to adopt a social and environmental improvement approach. Modern slavery obligations are included in the upstream contracting process and suppliers are evaluated at all stages of the procurement cycle, from qualification to contract execution.

Consideration in Group purchasing

In terms of purchasing, the Group Purchasing Department's CSR risk mapping has included an analysis of "human rights" risks for each purchasing segment since 2019, to determine the level of residual risk and identify the action to be taken with suppliers (see section 3.4.2.3.2 "Sustainable and balanced relationships"). For fuels, see section 3.4.2.3.4 "Responsibility in the fuel supply chain".

Other factors taken into account

The "human rights in business" e-learning module developed with the voluntary association *Entreprises pour les droits de l'homme* (i.e. businesses for human rights – EDH), of which EDF is a founding member, was updated in 2021 to include the duty of vigilance, and is available to all employees.

Performance indicators are monitored at the Group level, based on Cap 2030, via the Health & Safety Policy (see section 3.3.1.3 "Health and safety of employees and subcontractors"), Let's Talk Energy programme, employee commitment surveys and supplier relations (evaluations, supplier focus survey).

3.3.2.4 The EDF group whistleblowing procedure

The EDF group whistleblowing procedure is undergoing review in order to incorporate both the Wasserman Act of 21 March 2022, transposing into French law the European Directive on whistleblower protection, and its implementing decree of 4 October 2022. After validation by the competent bodies, the revised whistleblowing procedure will enter into force during the first half of 2023.

3.3.2.4.1 Scope

In order to make report-handling more secure and to strengthen the confidentiality and security of personal data, in 2018 the Executive Committee decided to set up a single whistleblowing system for all wrongdoing reported under the Sapin II Act and the Duty-of-Vigilance Act as well as wrongdoing reported by employees alleging harassment and discrimination. This Group system benefits all Group entities, except for the subsidiaries in the regulated sector, Enedis and RTE, which have their own whistleblowing system to uphold their managerial independence. Whistleblowers may choose to use the Group whistleblowing system or the other channels available to them (manager, human resources, staff representatives, local ethics and compliance officers, mediators, etc.).

The referee body for the EDF group procedure for collecting and processing reports of wrongdoing, appointed by the Executive Committee, is the Group Ethics and Compliance Department (DECG) ⁽¹⁾.

3.3.2.4.2 Accessibility of the system

The Group whistleblowing system, managed from an independent server that is not connected to EDF's IS, can be accessed at any time via the EDF group website. The interface is available in several languages (French, English, Italian, Spanish, German, Portuguese, Dutch and Mandarin) in France and abroad, and the whistleblower can report wrongdoing in the language of their choosing.

3.3.2.4.3 Reporting wrongdoing

The EDF group whistleblowing procedure enables staff and external personnel ⁽²⁾ to report evidence of:

- a breach or attempted breach of the law or of the code of conduct, relating to the EDF group;
- a risk to or a serious breach of human rights and fundamental liberties, imperilling the health and safety of persons or the environment, relating to the EDF group and its business relations.

3.3.2.4.4 Analysis of the admissibility of reports

Once the report has been submitted, whistleblowers receive confirmation within seven days from the delivery of such report. Whistleblowers can submit reports anonymously in countries where this is authorised. Wrongdoing can be reported anonymously, as long as the severity of the reported facts is established and the factual elements are provided in precise and sufficient detail, so as to provide evidence for the reality of the reported facts.

Each whistleblowing report is examined for admissibility by the DECG whistleblowing committee in order to determine, before investigating the actions reported, whether it meets the criteria defined in 3.3.2.4.3, and whether the appropriate protective measures can be identified.

During the phase of ascertaining admissibility, the recipient of the whistleblowing report may exchange with the whistleblower and refer to the experts (DECG, Legal-Affairs Department, REC, RDV) in order to obtain any supplementary information required for finalising the admissibility analysis.

3.3.2.4.5 Processing of admissible reports

Upon confirmation of the whistleblowing report's admissibility, the investigating officer appointed ⁽³⁾ signs a specific confidentiality undertaking and has a maximum of three months within which to communicate to the whistleblower the information on the measures envisaged or taken in order to remedy the wrongdoing reported, and on the reasons for those measures.

The processing of whistleblowing reports (verification of the facts, interviews with the persons concerned, searching for evidence, etc.) is conducted with the support of line experts (DECG, HRD, DSIE, Legal-Affairs Department, Audit Department, etc.) or, where necessary, with the support of an external consultant. These experts are bound by the same strict confidentiality obligations (was prior signature of a confidentiality undertaking).

Upon completion of the investigation into the matter, if the facts reported are found to be true, an action plan is implemented. The whistleblowing report will be closed only upon complete fulfilment of that action plan.

(1) Decree of 4 October: The referee is tasked with gathering the wrongdoing report and with processing it in compliance with the procedure. This referee is appointed by the Company.

(2) Occasional staff (interns, work-study students, etc.) and also service providers or partners.

(3) The investigating officer is appointed from within the network of Group ethics and compliance officers (Departments and subsidiaries), managed by the DECG. In the event of difficulty (e.g. conflict of interest), the investigation may be conducted by the DECG itself or by the Ethics & Compliance Manager (REC) of another entity.

3.3.2.4.6 2022 Results

Whistleblowing results are consolidated and included in the annual ethics & compliance report submitted to the Executive Committee and presented to the EDF Board of Directors' Governance & Corporate Responsibility Committee. The Group Ethics and Compliance Department has consolidated all admissible reports submitted in 2022 within the Group (via the Group system or any other channel). 305 admissible reports were recorded (including 63 via the Group whistleblowing system). 224 were about incidents occurring in France and 81 occurred abroad.

Admissibility of reports in the Group's whistleblowing system



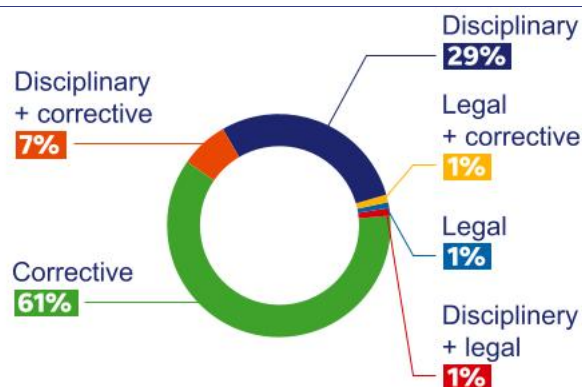
Results of investigations following alerts (all channels combined)



Relationship of whistleblowers with the Group (all channels combined)



Actions taken following alerts (all channels combined)



3.3.2.5 Group key performance indicator

GROUP KEY PERFORMANCE INDICATOR

The key performance indicator at Group level is the time taken to respond to the whistleblower, informing the latter of the admissibility of his/her report and on whether the whistleblowing processing procedure will continue. This response time must not exceed one month from receipt of the whistleblowing report.

The target for this KPI is therefore an annual 100%.

This indicator contributes to continually demonstrating the importance EDF attaches to duly taking account of whistleblowing alerts, and the resources implemented to process all alerts reported by the whistleblowers via the Group level whistleblowing system.

Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure (in %)



3.3.3 Equality, diversity and inclusion

In keeping with its responsibility to promote equality, respect for diversity and inclusive values, the EDF group is committed, without overriding the managerial independence of regulated infrastructure operators, to developing concrete action to promote equality in the workplace and occupational and social integration for disabled people, combating sexism, violence and all forms of discrimination, and developing support for parents. As a socially responsible employer, the Group is committed to maintaining and perfecting a high level of social dialogue and strives to secure the skills required for the Group's business lines over the long term, by integrating all aspects of sustainable development into its operations and projects and giving employees an opportunity to develop their employability throughout their careers.

2021 and 2022 were extremely busy in all the components of this commitment to equality, diversity and inclusion, and this period was particularly marked by:

- a heightened ambition towards gender diversity, including the adopting of targets for the number of women at all levels of the Company, with support from, among others, the head of the Diversity, Inclusion and Workplace Performance unit and his team;
- the unanimous signature by the trade-union organisations, of a new 2021-2025 agreement on gender (M/F) equality and professional equality at EDF.

The EDF group and some of its subsidiaries have decided to apply for an international certification (GEEIS certification renewable every four years) to assess the quality and relevance of their commitments to gender diversity and equality in the workplace. The certification was successfully renewed in 2019 and, for the very first time, it was extended to all the Group's other fields of action in terms of diversity and inclusion. Signing a GEEIS commitment charter, marking the Group's commitment to combating stereotypes by deploying inclusive artificial intelligence stripped of gender stereotypes in all business processes and environments.

3.3.3.1 Workplace equality

As part of its CSR commitments, the Global CSR Agreement and its Ethics Charter, the EDF group is committed to and sets objectives for professional equality between women and men, measures the progress made, and deploys appropriate actions. Since 2015, the Group has been acting to promote equality and equity between women and men at all levels of the Company. The EDF group's professional equality policy is based on principles such as: equal treatment of women and men throughout their professional lives; condemning any behaviour or practice that

discriminates against employees; and EDF's contribution to changing people's attitudes.

3.3.3.1.1 Reinforcing the Group's commitment

In 2021, EDF's Executive Committee decided to strengthen the Company's gender diversity ambitions, which were formalised at the Group level in 2019. The Group's gender diversity ambition is being implemented in three areas.

1st area: Break the glass ceiling, at all hierarchical levels A new target for female employment

A new Group-wide target for the number of women has been set for 2021, covering all hierarchical levels: 33% in 2026 and 40% in 2030.

2nd area: Inspire interest in technical and digital professions

EDF aims at developing gender diversity in science, digital technology and innovation, mainly by: continuing to increase awareness among young women of scientific, technical and digital careers thus encouraging more women to take up careers in the digital professions, and improving the integration of gender diversity in the Group's innovation systems (EDF Pulse, Let's talk energy, Project Y, etc.). Each relevant entity develops a programme to include young women in STEMs (Science, Technology, Engineering, Mathematics). For more about bringing women into technical occupations, see section 3.3.3.8.3 "Recruitment priorities".

The 4th edition of the Mixed Energy challenge raised awareness among upper secondary schoolgirls about the technical professions in energy and helped them discover new career opportunities. Sponsored by women from various EDF entities (Dalkia, Enedis, Citelum, etc.), a discussion was held on the stereotypes associated with technical professions.

3rd area: Guarantee non-sexist communication, promoting balanced M/F representation

EDF group is aiming at developing gender diversity in internal and external representation of the Group, mainly by encouraging women to take part in the Group's public interventions (EDF is a signatory of the #jamaisanselle (#neverwithouthether) charter),

3.3.3.1.2 2022 Performance

The results concern the proportion of women in the Group's workforce as a whole, in the executive category (managers) and on Management Committees.

Results by hierarchical level

	2026 Target	2020	2021	2022
Proportion of female employees (in %)	33	25.8	25.9	25.9
Proportion of female managers (in %)	33	28.8	28.9	29
Proportion of women members of the Management Committees (in %)	33	28.7	29.8	30.8

Details for female employees

	2020	2021	2022
Male workforce √	122,578	123,915	127,130
Female workforce √	42,622	43,242	44,360
Women/workforce (in %)	25.8	25.9	25.9

√ 2022 indicator subject to reasonable assurance audit by Deloitte & Associés.

3 NON-FINANCIAL PERFORMANCE

Well-being and solidarity

26% of the EDF group's workforce is currently female (30% at EDF), which places it in the top half of the main French industrial groups. Although the increase in this rate has slowed slightly in recent years (impact of the "15 years, 3 children" measure, reduction in the number of new hires), it is still increasing at double the average rate of French companies, for all sectors combined.

EDF strives to guarantee equal access to professional and promotional training, through, for example, a scheme to cover additional childcare costs for parents undergoing training, with a view to securing comparable career paths for women and men.

Details for women executives

The percentage of women in the Group's management has doubled since 2002, reaching 29% by 2022.

	2020	2021	2022
Male managers	38,084	39,345	41,061
Female managers	15,401	15,986	16,803
Women/managers (in %)	28.7	28.9	29
Female managers/female employees (in %)	36.1	37	37.9

Details for women on the Management Committees: a key performance indicator for the Group

GROUP KEY PERFORMANCE INDICATOR

The key performance indicator used by the Group for "Equality, diversity, inclusion" is the percentage of women among the Management Committees of Group entities. Women formed 30.8% of Management Committee members in 2022, an increase of 1 point compared with the previous year.

Over 10 years, the percentage of women in the Group's Management Committees has increased by almost 50% (it was slightly less than 20% at the end of 2011). It also reflects the dynamic observed, more generally, in the Company's managerial body becoming more female.

Article 14 of act No. 2021-1774 of 24 December 2021 (the "Rixain Act"), aimed at accelerating economic and professional equality, creates an obligation of balanced representation of men and women among the senior executives and the members of management bodies in large companies, also creating an obligation of transparency in this respect ⁽¹⁾.

The percentage of women executives at EDF was 24.1% at end 2022.

Succession plans for senior management positions are always mixed-gender. In addition, schemes such as TALENTS 2.0 help identify a more diverse range of talent, at all stages in a career.

Gender balance index: percentage of women in the Management Committees of the Group's entities (in %)



Gender mix of the Board of Directors

The proportion of women on the Board of Directors is in compliance with the statutory threshold. The Nominations, Remuneration, and Governance Committee and the Corporate Social Responsibility Committee are chaired by women (see section 4.2.1 "Members of the Board of Directors").

Professional gender equality index *

	Published in 2021 based on 2020	Published in 2022 based on 2021
Professional gender equality index (EDF)	95/100	90/100

* Index published before 1 March reference year+1 in respect of reference year.

EDF points for the four first indicators relating to disparities in remuneration and to equality of treatment between women and men in the Company, but had allowed 5 points since there was one woman the fewer among the 10 highest remunerations in the Company.

The Group has succeeded in virtually eliminating the pay gap between men and women in terms of primary pay, with our progress reflected in equality indexes of

between 75 and 95/100. In-depth work were conducted on equal pay for women and men, in partnership with the *Institut national des études démographiques* (National Institute for Demographic Studies or INED), to identify the sources of the gender pay gap, with a particular focus on the impact of additional pay components. Analyses have been carried out at the Division level, and social dialogue on the subject is ongoing (see section 3.5.3 "Social dialogue").

(1) For EDF, this first publication pursuant to the Rixain Act was released during 2022 on the basis of the data at 31/12/2021: the percentage of women senior executives of EDF was 23.95%, and the percentage of women in the management body of EDF (the Executive Committee) was 15.4% at that date.

3.3.3.2 Combating sexism and violence

The EDF group is committed to preventing and combating all forms of violence against women, in the workplace (sexism, harassment) and also domestic and family violence (support, guidance and job retention). The aim is to train and raise the awareness of managers and HR personnel on the subjects of sexism and both moral and sexual harassment.

3.3.3.2.1 Combating sexism

Label

As early as 2016, EDF was the first company to earn the “*Sexisme, pas notre genre*” (Sexism is not for us) label.

ENERGIES Mixité! network

The Company acts with the support of the ENERGIES Mixité! network (formerly Energies de femmes) and its more than 4,200 members.

Sexism barometer

With the help of the network “ÉNERGIES Mixité!”, a new “sexism barometer” was set up, as part of the #StOpE multi-company initiative, of which EDF has been a member since the beginning.

Employee training

The e-learning programme dedicated to the prevention of ordinary sexism was attended by 2,888 employees on e-campus (i.e. 11,273 employees in aggregate since it went online).

Preventing the risks of moral or sexual harassment Training for managers and HR staff

An e-learning programme intended to prevent the risk of moral or sexual harassment was deployed for all target groups (management, HR, staff representatives, medical and social teams and employees) and was completed by 1,378 employees. Similar approaches are being deployed by EDF UK and Luminus.

3.3.3.2.2 Combating domestic and family violence

Support, awareness, assistance, and care for victims

These measures were operationally implemented in partnership with the Company's medical and social teams and the “*FIT, une femme un toit*” association in particular. In 2022, EDF has once again taken on board, assisted, supported and guided 122 employees who were victims of domestic violence, with over 485 employees (465 women and 20 men) who received help between 2019 and 2022 (one victim almost every three days).

Operational system

Toll-free hotline

A toll-free hotline for all employees of the Company, operating seven days a week, to allow employees to confide in someone and obtain advice on all harassment and discrimination issues.

Support team

A support team (with in-house and external skills) intervenes in investigations carried out when alerts are reported.

3.3.3.3 Parenting support measures

EDF is strengthening its support systems for parents and family carers, under the “Family Rights” business-segment agreement signed on 15 December 2017: implementing new rights for family carers (access to an advice and services platform, additional pay for 3 family carers' leave entitlements – to help a disabled family member or a family member with loss of autonomy); creating paid family care leave beyond parental leave available to both women and men that takes into account the different types of contemporary families, including single-parent families and parents of handicapped children; giving parents the option to lengthen their paternity and childcare leave if they so wish (with a basic minimum of 4 weeks' paternity leave and 16 weeks of maternity leave); childcare facilities (financial aid for children's study expenses; leave system for CESU employees (remunerated by a *chèque emploi service universel* (universal service employment cheque) with 80% prefinancing by the company for parents of children below 12 years of age, and additional assistance for isolated parents or parents of handicapped children).

Breast-feeding mothers are supported by entitlement to paid authorised absence of up to one hour per day (not prorated on the basis of time worked), for one year from the date of the child's birth.

3.3.3.4 Disability plan

3.3.3.4.1 A long-standing commitment

EDF is one of the first major French companies to be involved in the professional and social integration of people with disabilities, and is committed to doing so well beyond the legal framework. The 12th EDF agreement for equal rights and equal opportunity, and the occupational inclusion of disabled people, was signed on 11 January 2023 for the 2023-2025 period. EDF Renewables has also extended its agreement in December 2022 to cover the same period. Framatome and Enedis have agreements that are valid until end 2023.

Its goal is also to encourage sports for all. In 1992, EDF became a partner of the *Fédération française handisport* (French Federation of Disability Sports). EDF is also a partner of the 2024 Paralympic Games.

	2020	2021	2022
Number of employees with disabilities	5,826	6,454	6,791

3.3.3.4.2 Integration and inclusion

The Group pays attention to the integration of disabled employees throughout their careers.

Quality of life at work

The findings of the IPSOS survey on quality-of-life work by employees recognised as disabled (conducted in 2021 at EDF) have furnished employee-relations and professional dialogue throughout 2022.

New challenges

The Group's commitment to the occupational integration of disabled people is a long-term commitment, but the issues to be addressed are constantly changing. As an example, this is the case for the digital issue, given priority in the latest EDF handicap agreements, and leading to the signature in February 2022 of a first policy on access to digital technology at EDF.

Disability compensation

Several Group companies in France have introduced schemes, as part of their disability agreements, to provide them with occasional, back-up aid to offset the challenges they face in the workplace. Applications for aid are examined anonymously, in a multidisciplinary framework.

Extension of rights

The situations of parents of children with disabilities are now taken into account in the related rights.

End-of-career continued employment

In connection with their approved agreements, several Group companies in France have also introduced measures to facilitate the continued employment of disabled employees during the second half or at the end of their careers.

3.3.3.4.3 Purchasing from companies who employ disabled people only (STPA)

The amount of STPA procurement is €12.57 million for EDF, and €14.2 million for Enedis in 2022. In the same year, EDF, in partnership with GESAT, organised several digital meetings dedicated to STPA procurement, targeted to its Procurement Department and specifiers. EDF also organised a trade fair on responsible procurement in October 2022 to bring together major companies and STPA service providers. A STPA Purchasing Guide has been added to the collection of tools for developing relationships with contractors employing disabled workers only⁽¹⁾.

3.3.3.5 Preventing discrimination

3.3.3.5.1 A clear, proactive framework Backgrounds and racial discrimination

In order to give concrete form to its commitments under the Global CSR Agreement and its Ethics Charter, the EDF group has addressed the issue of cultural backgrounds, and more specifically racism in the workplace, in a reference document for its managers and HR staff.

Religion in the workplace

The Company will perform better if its employees feel respected, including respect for their personal beliefs, as this will allow them to fully commit their skills to their work teams.

The EDF group has been committed to respecting religion in the workplace since 2008, and published a first set of guidelines in 2010 (updated in 2016), setting out guidelines for managers and HR officers to help them understand, analyse and act in compliance with the law.

Respect for different sexual orientations or gender identities in the workplace

The Group has adopted a code of ethics based on three main values: respect, solidarity and responsibility. Through these values, all employees should flourish in the workplace, regardless of their sexual orientation or gender identities.

EDF is a partner of *L'Autre Cercle* and has been a signatory of the LGBT+ charter since 2015. It regularly participates in the inter-company perception survey supported by *L'Autre Cercle*. EDF has also partnered and supported the Energay association since 2010. EDF's HR staff and managers have been provided since 2015 with guidelines on "Respect for sexual orientations in the workplace".

EDF has also designed, in partnership with Energay, a process to accompany and support transitioning employees within the Group. "Supporting transitioning employees at EDF – Respect for gender identity" guidelines were published.

Age discrimination

The Company has set up a "generation contract" negotiated with the trade unions, which includes commitments for the sustainable integration of young people, for the employment of seniors, and for the transmission of knowledge and skills between generations, as well as a serious game (Secret Cam).

Sensitive medical situations

The Group has taken initiatives to encourage employees with health problems to remain at work. Since 2020, EDF has been a partner in the experimental programme "Work and breast cancer in companies and organisations" run by the association "Le Nouvel Institut".

3.3.3.5.2 Tools available to all to combat discrimination

To implement these policies of inclusion and equal opportunity, EDF has produced educational and training materials for its entire workforce, whilst still providing managers and HR staff with more targeted materials. For example, in 2018, Enedis published a set of guidelines called "Deciding without discrimination". The Company trains everyone involved in its recruitment process, using training course on how to "recruit without discrimination". To raise employee awareness of diversity and encourage new inclusive practices and methods of organisation, the Group has launched a digital training programme called "*Vivre ensemble la diversité*" ("Experiencing Diversity Together"), a serious game completed by 1,708 employees in 2022 (making an aggregate 16,155 employees since it went online).

3.3.3.6 Skills development

The skills development policy "Groupe France", updated in 2022, aims to boost the transformation of training and professionalisation practices with a view to securing the skills of the Group's businesses over the long term, in the context of the development of new nuclear power. The goal is to implement a shift from training and employment management to skills management, and to set in stone the acquisition of learning as part of a learning organisation.

3.3.3.6.1 Investing in human capital and empowering employees to forge their career path

The financial investment contracted throughout the Group was more than €516 million in 2022, enabling us to provide a volume of nearly 6.5 million hours, ensuring access to training or professionalisation resources.

	2020	2021	2022
Share of employees who benefited from a skills development action (rate of access to training, in %)	71	79	79
Number of skills development hours	4,735,240	5,948,618	6,453,195
Number of skills development hours per employee in the workforce	29	36	37
Number of skills development hours per trained employee	40	45	48
Employees who have taken part in a skills development initiative	117,341	132,018	134,683
Number of employees who have not taken part in a skills development initiative for 3 or more years	5,907	7,420	8,113
Number of employees who attended Group Campus training	40,290	56,800	92,095

3.3.3.6.2 Adapting the training offering to facilitate employee training paths

The acceleration in the deployment of the new educational methods set out under the Group's policy was further boosted following the impact of the pandemic. The increase in the use of distance learning based on digital resources has made it possible to develop access to e-learning modules and also to convert face-to-face sessions into remote virtual classes, using new dedicated digital tools. At the same time, courses that combine different teaching methods for modules grouped

together in a curriculum are tending to become the norm (so-called "blended learning" courses).

Growing success of digital resources

119,835 Group employees were trained using these procedures, and 27% of training hours were consumed in "digital learning"⁽²⁾ (figures for EDF) chiefly *via* in-house training platforms, but also *via* external resources.

(1) See also in section 3.4.2.3.1 "Share of local purchasing": "Solidarity-based purchasing".

(2) EDF figures: Digital Learning: Includes digital methods of developing skills, whether they are e-learning modules integrated into courses, virtual classes, methods using virtual or augmented reality, MOOCs or serious games, or sometimes even digital methods integrated into face-to-face sessions.

Improvement of the employee “user path”

Actions to make the offer clearer, hence facilitating employee and manager training paths, were intensified: reducing the number of offers in the catalogue (-19%), preliminary study of increased use of external platforms, launching of a task-force action to converge towards a single catalogue following the gathering of the feelings and suggestions of employees, managers and members of the HR function “Parlons Formation” (“Let’s talk about Training”) in 2021 and 2022.

3.3.3.6.3 Ready to face the Group’s future challenges

The development of new nuclear technology and all the industrial challenges facing the Group call for acceleration in the detection of profiles with the appropriate skills, in contributing to the implementation of appropriate syllabuses, even outside the Group, in converting to redeploy in developing business lines, and lastly, in systematising knowledge and skills transfers.

Nuclear Industry University

The EDF group works in partnership with the government authorities and the players in the business lines in order to develop initial training courses connected with its skills issues, and to enhance the attractiveness of these training courses. This is very largely the case via the Nuclear Industry University, in which EDF is stakeholder alongside 11 other nuclear-industry companies ⁽¹⁾. This University fosters closer acquaintance with the nuclear business and skills, and acts with industrialists and regional training providers to adapt the training offer to the industry needs, especially for trades in which there are shortages such as welders, mechanics and electricians.

Learning organisation

Beyond the widening of the training offer in digital technology, and to work towards a “learning organisation”, the Group encourages knowledge management practices aimed at improving the circulation of knowledge by fostering knowledge transfer, sharing, capitalisation, storage and dissemination. This translated into initiatives such as best-practices communities, the use of a wiki or the implementation of new search engines.

Promotion and internal mobility

The Group is further strengthening its commitment to internal promotion and mobility, thanks to schemes such as support for changes in pay grade. Regional e-forums on mobility very largely provide relevant information. Other existing drivers (work-study training, promotional training including training leading to qualifications, arrangements for redeployment in areas with skill shortages) continue to be widely acted-upon.

3.3.3.6.4 Group talent management

The Talents policy, implemented at the level of the EDF group, describes the principles and criteria for identifying and validating employees with the potential, in the long and short term, for executive level responsibilities.

3.3.3.6.6.1 Comprehensive “environment – sustainable development” training programme

In France, a comprehensive “environment – sustainable development” training programme features both business line and cross-disciplinary training focusing on themes of environmental management, standards and regulations, and environmental analysis.

“Environment – sustainable development” training programme	2022
Number of employees trained in “Environment – Sustainable Development”	1,755
Number of hours of training	19,061

Early identification

Early identification of high-potential managers, with strong involvement from the Group’s senior managers, enables them to be prepared and monitored over the long term, via individualised support (career paths, development plan, training) and special networked events.

Assessments

To identify the managers of tomorrow, assessments are carried out to evaluate the potential of managers according to a leadership model that is unified at the Group level.

Talents 2.0

Since 2018, the Talents 2.0 programme enables employees to identify themselves directly through a series of online tests. The participants accredited under this arrangement may have the opportunity of undergoing junior assessment.

Project Y

Each year, the “Project Y” mobilises some 30 young employees from the Group’s entities and subsidiaries. They meet in order to accelerate innovation and transformation at EDF, and the work response to 12 issues (one raised by each member of the Group Executive Committee). This year, the Y.22 employees succeeded in proposing 12 practical and unprecedented solutions particularly focusing on sobriety, the metaverse, external attractiveness and safety at work.

3.3.3.6.5 Support for the Group’s executives and managers: the Group Management University

The Group Management University (GMU) was created in 2010 to support the development of EDF group managers and executives throughout their careers. GMU has pooled its intelligence to develop the new leadership ambition and has been deploying it since early 2020. More than 160 Management Committees have adopted this new model through collective workshops and a network of ambassadors.

3.3.3.6.6 Skills development in the area of sustainable development

In line with the Company’s training policy, there are many training courses available for employees, managers and Directors on sustainable development issues. Among them can be mentioned 100% digital training syllabuses made available to all managers and senior executives such as: “Constructing a decarbonated electrical mix by 2050: issues and methodology”, or several items relevant to “Thematic energy issues”, particularly “responding to climate change” made available in September 2022 around the presentation at the seminar for the end of the government recess given by the climatologist Valérie Masson-Delmotte. The EDF group is also pursuing its training offer “Energy strategic business” for senior executives, “The New World of Energy” targeting the Group’s talents, or the “Business and sustainable development” module targeting incoming Group directors ⁽²⁾.

(1) For further details, see section 3.4.3.2.1 “The excell plan: being present in major nuclear power projects”.

(2) See also in 2022 the Eco2 cycle of conferences in section 3.1.3.5.2.3 “Eco2 conferences”.

3.3.3.6.2 Environmental & societal (E&S) syllabus

In 2022, 25 executives who were already experienced in CSR inaugurated the new "Environment and Society" training syllabus, aimed at enhancing and rendering uniform the Group's CSR skills. The syllabus is organised around four key themes: CSR fundamentals, relations with stakeholders, Environmental and Societal impacts, and communication including the use of social networks. Comprising 17 modules spread over 6 months, amounting to more than 50 Group experts, and it counts on collective intelligence and experience sharing.

A second intake of 26 employees began training at end September 2022.

3.3.3.6.7 Developing a culture of innovation: the EDF Pulse ecosystem

The Company wishes to develop a culture of innovation in-house in order to support its development and transformation in line with its performance needs, the expectations of its employees and customers, and societal changes.

The internal innovation dynamic is structured around the "EDF Pulse" ecosystem, which relies on several levers:

- the EDF Pulse programmes, a set of support mechanisms to help all innovators grow;
- the EDF Pulse awards, a competition started in 2014 to promote "the women and men who are creating and inventing tomorrow's world today", with a section for external startups and a section for internal efforts;
- the EDF Pulse community, a network for developing and disseminating best practices in innovation within the Group.

3.3.3.7 Remuneration

Global remuneration is a key component in recognising the contribution of every staff member to the Group's performance. It contributes to employee engagement, increases the loyalty of talent and adds to the Group's attractiveness.

The policy of remuneration and employee benefits updated at 20 June 2022 defines the principles underpinning the companies of the Group including EDF.

This policy incorporates the following:

- the main remuneration;
- the variable remuneration (individual and collective including employee profit sharing and employee shareholdings);
- additional remuneration;
- employee savings;
- employee shareholding;
- employee benefits (health mutual, death and disability insurance, housing, etc.);
- other benefits (adjusted working arrangements and working time, etc.).

It is based on appropriate governance, based on:

An annual review conducted by the Group HRD, and harmonised for EDF and the top-ranking subsidiaries (currently Enedis, Luminus, Edison, Framatome, Dalkia, EDF Renewables, EDF Trading, and EDF China). Top-ranking subsidiaries are monitored within their parent company and the second ranking subsidiaries are monitored by the top-ranking subsidiaries.

3.3.3.7.1 Fair and competitive global remuneration

Global remuneration is a key component fostering the contribution of every staff member to the Group's performance. Accordingly, the Group is committed to offering its employees fair and competitive remuneration, while also paying great attention to the level of social welfare it proposes, particularly in terms of cover against the major risks of life.

Global remuneration policy:

- covers all employees of the main companies controlled by the Group. The Group's main companies' remuneration and social welfare systems are reviewed on the basis of this policy;
- is guided by four main principles:
 - > competitiveness with the external market,
 - > internal equity and consistency,
 - > financial sustainability,
 - > readability for employees and managers.

It is based on fixed remuneration and individual and/or collective variable remuneration which serves to recognise the achievement of objectives, connected to the companies' economic results. This policy must also ensure consistency in the level of job remuneration with the market, taking into account all the benefits conferred upon employees.

The priority is to establish a direct and visible link between the employee's contribution and the related remuneration. The managers and the HR business segment are responsible for implementing these principles, including allowing for differentiation in order to provide individualised support, adhering to a defined framework.

The Group's companies guarantee both the meeting of the minimum legal or professional requirements in each country, and the absence of discrimination.

The Group companies communicate on their remuneration rules and systems, ensuring maximum transparency and adhering to the principles set out. Each EDF group employee must have visibility on his/her total compensation. The manager, with the HR function, is their prime contact. The annual career assessment interviews provide a key opportunity for exchanging on this topic.

EDF is reaffirming its priorities in terms of recognition and has updated its policies by:

- improving the integration of recognition into its managerial practices and processes;
- strengthening the direct, unbiased and obvious link between personal contribution (performance, ability to adapt and take the initiative), professional development and financial recognition; and
- developing variable remuneration schemes, linked to the Company's financial performance, to recognise through differentiation.

To meet the challenges of employee and manager recognition, the project to modernise the pay classification system for the Electricity and Gas Industries branch was carried out throughout 2022. For total gross remuneration, please refer to the note on employee expenses.

	2020	2021	2022
Equity ratio/Average remuneration	6.6	6.6	6.3
Equity ratio/Median remuneration	7.2	7.2	6.8

The employees taken into account for the calculation of the above ratios are all the full-time equivalent employees of EDF in France, continuously present over the year 2022, numbering approximately 60,000 employees, which represents all of EDF's employees in France and nearly 50% of the Group's employees in France. Salaries

of the EDF employees concerned include the fixed salary, the variable portion and all bonuses, including those related to the status of the IEGs, as well as any benefits in kind. See also section 4.6.1.1 "Remuneration policy applicable to the Chairman and Chief Executive Officer".

3.3.3.7.2 Variable remuneration plans to boost performance

Variable remuneration

Within the Group, most employees have individual or collective performance-based variable remuneration. The terms and conditions of this variable remuneration differ from one Group company to another on the basis of historical agreements or applicable regulations.

Profit-sharing

In France, EDF and Enedis employees benefit from a profit-sharing scheme, introduced more than 20 years ago for EDF and for Enedis when it became a subsidiary. Most of the Group's European subsidiaries have similar schemes. EDF and Enedis employees can choose either to receive payment and/or to invest it into either the Group Corporate Savings Plan or the Group Collective Retirement Saving Plan. In a constrained economic context, a policy of matching contribution is maintained. EDF's profit-sharing agreements, usually three-yearly, were concluded for a one-year period in 2020, 2021 and 2022. EDF and Enedis require the profit-sharing amount payable to be set based on the meeting of national objectives reflecting the different components of the companies' performances (economic, business lines, social and environmental).

Professional training on compensation issues

EDF and Enedis pay particular attention on the professional training of their managers in questions of remuneration and, for example, in supporting managers at the time of the recognition campaign, with the modernisation of the recognition path for EDF as a whole and professional training for the HR function as a whole on questions of remuneration (implementing the new syllabus).

3.3.3.7.3 Employee savings policy

The employee savings schemes are open to employees of EDF and of the Group's French companies in which EDF owns directly or indirectly at least 40% of the share capital and which have signed up to the Group Savings Plan (PEG) and/or the Collective Retirement Savings Plan (PERCO).

3.3.3.7.3.1 Group corporate savings plan (PEG)

A full range of diversified mutual funds is available for subscription, including conservative funds mainly invested in bonds and money market investments, balanced funds and dynamic funds, mainly invested in shares, including shareholding funds invested in EDF shares. A dedicated, solidarity-based, low-carbon fund aims to invest in the energy transition while respecting agreements that limit CO₂ emissions. Profit-sharing, as well as individual payments and transfers from the Time Savings Accounts, are matched by the Company under conditions negotiated within each company.

The EDF group's PEG	2022
Number of employees, retirees and former employees of the Group holding a PEG	203,382
Share of total population (in %)	97.4
Outstanding amounts (in billions of euros)	5.3

3.3.3.7.3.2 Collective Retirement Savings Plan (PERCO)

The EDF group's Collective Retirement Savings Plan is made up of two FCPE (Employee Mutual Investment Funds) profit-sharing funds with a total of eight investment vehicles: one solidarity fund and one set-maturity fund. The plan may be managed independently, in which case it may be invested in any sub-fund

regardless of the retirement date, or by the fund manager, in which case the level of risk will be automatically reduced as the maturity date approaches (retirement, acquisition of their primary residence). Profit-sharing, as well as individual payments and transfers from the Time Savings Accounts, are matched by the Company under conditions negotiated within each company.

PERCO EDF group	2022
Number of employees, retirees and former employees of the Group holding a Group Collective Retirement Savings Plan	89,723
Share of total population (in %)	42.29
Outstanding amounts (in billions of euros)	1.0

It will be noted that 27% of Group employee savings (PEG + PERCO) is invested at the date hereof in funds aligned with Article 8 of the European Union SFDR (Sustainable Finance Disclosure Regulation).

3.3.3.7.4 Employee shareholding

In 2022, the EDF group launched an employee-shareholding operation termed "ORS 2022" by way of an increase in capital reserved for employees who are members of the Group Savings Plan or of the International Group Savings Plan.

The capital increase comprised a structured (or "leveraged") formula with a guaranteed personal contribution in euros, within a limit of 8 million shares and a so-called "conventional" formula.

This operation enabled 43,888 employees to subscribe 18,100,741 shares equivalent to 0.46% of the pre-existing share capital.

As at 31 December 2022, the employees held 1.59% of the share capital, divided between the shares held by the "Actions EDF" and "EDF ORS" employee shareholding funds (FCPEs) of the Group Savings Plan and the shares held in registered form:

	Employee shareholders	Number of shares	% of capital	% of voting rights
Employee shareholdings		61,668,032	1.59%	1.47%
Group Savings Plan ("Actions EDF" and "EDF ORS" employee shareholding funds)	103,715	57,796,177	1.49%	1.35%
of which EDF shares	69,628	33,155,642	0.85%	0.95%
of which EDF ORS	59,697	24,640,535	0.63%	0.41%
Shares held in registered form		3,871,855	0.10%	0.12%

3.3.3.8 Attract and retain talent

3.3.3.8.1 EDF remains one of the top industrial recruiters

In 2022, in the context of a major energy crisis and of unprecedented shortages in industrial, technical and digital skills, EDF, as a major player in the energy transition in France and worldwide, is one of the main industrial recruiters with close upon 13,000 recruitments on permanent contracts in 2022. The Group also took in 8,346 work-study students and 3,500 interns.

Hires/departures	Unit	2020	2021	2022
Hires*	Number	11,214	10,254	12,992
Retirement departures/inactive employees	Number	3,523	3,333	3,403
Resignations	Number	2,452	3,522	4,761
Redundancies, dismissals, people made inactive	Number	1,174	1,524	1,086
Turnover	%	5.6	5.6	6.5
Other arrivals	Number	6,258	9,856	12,594
Other departures	Number	8,691	9,940	10,396

* The Hires indicator takes into account permanent hires at the Group level.

3.3.3.8.2 Attractiveness of the employer brand

In order to attract candidates who are of interest to the Group, the Company relies on a CSR and innovative Group employer brand. EDF remains one of the most attractive employers for students, work-study students and young graduates, and this is confirmed by this year's rankings:

Epoka ranking ⁽¹⁾

For the third year in a row, EDF is the number one preferred company among students and young graduates in the energy sector according to the Harris Interactive study for Epoka, and ranks third for all sectors combined among engineers.

Universum ranking ⁽²⁾

In 2022, Universum launched a CSR Index. In 2022, EDF ranked as fourth most attractive company for managers who graduated from engineering schools and ranked first for experienced professionals holding qualifications from 2-3 years in higher education;

IFOP ⁽³⁾

EDF is ranked 3rd for employer brand and environmental responsibility.

Happy Trainees ⁽⁴⁾

EDF is ranked first in the general ranking measuring the level of satisfaction of work-study students and interns for 2022 (for companies hosting more than 1,000 young work-study students and trainees).

3.3.3.8.3 Recruitment priorities

In 2022, the EDF group increased its recruitment volume by 27% compared with 2021 while continuing to favour the employability of its employees and by targeting its hires on profiles that are unavailable through internal mobility.

EDF has fulfilled its commitments to the inclusion of young people and people with disabilities, and to adding more women to its businesses. The Group has also reinvented itself with more digital, more innovative tools.

Industrial, technical, and digital skills Technical and digital industrial skill needs

To meet the need for excellence in industrial, technical and digital skills (see in particular section 3.4.3.2.1 "The excell plan: being present in major nuclear power projects"), EDF's hiring in 2022 prioritised recruiting in technical, IS, short-handed, rare or developing professions. These include mechanical or electrical maintenance technicians, valve technicians, welders, electrical project engineers, design office technicians, contract managers, cybersecurity specialists, and data scientists.

Joint hiring

The Company has set up joint hiring between the departments in production and nuclear engineering. As soon as the candidate arrives, they are given insight into the next job, so as to be able to follow a dual course of study (engineering/research) and of operational implementation (operation-maintenance).

Coordination scheme

In 2022, EDF launched a scheme for sponsored candidates. Its aim is to get its staff to do the recruiting. The recommending employee is entitled to a bonus for a "sponsored" hire that materialises. This approach has proved its worth: Framatome achieves 10% of its annual recruitment volume via this sponsorship method.

Prioritisation in technical professions	2021	2022
Percentage of young graduates recruited through work-study programmes (in %)	23	16
Percentage of young graduates recruited from end-of-study internships (in %)	6	4
Share of experienced technicians and engineers among hires (in %)	40	49

Adding more women to technical professions

Thanks to the Group's determined efforts to promote the participation of women in technical professions, industry is also a female field. EDF launched in 2022 the campaign entitled "C'est au tour des femmes d'entrer en jeu" ("Now it's women's turn to throw their hat in the ring") (see section 3.5.4.10 "Responsible communication").

Women's Energy in Transition Award

For the fifth year in a row, Dalkia has organised the Women's Energy in Transition Award, which provides financial support to female students and working professionals, with the aim of encouraging women to join training programmes or technical professions related to the energy transition.

(1) entreprises-preferees2022.eventmaker.io/

(2) https://universumglobal.com/za/

(3) ifop.com/publication/les-entreprises-francaises-les-plus-admirees-vague-3/

(4) edf.fr/edf-recrute/nos-actualites-rh/edf-et-ses-etudiants-une-histoire-qui-marche

Recruitment of women in technical professions (EDF)	2020	2021	2022
Total number of hires in technical professions	671	1,219	1,799
Share of women among hires in technical professions (<i>in %</i>)	16	17	17
Total number of hires in the information systems business units	113	159	269
Share of women among hires in information systems professions (<i>in %</i>)	31	21	20
Share of women hired as engineers (<i>in %</i>)	11	10.5	16

Highlighting of work-study programs and internships

Key element of the Group's sourcing and human ambition

EDF has made work-study programmes and end-of-study internships a key component of its skills sourcing and "inclusive industrial" employer brand, meaning that more than one out of every 100 work-study students in France is trained by the Group. The "# 1jeune 1 solution" ("# 1 young person 1 solution") scheme successfully took on 8,340 work-study students, of whom 4,800 for the 2022-2023 intake, and 3,500 interns.

Promoting work-study programmes in hiring	2021	2022
Number of work-study students	3,518	3,683
Number of interns received	1,727	1,700
Percentage of young graduates recruited through work-study programmes or internships (<i>in %</i>)	40	20

Commitment to launching the careers of young people and inclusion

Helping young people find employment remains one of the Group's priorities. For many years, the Group has been working for a more inclusive economy, especially for young people.

Priority neighbourhoods and revitalised rural areas

EDF is committed to bringing in young people who are far from employment and those who come from Priority Urban Neighbourhoods and Revitalised Rural Areas. With inclusion at the heart of the Group values, EDF also undertook in 2022, with the voluntary association "Tous en stage" ("Traineeship for all") to support schoolchildren in *troisième* (lower 5th form) from priority districts (deprived areas) seeking internships in France. This is a valuable opportunity for the Group which wishes to elicit vocations, particularly among young women.

"One young person, one mentor"

The EDF group and the EDF group Foundation are mobilised in the "One young person, one mentor" scheme which provides a response to the challenges of youth employment and of renewing skills. More than 1,000 mentorship proposals are open to Group employees ⁽¹⁾. Mentor missions are available throughout France in person and remotely, in formats ranging from one to two hours of commitment per month per mentor over an average duration of 6 months.

At end December 2022, 462 mentorship actions were undertaken, of which 227 were performed *via* Human Pacte, with additional actions reported by Enedis, Dalkia and the EDF group Foundation. Backed by this existing seedbed, the Group is changing scale with the ambition of achieving 1,300 mentored young people by 2025, since one employee can mentor several young people.

Partner in the "C Génial" competition

In June 2022, EDF awarded the Génialissime prize to the *Lycée pilote innovant international* at Jaunay-Marigny (pilot upper secondary school) near Poitiers for the project "Un fil qui donne des sueurs chaudes". Prizewinners are allowed to take part in international scientific contests, and to visit companies so as to see in real life the openings for students in science and technology.

Skill mentorship

Under the French Pacte Act, EDF has chosen to develop skills sponsorship. The Company adopted two lines of approach:

- senior skills sponsorship, which constitutes an opportunity to end one's career by placing one's skills at the service of a recognised voluntary entity. This scheme therefore addresses employees who are nearing retirement;

- mid-career sponsorship, which addresses all the Company's employees, enabling them to perform a mission in the general interest according to differing terms and procedures as part of an employee's career path.

In 2022, 63 skills sponsorship contracts were entered into in the Company.

Mobilisation for economic and social recovery

Numerous partnerships at national and regional level

In 2022, EDF carried on its national partnerships with *Pôle Emploi* (Job Centre), *Viva Fabrica*, *MED Metaverse*, *Yookan*, and *C Génial*.

EDF recruits in the Nantes tramway

New recruitment methods in line with the values of the EDF group make it easier for people who are far from employment to enter the job market. Under this scheme, EDF took part in the *Tramway de l'emploi* (Tramway for Employment) addressing the young people of the Nantes metropolis. A tram travelling on line 1 included seats reserved for the operation to afford the opportunity of meeting candidates. The job offers proposed by EDF Pays de la Loire included: a boilermaker for the Izy Confort subsidiary, a customer advisor for the Sales Department, etc.

Sector in decline or affected by PSE

EDF is pursuing its responsible and win-win sourcing approach and is offering jobs to employees with experience in sectors that are shrinking or affected by PSEs ⁽²⁾. "Job dating" operations were organised with the employees of Renault, Stellantis and Naval Group.

2022 profit-sharing scheme and recruitments

Increased proportion of women recruited

The employee profit-sharing agreement signed for 2022 includes, in addition to the business-line, health and safety and climate criteria, a criterion relating to the rate of female recruitment ⁽³⁾ with the ambition of achieving 27%. With a female recruitment rate of 28% in 2022, this result yields 100% performance for this profit-sharing criterion.

3.3.3.8.4 Other innovative sourcing methods

The Group maintains a high level of digital communication in order to maintain its position and role as an indirect "source" *via* social media and online events targeted at the profiles it seeks. Communication on the Group's businesses and subsidiaries has been strengthened, with a particular focus on the Group's recruitment energy-transition related priorities.

(1) engagement.microdon.fr/humanpacte

(2) PSE: Employment Protection Plan (*Plan de sauvegarde de l'emploi*).

(3) Counting for 10% of the profit-sharing result.

Social networks; Web series; Data Challenge; Videos

To boost its communication targeting young people, the EDF group increasingly works with influencers and the TikTok social network. As an example, an operation was conducted with the YouTuber Bruno Maltor (269 thousand subscribers) on the theme of recruitment to the nuclear industry, "*des centrales où il fait bon travailler et où il fait bon vivre*" (power stations for congenial working and living). In this video, Bruno Maltor discloses to his community the town of Beaugency in the Centre Val de Loire region through the eyes of Mathilde Douillet, who is tasked with preparing mechanical modifications at EDF in the Saint Laurent des Eaux nuclear power station.

At end 2022, EDF and 10 other major industrial groups launched the #SmarterMobilityDataChallenge targeting European data science students. The students are set the task of developing an algorithm to predict the use and availability of recharging terminals in Paris. This challenge both enables students to move on from theory to practice by responding to one of the greatest challenges of a capital city, and also gets them to create a network of qualified Data Scientists in major companies.

Apart from recruitment, the EDF group uses its website to provide key advice on drafting CVs, covering letters, conduct at interviews, *via* its *Cartes en main* (Cards in hand) podcasts. The podcast is available on Spotify, Deezer and the EDF Recrute career site.

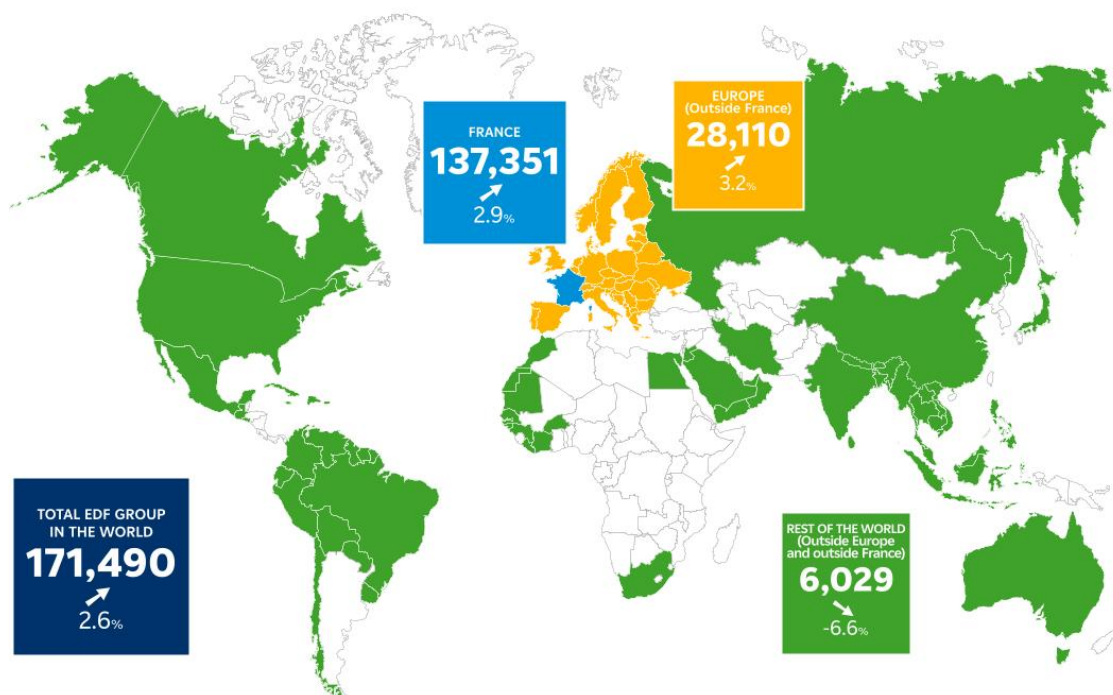
Employee ambassadors to young people

Active and well-organised employee networks (Myjobglasses, graduates, *EDF c'est moi, Elles bougent*, EDF social club) target young people aged 15 to 25, to make them discover the electricity generating industry through the employees' know-how and their passion for their profession. In videos published on the edf-recrute website and in the EDF YouTube channel, employees give their authentic account spontaneously, showing the usefulness of their profession, and thus affording prospects to young people seeking a meaningful professional future.

3.3.3.9.3 International Group workforces: 96% of the international workforce is European, with 80% in France

The increase in Group staff numbers in 2022 is mainly centred on Europe and France. This trend is explained by the growth in activity of the nuclear business, and of the renewable activities.

3.3.3.9.4 Details of the allocation at 31 December 2022



3.3.3.9 Detailed information on the Group's workforce

3.3.3.9.1 A workforce trajectory in line with the Group's strategic orientations

The EDF group's consolidated workforce totalled 171,490 employees at 31 December 2022 (with subsidiaries consolidated). The 2.6% increase compared with 2021 is explained by the expanding need for skills driven by the Group's nuclear industrial segment, so as to respond to the unprecedented industrial challenges entailed in the energy transition.

3.3.3.9.2 The workforce in France

The EDF group is continuing to transform itself and is adapting its business model to meet the challenges of the energy and ecological transition in France and Europe (maintenance programme for existing power plants, new nuclear, developing renewable energies, developing new commercial offers, particularly electric mobility, heat pumps, optimisation of support functions, digitalisation of internal service sector processes, targeted development abroad). In France, the Group companies had 137,351 employees as at 31 December 2022, a 2.6% increase on the figures for 2021. The Group's companies in the nuclear, renewable energy and energy service sector are expanding quickly to support the development of their business, with workforce numbers for Framatome growing 9%, and for Cyclife, 27%. In renewable energies, the workforce increased 38.1% for EDF ENR and 3% for EDF Renewables.

FURTHER DETAILS ON THE BREAKDOWN OF THE WORKFORCE

		2020	2021	2022
By age				
Under 25 years old ✓	%	7%	7%	7%
From 25 to 35 years old ✓	%	28%	27%	26%
From 36 to 45 years old ✓	%	27%	27%	28%
From 46 to 55 years old ✓	%	26%	26%	25%
56 years old and older ✓	%	13%	13%	13%
Per category				
Managers	Number	53,485	55,324	57,864
Non-management employees	Number	111,715	111,833	113,626
Part-time work				
Part-time employees	Number	9,748	9,234	8,856

✓ 2022 indicator subject to reasonable assurance check by Deloitte & Associés.

For gender distribution, see section 3.3.3.1 "Workplace equality".

The distribution of the workforce reflects a balanced staff, which is the result of the EDF group's employment strategy. The proportion of employees under 35 years of age (i.e. 33%) arises from the Group's desire to integrate young graduates from work-study programmes and internships. The proportion of managers Group-wide will increase in 2022 due to the significant increase in hires, and particularly nuclear engineering hires.

3.3.4 Energy poverty and social innovation

Taking into account the most vulnerable customers is at the heart of the Group's efforts to ensure a fair and inclusive energy transition. It is for this reason that the EDF group confirms and renews its commitment to its most vulnerable customers, by increasing the understanding of this diverse, complex reality, implementing support solutions based on public solidarity schemes and specific initiatives.

3.3.4.1 Understanding energy poverty

The first part of EDF's efforts consists of gaining a better understanding of the complexity of energy insecurity situations to be able to identify more precisely the customers most at risk, with a view to providing them with better support.

3.3.4.1.1 Complexity of the problem

The problems due to access to energy and energy poverty keep intensifying in most developed countries, in terms of the number of households concerned or the severity of the impacts encountered. Vulnerability varies according to geographical location, income, and size and type of accommodation, as well as the type of energy used. The pandemic has worsened a growing phenomenon.

And its measurement is complex and varies from one country to another. In France, the French National Energy Poverty Observatory, of which EDF is a partner, published its indicator, revealing that 3 million households were in a situation of energy poverty. In the United Kingdom, the indicator published by the public authorities showed the country had 2.5 million households in a situation of energy poverty. In Italy and Belgium, there is currently neither a definition nor an indicator relating to energy poverty.

3.3.4.1.2 Group initiatives

In these very different national contexts in regulatory, economic, political, and competitive terms, the EDF group is committed to combating energy poverty alongside public and social organisations and associations.

Understanding the R&D programme

EDF R&D runs an "Energy poverty: understand-innovate" programme to anticipate the changes in energy poverty and public policies and to design and develop

innovations to combat energy poverty more effectively. In France, EDF was involved in the work of the National Energy Poverty Observatory.

Identify GEODIP

Since late 2021, the National Observatory of Energy Poverty (ONPE) has enabled local actors to use the GEODIP tool (Geolocate Diagnose Energy Poverty), which makes it possible to visualise energy poverty zones based on housing and household car use.

3.3.4.2 Combating energy poverty.

The Group has long been acting to ensure that an electricity bill is not an additional aggravating factor for its most vulnerable customers. EDF's efforts are supported by its solidarity policy, which either serves as a supplement to public programmes or works by deploying special actions of their own. The operational implementation of this policy is based on three components: payment assistance, customer support, and prevention.

3.3.4.2.1 Payment assistance

In addition to the individualised payment terms that may be granted (see section 3.3.4.2.2), the EDF group is closely involved in national and regional public schemes and participates in the "Don d'énergie" (Energy gift) programme.

In France

Energy vouchers

5.4 million energy vouchers were sent out by the authorities in April 2022. On 14 September 2022, the Prime Minister announced the setting up of an exceptional energy voucher scheme for the winter of 2022. The scheme covered 12 million households in France (with a doubling of the number of beneficiaries) for an amount of between €100 and €200.

Fonds de solidarité logement (Housing Solidarity Fund or FSL)

For the past 30 years, EDF has had an active partnership with the Fonds de Solidarité Logement, granting financial aid to people who have difficulty paying for their housing expenses. With €21.2 million in 2022, EDF is the largest contributor to the Fonds de Solidarité Logement, after government agencies.

"Don d'énergie" (i.e. "Energy gift")

In France, EDF is developing "Don d'énergie" (i.e. "Energy gift"), in partnership with the Abbé Pierre Foundation. Since 2018, EDF's customers with the EDF & MOI application and its newsfeed can make a donation to help vulnerable households pay their electricity bill, irrespective of their electricity supplier. EDF matches this tax-free donation at 100% within a certain limit.

In Italy

The customer service function was boosted, with widened scope for paying in several instalments. Edison joined the Manifest on energy poverty, an initiative promoted by the Banco dell'Energia, aimed at creating a network of energy companies, voluntary associations, research organisations, and service sector organisations with practical commitment to combating energy poverty. In 2022, the action was particularly focused on the Calabria region, with Edison financially supporting some hundred families (not necessarily Edison customers) to help them pay their electricity bills. Training sessions for ecologically responsible habits were also provided to sustainably raise families' awareness.

In Belgium

In Belgium, Luminus developed all the public schemes that are specific to each of the three regions: Flanders, Wallonia and the Brussels Capital Region. In 2021, the Belgian government decided to extend the so-called "social" rate to new customer categories. This social rate now covers one million beneficiaries, against 500,000 in 2020. 20% of Luminus customers enjoyed benefit of the social rate in 2021, double the figure for 2020. For many years, Luminus has focused its efforts on calculating monthly instalments, and encourages its customers to adjust the instalments proactively in order to avoid unpleasant surprises at the annual settlement. In 2020 and 2021, these efforts brought about a fall in requests to stagger payments. In 2022, the sudden soaring of energy prices caused a sharp increase in requests to stagger payments (spread over eleven months, instead of the previous six months).

In the UK

In the UK, the Energy Carbon Obligation (ECO3), wholly aimed at vulnerable customers and implemented by EDF Energy, encompasses measures both for reducing carbon emissions and for combating energy poverty through the improvement of energy efficiency.

Group key performance indicator

GROUP KEY PERFORMANCE INDICATOR

The key performance indicator relates to the number of advisory actions carried out with customers within the framework of the Energy Support Service.

The *accompagnements énergie* (energy support measures) are one of the levers implemented by EDF to combat energy insecurity, in parallel for example with the promotion of the energy voucher scheme, and with the institution of payment instalment schedules or the renovation of housing.

In 2022, the number of advisory actions was below the range set annually, despite the general rise in prices due to the soaring of energy prices, with major impacts on households, particularly on the most vulnerable among them.

Energy insecurity is a complex phenomenon, and an increased number of households do not apply for the financial aid to which they are entitled. Heating restrictions avoided excessively-high bills that are harder to honour. The EDF recovery process also helped maintain a continuous, proactive dialogue with customers experiencing payment difficulty, with regular sending of e-mails or SMS messages, with a commensurate decrease in recourse to advisory actions under the energy support.

3.3.4.2.2.2 Local foothold for the solidarity policy

Several additional tools allow EDF's solidarity policy to be fleshed out and rooted as close as possible to the problems being faced.

Solidarity contacts

The work of the Solidarity Experts is supplemented by that of the Solidarity Contacts, who are the regional leaders of EDF's solidarity policy. They raise awareness of energy insecurity issues among their partners and provide them with training.

3.3.4.2.2 Support initiatives

In November 2021, EDF committed itself to no longer requesting that electricity be cut off for bills unpaid by its private customers in France.

With this measure, EDF goes further than its regulatory obligations outside the winter grace period, by replacing the cut-off with a power limit of 1kVA. This measure, which took effect on 1 April 2022, applies in all cases, unless there is a physical or technical inability to limit the power supply to the dwelling. A qualitative and quantitative study is in progress seeking to better understand how the scheme was perceived by customers.

EDF has made arrangements to provide massive support to customers facing hardship. This translates into an Energy Support service, increased vigilance during the winter grace period, and a firm local basis for the solidarity policy.

3.3.4.2.2.1 The Energy Support Service

Since 2010, "*Accompagnement Énergie*" (Energy Support Service) has been providing a personalised solution to any EDF customer who has trouble paying. This is a system deployed by telephone by 5,000 customer advisors and 230 solidarity experts.

The Energy Support Service and who is involved 5,000 Customer Relations Advisors

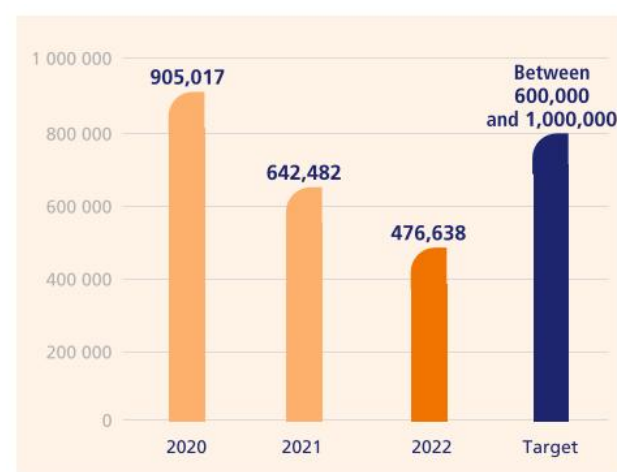
All of them are based in France, and have been trained to handle energy insecurity situations. They detect the first signs of hardship and offer the first forms of assistance. The EDF advisor checks that the customer is getting the right rate for their consumption habits and that the bill has been calculated on the basis of a real index. The advisor tells the customer how to lower their consumption and discusses the terms of payment. They inform the customer about the energy voucher, directing them to those who can help if necessary.

230 Solidarity Experts

230 EDF Solidarity Experts dedicated to solidarity who work directly with social action organisations to provide the best possible support to the most vulnerable customers.

Advisory actions carried out with customers within the framework of the Energy Support Service

(in number of actions)



Partnerships

Effectively combating energy poverty usually means working with partners. EDF works with the *centres communaux d'action sociale* (CCAS), as well as with major charities such as the Abbé Pierre Foundation, the French Red Cross, Secours Catholique, and Secours Populaire Français. EDF cooperates with the Union Nationale des CCAS (UNCCAS) and the *Association des cadres territoriaux de l'action sociale* (ACTAS) to seek all forms of innovation, for example in terms of access to rights.

Mediation points (PIMMS) and social mediation

To strengthen its support in the field, EDF works with many social conciliation structures throughout France, including around forty PIMMS (multiservice conciliation and information points). Under its partnership with the national conciliation network Pimms, EDF participates among others in the development of mobile Pimms (itinerant multiservice points), providing humane neighbourly responses to the everyday needs of rural inhabitants.

3.3.4.2.3 Prevention initiatives

In conjunction with its partners, EDF is deploying strong efforts in the area of prevention, taking action either in housing or in energy efficiency.

3.3.4.2.3.1 Actions to improve housing

"Toits d'abord" programme

EDF and the Abbé Pierre Foundation have signed a three-year extension to the "Toits d'abord" ("Roofs First") programme, which aims to build and renovate housing for people on very low incomes. To this effort, EDF is contributing €6.3 million over the period 2021-2023.

EDF Energy bonus

This offer of support is for carrying out renovations that are likely to save energy. It is based on a public system, which has been enhanced under the Recovery Plan.

"Mon chauffage durable" offer

The "Mon chauffage Durable" ("My Sustainable Heating") solution allows customers to replace a fossil-fuel-fired boiler with a heat pump, or to replace conventional electric radiators with smart, efficient radiators. This solution is part of the "Coup de Pouce Chauffage" (i.e. Heating boost) initiative launched by the French government in 2019. For heat pumps, EDF goes further than the state scheme, and offers additional bonuses for households facing energy insecurity.

Global renovation offer

In 2022, EDF added to its support offerings for energy renovation by launching its "Global Renovation" offer, affording for all individual-home owners scope for renovating their housing overall, in a secure framework, aiming at not less than 55% saving in home energy consumption compared with the situation prior to renovation works.

Ashoka Partnership

The issue of housing renovation for customers facing hardship has priority in combating energy insecurity and hence, the partnership agreement signed with Ashoka in 2021 arose from the ordinary will to provide innovative responses to energy insecurity through renovation. EDF, Réseau Eco-Habitat and Ashoka instituted a collaborative scheme to join forces in sharing their synergetic areas of expertise, and thus help promote sustainable solutions for people facing severe energy insecurity⁽¹⁾.

Alogia offer

EDF and its partner Alogia are committed to helping senior citizens through the energy transition. This offer for social-housing landlords addresses two important societal challenges: helping seniors stay in their homes by improving comfort and security, and combating poverty.

Green Homes Grant

EDF in the UK is the only supplier to have taken the decision to help its customers access the Green Homes Grant new government fund that finances households via a voucher system for insulation and low-carbon heating systems (UK Government programme "Energy Company Obligation" (ECO)). The latest scheme, "ECO4", became effective on 1 April 2022. For the year as a whole, 8,110 vulnerable households were aided via the ECO3 and ECO4 programmes.

3.3.4.2.3.2 Energy efficiency actions

Awareness-raising of ecologically responsible habits was boosted during the winter with enhanced customer support for consuming less or more efficiently

(#GestesUtiles "j'éteins, je baisse, je décale" – #UsefulPractices "I turn off, I lower, I defer energy use"). Numerous partnerships were set up, among them Unis-Cités.

Info Watt

Since 1 October 2022, for customers benefiting from energy vouchers, and equipped with a communicating meter, EDF proposes its "Info Watt" service. This is a free-of-charge service affording real-time display of electricity consumption, in euros and in kWh. This system identifies the most energy-consuming appliances and habits. Thus, each Info Watt beneficiary has no difficulty in being aware of his/her consumption, adapting habits by means of eco-practices, controlling consumption and making savings on bills.

Unis-Cité partnership

Under the new agreement "Des jeunes contre la précarité énergétique" (youth against energy poverty), Unis-Cité mobilises 300 young people performing civic service. Their mission consist of: raising awareness among the most vulnerable households of the challenges entailed in the energy transition; supporting them in controlling their energy consumption; helping to identify people experiencing energy insecurity; providing information on existing aid both preventive (*Ma Prime Renov*) and remedial (*chèque énergie*) by going out in the field to meet people, provide guidance and support eligible publics to approach the France Renov services.

SLIME programme

On Reunion Island, EDF carries out awareness-raising and demand-side management (DSM) diagnosis actions for households facing hardship. These actions are carried out in partnership with regional government via the Local Intervention Services for Energy Management (SLIME in French).

3.3.4.3 Social innovation for a just and inclusive energy transition

The EDF group, through its employees, businesses, and Foundation, is working to bring out all forms of social innovation to promote a just, inclusive energy transition.

3.3.4.3.1 Within the business lines: professional remobilisation actions at Dalkia

In 2022, Dalkia and Dynacité, the leading social-housing landlord in the Ain department, with a presence in 5 departments of the region, formed a partnership aiming to provide jobs for interested tenants by strengthening their employability in occupations with a future that have a secure foothold in the respective areas. Dynacité undertakes to facilitate identification of candidates residing within the properties it owns. Dalkia undertakes to incorporate the Dynacité tenants identified in a recruitment process that includes training in its business skills. This innovative scheme also involves a third partner, the work integration agencies, whose activities seek the return to work of people facing hardship.

3.3.4.3.2 In the subsidiaries: actions to combat poverty

Edison recently endowed a foundation, Edison Orizzonte Sociale (EOS), aimed at consolidating the Company's societal commitment, developing social innovation, and promoting inclusive and sustainable development. In 2022, EOS focused on promoting the development and education of teenagers, through access to culture and sports practice (in Milan, Turin or Catania). At Palermo, under the auspices of the fund to combat poverty among schoolchildren, EOS steered a project, "Urban Trajectories", with the support of sponsors such as Asvis and the Global Compact Foundation in Italy.

(1) <https://www.ashoka.org/en-gb/node/62410>

EDF Norte Fluminense (EDF NF) formed a sustainable partnership with the Oswaldo Cruz Foundation (Fio Cruz), one of the foremost scientific and technological institutions promoting health in Latin America. As an example, in 2022 EDF NF sponsored the *Roda de Palhaço* project designed to comfort and bring joy to sick children in hospital by sending them singing teams dressed as clowns.

3.3.4.3.3 Via the EDF group Foundation

The EDF group Foundation assists community organisations and encourages employee involvement. Its efforts are mainly focused on three areas in France and abroad: environment, education and inclusion, with priority given to actions to help future generations and the most vulnerable. The Group's philanthropic efforts involve both financial support and assigning employees via skills-based sponsorship and volunteer work.

The EDF group has donated €12.6 million to support projects in the public interest. 45% of the actions are carried out by the EDF group Foundation, 44% by the EDF parent company, and 12% by the Group's subsidiaries. The EDF group Foundation supported 247 projects in France and 34 projects abroad, mainly focused on the environment, education and inclusion.

The EDF group Foundation routinely assesses the implementation and impact of the projects financed. Sponsorship agreements set out indicators measuring the implementation and impact for beneficiaries and their achievement is monitored through an annual review requested from the association running the project. 10% the amount awarded is withheld until the review is produced and the indicators met.

For details of the EDF group Foundation's philanthropic efforts, see the online annual report ⁽¹⁾.

3.3.4.3.4 Focus on support for Ukraine

Since the beginning of the war in 2022, a crisis unit was set up, managed by the Group Risk Department, coordinating the action of all the concerned entities and subsidiaries in our business. Having received numerous requests from the Ukrainian authorities, the embassies and partners, etc., the EDF group wished to provide effective responses to requests for equipment to maintain the electricity distribution network, which suffers damage daily. Thus, in coordination with the French Foreign Affairs Ministry and the Electricians Without Borders NGO, Enedis sent 60 emergency electricity generating units to Ukraine and Moldavia to secure the most crucial infrastructures, such as hospitals. The NGO's teams went out to install and connect the equipment, and also to train the Moldavian personnel in maintaining

and operating the emergency power generators. EDF sent out personal protection equipment and radiometers to the Zaporizhzhia nuclear power station, together with four transformers.

In addition to sending out equipment, the Group is mobilising to receive refugees. As an example, Enedis and EDSO (Association for the European Distribution System Operators) organised reception of families of the Ukrainian distribution network personnel – catering for some ten thousand people. Other local initiatives, such as the EDF real-estate department making available 17 homes in 9 municipalities, or the opening of CCAS holiday centres, thus affording housing for Ukrainian refugee families.

Furthermore, at end August 2022, the EDF group Foundation collected €500,000 via a campaign seeking donations of employees' hours of work or leave entitlements. €250,000 were assigned to first emergency actions to benefit displaced Ukrainians, through the intermediary of 3 NGOs:

- the United Nations High Commission for Refugees (HCR) – Ukraine (for people displaced within the country) and bordering countries: to help provide shelter for refugees (tents, reception facilities) and emergency aid (delivering packages of materials, blankets, water in jerry cans, mattresses, etc.) and in reception facilities at the borders;
- UNICEF – Poland: to set up an emergency services centre to assist vulnerable families with children: providing information for families on the road, psychosocial support, support by social workers and health services, person search and re-uniting of families for children separated from their families during their journeys (a centre capable of supporting 3,000 to 5,000 people per day);
- SOS Attitude – Moldavia: equipping three refugee camps in Moldavia with a communal lighting system to enhance security at those camps by lighting washroom areas and the alleyways between tents.

3.3.4.3.5 An employees' collective in the service of energy transition: Rhizome

Rhizome is an organic, interconnected, horizontal network focusing on action to promote the Company's ecological transition (in furtherance of its *raison d'être*). It is a collective of employees committed to greater ecological awareness at the workplace. Rhizome regularly organises webinars broadcasting employees' personal accounts of initiatives and moments of sharing. Today, by word of mouth, 1,280 employees join forces around a Manifesto ⁽²⁾.

(1) fondation.edf.com/app/uploads/2022/10/ra-2022-fgedf-ua-fr.pdf

(2) As an example, the EDF Rhizome is presented on: <https://pour-un-reveil-ecologique.org/en/collectifs-de-salaries/>

3.4 Responsible development

The Group aims to achieve responsible growth. To do so, it has made a priority commitment to maintaining and developing a high level of stakeholder dialogue and consultation in all projects and operational business, whilst ensuring that regulated network operator management remains properly independent. Indeed, over and above its environmental responsibility and alongside its social and societal responsibility, the Group seeks to nurture economic, social, and human development in all territories in which it operates. The Group is keen to develop, stimulate, and support industries, and aims to implement responsible behaviour as its digital development expands.

100%

ANNUAL RATE OF PROJECTS
ENGAGING DIALOGUE AND
CONSULTATION
PROCEDURES

23.2%

ANNUAL RATE OF
PROCUREMENT FROM SMES
IN FRANCE

71.4%

ACHIEVEMENT RATE FOR
RELOCATION AND
MAINTAINING NUCLEAR
INDUSTRY SKILLS

52.5%

ACHIEVEMENT RATE OF
COMMITMENTS TOWARDS
FRENCH "INSTITUT DU
NUMÉRIQUE RESPONSABLE"

3.4.1 Dialogue and consultation with stakeholders

Dialogue with stakeholders is a major part of EDF's culture. It forms the basis of EDF's cooperation with our stakeholders. The Group has made dialogue and consultation one of its priority societal commitments.

3.4.1.1 Experience in dialogue and consultation

EDF's history and its role as a major investor and operator throughout France have allowed it to develop long-standing, tried and tested experience in listening, dialogue, and consultation with stakeholders, which are organized with a view to taking into account multiple stakeholders and a diverse range of situations. In a fast-changing society, EDF supports social innovation in local stakeholder relations.

3.4.1.1.1 EDF, a policy of dialogue and consultation

3.4.1.1.1.1 EDF: a pioneer in the implementation of stakeholder panels

For over 20 years, the EDF group has relied on different external stakeholder councils, at EDF, Group, country and subsidiary level. Several panels of experts from civil society provide Group managers with their view on the major topics of interest to the EDF group.

Group Stakeholder Advisory Committee

For dialogue with external stakeholders, over and above forums for listening to third parties, strategic watch, and ongoing partnerships, the main body is the new Stakeholder Advisory (1) Committee. This is a joint, multidisciplinary, voluntary group made up of thirteen individuals representing civil society (climatologists, delegates from student and consumer groups, economists, NGOs, solidarity actors, etc.). It has been co-chaired by EDF's Chair, and by Cécile Renouard ⁽¹⁾ since 2022. Members of the Committee share their insights on the Company's strategic orientations with the Chairman. Minutes of the discussions are systematically produced at the end of each session.

Three sessions were held over the past year on the following themes: 2050 energy mix scenarios and externalities relating to these scenarios, the duty of vigilance and its practical Group-wide implications, plus climate change adaptation. EDF encourages members of this Committee to speak both internally and externally. For

example, in 2022, Germain L'Hostis made a presentation to the Group Talents department, and Kalina Raskin was featured in the *Mag* discussing biomimetics ⁽²⁾.

Other Advisory Committees in which stakeholders are involved

- **Scientific Council:** Chaired by the Chair of the *Académie des sciences*, this Group-level council met 3 times in 2022 to discuss energy markets, offshore wind, and EDF's R&D policy.
- **Edison Stakeholder Advisory Panel (SAP):** the SAP met three times in 2022, discussing the role gas plays in electrical system flexibility and security, updating Edison's material issues, and conducting the first review of the SAP after three years of operation.
- **Enedis Stakeholder Council (SC):** the SC met three times to discuss the renewal of concessions, current thinking regarding the *entreprise à mission* (i.e., French legal framework in which businesses pursue a set social and environmental purpose with specific sustainability goals), electric mobility, follow-up of SC recommendations, and solidarity purchasing. The minutes of the conclusions of each Advisory Committee meeting are shared with the members of Enedis' Executive Committee. Enedis implemented in 2021 regional iterations of the Stakeholder Advisory Committee. Following this experimental phase, the twenty-five regional divisions set up their regional Stakeholder Councils in 2022.

3.4.1.1.1.2 Experience in public debate

One specific aspect of major local development projects in France is the "public debate", a participatory process that lasts between four and six months during which individuals with an interest in the project can have their say about its implementation. The EDF group has implemented many projects entailing a formal public debate.

Dunkirk Wind farm

Following the public debate on the offshore wind project off the Dunkirk coast that was held from 14 September to 13 December 2020 and the decision to pursue the project taken in May 2021 (in conjunction with RTE, which is tasked with connecting the facility), in June 2021 the French National Public Debate Commission (CNDP) tasked two guarantors with monitoring the post-debate consultation phase until the start of the public enquiry.

Guarantors draw up an annual report giving a fully neutral and transparent account of all the consultation actions carried out and points raised on both sides. It also includes guarantors' recommendations for the next steps of the ongoing consultation. The ongoing consultation's first intermediate report covering the period from June 2021 to the end of June 2022 was published on 10 October 2022: its conclusions were very positive ⁽³⁾.

(1) Philosopher, professor at the *École des Mines*, ESSEC and IEP Paris, and Chair of *Campus de la transition*.

(2) Particularly via the partnership confirming EDF R&D's commitment to the Bio-inspired Materials Open Innovation Generator (BiOMIG) consortium (edf.fr/groupe-edf/inventer-lavenir-de-lenergie/rd-un-savoir-faire-mondial/toutes-les-actualites-de-la-rd/edf-rejoint-le-consortium-biomig-de-ceebios-pour-le-developpement-des-materiaux-bio-inspires).

(3) It is available on the participative platform dedicated to the project: https://participer.eolien-en-mer-dunkerque.fr/media/e16a381916bdd58181/EMD-RTE_Garants_CNDP_Bilan_concertation_ann__e_1_VF.pdf as well as on the CNDP website.

New EPRs in Penly

The programme to construct three pairs of EPR2 reactors and the plan under consideration to build an initial pair on the Penly site were publicly debated under the aegis of the CNDP from 27 October 2022 to 27 February 2023. EDF's role is as project owner for the first pair of EPR2 units and nuclear sector lead contractor for the proposed programme of 6 new EPR2 reactors. This debate had a local component due to the integration of the project into the Penly area, and a national one given the proposed industrial programme. It furthers the national consultation on the energy mix set up by the French State under the aegis of 4 CNDP guarantors focusing on France's energy choices. This gives the public the opportunity to contribute to the project owner's decision: options are still open.

3.4.1.1.3 Fresh stimulus for dialogue with NGOs

The EDF group has long-standing relations with NGOs, spanning all the Group's various business lines on a local, regional, national, and international level. For more than twenty years, it has had an institutional outworking in the form of the Group's Stakeholder Panels (formerly the Environment Panel, Societal Council, Sustainable Development Council, now the EDF Stakeholder Advisory Committee). Regular discussions are held with leading non-governmental organisations covering issues such as the environment and human rights. These relations have led to many practical joint implementations. For instance, our bird life protection policy in respect of electricity infrastructures has been put together in consultation with France's League for the Protection of Birds (LPO). The EDF group recognises the vital role of NGOs in our societies, in particular as regards energy-related decisions, and is seeking to do so more going forward.

Closer ties

Closer relations with NGOs aim to prevent the emergence of any high-risk situations by maintaining regular monitoring and establishing forums for dialogue. This also allows the Company's decisions to be challenged, improves its expertise, and strengthens the legitimacy of Group projects. The Group encourages its employees to be involved in NGOs.

New policy

A new NGO relations policy was drawn up and approved by the CSR Committee. This policy takes account of the new NGO landscape and changes to their modes of action under the supervision of an "NGO Relations" project manager answering to the Impact Department Manager. Four areas were identified: coordination, internal communication, dialogue, and human resources.

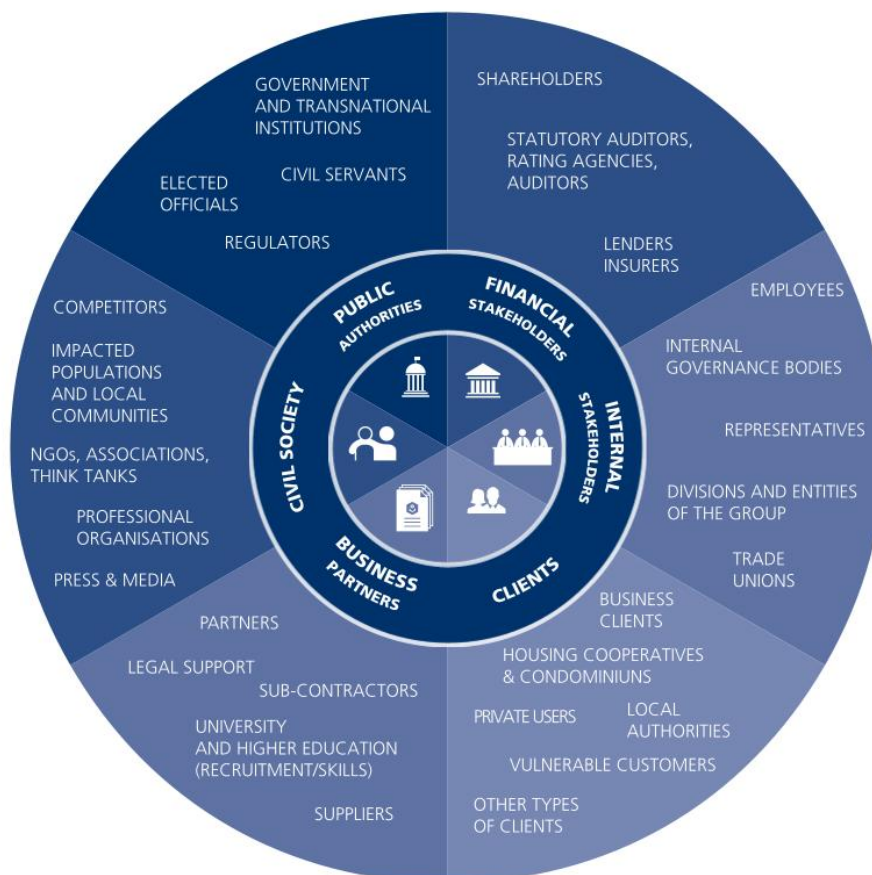
3.4.1.1.2 An open dialogue with all, involving all the Group's businesses and subsidiaries

The culture of dialogue promoted by the Group underpins the way it engages in stakeholder relations.

3.4.1.1.2.1 Mapping Group stakeholders to inform actions

Stakeholder relations are at the heart of the EDF group's CSR policy:

- The Group has drawn up an overall map of its stakeholders, approved by the Executive Committee; this provides Group divisions and companies with a framework within which to organise dialogue ⁽¹⁾.
- As part of ISO 9001 and 140001 certification, the Group's divisions and companies systematically map their stakeholders in order to define appropriate modes of dialogue adapted to their specific context.
- Relations with local communities fall within the scope of internal control.



(1) Identify stakeholders; launch consultation as far upstream as possible; provide transparent and clear information to stakeholders on the project; gather stakeholder opinions on the project and address them; set up a system for dealing with suggestions and complaints; ensure that local populations are able to participate in the consultation process; ensure that consultations are publicly reported.

3.4.1.1.2.2 Principles for dialogue and relations in projects

Principles

The Group engages in a societal approach based on identifying stakeholders (with special attention paid to indigenous communities), the principles of "Avoid, Mitigate, Offset", and seeking to optimise the positive impacts and mitigate the negative impacts of its activities. Regarding projects exceeding €50 million, the process is based on the Equator Principles ⁽¹⁾.

Due diligence

The impacts of each project are assessed on the basis of reasonable environmental and social due diligence. E&S impact studies encompass human rights aspects and stakeholder identification. Dialogue and consultation begin as early as possible, based on context, with special attention being paid to groups that are typically marginalised. A public claims mechanism is set up at a very early stage of the project. Public reporting is provided.

Detailed doctrine

Details of the Group doctrine with respect to dialogue, consultation, and stakeholder relations are to be found in a collection of practical guides ("Stakeholder dialogue"). These principles are key to successful dialogue. For example, the long-standing dialogue between the power plant being decommissioned in Brennilis (Finistère) and the region (whether in terms of informing locals, partnerships, relations with socio-economic stakeholders, or the future of the "Maison du lac" zone on the shores of Lac Saint-Michel) reached a key stage in early 2022 with the public enquiry into the application for the reactor to be fully decommissioned. This public enquiry, following which the enquiry committee issued an unreserved favourable opinion, is an important milestone on the road to the issuing of the decommissioning decree, which will signal the start of the final phase of the decommissioning process.

3.4.1.1.2.3 Dedicated local organisation

EDF has set up in France a Regional Action and Territories Department (*Direction des territoires et de l'action régionale*) or DTAR to organise more specific dialogue and stakeholder relations locally. In addition to its role in cross-cutting dialogue and internal coordination, DTAR engages in dialogue with the local stakeholders closest to Group projects and operational activities, and more generally, with all bodies and stakeholders concerned with the French government's "Recovery Plan".

3.4.1.1.2.4 Making high-level expertise available

EDF R&D has thirty years' worth of cutting-edge expertise in the local acceptability of structures, and devotes part of its research work to this aspect. This expertise helps the Group and its business line project managers to understand issues of acceptability, particularly regarding environmental and societal aspects.

In addition to their many contributions in terms of guidance and proactive measures, these experts assist departments and project managers. For example, in 2022 they helped the EPR2 (DIPNN) permitting team with a major programme of studies in preparation for the public debates.

3.4.1.1.2.5 Skills development for managers and project managers

Identifying and understanding stakeholder circumstances and expectations, taking the related decisions, and implementing appropriate action plans requires professional upskilling for managers and all other stakeholders.

A full-scope training offering

Since 2008, the EDF group has provided a training offering to develop stakeholder knowledge for employees, nurture understanding of issues, and improve the management of dialogue and consultation practices. Open to all EDF group departments and subsidiaries in France, it is directed more particularly at project managers, managers, communications officers, and the members of regional delegations, in liaison with stakeholders.

3.4.1.1.2.6 Listening and dialogue innovations in stakeholder relations

EDF intends to implement tools that promote listening, dialogue and understanding of its environment using a wide range of instruments, from opinion barometers to forums for listening to stakeholders and employees implemented in the form of ongoing surveys or organised in connection with institutionalised dialogues.

Opening up the "Let's talk energy" Collective Intelligence lab to outside parties

For the first time in 2021, *Parlons énergies* ("Let's talk energy") became outward-facing. 3,500 interviews with private individuals and 52 participatory workshops were organised across France, led by 700 employees trained in interview techniques and overseen by a Supervisory Committee made up of academics, company leaders, and think tanks. Discussions related to perceptions and expectations in respect of modes of production and consumption, global warming, and EDF in general. The lessons learned were published in late 2021 in the form of a "citizen handbook" ⁽²⁾. The expectation of those consulted was that EDF should be engaged in a French low-carbon production strategy. They were keen to see the Company innovate, establish partnerships to hasten the energy transition, and create closer ties with its customers.

ObsCop 2022

For the fourth consecutive year, EDF and Ipsos conducted an opinion survey on an unprecedented scale in 30 countries across five continents covering two-thirds of the world's population, including the biggest emitters of CO₂. Its aim is to produce an international overview of opinions, knowledge, expectations and levels of public engagement regarding climate change in order to provide food for thought and contribute to the constructive identification of solutions for the future.

The full results are available as open data ⁽³⁾. One of its main findings was that spending power tops the list of global concerns. Despite the importance they attach to climate change and extreme climate events, those consulted are less likely to get involved and more doubtful that climate change is man-made. Counter-intuitively, young Westerners only differ slightly from adults in terms of their awareness of or involvement regarding global warming. Globally, it is still hard to identify a stand-out "climate generation".

3.4.1.1.3 A dynamic of continuous improvement

The culture of dialogue promoted by the EDF group constantly seeks to improve and encourage social innovation at grassroots level and in the immediate environment of projects.

3.4.1.1.3.1 Innovative partnerships

EDF is a partner of France's new Versailles-Marseille National School of Landscape Architecture (*École nationale supérieure des paysages de Versailles-Marseille*, ENSP). It provides regular consultancy support for projects and infrastructures that raise landscape integration issues. EDF and ENSP have produced a best practice guide for infrastructure managers and project managers. In 2022, cross-generational surveys of young landscapers were conducted focusing on the Hague pool project and Ricanto power plant project (Corsica), as well as the EDF R&D site in Les Renardières.

UNCPIE ⁽⁴⁾

EDF and UNCPIE are endeavouring to develop an ordinary culture and maintain close relations on the issues of the climate and the environment, by developing for instance – among other cooperations (PAAAB, i.e., platforms of actions and stakeholders for biodiversity), following the heritage audit conducted in maritime Flanders in late 2021. A national agreement signed between EDF and UNCPIE was adapted into local agreements allowing nuclear power plants to benefit from the ecological expertise of CPIEs (taking inventories, drawing up management plans, preparing the scientific content of teaching materials) in the setup of biodiversity and local engagement projects by nuclear power plants, such as the laying of a footpath around the crest level of the Syrech (minor tributary of the River Garonne) in Golfech, the installation of an ordinary tern nesting platform in Gravelines, or the creation of a nature trail in the Font d'Orveau reserve in Civaux.

(1) equator-principles.com

(2) https://parlonsenergies.fr/chez-vous/EDF_PECV_livre_T1.pdf

(3) edf.fr/groupe-edf/observatoire-international-climat-et-opinions-publiques/telechargements

(4) UNCPIE: National Union of Permanent Centres of Environmental Initiatives (*Union nationale des centres permanents d'initiative pour l'environnement*).

3.4.1.1.3.2 Constantly improving public information practice

La Hague pool

The underwater spent fuel storage facility project in the Hague was the focus of a preliminary consultation under the aegis of the guarantors of the French National Public Debate Commission (CNDP) between November 2021 and July 2022. The guarantors of the consultation process noted in their assessment that this preliminary consultation resulted in "genuine, wide-ranging and productive public participation" using multiple participation methods. A wide-ranging public had their say during the debates, whether to provide information, make suggestions, or support, question or challenge the project: local residents, elected officials, non-profits, institutions, authorities, experts, trade union organisations, industrialists, nuclear operators, the media, etc. Following on from this preliminary consultation, EDF is currently putting in place a structured system of exchange and dialogue with locals known as "ongoing consultation" to continue working with local stakeholders and the public on the issues identified.

Ricanto power plant, Corsica

The planned construction of the Ricanto power plant led to a consultation being held between 19 May and 24 May 2021. High levels of participation by non-profits led to discussions being engaged on topics such as atmospheric emissions and the risks of flooding and submersion. However, EDF PEI noted poor attendance among Ajaccio residents and those living close to Vazzio. To address this, it implemented new informational resources, including a quarterly newsletter and a dedicated website with an FAQ system.

French nuclear fleet (VD4 900)

From 6 September 2018 to 31 March 2019, the general consultation on improving the safety of thirty-two 900MWe French reactors set up by the French High Committee for Transparency and Information on Nuclear Safety (HCTISN) with ASN, IRSN, and ANCCLI, featured EDF – which was tasked with handling periodic safety reviews – and the main stakeholders in the safety of nuclear power plants in France. 16 public meetings brought together a total of 1,300 people; 1,600 contributions were made to the digital platform consulted by 4,000 visitors. The public were invited to express their opinions about the "Response to Objectives" brief in respect of the fourth periodic review of these reactors, submitted to the French Nuclear Safety Authority by EDF. EDF produced a public report detailing lessons learned from this consultation⁽¹⁾.

Once this general consultation phase had been completed, the specific public enquiries into each reactor began in 2022 and will last several years.

The first public enquiry into Tricastin power plant (Drôme) reactor 1 ran from 13 January to 14 February 2022. The enquiry committee published its conclusions on 15 March, issuing a favourable opinion on the measures suggested by EDF plus 12 comments. The public enquiry into reactor 2 at the same power plant ran from 14 November to 16 December 2022. It gathered 1,274 contributions and 74% favourable opinions. The enquiry is awaiting the enquiry committee's conclusions and the prefect's decision. Three public enquiries were also organised simultaneously by the Ain Prefecture from 6 February to 8 March 2023 for Bugey power plant reactors 2, 4 and 5.

3.4.1.1.3.3 Increasingly sophisticated systems to handle requests and complaints

The practical outworking of dialogue relating to local situations takes the form of action plans: from a very early stage, these include a question and complaints handling process. One example is the project in Nachtigal (see section 3.3.2.3.4 "Implementation of human rights commitments").

3.4.1.2 Continuous improvement of dialogue and consultation practices

The EDF group constantly monitors the quality of stakeholder dialogue and relations. An internal guide to evaluate consultations (in the "Stakeholder dialogue" collection) destined for managers and project managers has been put together jointly with EDF entities. An intranet site has also been set up to improve experience-sharing between project teams.

3.4.1.2.1 Dialogue and consultation improve the identification and management of project impacts

This is the clearest benefit of engaging dialogue directly at stakeholder level.

Atlantic Shores wind farm (USA)

As part of the consultation, the Atlantic Shores project has committed to taking care of the environment, more specifically *via* a programme to attenuate its impacts on marine mammals; this includes acoustic monitoring and vessel speed limits. Atlantic Shores is also committed to avoid pile-driving during right whale migration periods and at night.

3.4.1.2.2 Dialogue and consultation stimulate questioning

Dialogue and consultation encourage questions to be raised, thereby improving project design; this can result in significant changes to developments, routes, and the location of structures.

Reconfiguration of the Poutès dam

The Poutès dam, inaugurated on 24 October 2022, was the focus of twenty years of consultation to co-construct a solution with all stakeholders, including elected officials, non-profits, and a range of experts.

A steering Committee set up under the auspices of the Haute-Loire prefect brought together all project stakeholders (elected officials, environmental protection non-profits and government departments) to validate each major stage of the Nouveau Poutès project. Co-developed in partnership, the project engaged all stakeholders in every aspect of the project, including technical aspects, scientific monitoring, local integration, and communication.

This new project will help to preserve biodiversity, as the flow of water will not only facilitate the movement of salmon and improve living conditions for aquatic invertebrates, but also respect the river's full biodiversity. This project took 3 years of building work. Using a highly innovative technique, the dam (gates opened twice a year) will allow salmon to move freely along the Allier to reproduce. The Monistrol sur Allier plant now powers the equivalent of 36,000 homes.

3.4.1.2.3 Dialogue and consultation improve the management of the construction phases

This is especially applicable in respect of road traffic and noise pollution impacts during a worksite.

French nuclear fleet (VD4 1300)

Regarding the fourth periodic safety review of 1,300MWe reactors, in 2022 the HCTISN held fresh elections to appoint the members of the Policy Committee (PC) and Steering Committee (SC, chaired by EDF), which will be tasked with organising the general consultation scheduled for early 2024. The EDF group is already participating in the technical dialogue initiated by IRSN and ANCCLI for which the first meeting was held on 9 December 2022. EDF will pay special attention to identified good practices and feedback from the RP4 900 consultation.

(1) edf.fr/sites/groupe/files/2022-07/RP4-v5.pdf

Hinkley Point

As a result of the dialogue and consultation process at Hinkley Point C, the impact of road traffic and noise pollution was assessed in detail, and the project continues to advance with an agreed transport strategy and traffic plan. Measures have been taken to reduce the total number of vehicles on the road by developing park & ride and freight management facilities. The number of vehicles has been reduced with the recent introduction of double-decker busses, a digital car-sharing system, and use of maritime transport methods (the Hinkley Point C jetty will help to cut out 100,000 HGV journeys over the construction period). Vehicle itineraries are monitored and tracked by GPS. Noise from the site is also monitored by noise monitoring stations near the site perimeter, then directly reported to the local council. All breaches of set noise limits are investigated. In terms of noise attenuation, a large earth berm was set up on the southern perimeter to protect local communities from noise and visual impact. Eligible properties along the road also had their double-glazing replaced free of charge.

Lightning project (Abu Dhabi)

The Lightning project involves connecting two islands each located approx. 130km off the coast of Abu Dhabi by cable, reducing the use of fossil fuels to power these islands and cutting their carbon footprint by approx. 30%. The work involves dredging trenches into which cables are then laid, before being sealed up with quarry materials. The support measures are mainly focused on protecting the marine environment as a section of the works lies close to a major marine nature

reserve (Marawa zone), home to both dugongs and marine turtles. For example, an agitation model was used to calculate movements of turbid waters, positioning underwater curtains to limit the spread of these waters and protect sea grasses and corals. Water quality will be monitored throughout the project using buoys to take real-time turbidity measurements and regular water samples taken for laboratory analysis: in case of excess turbidity, works at sea will be limited until turbidity returns to normal.

3.4.1.2.4 New participatory financing tools strengthen the relationship with stakeholders

Since the first such fundraising drive in 2015, EDF Renewables has launched 60 crowdfunding initiatives raising over €9 million from 4,944 private individuals to finance solar and wind power projects. This funding method has intensified: in 2022 alone, 19 such initiatives were launched by EDF Renewables in partnership with crowdfunding operators, raising over €2 million from 1,414 investors.

In Belgium, following on from the success of Luminus Wind Together (its first crowdfunding initiative for wind farms), Luminus launched Lumiwind, a cooperative allowing the general public and those living close to wind farms to invest in energy transition. At the end of 2022, Lumiwind had 2,180 members, including 460 new members who subscribed to 71,249 shares over the year.

3.4.1.3 Group key performance indicator

GROUP KEY PERFORMANCE INDICATOR

For projects of over €50 million examined by the Group Executive Committee's Commitments Committee (CECEG) with a significant impact on localities and/or the environment, the Group entities in question implement the appropriate dialogue and consultation, in line with the Equator Principles.

The Group's key performance indicator in this respect is the annual proportion of such projects for which a dialogue and consultation processes has been initiated. Practically speaking, this means that as a minimum, each project has initiated or implemented a dialogue and consultation strategy and that the various stakeholders (in particular local and indigenous communities) are taken into account, e.g. through specific measures being taken to address their expectations.

In 2022, this indicator was 100% for all projects within the scope of the defined criteria.

Annual rate of projects for which a dialogue and consultation procedure is engaged (in %)



3.4.2 Responsible regional development

The EDF group is committed to contributing to the development of the regions where it operates, by creating local jobs, purchasing locally, creating economic value and providing a tax revenue. The EDF group is also committed to developing low-carbon sources of energy and access to energy in developing countries.

3.4.2.1 Contribution to development through jobs: employment footprint

The employment footprint of a territory, project, or scope of business may be broken down into direct impacts (EDF employees, see section 3.3.3.9 "Detailed information on the Group's workforce"), indirect impacts (the impact of EDF purchases throughout its supply chain) and induced impacts (impact of spending by employees and suppliers, and induced employment generated by taxation). Both EDF employees and the employees of companies in the supply chain spend some of their salary in the region and pay taxes and duties.

3.4.2.1.1 Global study

One direct job supports 4.2 indirect and spin-off jobs.

The EDF group contributes to the development of the regions where it operates, by creating local jobs. The 2022 study shows that 325,200 jobs (including 62,000 direct jobs) are supported by EDF. The leverage effect has remained at the same levels as last year: over the whole French territory, one direct job generates 4.2 indirect and induced jobs in the locality in question; EDF supports some 1.1% of all French jobs.

3.4.2.1.2 Studying the employment footprint of nuclear power plants

Regional study in collaboration with INSEE

EDF has undertaken a partnership initiative with regional departments of the French National Institute of Statistics & Economic Studies (INSEE) to produce public studies describing the socio-economic footprint of Nuclear Power Generation Plants (*centres nucléaires de production d'électricité*, CNPE) and, more generally, its nuclear business within the localities in question. In the Centre-Val de Loire region, EDF's nuclear business generates a total of 11,800 jobs: 6,200 direct jobs relating to production sites (95% of which are permanent), 2,300 indirect jobs relating to orders from suppliers located in the region, and 3,300 jobs induced as a result of consumer spending by directly and indirectly employed individuals and their families.

3.4.2.1.3 Focus on the various hydropower lines of business

Local Economic Impact Simulator

EDF Hydro has developed a Local Economic Impact Simulator (*simulateur des retombées économiques territoriales*, SIRET). Simulated input-output data allows the numbers of indirect and induced jobs generated by purchases to be estimated. For instance, it is estimated that purchases from French businesses totalling €458 million in 2022 corresponded to 4,495 indirect jobs ⁽¹⁾, 2,650 with Tier 1 suppliers, and 1,845 in other tiers.

3.4.2.1.4 Focus on the customer service lines of business

Preserving employment basins

In 2021, EDF became the first energy supplier to obtain the Relation Client France ⁽²⁾ certification created by the French Association of Customer Relations (*Association française de la relation client*, AFRC) and the Pro France Association. This corresponds to 6,200 customer advisers, employees, and external partners serving consumers, professionals, industry, and local authorities.

3.4.2.2 Contribution to development through taxation

EDF has implemented a Group tax policy to define the applicable principles, in terms of taxation, to all of the Group's relations with its financial or business partners and the government or tax authorities. The tax policy is applied by the Group Executive Director responsible for the Group's Financial Management. It was approved in 2017 by the Executive Committee.

At the end of 2022, as in 2021, the Group uploaded its country-by-country report (of data for fiscal year 2021) to the French tax authorities, in accordance with the provisions of Article 223(5)(c) of the French General Tax Code which follows the OECD's recommendations.

3.4.2.2.1 Group tax policy

A wide scope

The policy covers all the Group's taxes: direct and indirect taxes, duties, contributions, any tax or customs deductions which are ultimately the responsibility of the Company or its customers (when EDF merely acts as a collector on behalf of third parties).

This policy must be applied throughout the Group, by all controlled entities regardless of their nature or geographical location, with the exception of regulated infrastructure managers, for whom it constitutes a guide. All Group staff must

comply with this policy which aims to protect the Group's reputation and to reduce any tax risks to which it may be exposed through its activities. The policy follows the following guidelines:

- strengthen the tax performance of the Group in strict compliance with national and international tax laws and regulations;
- control tax risks through continued, systematic improvement, in all Group entities, of the identification and management of fiscal risks;
- implement the tools, reporting and actions necessary for the continued, optimum, forward-looking management of tax cash flows ⁽³⁾, as well as attentive and proactive monitoring of the Group's effective tax rate;
- ensure the conditions necessary for obtaining constructive relations with the tax and government authorities of all kinds by maintaining a transparent, professional relationship with them.

Ethical principles

In the context of the allocation between countries of operating margins internal to the Group, EDF strives to apply a transfer price policy in accordance with the principles of the OECD to justify the resulting revenues. EDF has no legal implantation in a territory listed as a non-cooperative state or territory as defined by French and international legislation which is not determined by economic activity reasons and under no circumstances purely by tax reasons. Similarly, cash flow through these countries is prohibited where it is for tax reasons only.

Presence in Luxembourg and Ireland

Like all major French and international groups, EDF relies on captive and mutual insurance companies to supplement the cover provided by traditional insurance markets. The captive and mutual insurance companies enable EDF to reduce the cost of its insurance schemes and the total sum of premiums paid. EDF has three captive insurance companies, based in Ireland and Luxembourg:

- Wagram Insurance Company DAC. (wholly owned by EDF), an insurance company founded in 2003 in Dublin which is involved in the majority of the Group's insurance schemes;
- Océane Ré (wholly owned by EDF), a reinsurance company founded in 2003 in Luxembourg to reinsure EDF's nuclear civil liability risk;
- Terenco I and II (wholly owned by Framatome), a reinsurance company within the Framatome consolidation scope located in Luxembourg, to reinsure a portfolio of risks including that of Framatome's nuclear civil liability.

3.4.2.2.2 Taxes paid by the Group

In 2022, the EDF group's tax expense (on EBITDA) was €3,162 million, €168 million less than in 2021.

Effective tax rate

The income tax income amounted to €3,927 million in 2022, corresponding to an effective tax rate of 17.13% (compared to an expense of €1,400 million in 2021, corresponding to an effective tax rate of 25.09%).

The €5,327 million change in income tax expense between 2022 and 2021 is analysed in section 5.1.3.5 "Income taxes". Income tax paid in all the countries where the Group has subsidiaries is detailed in the ESG Pack publish on the edf.fr website ⁽⁴⁾.

Corporate income tax

Income taxes paid by the Group amounted to €1,282 million in 2022, compared to €2.276 million in 2021.

Local taxes

The EDF group thus contributes to the development of the French regions through an annual payment of more than €0.7 billion in local taxes to local authorities.

(1) See also section 1.4.1.3.1.4 "Issues relating to hydropower generation".

(2) See also section 3.1.4.2.4 "Earning trust through quality of service".

(3) Tax cash: tax actually paid or recovered.

(4) edf.fr/groupe-edf/agir-en-entreprise-responsable/rapports-et-indicateurs/indicateurs-extra-financiers/indicateurs-esg

3.4.2.3 Contribution to development through purchasing

EDF works with around 11,000 suppliers each year. The Group Procurement Department manages EDF's purchases, excluding fuel purchases and a portion of tertiary, IT and telecommunications purchases for certain subsidiaries. This totalled €8.3 billion in orders in 2022 (compared to nearly €7.9 billion in 2021), excluding suppliers belonging to the EDF group, broken down as follows: €5.0 billion in engineering and production purchases, €2.0 billion in tertiary and services purchases and €1.3 billion in IT and telecom purchases. In 2022, EDF's top five suppliers accounted for 11.7% of the total amount ordered by EDF (excluding fuel purchases), and the top ten accounted for 18.4% of that amount. In alphabetical order: Assystem Engineering and Operation Services, Cap Gemini Technology Services, Demathieu Bard Construction, ENDEL, GE Steam Power Service France, GE Steam Power System, Monteiro, Onet Technologies TI, Orano DS Démantèlement et Services, and Westinghouse Électricité France.

Suppliers are considered strategic based on a criterion of non-substitutability and the purchasing volume. EDF monitors the supplier dependency rate and implements suitable monitoring actions.

The voluntary development of industrial synergies between EDF entities reinforces the Group's coherence in its relations with suppliers and service providers. This is the case, for example, for purchases of wind turbines (for which Luminus and EDF Renewables cooperate) and also for hydro, nuclear, thermal and HVB power and tertiary and IT purchases, for which nearly all of the European subsidisers benefit from EDF framework agreements.

3.4.2.3.1 Share of local purchasing

3.4.2.3.1.1 Local value creation

The Group Procurement policy encourages local sourcing and value creation in the regions ⁽¹⁾. More than 97% of its purchases are made in France, mainly due to the mechanism used to split contracts into various lots, which facilitates access to the Group's contracts.

In 2022, as part of the consultation process, the Group Purchasing Department kept on encouraging tier-1 suppliers to employ local suppliers meeting the requirements of European Directive 2014/25/EU, for work or service contracts on electricity generation sites. As an illustration, at the end of June 2022, the Group Purchasing Department signed a framework agreement with Néopolis, a collection of 240 SMEs from the Pays de la Loire who formed an SAS (simplified joint-stock company) to be able to respond to invitations to tender launched by big businesses. This agreement both opens up possibilities for businesses that could not work with major clients like EDF on their own, and expands EDF's supplier panel to SMEs with expertise in their field.

As in previous years, the Group Procurement Department has taken part in programmes and events organised by the Pacte PME association, including Destination RSE and Destination ETI 360 with the French Nuclear Energy Industry Group (Groupement des industriels français de l'énergie nucléaire, GIFEN). It runs awareness-raising campaigns for SMEs regarding the contracts and authorisations required to tender for EDF group contracts and puts them in touch with interested business lines and subsidiaries. It also assists business lines, to help local companies access EDF projects or take part in calls for tenders for the *Grand Carénage* refurbishment projects: nuclear sector business day in Dampierre, presentation of the EPR2 contracts in Penly...

Recent examples:

Hinkley Point C reactor

Via ongoing collaboration with local partners, the Hinkley Point C (HPC) project has to date generated £4.1 billion in direct spending for local businesses, *i.e.*, £2.6 billion ahead of schedule. More than 4,000 local businesses were registered on the HPC supplier portal, and approx. 1,400 local business hired. These businesses receive active support and are brought on board for work modules suited to their skills. The total economic value of the regional supply chain should hit more than £5 billion by the end of the project, forming a key component of the HPC's long-term economic heritage. As a result, local businesses are getting growth and skill development opportunities, boosting their expertise in preparation for future low carbon emissions projects.

Reconstruction following storm Alex

Following storm Alex, EDF Hydro decided to reconstruct its hydroelectric facilities, which cover the annual electricity consumption of 357,200 people and total 278MW of installed capacity. EDF's contribution to the vitality of these regions also continues in the valleys (*i.e.* 80% of 220 people present in rural areas).

Flamanville

On 7 July 2022, the French State, EDF, representatives of local authorities and beneficiaries of schemes set up as part of the "*Grand Chantier*" programme celebrated the completion of 58 infrastructure projects since 2008 worth a total of €123 million, including €30 million financed by EDF. Thousands of employees have also been trained, hired and assisted, and around thirty business projects assisted, supporting the Cotentin region over a 14-year period.

For example, the projects financed have secured roads used by employees and made it easier to welcome travelling employees from partner businesses by building or renovating homes. There have been multiple projects focused on childhood, sport and health, such as building a nursery or creating a health centre, which is now home to more than 20 healthcare professionals.

In terms of economic development, three industrial areas have been or are being developed: Armanville in Valognes, Les Costils in Les Pieux, and Le Coignet in Sideville.

Regarding employment and training, the setup back in 2007 of a dedicated EPR employment & training team launched by the French State and EDF gave highly satisfactory results in terms of investment and securing of career paths. 93% of job offers were filled and the proportion of local labour was over 50% from the moment work got underway on the EPR site: 1,400 local jobseekers were trained and recruited, and 75% of employees on fixed-term/open-ended construction contracts or temping agreements who worked on the site were able to pursue their professional activity in the form of either training, reconversion or recruitment by businesses in the nuclear sector or region.

3.4.2.3.1.2 Solidarity-based purchasing

The Supplier policy has a long track record of giving preference to relationships with SMEs and companies who employ disabled people only (STPA) and structures for integration through economic activity (SIAE). EDF makes full use of the possibilities offered under Directive 2014/25/EU, allowing certain purchases to be reserved for these sectors. In 2022, EDF's purchases from the solidarity sector amounted to €15.5 million. In March 2022, EDF – in partnership with the GESAT network – organised a Group Purchasing Department-wide webinar focused on sustainable purchasing. In addition, also in March 2022, and for the first time, the EDF group invited stakeholders from both the standard and protected sectors to a "sustainable purchasing" speed meeting, giving them the chance to meet and respond as joint-venturers to invitations to tender. Pursuant to its disability agreements, EDF is developing close ties with ESAT and EA sheltered workshops working in landscaping ⁽²⁾. For Enedis, services range for instance from cleaning uniforms to mapping services, as well as customer service call centres.

	2020	2021	2022
EDF solidarity-based purchasing (STPA and SIAE)	13.8	15.6	15.5

(1) See section 3.4.2.4.1 "Boosting the economic, social and human environment".

(2) See section 3.3.3.4 "Disability plan".

3.4.2.3.1.3 Group key performance indicator

GROUP KEY PERFORMANCE INDICATOR

In terms of purchases from SMEs located in France, the target range is between 22% and 26% of purchases by EDF and the distribution network manager, Enedis ⁽¹⁾.

For 2022, this figure stands at 23.2%, within the target range.

Annual rate of procurement from SMEs in France (in %)



3.4.2.3.2 Sustainable and balanced relationships

EDF's responsible purchasing policy is at the heart of the Group's social and environmental responsibility practices in its supply chain. It is structured by the Group Procurement Department, which sets the general framework and manages the Purchasing function while respecting the management independence of network managers.

3.4.2.3.2.1 Improving the quality of supplier relations Strategic Supplier Manager

As part of the reorganisation completed in late 2020, the GPD created new jobs to further improve the quality of its supplier relations. These new jobs included the position of Strategic Supplier Manager, the key point of contact for some 40 suppliers identified as strategic. The Manager establishes a trust-based relationship, encourages strategic alignment between EDF group entities and its suppliers, and facilitates the setting up of productivity and innovation partnerships on a win/win basis. Procurement Category Managers are responsible for relations with other suppliers.

Responsible Suppliers and Procurement Charter

In December 2021, the Group's Senior Executive Vice-President, New Nuclear Projects and Engineering signed the "Responsible Suppliers and Procurement" Charter in the presence of France's Ministry Delegate to the Ministry for the Economy, Finance, and Recovery, at the 2021 World Nuclear Exhibition. Updated in October 2022, the Charter seeks to uphold the quality of client and supplier relations, as well as the values of solidarity, ethics, and trust ⁽²⁾. The Group Purchasing Department also contributes to the nuclear sector charter monitoring committee headed up by the French State and the Nuclear Sector Strategic Committee (CSFN).

Responsible Supplier and Procurement Label (RFAR)

In November 2022, the annual monitoring review confirmed the RFAR label, renewed in November 2021 for a 3-year period. Under the auspices of France's Ministry for the Economy, Finance, and Recovery, for the third time running the accreditation committee endorsed EDF again in 2021 by awarding the Group its Responsible Supplier and Procurement Label (*relations fournisseurs et achats responsables*, RFAR). First secured in 2015, the Label, accompanying the ISO 20400 standard, recognises companies that maintain balanced, sustainable relations with their suppliers.

3.4.2.3.2.2 Supplier policy

The new supplier policy adopted in the end of 2021 to replace the Group Procurement Policy has a special focus on the Group's commitment to maintaining robust, sustainable partnerships with its suppliers. It details the Group's *raison d'être* and its CSR commitments with respect to responsible procurement, the use of suppliers who employ disabled people only, local engagement, and supplier awareness-raising. The responsible procurement policy remains central to this approach, with the systematic inclusion of environmental, social, and human rights-related clauses in agreements.

When implementing purchasing contracts, the Group Procurement Department ensures that financial balance is maintained with respect to suppliers, in particular through compliance with payment deadlines and pricing analysis and structuring actions. Each buyer shall sign the mandatory ethical undertaking which lists the principles to be complied with in relationships with current and prospective suppliers.

3.4.2.3.2.3 Listening, dialogue, and partnerships

With a view to continuous improvement, EDF engages in listening, dialogue, and partnership relations in respect of responsible procurement.

Partners

EDF supports and contributes to the work done by France's National Procurement Council (Conseil national des achats), Responsible Procurement Observatory (Observatoire des achats responsables, OBSAR), the Pacte PME Association.

In the nuclear field, EDF chairs the Nuclear Sector Strategic Committee (CSFN), which features major clients, industrialists, trade union organisations representing the sector, professional associations, and the French state. One of the main projects identified by the CSFN consists of structuring the Supply Chain and the innovation process within the nuclear sector. EDF has also joined GIFEN (Groupement des industriels français de l'énergie nucléaire, *i.e.*, French nuclear energy industry group), which was set up in June 2018 in parallel to the creation of the CSFN, which features major clients (CEA, EDF, Framatome, Orano and Andra), 24 major industrialists in the sector, and the four pre-existing national associations (GIIN, AIFEN, PFME and FAIF).

For some 15 years now, EDF has had a partnership agreement with GESAT, a national French network of companies who employ disabled people only which facilitates contact between businesses in this sector and clients. EDF is also involved with France's New Energy Systems Strategic Sector Committee (Comité stratégique de la filière des nouveaux systèmes énergétiques), which brings together stakeholders in renewable energies, storage, energy efficiency, decarbonation, and grids.

(1) Enedis is an independently managed subsidiary.

(2) EDF was one of the first signatories of the Responsible Supplier Relations Charter.

Listening

In 2022, as part of the Excell Plan, a survey was conducted for the 3rd time of suppliers in the nuclear sector to identify ways to improve relations and potential optimisations to boost our suppliers' engagement. The results demonstrate improvement in relations between EDF and its suppliers following the various measures put in place, particularly the creation of the positions of Purchasing Category Manager and Strategic Supplier Manager at the Purchasing Department.

EDF took part in the Pacte PME Association's 2021 Observatory; this assessed the quality of relationships between major clients and SMEs. Satisfaction is up on all themes compared to the previous survey in 2019.

Dialogue at site level

In every country, to foster dialogue, promote the development of relations between EDF suppliers and local businesses, and improve these businesses' skills, entities organise regular events or specific schemes such as "*Une rivière, un territoire*" ("One River, One Territory") agencies to boost the economic development of the regions where its hydropower facilities are located, the *Salon à l'envers* in Cattenom, or the "Sourcing and matching of general contractors with local sub-contractors" seminar with the Ardèche CCI and the Cruas power plant.

Training

Following the AFNOR ISO 14 001 audit of the Nuclear Fuel Department (NFD), an e-learning course setting out the NFD's environmental issues was created, providing NFD staff with the right tools to challenge suppliers and service providers on the themes of the Environment and Biodiversity. The goal was to design a short-term, adaptable and sustainable educational solution to raise awareness at every stage of the fuel cycle (overview) and send a strong message: "We are responsible for the environmental impact of suppliers' activities".

3.4.2.3.2.4 Responsible procurement process

Group commitments and obligations in respect of responsible procurement apply to every stage of the procurement process, including during prior supplier qualification, as well as during preparation of calls for tenders.

Principles

Supplier commitments:

- validation of a compliance commitment for all bidders (mandatory to respond to the call for tenders) covering the following areas: corruption, money-laundering, the funding of terrorism, compliance with international sanctions and the absence of any conflict of interest. Bidders undertake to comply with requirements pursuant to the French Duty of Vigilance Act: observing human rights and the fundamental rights of individuals, guaranteeing individuals' health and safety at work, protecting the environment, and complying with social and environmental legislation applying to their business;
- incorporation of CSR criteria in tenders, including specific criteria in the specifications on the basis of the risks identified for each type of contract and/or to address Group CSR aspirations such as the use of sheltered workshops, local engagement, and the inclusion of SMEs in the supplier panel;
- development of Productivity Partnerships (see section 3.4.2.3.2.8);
- systematic inclusion of a CSR Charter for EDF and its supplier as part of tender documentation updated in December 2022. This update refers to the Group's *raison d'être* and CSR commitments made by the Group, and takes better account of the duty of vigilance;
- the inclusion of a CSR clause in General Terms and Conditions of Purchase;
- monitoring supplier compliance with these principles (see section 3.4.2.3.3 "Supplier monitoring").

Further measures on climate issues and natural resources

In May 2022, as part of its adaptation of its *raison d'être*, the Group Purchasing Department decided to take further measures to tackle and focus on climate issues and natural resources in its purchasing process with prescribers and suppliers to

reduce carbon emissions and preserve natural resources. This Sustainable Purchasing Plan is managed by the Group Purchasing Department in collaboration with multiple EDF entities and focuses on 3 goals:

- taking account of sustainability issues in our purchasing processes, in collaboration with prescribers, particularly based on lifecycle costing;
- setting up a carbon and resources incentive system for suppliers;
- getting Group Purchasing Department staff engaged with these key issues.

Work in 2022 has already included:

- identifying high-priority purchasing categories on which to focus initial measures;
- raising purchaser awareness of these high-priority categories;
- testing a simplified purchasing file greenhouse gas emissions assessment tool;
- creating a dashboard featuring specific quantified goals.

Following the adoption of an internal energy sobriety plan by EDF, the Group Purchasing Department committed to assisting Group suppliers with reducing their consumption. To this end, an Energy Sobriety space was opened on the EDF's dedicated supplier site and a letter was sent to suppliers in October 2022. This letter particularly encouraged suppliers to put in place productivity partnerships to optimise resources and reduce energy consumption ⁽¹⁾.

Further measures on health & safety issues

In addition, following the EXCOM of 21 March 2022, it was decided that every business line must require that a high level of health & safety standards be met when selecting businesses and that these standards must be raised at every stage of the purchasing process. To do so, an approach was developed for each health & safety issue per purchasing category to identify the most exposed categories (e.g., rotating machine maintenance) in order to take appropriate actions such as including standards in specifications, and suitability and/or admissibility criteria, and criteria in technical ratings.

3.4.2.3.2.5 Other practical procedures within the EDF group

Even when the mechanisms described in the preceding chapter are not directly applied, the major departments or subsidiaries use equivalent methods of commitment adapted to their specific industrial or geographic characteristics. A Working Group meeting twice a year allows every entity to share its sustainable purchasing processes and accordingly have the chance to work with other entities on specific issues. In 2022, the Working Group addressed the following issues: the EDF Purchasing Department's Sustainable Purchasing Plan, EDF R's newly-released sustainable purchasing tools, and feedback on the Human Rights questionnaires sent to suppliers.

Therefore, suppliers of the Nuclear Division must agree to comply with the Progress Charter for Exemplary and Efficient Nuclear Power and the Social Specifications of the Strategy Committee for the Nuclear Sector.

EDF Renewables

EDF Renewables responsible procurement is based on two pillars.

The supplier qualification process takes place in two stages. The first of these is a request for information phase, during which suppliers answer a list of questions and provide documents about their environmental and societal management, including information about human rights (policies, codes of conduct, commitments, procedures, supply chain management, and any sanctions). Following this first stage of qualification, they are then audited to ensure that the practices adopted are in line with EDF Renewables standards.

Contractual clauses make up the second Responsible Procurement pillar. When they enter into the agreement, providers undertake to abide by EDF Renewables environmental and societal requirements and to apply these to their own suppliers and subcontractors. Failure to fulfil these requirements may entail termination of the agreement.

(1) edf.fr/groupe-edf/espaces-dedies/espace-fournisseurs/accueil/sobriete-energetique

Framatome

Framatome's Supply Chain Department takes account of CSR at every step of Framatome's purchasing process, covering everything from specifications to definition of certain supplier panels, plus contractualisation. Framatome includes its "Framatome's Ethical Commitments" and "Sustainable Development Commitments applicable to suppliers" documents in its specifications and contracts, setting out the principles with which suppliers must comply.

In turn, Framatome's General Terms of Purchase contain a clause on Corporate Societal Responsibility. The Supply Chain Department drew up a CSR action plan containing 9 actions to include in specifications, contracts, and progress plans on certain markets.

Framatome is working with Afnor to set up a CSR assessment for suppliers based on risk mapping. Framatome is a signatory of the "Sustainable Supplier Relations & Purchasing" charter and has appointed a mediator to tackle issues in conjunction with the French national mediation service.

Edvance

Since 2020, Edvance has required each of its suppliers to evaluate its CSR performance via the global EcoVadis platform. Edvance reserves the right not to list any supplier whose score on this platform is not high enough. 88% of its suppliers are "medallists" in the platform's CSR guide. Edvance also includes a clause committing signatories to the United Nations Charter in all its contracts, as well as an ethics and compliance clause.

Edison

Edison set up a supply qualification process based on the use of CSR criteria to be completed by suppliers, such as requesting the following ISO certifications: 26000 (Social Responsibility), 30415 (Diversity & Inclusion), and 20400 (Sustainable Procurement), as well as the AA1000 Accountability standard. The list also includes questions relating to supplier goals, in particular with respect to sustainability and calculation of their carbon footprint.

Edison includes social and environmental criteria in its invitations to tender and contracts, particularly focusing on waste management and chemical use. Suppliers commit to making their sub-contractors abide by these same commitments and submit any useful information regarding compliance with environmental protection at every stage of the value chain to Edison. The same applies for the social plan: the contractor must comply with fundamental principles and rights. Edison reserves the right to verify that working conditions on the worksites of contractors, sub-

contractors and suppliers do not breach the principles to which Edison is committed (fundamental principles and rights defined in the United Nations Universal Declaration of Human Rights, United Nations Global Compact, and European Union Charter of Fundamental Rights, etc.).

In 2022, meetings were held focusing on "Supply chain sustainability: a regionally-shared value". Edison's aim is to involve its entire supply chain stakeholder ecosystem (suppliers, partners, purchasers and colleagues from business's BUs) with issues of sustainability reflecting views in the region. In 2022, a series of interviews was held with a group of 100 suppliers to investigate possible ESG improvements to supply chain.

Luminus

Luminus systematically takes CSR criteria into account in its calls for tenders. Since 2020, a CSR questionnaire has been included in each call for tenders via a procurement platform. CSR criteria encompass carbon emissions, packaging, recycling, waste management, and shipping.

Dalkia

Dalkia is currently overhauling its Sustainable Purchasing process, developing risk mapping of its purchasing processes based on 4 risk categories: Environmental, Human rights, Health & safety, and business ethics.

EDF UK

EDF in the UK is also conducting a risk assessment in respect of modern slavery to ensure that prevention measures are in place (see section 3.3.2.3.4 "Implementation of human rights commitments").

3.4.2.3.2.6 Procurement stakeholder training

Buyers are also educated about the importance of the responsible purchasing approach, mainly through their training. Every new purchaser joining the Group Purchasing Department attends a "PURCHASER PASS" training course focusing on the main principles of sustainable purchasing. Plus, in November 2022, a "sustainable purchasing" e-learning module was finalised, and is now available on the EDF training platform where it can reach a wider audience.

3.4.2.3.2.7 Collaborative reverse factoring

The EDF group offers its suppliers collaborative reverse factoring, granting them the possibility to pre-finance their invoices before the contractual due date, as soon as EDF issues the payment voucher ⁽¹⁾.

	2020	2021	2022
No. of beneficiary suppliers	692	718	726
Amounts (in millions of euros)	1,183	2,857	3,357

3.4.2.3.2.8 Mutual benefits

The Group Procurement Department continued its proactive programme of "Productivity Partnerships". The aim is to improve the contract's operational performance through close cooperation between EDF and its suppliers. This performance generates shared gains, which can be financial, organisational or technical, and sometimes include a CSR component.

For example, in 2022, the successful bidder on a landscaping contract for two nuclear power plants subsequently introduced an "eco-grazing" technique, a natural and more environmentally-friendly approach reducing green waste and use of both weedkillers and machines.

Productivity Partnerships	2020	2021	2022
Productivity gains within the scope of EDF (in millions of euros)	44.1	55.2	51.4

(1) EDF enables its suppliers to benefit from interest rates based on its own financial risk and credit standards.

3.4.2.3.2.9 Company mediator and whistleblowing

- The EDF group has used a company mediator since 2010. Suppliers may refer a matter to the mediator directly, free of charge, through its website or by post ⁽¹⁾, as stated in the General Terms and Conditions of Purchase and on the Group's purchasing platform.
- As is the case for all stakeholders, suppliers can use the Group's whistleblowing system, set up in accordance with the Sapin 2 and Duty of Vigilance Acts, which guarantees anonymity and is available in the Group's six languages ⁽²⁾.

3.4.2.3.3 Supplier monitoring ⁽³⁾

3.4.2.3.3.1 Identifying the CSR risks

The assessments designed to ensure suppliers comply with CSR commitments are prioritised based on risk mapping limited to the purchases driven by the Group Procurement Department. This monitoring takes the form of documentary or on-site audits.

Enhancing the supplier risk map

En 2020, the Group Purchasing Department enhanced the performance of its risk analysis, implemented in particular in accordance with the "Duty of Care" Act. This method takes into account all aspects of CSR (environment, working relations and conditions, human rights, ethics and compliance). Its ultimate aim is to determine the degree of residual risk and identify actions for the supplier. The risk analysis encompasses all procurement categories, covering some 11,000 suppliers.

3.4.2.3.3.2 CSR risk level

Inherent risks and residual risks ⁽⁴⁾ are assessed per purchasing categories on a scale of 1 to 4: low, material, major or critical risk. Risk assessment is based on the business of the supplier; their geographical location is also a significant risk assessment component.

Any residual risk in the assessed segments can be secured using countermeasures implemented prior to contracting, the contractual clauses and contract monitoring.

Major residual risks have been identified in the various sectors of purchasing, mainly concerning safety, ethics, waste, the use of rare materials and human rights. 15% of the purchasing segments analysed are classified as having a major residual risk, 50% are classified as having a material residual risk and 35% are classified as having a low residual risk.

The largest procurement categories in financial terms for which major residual risks are deemed to remain include the following:

- IT and electronic services and hardware (supply chain human rights risk);
- industrial environment works and maintenance services (heightened safety risk);
- decommissioning/de-pollution services (environmental risk: waste production).

More than 97% of purchases are made in France, 98.4% in Europe, and 99.4% if European countries outside the European Union are included (particularly Switzerland and the UK). The human rights risks related to the supply chain have been specified in the risk mapping, in the areas of textile purchasing, IT equipment, instrumentation & control and solar panels concerning the risks of forced labour.

3.4.2.3.3.3 Internal service assessments

The monitoring of suppliers, which includes a CSR component, begins with an internal evaluation of the services they provide. Supplier monitoring is mainly carried out by the Division or Contract Management, which uses Performance Assessment Sheets.

	2022
Number of internal assessments of services	~12,800
Number of suppliers assessed	~2,300

Documentary audits (CSR)

These audits are completed and documented by the supplier and then systematically verified by an independent body, French standards agency AFNOR. Questionnaires cover the entire scope of CSR; some are custom-designed to take issues specific to a given category into account. The decision to evaluate a supplier is based in particular on the supplier risk map, business line and purchaser requirements, and contracts in progress.

In 2022, the Group Purchasing Department continued the CSR documentary audit campaign focusing on Human Rights. A questionnaire was sent out to suppliers with a contract belonging to procurement categories listed in international reports on failures to observe human rights and/or specifically named therein in the fields of textiles, electronics, instrumentation & control, and IT.

Once more based on a risk management approach, suppliers in the major residual CSR risk categories were questioned (moving, document management, warehousing in case of third-party services). Since 2020, there have been audit campaigns focusing on 91% of major residual risk categories. In parallel, suppliers were also questioned on request from Purchasing Category Managers (rope access work, valves and fittings, pressure vessels).

At the end of 2022, 3,200 suppliers were questioned using the Acesa platform, and over 1,200 have been controlled. In 2022, the assessments were "satisfactory" for 34% of the audited questionnaires. The majority of questionnaires analysed in 2022 came from two targeted campaigns:

- Human Rights campaign: this issue can be better taken into account by questioned businesses, particularly VSEs/SMEs;
- Housing campaign: most of the panel of businesses surveyed are small-sized establishments, which still do not have the resources to formally put in place and implement the CSR policies adopted by their parent companies.

In 2022, EDF used the results of the Housing campaign to highlight the most virtuous suppliers in the sector. EDF's user business trip booking tool now highlights hotels with satisfactory CSR scores.

These audit campaigns make it possible for purchasers and suppliers to share an approach of continuous improvement in Corporate Social and Environmental Responsibility.

Audits have also been conducted by other companies, e.g. Dalkia (2,932 audits in 2022).

	2022
Verified documentary assessments (completed or in progress)	237

In 2021, EDF Renewables sent out a supplier questionnaire on human rights in respect of solar panel procurement.

(1) mediateur.edf.fr | by post (Médiateur du groupe EDF – TSA 50026 – 75804 Paris cedex 08).

(2) edf.fr/edf/dispositif-alerte-groupe

(3) This monitoring is performed from supplier qualification onwards. For example, EDF Renewables assesses its suppliers of strategic wind and solar energy equipment in its qualification processes, comprising selection criteria in all CSR fields.

(4) Residual risks are the risks remaining after countermeasures have been adopted.

On-site CSR audits ordered by the Group Procurement Department

These audits cover all CSR aspects: environmental, social and ethical (in particular human rights) policies, commitments and practices. A quality audit was also carried out in 2022. On-site supplier audits are conducted by external, independent providers. CSR audits are conducted based on supplier risk mapping and feedback capitalised by Procurement Category Managers on how contracts are performed, with the help of the business line entities.

	2022
Number of on-site CSR audits ordered by the Group Procurement Department	37
Proportion of audits conducted outside France (in %)	54

33.5% of finalised audits had a "satisfactory" result, 58.5% an "acceptable with comments" result and 8% an "insufficient" result: action plans were subsequently set up with suppliers and follow-up audits scheduled as necessary.

"Work clothing" Audit campaign

In 2021, many of the CSR audits related to a call for tenders in the "work clothing" category. Audited production sites that received "Insufficient" or "Unsatisfactory" overall ratings caused the applicant supplier to be excluded from the supply chain. In 2022, declared sub-contractors of the secondary chains of successful bidders selected in 2021 were audited. Only sub-contractors with a "Satisfactory" or "Acceptable" result can be included in secondary supply chain. The results of this campaign show that environmental and societal impacts were better taken into account, particularly compared to the similar initial campaign back in 2014. There was only one "Insufficient" result. Several businesses have demonstrated their determination to minimise their environmental impact: OEKO-TEX certification prioritised or obtained, reduced use of chemicals, energy management, etc.

Audits for other procurement categories

Upstream from an invitation to tender regarding manufacturing of GRP piping, potential tenderers were audited to confirm the compliance of their practices with minimum expected CSR prerequisites. In case of an unsatisfactory or insufficient result, an action plan must be set up: if necessary, an inspection audit is also required before the contract can be awarded.

Across all procurement categories, in 2022 as in previous years, overall results indicated appropriate management of safety and environment-related operational risks, due mainly to certification providing a framework and a robust safety culture. Environmental impact was also found to have also been better taken into account: carbon offsetting, use of the local economy, presence of CSR indicators/goals. However, several audited businesses did not have a code of ethics or anti-corruption policy. The other area for improvement was once more taking account of CSR criteria in successful bidders' own supply chains, even if some good practices were identified this year. EDF's requirements on these matters are still to be promoted in the audited companies.

In terms of organisation, 2022 was marked by audit postponements or cancellations due to geopolitical events (Russia-Ukraine crisis, instability in Burma, pandemic in China at the end of the year).

3.4.2.3.4 Responsibility in the fuel supply chain

3.4.2.3.4.1 Coal supply chain

Since its coal contracts were taken over by JERA Trading (JERAT), EDF has no direct contractual relations with mining companies or the market, but remains an active promoter of the Bettercoal responsible coal purchasing initiative that EDF helped to

found. Bettercoal brings together energy companies, port institutions and coal terminals to promote CSR in the coal supply chain, mainly at mining sites, to ensure that fundamental rights are respected.

The operational approach is based on a code that sets out ethical, corporate and environmental principles and provisions relevant to mining companies. It takes into account general performance requirements, including management systems, and also performance requirements concerning: ethics and transparency, human and labour rights (such as the prevention of forced and child labour, the right to a decent wage), social issues, including health and safety, and the environment.

JERA Trading, its supplier, is now a member of Bettercoal, thus increasing the initiative's influence in Asia. In 2022, 24% of the coal supplied by JERAT to the EDF group come from Bettercoal operators, 28% from North American operators and 48% from producers in the rest of the world. This reduction was particularly due to suspension of imports from Russia and use of alternative suppliers from producing countries not signed up to the Bettercoal initiative. However, Bettercoal is currently in discussions with several of these producers to sign them up in 2023.

3.4.2.3.4.2 Uranium supply chain

EDF obtains its uranium supplies over the long term under diversified contracts in terms of origin and suppliers, in most of the main producing countries (Australia, United States, Canada, Kazakhstan, etc.). The clauses authorising the completion of audits and setting out EDF's expectations in terms of enforcement of the fundamental rights and main international standards by suppliers and sub-contractors have progressively been added to contracts.

Audit reference framework

The uranium mine audit system used by EDF since 2011 ensures that the ore is extracted and processed in good environmental, social and societal conditions. The method and evaluation chart were developed with the World Nuclear Association (WNA) ⁽¹⁾. This method is based on international standards, including The World Nuclear Association's Sustaining Global Best Practices in Uranium Mining and Processing: Principles for Managing Radiation, Health and Safety, and Waste and the Environment, The Global Reporting Initiative's (GRI) Sustainability Reporting Guidelines & Mining and Metals Sector Supplement, and The International Council on Mining and Metals' (ICMM) Sustainable Development Framework. Safety is an especially critical issue in mining (process safety), and as such is standardised and recognised by all players in the industry. It takes into account the issues of human rights and fundamental freedoms (human rights, whistleblowing register, rights of indigenous peoples and radiation protection), health and safety of people and the environment, in the broadest sense of that term (greenhouse gases, water, diversity, Biodiversity waste, site clean-up after extraction).

Audits

Every year, EDF carries out mine audits through internal means (two audits per year). The reports present the main strengths, recommendations and suggestions. The most ordinary ones relate to health and safety (wearing personal protective equipment such as gloves or goggles), the display of safety instructions, monitoring accidents, performing radiological controls, monitoring environmental footprint (specifically carbon emissions) and proposals relating to well-being in the workplace. Audit recommendations are included in the continuous improvement plans and action plans. There were two uranium mine audits in 2022.

"ON DECK" approach

In 2022, with the aim of boosting its CSR commitments, the Nuclear Fuel Department (NFD) focused on decarbonisation via the so called ON DECK approach ("Décarboner ensemble le cycle du combustible", i.e., decarbonising the fuel cycle together). The aim of this approach is to highlight and showcase to stakeholders the challenges and ways for its activities to achieve carbon neutrality, and encourage the different links in its value chain to change the direction of their own carbon trajectory.

(1) Guidelines for Evaluating Supplier Performance at Uranium Mining and other Processing Sites in the Nuclear Fuel Supply Chain.

3.4.2.3.5 Responsible subcontracting

3.4.2.3.5.1 Policy and Agreements

EDF's subcontracting policy focuses on three main themes: providing providers with visibility and ensuring long-term supply partners; helping the Group improve its subcontracting practices by defining criteria to support decision-making in terms of strategy, economics and social impact (CSR and skills maintenance); developing socially-responsible subcontracting practices, particularly via the new Global Framework Agreement on the EDF group's Corporate Social Responsibility (Article 4) signed on 19 June 2018 and the agreement signed on 19 October 2006 on socially-responsible subcontracting.

3.4.2.3.5.2 Commitments

The Group may be required to use subcontractors with employees under contracts drawn up in a country other than the one in which it operates. In this case, particular attention is paid to human rights, working conditions, housing conditions and employee health and safety.

Risk mapping

The EDF group implements a compliance plan, including a map of the risks identified in relation to its suppliers and subcontractors, a risk assessment, and the risk mitigation measures taken.

Strategic analysis

The decision to outsource or backsource activities in these areas is based on a strategic analysis for each industrial policy segment. The analysis takes into account criteria such as the need for the Company to master strategic skills (core businesses, etc.) and variations in workload and the flexibility needed to address them.

Monitoring

CSR governance organised at all levels of the Group: Board of Directors, EXCOM and Stakeholder Council. CSR Agreement commitments are monitored by the global CSR Committee. For EDF, a Committee to monitor the socially responsible subcontracting agreement, made up of signatory trade union organisations, meets twice a year.

3.4.2.3.5.3 Key events in 2022

In the industrial field

Progress charter: The improvement measures launched in 2015, reflected in the Progress Charter signed in June 2016 between EDF and the Professional Organisations representing the Group's subcontractors, continued in 2022 and provided for, in particular, support for subcontractors at the Flamanville 3 work site, with a view to reducing the workload. In December 2021, EDF signed the RFAR (*fournisseurs et achats responsables*, i.e., Sustainable Suppliers and Purchasing) charter at the World Nuclear Exhibition. The Charter promotes a certain number of values regarding supplier relations, including the following commitments: ensuring a sustainable financial relationship with suppliers; identifying and managing mutually-dependent relationship with suppliers.

10-year workload visibility: In the nuclear field, EDF organises events with suppliers to give visibility to 10-year workload, for example at DPNT (Nuclear & Thermal Generation Department) days and GIFEN (Groupement des industriels français de l'énergie nucléaire, i.e., French nuclear energy industry group) days. Longer EDF contracts prioritising long-term relationships with suppliers to capitalise on resources and skills. Example: EPR2 and PIAT (intellectual services and technical assistance) contracts, and catalogue framework agreements that commit EDF to longer terms than in the past.

Supplier relations barometer: EDF carries out a yearly Supplier Relationship survey in September (144 suppliers surveyed) to compile information about their points of view and obtain feedback. The results of the last survey support the action taken in terms of contractual improvements and the extended enterprise model. Points of satisfaction included: high supplier appreciation of visibility regarding EDF's industrial programme and the 3-year detailed workload plan, invoicing and terms of payment (effect of electronic invoices and specific methods adopted during Covid), systematic deployment of new Excell standards in invitations to tender launched since early 2022, including issuing of information packs to suppliers covering the actions taken in different Excell areas (manufacturing, supplier relations, standardisation, and welding plan) that are reflected in contractual provisions

In the field of Information Systems

The OpenSource policy established in 2016 is still valid. For 2022, it focused on three additional areas:

- prioritising use of OpenSource rather than OFS software if it is available and meets the functional needs of the IT sector;
- making sure that sub-contractors and partners provide their staff with training to become equally proficient in using these OpenSource products as OFS software;
- encouraging partners and sub-contractors to get involved with OpenSource bodies and communities to promote and contribute to their development as much as possible.

In the commercial field

In an increasingly competitive context, the Sales Division continued to use outsourcing to deal with variations in workload and cover extended hours. These external centres are also located within metropolitan France (see section 3.4.2.1.4 "Focus on the customer service lines of business").

External providers are chosen and accredited for customer relations and sales development ("Engagé RSE Afnor" label).

3.4.2.4 Other kind of contribution to local development

The Group also contributes to local development through employment, taxes, and procurement, as well as via a large number of initiatives promoting a local dynamic, together with its action to facilitate access to energy in developing countries.

3.4.2.4.1 Boosting the economic, social and human environment

At local level, the Group rolls out a great many initiatives to nurture the economic, social, and human environment.

10 years of the "EDF, une rivière, un territoire" ("EDF, One River, One Territory") programme

Back in 2012 EDF Hydro put in place a original local programme to assist socio-economic stakeholders in hydroelectric valleys. This scheme now consists of a network of 7 agencies, each set up following a joint development process featuring institutional, economic, and local non-profit stakeholders and taking account of specific local characteristics and expectations. The aim of these joint projects is to support the economic impetus of the valleys, particularly SMEs/SMIs and innovators, by providing assistance with bidding on EDF contracts, and setting up joint employment-based integration access projects, but also crowdfunding to local businesses in the fields of water, energy, environment, and tourist activity on dams. This local programme has created or maintained over 610 jobs by means of loans to over 50 local companies. Furthermore, this should involve the creation or preservation of more than 725 jobs by 2025⁽¹⁾.

Socioeconomic support for the Cigéo host locality (Meuse et Haute Marne "départements")

EDF continued its actions based on its three main areas of focus: local economic development including the symbolic laying of the first stone of the extension of its logistical base in Tronville-en-Barrois; the training field, in which in addition to paying apprenticeship taxes, EDF provides tangible practical support to three vocational colleges, for example by helping young local people to access attractive training courses in the fields of pressure vessels and welding; and finally, the global building energy renovation programme, which is still ongoing, saw the development of a trained and qualified local sector. Today, EDF has a network of 135 businesses in the building sector that partner the programme.

Socioeconomic support for localities around Hinkley Point (United Kingdom)

In addition to substantial economic benefits for the region, Hinkley Point C contributes directly to local and national availability of skills and expertise, which will support the transition to net zero. Investments and direct actions also support improvement of social mobility by focusing on local recruitment, development of training programmes, and supporting the supply chain.

(1) The 10 years of this programme have made it possible to make a shared assessment summarised in a film accessible to all: https://www.youtube.com/watch?v=N8_H6hsqPTc

€24 million have been directly invested in education, skills and employment and in 2022, the project added extra training programmes open to all candidates, regardless of their background or prior experience. This includes T-Levels (a nationally-recognised qualification for 16- to 19-year olds) and work placements. To date, a little under 1,000 apprentices have been trained in a wide range of disciplines, from ironwork to catering. Three levels of centres of excellence, which are essential to skill development services, have now been completed. They will train the next generation of qualified welders and both electrical and mechanical engineers. More than 5,000 people will be trained at these cutting-edge technological facilities, before taking on roles on the project and beyond.

At Hinkley Point C, sustainable construction methods contribute to reducing emissions by cutting the quantity of materials and water used, limiting the quantity of waste generated, and increasing local biodiversity. Lessons learned from the construction sector are taken into account at Hinkley Point C.

The construction requires 280,000 tonnes of steel reinforcement bars (rebars). Hinkley Point C's rebars are made from 98% UK-sourced recycled steel. As a result, the steel reinforcement has approx. one quarter of the CO₂ impact of using imported new steel.

Supplies for the project are also purchased locally, and plastic packaging has been reduced. Hinkley Point C's catering supplier has served more than 4 million meals to workers since the start of its activities. 95% of packaging used by Hinkley Point C's catering supplier is from sustainable sources, with nearly no single-use plastic. More than 75% of its packaging is plastic-free and disposable cups are made out of plant matter. All food waste generated in the central kitchen is processed by an anaerobic biodigester, supplying the national mains network with electricity. General waste from construction and site operation is also minimised by using a waste collection centre, which considerably reduces the quantity of waste sent to landfill sites. It now processes more than 700 tonnes of material per month.

More broadly, fifty or so environmental specialists minimise Hinkley Point C's impact on the environment and contribute to increasing biodiversity in nearby habitats. This includes creating a freshly-restored nature area on the site's southern perimeter and supporting a new local wetlands nature reserve. The project team also works in close collaboration with other environmental partners such as the Somerset Wildlife Trust. This partnership protects the coastal habitat providing more than £150,000 of funding to support the Brilliant Coasts project.

Socioeconomic support in Laos

For some 20 years now, the EDF group has been supporting development in Laos as part of an ambitious social and environmental assistance programme. This has been implemented jointly by the government of Laos and Nam Theun 2 Power Company (NTPC), a company created by EDF, EGCO and Lao Holding State Enterprise responsible for the design, construction, and operation of the Nam Theun 2 hydropower complex.

Support over and above World Bank standards

Developed in consultation with local inhabitants and implemented by the government of Laos with the support of NTPC, the entire social and environmental programme complies with, and indeed exceeds, standards set by the World Bank and the Asian Development Bank.

Significant results

Houses have been built for all the affected households, alongside 2 dispensaries and 32 schools. Following a programme to support economic activity, Nakai plateau has undergone economic development; 97% of displaced households have achieved the revenue levels established by the programme. The median levels of consumption in the area are three times higher than the poverty threshold determined by the government. The entire population now has access to healthcare and education. 37% of those on village Committees are women.

New goals for 2035

New objectives were set for 2035: maintaining sustainable means of subsistence around the reservoir via the NT2DF fund (Nam Theun 2 Development Fund); preserving biodiversity with global heritage status; maximising renewable generation potential, including additional generation using floating photovoltaic panels, or optimising water use downstream from the dam to irrigate surrounding paddy fields, adding a second harvest during the dry season.

Social-economic support in Cameroon

In Cameroon, across the 7 districts within the Project's area of influence, the Nachtigal Hydro Power Company (NHPC) is implementing a local economic development action plan to support micro-infrastructure and local development, as well as funding revenue-generating business projects at local level.

Financing of the project (SAFIDI)

SAFIDI, a subsidiary fully owned by EDF via the holding EDEV, is a local engagement tool to implement EDF group policies nationwide. SAFIDI's aim is to support local economic development, industrial reconversions and spin-offs via crowdlending of job-creating SMEs in key regions and minority equity investments in companies of local interest such as semi-public companies, Energy Transition-focused SPC subsidiary, regional recovery funds, etc.

At the end of the 2022 financial year, SAFIDI had 79 minority equity holdings with assets worth €25.4 million and 74 outstanding loans (total receivables: €2.7 million). SAFIDI also owns 100% of the securities in its subsidiary *Une Rivière Un Territoire Financement*, EDF Hydro's local engagement tool, which is worth €8 million.

Over the course of this year, SAFIDI examined 4 crowdlending applications, 9 equity investments, and 9 spin-offs, i.e., a total of 22 projects, on request from Group business line departments and subsidiaries.

3.4.2.4.2 Access to electricity in developing countries

Access to electricity is a vector for progress and development, including in the areas of health, education and security. The global electrification rate has increased steadily since 2010 but more than 800 million people still have no access to electricity, with around one half of them being located in Sub-Saharan Africa.

Most major EDF projects, especially those in Africa and Asia, are designed to improve access to electricity on a local, regional and national scale, such as the Nachtigal hydropower dam project in Cameroon.

Besides its major projects, EDF intends to developing new business models that combine its traditional know-how with technological and economic innovation. These measures are supplemented by Group sponsorship.

3.4.2.4.2.1 New business models

EDF is developing off-grid projects designed to provide residential customers and very small enterprises, mainly in Africa, with electrical services, including ZECI in Ivory Coast or Bboxx in Togo (see section 1.4.5.3.7 "Africa").

3.4.2.4.2.2 Sponsorship and access to energy

The EDF group also supports energy access across the globe in the form of sponsorship, through its Electricians Without Borders (EWB) Foundation, or through partnerships coordinated by its affiliates.

EDF Foundation

The EDF Foundation supported in 2022 27 projects run by non-profits, in an amount of €1,121,000, which electricity aids in access to water, health, education and development, by providing them with a combination of funding and technical expertise from the Group's employees.

Electricians Without Borders

Since 1986, Electricians Without Borders (EWB), of which EDF and Enedis are partners, has been striving to overcome unequal access to electricity and water worldwide.

Litro de Luz (Brazil)

Since 2019, EDF Norte Fluminense has partnered with Litro de Luz, an international organisation that operates in over 20 countries. In Brazil, several projects have had a direct impact on more than 10,000 people. Actions are designed to provide

lighting to communities that either have no access to electricity or no domestic electricity supply. The technology used is ecologically sustainable and made from plastic bottles, solar panels, and LED lamps. Projects last 12 months and can be extended.

Cabrero (Chile)

Near the Santa Lidia power plant, in the city of Cabrero, the Group participated in 2022 in the "*Ensemble, nous éclairons notre communauté de Charrúa*" ("Together, let's light up our community of Charrúa") programme, installing 64 LED street lights.

3.4.3 Responsible development of industrial sectors

The Group is committed to contributing to the development of the industrial sectors needed for the energy transition (renewable energies, batteries, hydrogen, etc.) or their revitalisation (nuclear) by developing, adapting and redeploying the necessary skills, and setting up support, retraining and protection schemes for employees for a just transition.

3.4.3.1 The Group's contribution to the creation of new industrial sectors

The Group's contribution to the creation of new industries is especially noteworthy in the fields of offshore wind power and graphite reactor decommissioning.

3.4.3.1.1 Offshore wind sector

The three offshore wind power projects at Fécamp, Courseulles-sur-Mer and Saint-Nazaire, with combined total capacity of 1,428MW, were awarded to EDF by the French government in April 2012. Destined to play a key role in the development of the French offshore wind power industry, they are the product of extensive consultation and grassroots work conducted by EDF Renewables and its partners with local stakeholders, government departments, industry, non-profit associations, and local residents. Though the projects in Fécamp and Courseulles-sur-Mer are still in the construction phase, full commissioning has been effective since November 2022 for the Saint-Nazaire project.

Partnerships encouraging the creation of a dedicated industry

A partnership entered into with Siemens Gamesa covers the supply of wind turbines to 2 projects in France (Fécamp and Courseulles); wind turbines for the Saint-Nazaire project will be supplied by GE Renewables Energy.

The Saint-Nazaire wind farm: case study

Since the commissioning, the Saint-Nazaire wind farm produces the equivalent of the annual electricity consumption of 700,000 people, corresponding to 20% of electricity consumption in Loire-Atlantique. The EDF group is thus involved in the creation of a new French industrial sector and new jobs, in particular in Loire-Atlantique.

3.4.3.1.2 Graphite reactor dismantling sector

The Graphite Industrial Demonstrator (*démonstrateur industriel graphite*, DIG) near Chinon (Indre-et-Loire) is a key installation for graphite reactor decommissioning, allowing physical and digital tests to be carried out on models of these reactors. Construction was completed at the end of 2021 and involved a consortium of local contractors (80% of purchases and services were local). The site was inaugurated in the presence of elected officials, local stakeholders and partners, who could see that EDF had kept its commitments, the opportunity this facility provides regarding the creation of direct jobs (twenty or more between EDF and its subsidiary Graphitech), and the springboard for innovation that this facility represents.

European project

For the 2022-2023 period the European Inno4graph project coordinated by EDF/DP2D featured 13 decommissioning stakeholders, including the CEA, SOGIN (Italy), and LEI (Lithuania), as well as Graphitech and Cyclife Digital Solutions, two EDF subsidiaries. The aim of this project is to design NUGG reactor decommissioning tools, which will be tested in the demonstrator.

IAEA label

The DIG is the first EDF installation to receive the International Atomic Energy Agency's "Collaborating Centre" label. This label provides recognition from the international community for EDF's graphite reactor decommissioning strategy. It features a programme of works over the 2021-2025 period.

3.4.3.2 The Group's contribution to revitalising existing sectors

3.4.3.2.1 The excell plan: being present in major nuclear power projects

The excell plan, which was announced in December 2019 and launched in spring 2020, aims to enable the French nuclear industry to restore the most stringent standards and the highest levels of quality and excellence to be at the forefront of major nuclear projects. In November 2021, EDF group and the nuclear industry made 30 public commitments, spread across 5 priority areas of work (governance, skills, manufacturing and construction, supplier relationship and standardisation). 27 of these 30 commitments have met or exceeded the targets set. They are currently applied every day in the field. The final 3 commitments, which are particularly exacting, have been partially achieved and will be fully met in the course of 2023. The excell plan has now entered a new phase, with the aim of sustainably establishing its principles across the business.

With half of employees who are set to work in the nuclear field in 2030 not yet involved in the sector, the issue is attracting, training and recruiting, then boosting the experience and skills of newly-hired employees. Multiple actions were taken in 2022 to deal with the issues of the sector's attractiveness, and capitalising on and developing skills.

Stakeholders in the sector got involved to prepare the sector for upcoming challenges, particularly the issue of skills. In late 2019, GIFEN called on the French Labour Ministry and the relevant sectors of industry (metallurgy and the electrical and gas industries) to finance an employment and skills development commitment programme (EDEC). The 2-year nuclear sector EDEC was signed in March 2021 with a budget of more than €1,500,000, forming the cornerstone of the structure that will provide the sector with the right resources at the right time.

All the commitments are available online (edf.fr/plan-excel). For further details on 2022's achievements in the plan's 5 major areas of focus, see section 1.4.1.1.1 "The excell plan".

3.4.3.2.2 The Group's contribution to the creation of new industrial sectors

"France Relance" plan

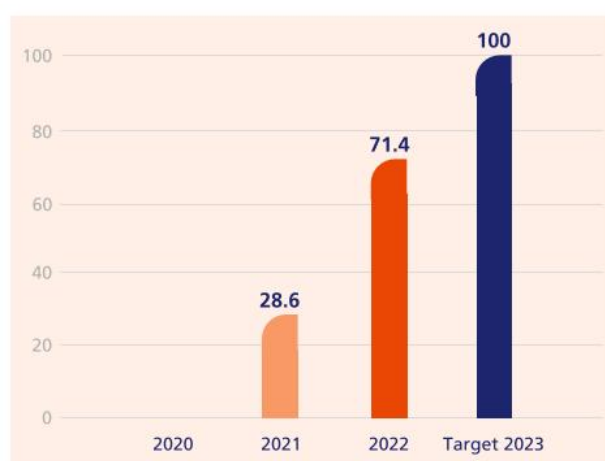
The action provided for in the excell plan will be further strengthened and stepped up under the stimulus package. On 27 November 2020, the French government announced a sector support plan as part of the *France Relance* recovery plan, with €470 million earmarked for the nuclear industry.

GROUP KEY PERFORMANCE INDICATOR

EDF's performance in respect of its "Development of industries" commitment is assessed on the basis of the rollout rate for EDF-backed support initiatives to promote nuclear industry skills insourcing and maintenance as part of the *France Relance* plan.

These support initiatives include the creation of a fund to assist SMEs and MSEs in the sector, the setting up of a Nuclear Industry University, support for students through the granting of scholarships, and funding for re-industrialisation and insourcing projects.

Achievement rate of supporting actions backed by EDF, encouraging relocation and maintaining nuclear industry skills ("France relance" programme) (in %)



3.4.3.3 Support in the context of redeployment of sites and professions

All employees affected by job cuts are given specific support. They benefit from specific schemes in terms of priority mobility (individual personalised support and financial support), external career plans and pre-retirement paid leave.

3.4.3.3.1 Declining activities and territories

Power plant closures: greater solidarity Social dialogue

EDF continues with social dialogue during the various shutdown phases of power plants. In France, plant closures are the subject of consultations with staff representative bodies⁽¹⁾. The "business-specific" agreements cover production fleet closures and include dedicated measures to provide recognition and financial assistance.

Redeployment measures

EDF has committed to implement all means necessary to carry out exemplary closures and enable employees to consider new career prospects taking their individual aspirations into account. Plant closures are implemented with measures to redeploy employees within the Group and initiatives to develop new local economic activities, to offset the loss of jobs and tax revenues in the affected municipalities.

Fessenheim and Le Havre

Employees from the Fessenheim and Le Havre power plants (which closed in June 2020 and April 2021 respectively) are benefiting from social innovation measures to facilitate their redeployment within the Group's regional or national entities. As of the end of 2022, 95% of Fessenheim and Le Havre employees had found another job within the Company.

Instruments to preserve local economic vibrancy: Social Bonds and Ecological Transition Contracts

EDF ensures to develop new local economic activities, to offset the loss of jobs and tax revenues in the affected municipalities.

Use of Social Bonds

EDF's first Social Bond issue, totalling €1.25 billion, was made last year. The social purpose of eligible projects is support for SMEs that form part of EDF's industrial fabric and provide job opportunities in localities where EDF is present. 100% of the funds raised will be used to support investment in areas with high levels of unemployment.

Use of Ecological Transition Contracts (CTE)

The Group uses Ecological Transition Contracts (*contrats de transition écologique*, CTE) as part of a consultative process bringing together local authorities alongside local NGOs and companies to refocus the local economy around sustainable, job-centred projects.

CleanTechBooster at Aramon

Following the signing of an Ecological Transition Contract, the Aramon coal-fired power plant in the Gard was replaced with a 5MWc photovoltaic power plant, and a local energy transition development plan called *CleanTechBooster* was implemented. Via the CleanTechBooster accelerator, 300 jobs were maintained, 38 jobs were created, and 138 start-ups were matched with big businesses or local authorities. Several projects were set up to develop air quality monitoring in nurseries or treatment of industrial wastewater via re-use systems.

(1) See section 3.5.3 "Social dialogue".

3.4.3.3.2 Declining departments or subsidiaries

Enhanced employee mobility and onboarding measures

Priority given to redeployed employees

All candidate searches must first seek internal solutions, with priority given to redeployed employees; this hinges on solidarity between different entities within the Group and the development of fast-tracking between business lines.

Sandwich-based redeployment courses

The EDF group has implemented sandwich-based redeployment courses, allowing employees to retrain for positions in line with the Group's strategic workforce planning priorities. In 2022, 60 employees benefited from this type of course, including 30 in the process of redeployment, for positions such as that of data analyst and maintenance technician. The EDF group has continued to enrich its offering, drawing on lessons learned from previous intakes.

Mobility and redeployment in 2022

	2021	2022
Employees who found a job in line with the Group's needs in 2022	703	502
Employees which have been redeployed since 2018 (EDF)	2,993	3,495

3.4.3.3.3 Intensifying the mobility dynamic

In addition to targeted actions, and to remove obstacles and give fresh impetus to mobility, in 2022 EDF implemented the *Booster la mobilité* (i.e. boosting mobility) plan launched back in 2021, which adds to the Group's existing mobility systems.

The new "Booster la mobilité" plan

This initiative co-built together with all EDF Divisions and subsidiaries, with a series of actions focused on three goals:

- matching supply and demand for jobs across the Group;
- redefining financial support for mobility and redeployment programmes;
- creating and enhancing attractive career paths.

Building on past experience, the plan offers new solutions to encourage mobility in line with the challenges facing the Company. The *Booster la mobilité* programme supplements the Group's existing mobility schemes, making it easier for employees to apply for jobs far from home without needing to move (*Mon job en proximité*); facilitating discussions about financial questions (before/after financial situation) and other issues (relocation); encouraging transparency and fluidity in the internal job market (since 2020, a Group IS scheme devoted to mobility and recruitment has made it easier for all employees to have an overview of the internal job market).

Enedis Conseil & Action EDF Impulsion

Following the example of 30 other French businesses (who joined forces to form the *Association française du conseil interne*, i.e., French internal consulting association), EDF set up two internal consulting teams.

Enedis Conseil & Action and "EDF Impulsion" feature high-level managers who are changing careers: they put their skills to use to help Group business lines by carrying out operational assignments. This model – complete with its dual *raison d'être* – creates value for Group managers by providing internal consulting services.

At Enedis Conseil & Action, 300 assignments have been completed since 2017 by around fifty consultants and "alumni" who have since moved on to pastures new. EDF Impulsion 64 manager-consultants recruited between 2020 and 2022 have already completed 143 assignments. These entities also provide specific, targeted support for each team member, to help them find a job matching their aspirations and the Group's needs within 18 months.

"My Job"

Declining departments have been supported through a specific project called My Job, designed to enhance the visibility of pools of qualified employees and solidarity between departments for EDF.

New solutions

- Modular mobility capital, facilitated mobility pack, locality discovery service.
- National People Reviews, the aim of which is to have an overview of positions that are hard to fill nationally alongside Group mobility potential beyond regional level, and to facilitate individual mobility between EDF and other entities within the Group.
- Consultation of business lines and trade union organisations on sites and business lines to set up high-priority or encouraged support schemes.

EDF group mobility month

- In parallel, in November 2022 the Group launched the EDF group Mobility Month, a first in terms of its scale, impact, and duration. Mobility days provided an opportunity for all the Group's businesses to focus on internal mobility. More than a hundred stands gave mobile employees the chance to meet nearly 400 HR advisors and managers involved in this event over the month.
- These events organised in regional employment areas include conferences, business line sector presentations, and jobdating, plus informal meetings and skills assessments; they allow Group employees to plan their career path and make precious new contacts for their projects.

3.4.4 A data responsible company ⁽¹⁾

3.4.4.1 EDF, the first energy company to be awarded the “Responsible Digitalization” label

The EDF group is committed to responsible digital transformation that is low-carbon, low-energy, inclusive, ethical, and adds environmental value for its employees and customers.

3.4.4.1.1 Roadmap

This aim has been asserted at the highest level of the Company in the Group’s SI 2020–2025 roadmap. On the occasion of a seminar on digital transformation on 17 September 2021, the EDF group EXCOM affirmed responsible digitalization as one of its priorities.

This commitment is coordinated by the Digital Transformation Committee, co-chaired by three members of the EDF EXCOM and implemented through a programme dedicated to responsible digitalization.

3.4.4.1.4 The Group’s commitment

GROUP KEY PERFORMANCE INDICATOR

The key performance indicator is the achievement of the commitments made to the French Responsible Digitalization Institute.

The related action plan comprises 18 actions and 32 related deliverables.

It must be completed in full by the end of 2024.

3.4.4.1.2 Responsible Digitalization Charter

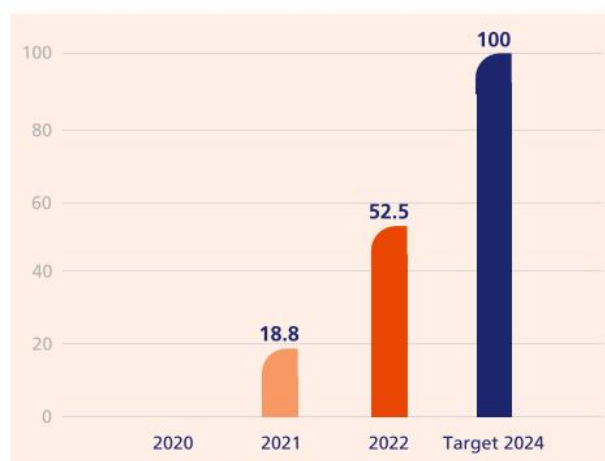
By signing the “Responsible Digitalization Charter”, EDF, Enedis and Luminus (alongside the Belgian Institute) have strengthened their goal, by formally committing to develop sustainable, inclusive and value-creating digital services. Established by France’s *Institut numérique responsable* (“Responsible Digitalization Institute”), the charter covers every aspect of responsible digitalization.

3.4.4.1.3 Responsible Digitalization Label 20 binding commitments for progress

Drawing on robust achievements, in March 2021 EDF became the first energy supplier to obtain the Responsible Digitalization label developed by France’s Responsible Digitalization Institute with the support of France’s Ministry of Ecological and Solidarity Transition, research agency ADEME, and WWF. Pursuant to the charter, 20 binding commitments for progress have been made, coordinated by a 2021–2024 action plan structured around three areas: development of responsible digitalization by design, improving user experience, and innovation.

In 2022, the actions carried out under this label are progressing according to plan.

Achievement rate of EDF commitments towards the French Responsible Digitalization Institute (INR) (in %)



3.4.4.2 Acculturation of employees to responsible digitalization

EDF’s Transformation and Operational Efficiency Department has set up a mini website within the EDF group’s intranet devoted to digital responsibility, featuring educational videos (accessibility, smartphones, printing), “digital responsibility” MOOCs, toolboxes, and interviews with employees, managers, and sponsors involved in the initiative. The responsible digitalization programme at Luminus also includes awareness-raising actions. Two sustainable storage awareness campaigns were organised in spring and summer 2022 as part of the World Cyber Clean Up initiative. Luminus’s intranet was updated to take account of best data archiving practice.

3.4.4.3 Sensible use of digital tools

To highlight and further the commitments made by the business over the last few years in terms of energy sobriety, EDF adopted an internal energy sobriety plan in August 2022 with the aim of reducing the Company’s key consumptions by 10% based on proactive measures and employee engagement. Three main methods are used including optimising digital practices (for further details on this area for improvement, see the introduction to this section of the 2022 URD “Focus on the energy sobriety plan”).

(1) This section may be usefully supplemented by the action taken by R&D in section 1.5.1.4 “Accelerating digital transformation”, and the section “Risks to which the Group is exposed” in section 2.2.4, which deals in particular with cybersecurity issues.

3.4.4.3.1 Reduction of environmental impact

Decreasing the carbon footprint of digital technology involves responsible use of IT and telephony. EDF is seeking to reduce the related environmental impact by extending the lifetime of hardware, promoting the circular economy, and seeking to bring down the average electricity consumption of servers (see section 3.2.4 "Radioactive and conventional waste, and Circular economy").

3.4.4.3.2 Eco-design

The first environmentally-responsible website in the energy sector

Eco-designing digital services allows the key requirements of low-energy use and accessibility to be incorporated from the design stage. With this in mind, in 2021 Dalkia launched the first environmentally-responsible website in the energy sector, dividing the total number of web pages by 4, resulting in a 64% reduction in CO₂ emissions compared to the previous website. The efficiency of the code was also reviewed, the number of servers was brought down from 7 to 2, and the backup space was reduced. The website meets 94% of the French general accessibility improvement guidelines (*Référentiel général d'amélioration de l'accessibilité*, RGAA).

Sustainable AI guide

The Sustainable Digital programme issued a Sustainable Artificial Intelligence guide. It encourages simplifying AI systems to limit their environmental impact, as well as diversifying source data to prevent bias. Finally, the guide insists on the need for AI models to be explainable.

New end-of-publication date

From 2022, EDF chose to add an end-of-publication date to all its social network posts to avoid unnecessarily maintaining obsolete publications. At the same time, wide-ranging steps were taken regarding historical posts: more than 11,000 tweets published since 2011 were deleted.

3.4.4.3.3 Inclusion

Digital technology will only be responsible and sustainable if it is also accessible and inclusive, without any form of discrimination. This is why EDF adopted a new digital accessibility policy in 2022, covering both the working environment of disabled EDF employees, accessibility of external and internal digital services (website, mobile apps, intranet, messaging), and digital communication (emailing, newsletters).

3.4.4.4 Digital technology as a vector for responsible action

3.4.4.4.1 Saving of resources

Improving datacentre energy efficiency is a powerful way to reduce the consumption of EDF's digital services. Datacentres have been certified ISO 50001 since 2015 and EDF has already succeeded in reducing their energy consumption by 15% in five years, despite also doubling their computing power.

The EDF group sees digital technology as a key tool for sustainable development. It generates innovations reducing the Group's impact in terms of carbon or resources and increasing the services it offers. See for example, the setup in 2021 of EDF's Reutiliz digital platform (see section 3.2.4.3.2 "Optimising material and equipment").

3.4.4.4.2 Customer energy savings

Digital solutions allow customers to achieve energy savings, too.

Customers can use the "e.équilibres" platform and the "EDF et moi" app to track the various ways they use electricity and target energy savings. For more details on these aspects of digital responsibility, see section 3.1.4.2.4 "Earning trust through quality of service".

3.4.4.4.3 Digital for customer development

Waste heat from EDF's Val-de-Reuil datacentre (Eure) will be recovered for use by its future business park neighbour, Eurapharma, which will enjoy an ambient temperature of 15 to 25°C in its warehouse. This project is a win-win in both ecological and economic terms, with 6GWh carbon-free per year for Eurapharma, and approx. €1 million extra Group income over a 10-year period from the sale of waste heat.

For extensive examples of how digital technology is used for customer support and development, see section 3.1.4 "Developing low electricity consumption and innovative energy services".

3.4.4.4.4 Transparency and data sharing (Open data)

Digital tools encourage transparency and data-sharing. Since 2020, the EDF group decided to release its public data, in particular its consolidated financial statements, non-financial performance indicators, the Group's installed capacity, the corresponding generation figures and operational data such as EDF Hydro's average daily river flow data. It is released through an open data platform.

3.5 CSR Governance

The CSR governance structure is based on venues for information and forums for dialogue that strive to constantly improve the identification and assessment of the risks and opportunities specific to each issue and each commitment. This continuous identification is complemented by a complete organisational system aimed at controlling the implementation of the Group's commitments, while respecting the management independence of the regulated infrastructure managers.

3.5.1 Group policies

3.5.1.1 The Corporate Social Responsibility (CSR) Policy

Last year, a new EDF group Corporate Social Responsibility policy was adopted by the Executive Committee to replace the previous Sustainable Development policy.

Consistency and subsidiarity

The Company's environmental, social and economic performance is driven in the first place by the contributions of the various entities. The CSR policy provides a framework for these actions by formulating ordinary requirements and principles of action aimed at implementing the 16 CSR commitments to prove that the Group's *raison d'être* is being carried out. It applies to Group entities without overriding the managerial independence of regulated infrastructure operators, and defines the

priorities for 2030 at the Group level, which each entity implements taking into account its specific activities and challenges, in line with the principle of subsidiarity. Where appropriate, an entity may choose to supplement the requirements of this policy.

3.5.1.2 Other policies addressing CSR (expansion of CSR)

In addition to the CSR policy, other Group policies focus on other specific aspects of corporate responsibility (HR policies, Procurement policies, Ethics & Compliance policy, Nuclear Safety policy, etc.). In line with the Group's *raison d'être*, CSR is gradually being extended to all areas of the Group's activity.

3.5.2 CSR governance bodies

3.5.2.1 Board of Directors

The duties, powers, composition and operation of EDF's Board of Directors are described in detail in chapter 4, section 4.2 "Members and functioning of the Board of Directors". The Corporate Responsibility Committee ⁽¹⁾, as one of the Board of Directors Committees, examines, in connection with the Group's strategy, the Group's commitments and policies, as well as their implementation, in terms of ethics, compliance, and corporate responsibility.

At the beginning of 2023, a joint meeting of the Audit Committee and the Corporate Responsibility Committee of the EDF Board of Directors was organised prior to the closing of the financial statements for the fiscal year ending 31 December 2022 and the approval of the management report by the Board of Directors. The purpose of this joint meeting of the two Committees, held for the first time, was to review, in the presence of the Independent Third-Party Body and the Statutory Auditors, the results of the Group's ESG performance published in the Non-Financial Performance Statement for fiscal year 2022, as well as, for the second consecutive year, the results of the taxonomy (see section 4.2.3.4 "Corporate Responsibility Committee").

3.5.2.2 CSR Strategy Committee

The CSR Strategic Committee, which is chaired by the Chairman & Chief Executive Officer and composed of the Group's Executive Directors ⁽²⁾, conducts an in-depth review of all CSR issues, for which it provides strategic management and coordination. Depending on the agenda, the conclusions of the meetings are reported to the Board of Directors ⁽³⁾.

News in 2022

The CSR Strategic Committee met three times and dealt in particular with the non-financial rating, duty of vigilance, climate change adaptation plans, and the Group's environmental management system.

3.5.2.3 Sustainable Development Committee (SDC)

The SDC prepares the files presented to the CSR Strategy Committee and acts as a sector committee for environmental and societal competencies. It is chaired by the Sustainable Development Director and is made up of some twenty representatives in charge of sustainable development within their respective entities. In 2022, the SDC met on 6 occasions.

3.5.2.4 Impact Department

The Impact Department (formerly the Sustainable Development Department) reports to the Innovation, Corporate Social Responsibility and Strategy Director, a member of the Executive Committee.

Ambition

Its aim is to represent a differentiating factor for the Group's environmental and societal performance, as a responsible company and while respecting the management independence of network managers, that creates value for all stakeholders (employees, shareholders, customers).

Contribution to the Group's strategic transformation

It contributes to the Group's strategic transformation by accompanying business lines and projects:

- in specifically taking into account environmental and social issues (opportunities and risks);
- with respect to business choices and actions, in particular by integrating the four key issues derived from the *raison d'être* in the strategic supervision of the operational entities; and
- in screening new projects from the point of view of CSR ⁽⁴⁾.

It is particularly responsible for monitoring the Group's target for reducing "Scope 1" direct GHG emissions ⁽⁵⁾.

(1) Internal rules of procedure of 8 October 2019.

(2) It also includes the Directors of Communication, the EDF group Foundation and Regional Action.

(3) Through its Social Responsibility Committee.

(4) See section 3.5.4.1 "Integration of the corporate responsibility goals into the Group's strategic process and project screening".

(5) See section 3.6 "Methodology"

CSR coordination

The Impact Department coordinates CSR in the Group: corporate coordination of the business lines and subsidiaries through the SDC (Sustainable Development Committee) (see section 3.5.2.3 "Sustainable Development Committee"), coordination of the dedicated internal networks such as the EMS and the predictive

watch networks (see sections 3.5.4.2 "Environmental management system (EMS)" and 3.5.4.4. "Predictive watch networks"), coordination of relations and dialogue with external partners (see section 3.4.1.1.1 "EDF, a policy of dialogue and consultation").

The detailed outline of the Group's general CSR governance is similar to that shown in section 3.1.3 "EDF climate governance".

3.5.3 Social dialogue

3.5.3.1 International and European social dialogue

3.5.3.1.1 The Global Social Responsibility Agreement

The Group's actions go beyond merely integrating environmental issues into its strategy, as EDF remains a socially-responsible, committed employer and a leader in terms of the professionalism and involvement of its employees, by building their skills and fostering greater workforce diversity.

Principles of the Agreement

The EDF group's Global Social Responsibility Agreement sets out the major principles to be respected in several areas: respect and integrity; people development; dialogue and consultation; support for local residents and the impact of the Company's policies on local regions.

Scope and duration

All Group employees and subcontractors worldwide are covered by the provisions of this collective agreement, which the Group's subsidiaries apply with a view to continuous improvement by including it in their strategic action plans. Signed in 2018 for an initial period of 3 years, it was unanimously agreed by the signatories to extend the agreement for a further 2 years on 29 November 2021.

Monitoring body

The EDF group's global Committee for Dialogue on Social Responsibility (CDRS) is made up of representatives of all the signatories to the agreement (11 trade union organisations and two global trade union federations). Tasked with monitoring the implementation of the agreement, the CDRS continued its work in 2022 on the implementation of the EDF group's Duty of Vigilance and on the various aspects of its 2022-2024 roadmap. Its annual plenary session, organised on 15 June 2022 in the Paris region, enabled almost all of its members to meet physically for the first time since the start of the pandemic.

2022-2024 roadmap

On the basis of the interim assessment of the deployment of the agreement carried out in 2021, the CDRS defined its main areas of work for the next two years of the agreement's extension. In order to give new impetus to the implementation of this agreement, which was slowed down by the pandemic, the CDRS adopted a roadmap aimed in particular at intensifying social dialogue on Social Responsibility in the Group's subsidiaries, expanding the involvement of social partners in carrying out the Duty of Vigilance, providing more support to the subsidiaries and helping the CDRS to function more effectively.

Duty of Vigilance and Social dialogue

The CDRS is the preferred venue for dialogue with employee representatives on how the EDF group exercises its Duty of Vigilance regarding the impact of its activities on local populations and how it safeguards the rights of its employees and those of its suppliers. Since 19 June 2018, an update has been systematically given at each meeting of the Agreement Monitoring Committee (3 times a year on average). In continuation of the training day on the Duty of Vigilance co-organised in the autumn of 2021 by the EDF group's Social Dialogue Department and the two global union federations that signed the agreement, the CDRS focused in 2022 on ways to involve employee representatives in the development of the Duty of Vigilance plan and the implementation of the resulting annual action plan. By sharing views on the various stages of the Duty of Vigilance Plan's annual cycle (assessment of the previous year's actions, updating of the Duty of Vigilance Plan, drawing up of the action plan for the coming year, etc.), it was possible to define a methodology and identify the key moments when the CDRS's contribution would be needed.

3.5.3.1.2 European Works Council (EWC)

The European Works Council, made up of 38 employee representatives from the parent company and the European subsidiaries (French, German, British, Italian, Belgian and Polish subsidiaries), was characterised in 2022 by the roll-out of amendment no. 4 to the collective agreement, which had three objectives: to revamp and streamline the operation of the body set up in 2001 (composition, skills, resources, etc.), to determine the fate of the United Kingdom within the body after Brexit and to assimilate the lessons of the health crisis.

The Social Dialogue Department held a seminar to kick off the new 2022-2026 term in March 2022 with the aim of sharing improved knowledge of the Group and getting to grips with the renewed provisions of the agreement. This included a shared reading of the collective agreement as revised by Amendment no. 4, a presentation of the Group and the major areas of business at the European level, as well as presentations by each of the deputy secretaries of the social dialogue organisations for each of the countries represented within the EWC.

In 2022, the EWC met three times for two ordinary meetings and one extraordinary meeting. The ordinary meetings dealt with recent developments from the European subsidiaries, the yearly presentation of the Group's consolidated financial statements, an exchange with the Chairman, Jean-Bernard Lévy, and an update on European policies and their consequences for the Group. In accordance with the provisions of Amendment no. 4, the EWC was consulted in November on the strategic policies, as approved by EDF's Board of Directors, in addition to the consequences of these strategic policies on the environment and employment.

The extraordinary meeting on 12 April 2022 was held to consult with the EWC on the planned acquisition of GE Steam Power's nuclear business, covering its European operations. The EWC issued a favourable opinion.

The EWC Secretariat met twice in 2022 to prepare for the plenary sessions and discussed the Group's current situation in Europe, changes in the geographical scope of the EWC and the status of the Group's activities in Ukraine and Russia.

Through working groups, EWC employee representatives carry out work at the European level in connection with European news and Group policies (health and safety, site closures, consolidated accounts, energy transition, equality and diversity). In 2022, the Health and Safety WG and the Group Health and Safety Division will coordinate the organisation of the Health and Safety Stop on 13 October 2022 in all the Group's companies in France and Europe.

3.5.3.2 Social dialogue in France

In a context characterised externally by a succession of crises (energy, purchasing power, etc.) and internally by significant industrial and economic difficulties for the Company, social dialogue continues to play a major role at EDF, both within the employee representative bodies (nearly 20 CSEC meetings over the year) and during negotiations (with, as a sign of confidence between the players in the social dialogue, the unanimous signature of the wage measures agreement at the beginning of the year).

Thoroughly overhauled and with an innovative approach, the social dialogue also supports the evolution of the Company and in particular the transformation of the way it operates and is managed: the TAMA agreement, which was signed in November 2021, was rolled out throughout the Company in 2022 and has enabled teams to move collectively towards greater trust, empowerment and autonomy (see section 3.3.1.3.5 "Well-being, organisation of work and working time").

3.5.3.2.1 2022 social agenda

The 2022 social agenda was the subject of several discussions with the Central Trade Union Representatives.

Three agreements concluded unanimously:

- the 2022-2026 agreement on the establishment and operation of the Group France Council;
- the agreement relating to individual salary measures for 2022;
- the agreement relating to individual salary measures for 2023;
- the 2022 collective profit-sharing agreement.

Other collective agreements or amendments signed by EDF

- the 2021 amendment to the profit-sharing agreement;
- the 2021 amendment to the PEG agreement;
- the 2023 agreement on EDF's contributions to the PEG and PERCO employee savings plans;
- the Group agreement amendment relating to the terms and conditions of EDF's financing of the EDF group's supplementary pension scheme;
- the amendment modifying the agreement setting up the supplementary pension scheme within the EDF group;
- the supplemental agreement to the EDF group's collective bargaining agreement on sustainable mobility;
- the EDF's methodological agreement on the 2023 Social Dialogue plan.

3.5.3.2.2 EDF's Consultation and Coordination Body ("ICCE")

The ICCE is a forum for social dialogue, exchange and/or consultation with EDF's representative trade union organisations, led by the Group Social Dialogue Director. Its role is to discuss societal and development issues that do not fall within the remit of employee representative bodies or emerging issues, decisions or policy orientations.

For the year 2022, five face-to-face sessions were organised and twelve topics were presented, including the Nuclear Industry University, the Guide to combating sexist and sexual violence in the workplace, the 2021-2022 opinion surveys on the image of EDF and energy, the 2021 review of recognition practices and recruitment by co-option. The presentation of the results of the My EDF 2021 survey was shared with the Group's business line coordinators, who were invited for the occasion.

3.5.3.2.3 Employee Representative Bodies (ERB)

In 2022, the structure of the Employee Representative Bodies included 48 site-level Social and Economic Committees, one Central Social and Economic Committee for EDF and one France Group Committee.

3.5.3.2.4 Central Social and Economic Committee (CSEC)

The Central SEC, which was established in December 2019, is made up of 25 employee representatives and 4 trade union representatives.

The extremely high level of social developments led to 17 meetings, including 8 extraordinary meetings in 2022, covering recurring consultations such as the economic and financial situation or the Company's social policy, as well as projects such as the acquisition of GE Steam Power's nuclear business, inter-Directions real estate projects, the SSTIE balance sheets, the coming winter, the value-sharing bonus project, the progress of the New Nuclear Flamanville 3 project, the EPR2 project in France, the Jaitapur project in India, the Hinkley Point C and Sizewell C projects in the United Kingdom, and the plan to create the subsidiary Nuward SAS to run the SMR project. Finally, the CSEC was also advised about the planned Simplified Public Takeover Bid in October.

3.5.3.2.5 France Group Committee

The France Group Committee is a forum for dialogue at the Group level in France, and is made up of 28 employee representatives of the Group's subsidiaries (EDF, Dalkia, EDF Renewables, Framatome, Enedis, IZI Confort, Électricité de Strasbourg, Dalkia Electrotechnics).

On 25 April 2022, the collective agreement relating to the Group Committee for France was unanimously signed by the four representative trade unions. This agreement will improve the functioning of the Committee, enable a structured social dialogue to be maintained on industrial, social, environmental and innovation issues within the scope of the France Group Committee and ensure the same quality of social dialogue at regional level on issues of employment, mobility and work-study programmes.

In 2022, this Committee met six times, including two special sessions. The 4 ordinary meetings were used to review the Group's policies and in particular the roll-out of the Group's health and safety policy, the employment situation, mobility and training, the Group's economic and financial position, with the assistance of a chartered accountant for the elected representatives, the Group's strategic policies, news from the subsidiaries in France and a visit to Dalkia's SMURFIT site in Biganos. The two extraordinary meetings at the end of the year were devoted to briefing the France Group Committee on the Simplified Public Takeover Bid filed by the French State with the French Financial Markets Authority on 3 October and to the hearing of the French State's representative.

3.5.3.3 Social dialogue metrics

The social dialogue indicator selected at the Group level measures the existence of collective agreements in the key companies controlled. While taking into account certain particularities encountered internationally, the commitment aims to achieve social performance measured by this indicator at a rate of over 87% of employees covered in the consolidated scope.

	Annual target	2020	2021	2022
Rate of employees covered by a collective agreement (in %)*	87	87.2	87.5	88

* See section 3.6 "Methodology".

3.5.4 Transformation drivers

3.5.4.1 Integration of the commitments into the Group's strategic process and project screening

3.5.4.1.1 Screening letters and performance reviews

Commitments are implemented and set out in screening letters specifying the contribution of each of the Group's entities and subsidiaries to achieving the ordinary objective. The system for monitoring these commitments is integrated into the Group's strategic planning loop. Annual performance reviews allow entities and subsidiaries to monitor and control their actual performance.

3.5.4.1.2 Investments

Projects and investments subject to the approval of the Group's various Commitments Committees, and particularly those of the Group Executive Committee ⁽¹⁾ (CEGEC) that are the subject of an opinion of the Sustainable Development Department based on a screening grid that translates the issues of the Group's CSR commitments into operational terms. Where necessary, the Sustainable Development Department organises due diligence investigations specific to these issues.

3.5.4.2 Environmental management system (EMS)

In order to implement the environmental goals and related actions based on its CSR commitments and policy, the EDF group has set up a Group-wide environmental management mechanism using an environmental management system (EMS). This management system is based on EDF's governance bodies (see chapter 4 "Corporate governance" and section 3.5.2 "CSR governance bodies"), which

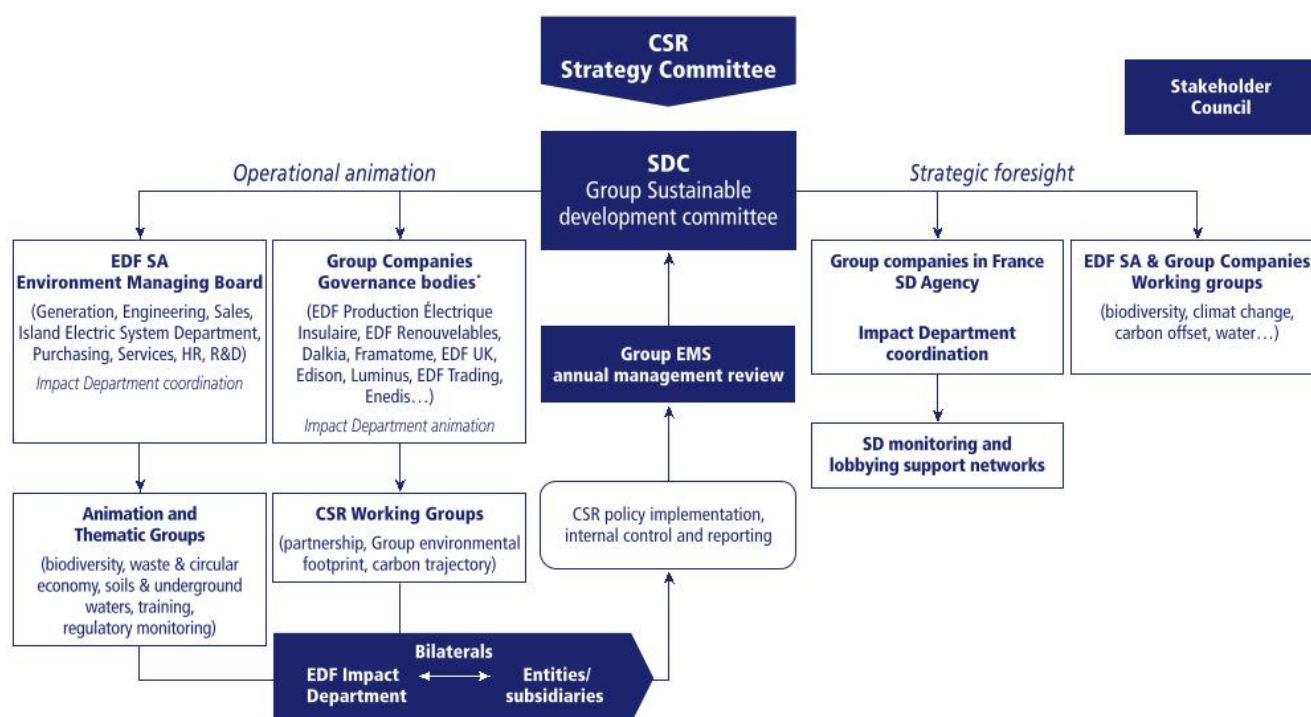
define the environmental guidelines and performance to be achieved, in line with the expectations of external and internal stakeholders.

In accordance with the requirements of the CSR policy, each of the Group's entities ⁽²⁾ has put in place an environmental management approach adapted to its own challenges, defining its organisation and the various levels of responsibility and authority associated with it in order to meet its environmental commitments and control its risks by making appropriate resources (human and financial) available.

The EMS is carried out *via* Group and business processes that allow for certifying to stakeholders that the Group:

- controls environmental risks and ensures that the EDF group complies with regulations and its commitments: each entity draws up and implements an environmental programme or action plan that takes into account the Group's commitments concerning it, its significant environmental aspects, and its regulatory obligations, considering its risks and opportunities;
- improve the efficiency of its organisations in a way that is appropriate to the issues at stake: each entity is responsible for its own internal control, internal and external audits of its EMS, and interfaces with the Group EMS;
- mandatory sustainability reporting of the environmental activities of the entities: each entity collects and communicates the required environmental information to the Impact Department.

The Impact Department is responsible for the overall coordination of the Group's EMS and the necessary interfaces with EDF and its subsidiaries through the operational coordination of environmental management, which involves the participation of each entity with significant environmental impacts at the Group level.



* Environment managing boards or equivalent

This EMS is ISO 14001 (2015 version) certified by the external certification expert AFNOR. All industrial sites are covered by an EMS, over 80% of which are certified.

In 2022, the results of the certification audits conducted by AFNOR confirm the quality of the leadership, strategies, and policies built in alignment with regional

issues and the needs and expectations of stakeholders. The auditors also underlined the effective and rigorous steering of the environmental management systems of the certified entities and subsidiaries and noted an increase in the control of environmental impacts in the business lines, with greater consideration of issues related to CO₂ and biodiversity.

(1) This undertaking concerns new projects involving investments of more than €50 million, entailing a significant impact on regions and the environment. The Group plans to lower this investment threshold to €30 million by 2030.

(2) Companies with industrial, operational (installation, operation, maintenance), engineering, distribution and marketing activities relating to goods and services.

3.5.4.3 Management of environmental risks

Environmental risks, including those associated with climate change, are fully integrated into the Group's EMS and internal control system in coordination with Group risk management. They are subject to action plans resulting from strategic priorities in the Group's CSR policy.

3.5.4.3.1 Identifying the environmental risks

The identification of environmental risks is part of the Group's overall risk management system (see chapter 2 "Risk factors and control framework"). Each company draws up its own risk map, based on the Group's methodology, and defines action plans to reduce and limit its risks. As in previous years, the most significant factors pertain to the following subjects:

Main environmental risks	
Risk factors	Activities most affected
● Climate change and GHG emissions	Power and heat generation activities from fossil fuel
● Impacts of EDF's activities on the air, water and soil and waste production	Power generation activities (nuclear, thermal, hydropower, wind and solar power)
● Protection of biodiversity and services provided by ecosystems	
● Management of water resources	

The main change concerns the observation of the effects of climate change with higher temperatures in summer and droughts increasing the pressure on both environments and some of the Group's business lines such as hydropower and nuclear activities.

At the end of 2022, the Group has eight high-threshold SEVESO sites ⁽¹⁾ and 32 low-threshold sites ⁽²⁾.

3.5.4.3.2 Managing the environmental risks

In order to control risks of industrial incidents or accidents that could harm the natural environment or public health, EDF has implemented a Group environmental management system. The system is based on an active investment policy incorporating:

- the best available technologies (BAT) for protecting the environment;
- an industrial asset decommissioning programme for assets no longer in operation, which includes decontamination operations where necessary;
- an employee training and awareness-raising programme for all stakeholders, including feedback from crises lived and drills;
- inspections and audits at generation and tertiary sites;
- a crisis management policy.

Crisis management policy

The Group crisis management policy which requires the regular testing of crisis systems through an annual programme of crisis response drills (see section 2.1.3.6 "Crisis management and business continuity"). The industrial incident at the Lubrizol Seveso site in France (non-EDF site) led to a change in the regulatory framework and generated specific internal feedback in order to identify avenues for progress in the layout and protection of storage facilities.

High-stake environmental event (EVE) ⁽³⁾

Locally, each of the Group's operational units and companies identify events that could have an environmental impact, manage emergency situations that could result from them, conduct corresponding crisis response drills, implement investigations and monitoring corrective actions, and communicate on environmental events under its responsibility.

No EVE

Actions to closely supervise and monitor production processes have made it possible to avoid high-stake environmental events with a significant impact on the environment. Certain operational events such as hydrocarbon leaks and alignment deficiencies in effluent transfers may result in litigation arising from complaints lodged by NGOs or associations and notices to comply issued by national regulatory authorities (ASN, DREAL, etc.).

In 2022, the amount of criminal fines ordered against EDF amounted to €3,000 (with the fines being suspended), for a breach of legislation relating to the protection of protected species at the Vieux Pré hydroelectric site in Pierre Percée (Meurthe-et-Moselle). Following the event, an agreement was entered into with local fishery stakeholders, providing for the financing by EDF of an annual action programme.

Reduction of chemical risks

When it is technically feasible, in order to reduce pollution risks, the Group's entities have also implemented a programme to eliminate or substitute certain chemical substances with more environmentally-friendly products. This work focuses as a priority on CMR (carcinogenic, mutagenic, or toxic for reproduction) substances or those considered subject for concern.

Substitution and disposal

Substitute products are often environmentally certified, e.g. cleaning products (regarding our subsidiaries Citelum, Électricité de Strasbourg (ÉS) and data centres). Following on from the R&D studies, substitutions are implemented, such as: environmentally acceptable oils for hydraulic production, fluids for thermal and nuclear power plant turbines in France and the United Kingdom, varnishes and paints (Industrial Division, Property Management and Citelum), and the decision by the Real Estate Department to stop using pesticides.

PCBs and PCTs

EDF, Hydro, Property Management, Enedis and ÉS are continuing with their programmes to decontaminate equipment with concentrations higher than 50 ppm for PCBs ⁽⁴⁾ and PCTs ⁽⁵⁾. These action plans continued in 2022 and are on target. For the "Electrical Equipment Laboratory" Department at the site in Les Renardières, the matter was fully handled last year. Complete disposal is set for the end of 2025 for EDF IES. Thermal and nuclear generation lines no longer have any equipment exceeding the threshold.

(1) These sites include Bellefontaine B, Pointe Jarry, East Port and Jarrie in France, Hole House in the UK, and Collalto, Cellino and San Polito in Italy.

(2) Upper and lower threshold: industrial establishments are "Seveso" classified according to their technological risk depending on the quantities and types of hazardous products they handle. There are two different thresholds which classify establishments as "Seveso low-threshold" or "Seveso high-threshold". The requirements vary significantly between these two types; they are very restrictive for the high-threshold, particularly with regard to the safety management system, informing the public and the prevention plan, etc.

(3) High-stake environmental event: an event causing serious environmental damage (areas, resources and natural environments, sites and landscapes, air quality, animal and plant species, biological diversity and balance) combined with extensive media coverage or a financial impact of more than €3 million. An event causing environmental damage and likely to affect human health falls within the scope of a high-stake environmental event for the EDF group.

(4) PCB: Polychlorobiphenyls.

(5) PCT: Polychloroterphenyls.

Forest fire prevention

Forest fire prevention is an integral part of environmental risk management.

Fire prevention in Brazil

Sinop Energia and its subcontractors have implemented a forest fire contingency plan in accordance with national forestry legislation. The contingency plan is a set of actions designed to avoid damage caused by fires and involves periodic monitoring that is mindful of the preservation of the environment, natural resources and livelihoods. This plan establishes procedures to be adopted by agencies involved that are directly or indirectly involved in the prevention, preparedness and response to emergencies that may occur during the dry season. The area covered includes the Sinop hydropower plant dam, access road, transmission line and areas undergoing vegetation restoration (particularly areas that have experienced fires before or have a high probability of occurrence). The main objective of the firefighters is to act under the command of the unit leader and the fire officer during all preventive actions. The aim is to minimise the risk of fire outbreaks: land surveillance, operation of surveillance systems, establishment of burning schedules with rural producers, environmental awareness and educating the public, etc. In addition, other fire risk prevention actions are planned (opening and/or maintenance of old roads used as firebreaks, maintenance of firebreaks within the boundaries of landholdings, clearing under transmission lines, maintenance and updating of the fire brigade, training and refresher courses for firefighters, purchase and maintenance of firefighting equipment, monitoring of firefighting actions).

Deployment of volunteer firefighters

In 2022, in view of the seriousness of the fires and their exceptional intensity, EDF and Enedis decided to release all EDF and Enedis volunteer firefighters who were not essential to the production and continuity of the power supply, so as to allow them to join their firefighting colleagues who were already on site. The EDF group has been certified as a "Volunteer Firefighter Employer" and, as such, offers volunteer firefighters the opportunity to be deployed to carry out public service rescue missions as well as training activities ⁽¹⁾.

3.5.4.4 Predictive watch networks

EDF anticipates changes to environmental and energy policies in order to take appropriate measures to guarantee regulatory compliance and manage business integration or reputational risk issues. To this end, the Impact Division coordinates a predictive watch system that mobilises and coordinates the Group's experts.

Watch networks

This process is based on the work of thematic groups known as "watch networks": water, waste and soil, air, biodiversity, industrial risks, energy efficiency, energy poverty, health and climate change, sustainable finance.

A Climate criterion, based on carbon intensity

	Weighting in the Group share of bonuses	2022 result	2022 target	2022 attainment rate
Carbon intensity	30%	50gCO ₂ /KWh	56gCO ₂ /KWh	120%

Two social criteria

The global LTIR ⁽⁴⁾ and the commitment index ⁽⁵⁾ together represent up to 30% (17.5% + 12.5%) of the bonus linked to objectives that are specific to the different structures of the Group (Divisions, companies). Since 2022, the Commitment Index has replaced the Leadership Index to strengthen the link between executive remuneration and the Group's CSR commitments.

Sustainable Development Agency

The managers of each network meet every month as a Sustainable Development Agency which monitors the transversality of approaches and ensures that the Group's challenges are taken into consideration.

Cross-functionality

Each network works closely with the Legal, Public Affairs and European Affairs Divisions.

Recognition

EDF was considered by the InfluenceMap think tank to be one of the 17 companies most actively supporting regulation in accordance with the Paris Agreements ⁽²⁾.

3.5.4.5 Controversy management process

The EDF group attaches great importance to identifying, preventing, mitigating and remedying the risks of serious human rights, environmental and health and safety violations in all its activities and projects. Accordingly, in order to identify and anticipate the risks of ESG (Environment, Social and Governance) controversies, EDF has set up a dual system for managing controversies:

Prevention

Pursuant to its risk anticipation approach, and thanks to monitoring tools ⁽³⁾, EDF identifies the risks of ESG controversies in France and internationally to which its operating activities and projects may contribute. EDF classifies these risks in consultation with the relevant entities and countries and decides on appropriate measures and/or communication;

Engagement and responsiveness

When reacting to the occurrence of risks, EDF responds systematically and transparently to rating agencies that ask for explanations on issues they have deemed controversial. This process is applied in particular when screening projects eligible for EDF's green emissions financing.

3.5.4.6 CSR and remuneration policy for group executives

In line with EDF's desire to promote integrated performance based on both finance and CSR, the annual variable compensation of the Group's senior executives is also based on financial and CSR criteria. The CSR criteria, which can represent up to 15% of the variable compensation of executives, consist of a climate criterion and two social criteria.

In addition, the long-term remuneration (3-year plan) of certain executives is also based, on top of the financial criteria, on CSR criteria, namely: rating obtained from the CDP agency (climate and water) as well as the percentage of women on the Management Committees and female executives at the Group level. These two criteria account for 20% of this variable remuneration.

(1) See the press release dated 11 August 2022. As a reminder, a framework agreement was signed in 2017 between EDF and the French Ministry of the Interior to support company employees volunteering as firefighters.

(2) How companies really impact progress on climate, 2019, influencemap.org/climate-lobbying.

(3) Such as RepRisk.

(4) See section 3.3.1.3.3 "Occupational accidents".

(5) See the introduction to section 3.3 "Well-being and solidarity (MyEDF)".

3.5.4.7 Partnerships

Partnerships are an important commitment for the Group, which evidence its mobilisation to promote the energy transition in local regions. These partnerships

are in line with EDF's *raison d'être*, built through dialogue with stakeholders, and in line with the four major Corporate Social Responsibility issues.

Key CSR issues	Complete references in the NFPS	Example
Carbon neutrality and the climate	Section 3.1	Iddri
Preserving the planet's resources	Section 3.2	LPO
Well-being and solidarity	Section 3.3	Ashoka
Responsible development	Section 3.4	UNCPIE

3.5.4.8 Responsible communication

For over 20 years, EDF has developed a responsible, educational and local communication, focusing on its public service values and based on authenticity and respect. Last year, the EDF group ranked first in the list of the most credible companies in terms of communication, in the utilities/energy category⁽¹⁾.

3.5.4.8.1 Responsible communication focused on the four key issues derived from EDF's *raison d'être*

In its communications, the Group expresses itself in a manner consistent with the four key issues of Corporate Social Responsibility, based on its *raison d'être*.

Carbon neutrality and the climate International Weather and Climate Forum

The International Weather and Climate Forum is an annual international event dedicated to sharing knowledge on atmospheric and climate sciences, of which EDF has been a partner since 2007. At the 2022 forum, during the "Carbon neutrality: how do we get there?" conference, the Group stressed once again the importance of expediting the transition of energy systems so as to become carbon neutral.

Preserving the planet's resources Business for Nature

Alongside 330 business stakeholders, EDF was a signatory to Business for Nature's COP15 Business Statement for Mandatory Assessment and Disclosure, which aims to encourage governments to make the assessment and disclosure of impacts and dependencies on nature mandatory for all major companies.

Well-being and solidarity M2022 Walk for Water in support of the village of Loma Verde in Colombia

Since 2019, the Foundation has been supporting the initiative of the Vision du Monde association, which organises the "Global 6KM for water" in 30 countries, a solidarity walk designed to promote access to drinking water. In addition to the symbolism of the 6km walk, participants' contributions help finance the construction of water access facilities. In 2022, 2,802 individuals from the EDF group and the Second Chance School Network took part. The Walk for Water raised the targeted €53,000. This benefits the village of Loma Verde (Cordoba) in

Colombia, where 6,000 villagers are totally dependent on rainwater, collected in an artisanal and untreated way, resulting in serious health problems.

Responsible development EDF launches the "Engagés" podcast

EDF launched "Engagés", a podcast which anyone can access on streaming platforms. Each episode addresses the Group's CSR issues by giving a voice to stakeholders, be they employees or outside partners.

3.5.4.8.2 Responsible communication visible to the general public EDF awarded for the Transparency of its CSR communications

In 2022, the EDF group was the winner of the 13th edition of the Transparency Awards presented by Labrador France⁽²⁾, succeeding Schneider Electric in the ESG Transparency Award category. This award, which is considered a gold standard in the market, has been rewarding since 2009 the transparency and quality of the ESG information published by companies, by promoting the five pillars of transparency: accessibility, accuracy, comparability, availability and clarity.

Publication of EDF's Impact Score

In 2022, EDF was the first major French company to publish its Impact Score. The Group achieved 68/100 (the average score of the companies that have already revealed their Impact Score is 55/100). This benchmark developed by Mouvement Impact France provides a comprehensive mapping of the Group's impact in 5 areas: impact strategy, social impact, ecological externalities, power sharing, value sharing.

EDF signatory of the FAIRe programme

EDF is a signatory of the FAIRe programme, which is led by the Union des marques association. This programme allows companies to start engaging in responsible communication and allows Union des marques to evaluate their performance in this area each year. In 2021, when the last evaluation was carried out, EDF earned a score of 2.67/3, up slightly from 2020, above the general average of its members.

"Energy sobriety" campaign

As part of its energy sobriety campaign, EDF has designed a communication campaign aimed at the general public that promotes action through "useful gestures". EDF is encouraging everyone to take action to save energy by reducing, switching off or postponing their energy consumption.

(1) Epoka awards, 29 January 2021 (most up-to-date): player.vimeo.com/video/502701862?title=0&byline=0&portrait=0.

(2) Founded in 1992, Labrador is a service agency dedicated to the transparency of corporate information, which contributes to the development of a reference framework shared by all transparency stakeholders. It operates in France and the United States.

3.6 Methodology

3.6.1 Principles

With regard to environmental, social and societal indicators, the scope covered by the non-financial reporting ⁽¹⁾ is based on the Group's financial consolidation scope. It includes EDF as well as exclusively controlled subsidiaries (full consolidation at 100% of the value of the indicators) in accordance with financial standards (IAS-IFRS).

The contributions of entities accounted for using the equity method are excluded from sustainability reporting, with the exception of the indicator on renewable capacities in net consolidation.

The entities acquired during the fiscal year are included in the scope of consolidation in the year following the date of acquisition for environmental and societal data, and in the year of acquisition for social data if the acquisition was made more than six months from the reporting date. Data on both workforce and production capacities is presented at 31 December of the relevant year.

The indicators are reported on the basis of:

- the scope of consolidation established by the Financial Department;

- the aforementioned rules in terms of variation of scope;
- the criteria linked to the relevance of the subsidiaries' activities in terms of environmental and societal impact:
 - for the environmental and societal data, only data from industrial activities that are significant in terms of their environmental impact are reported, therefore the data for some subsidiaries included in the financial scope may not appear in the report due to their activity or their small size with respect to the environmental challenges,
 - concerning social data, the selection criterion is the entity's workforce (greater than 50).

The environmental and societal data in the Statement of non-financial performance are based on methodological sheets. This is the Group's standard for sustainability reporting in force in 2022. If data are missing, particularly during the last days of the year, estimates are made on the basis of the best information available on that date.

3.6.2 2022 Scope

In 2022, Izivia, Hynamics, Sowee, Energy2Market, Citegestion (entity still remaining after changes in Citelum), as well as EDF Andes Spa and Lingbao shall progressively integrate the scope of the social indicators, with priority given to the Employment indicators for 2022.

List of main entities included in the consolidation scope of the social, societal and environmental data as at 31/12/2022	Scope of environmental indicators	Scope of social indicators
Électricité de France, Enedis, EDF PEI, Électricité de Strasbourg, EDF Renewables, EDF ENR, Dalkia, Framatome, Cyclife Holding, EDF Energy, Edison, Luminus, EDF Norte Fluminense, MECO, China Holding	X	X
EDF Trading	X*	X
Citegestion (a development of Citelum company), Iziconfort (formerly Cham), IZI solutions, Izi Solutions Renov, G2S, Izivia, Energy2market, Sowee, Hynamics, EDF Andes Spa, Lingbao		X

* Only the subsidiary EDF Trading North America and its own subsidiary EES – EDF Energy Services (USA).

3.6.3 Details relating to the CSR information

3.6.3.1 Details on the materiality matrix of the EDF group

A materiality matrix cross-referencing the priority CSR issues of both stakeholders and the EDF group was published in 2018 on the basis of the methodological principles contained in the AA1000 standard on stakeholder involvement in identifying, understanding and responding to sustainable development issues and concerns, as well as on the basis of the GRI Standard 101, which provides guidelines in relation to quality and content of reporting in order to meet stakeholder expectations. The methodology ⁽²⁾ was implemented through four key stages:

- the first stage was identifying the issues through the mapping of EDF's existing and emerging sustainable development issues, in the form of interviews with international experts (Key Opinion Leaders), members of the Executive Committee of the Group and its subsidiaries, as well as benchmarks and appropriate bibliographical data. The issues, reflecting both risks and opportunities for all the EDF group's activities, were selected according to four criteria: link with strategy, governance, performance; ability to substantially influence value creation; potential loss of opportunity if the issue was not followed; importance in the eyes of stakeholders or as part of an existing;
- the second stage aimed to assess and evaluate the materiality of the identified issues. Two processes were simultaneously carried out, with internal and external stakeholders. Stakeholders were consulted on the significance of the

issue for the EDF group, as well as on the Group's perceived performance on the issue. Each stakeholder defined the notion of "significance" according to its position in the Company or its relationship with the EDF group, which could integrate all or part of the criteria of the GRI 101 Standard (economic, environmental, social impacts, stakeholder interest, future challenges, etc.);

- criticality and significance for EDF was assessed by two committees (the non-financial publication committee, bringing together the management of the Trade, Purchasing, Finance and HR Divisions and a second committee bringing together experts and managers from the Strategy, Regulation, Risk, Innovation and CAP 2030 Divisions). Four representatives of trade union organisations (CGT, CFDT, FO, CFE) and four members of the Executive Committee were also consulted at this stage in the form of interviews. This evaluation also made it possible to screen the estimated level of performance (from very good to not taken into account);
- criticality and importance for external stakeholders was assessed by thirteen of the Group's stakeholders interviewed through open and closed questions aimed at gathering qualitative information on the issues and identifying possible issues not identified during the mapping stage. These stakeholders were chosen in line with EDF group's stakeholder mapping, representing public authorities, financial players, customers, suppliers and civil society. These thirteen stakeholders each selected ten issues considered to be the most significant by 2030 from the list of issues formulated in phase 1, or adding new ones if necessary and justified. This evaluation also made it possible to screen the estimated level of performance (from very good to not taken into account);

(1) Within the meaning of the non-financial performance statement as defined by Order No. 2017-1180 of 19 July 2017 on the publication of non-financial information.

(2) The Group was supported by the firm Utopies.

- the third stage of screening of the issues consisted in questioning the consolidated results through an initial materiality matrix summarising on the abscissa the importance of the CSR issues as seen by the EDF group and on the ordinate axis the importance of these issues for the Group's stakeholders. This phase of dialogue and testing was carried out during a day's work with the EDF group's Sustainable Development Council ⁽¹⁾, both on the substance of the results obtained (the issues and their ranking) and on the form to be given to them (type of materiality matrix). 35 issues were ultimately selected and prioritised;
- the final stage of collaborative development consisted in a managerial validation process involving the members of the Executive Committee of the Sustainable Development Council, then the members of the Executive Committee of the Innovation and Corporate Responsibility Strategy Department (DIREs) of the EDF

group. This process was concluded with the validation by the Innovation, Corporate Social Responsibility and Strategy Director (DIREs).

In 2019, EDF's external stakeholder panel, the Sustainable Development Council, held a new session on the subject of the Group's materiality analysis. It proposed, in line with the best practices in the market, to summarise the number of issues included in the matrix, reducing them from 35 to 18 issues. In 2020, and following the adoption of the Group's *raison d'être*, the formalisation of the Group's sustainability issues was again examined by the Sustainable Development Council, particularly with regard to the sustainability risks in the Group's risk mapping, which was reduced from 18 to 16 priority issues. The EDF group's dual materiality matrix has remained unchanged since then.

3.6.3.2 Further details on CSR challenges

16 CSR issues	Group appropriation of such CSR issues
Ambitious carbon trajectory	For its aim of becoming carbon neutral by 2050, its Group carbon trajectory targets are split into medium-term (2030) and short-term (2023) targets. These targets, based on a low-carbon nuclear power generation, are coupled with a renewable energy development target, a coal phase-out commitment and a high level of involvement in the TCFD climate governance scheme advocated at the international level.
Carbon offsetting solutions	For the EDF group, use of carbon offsetting is the final stage of a process to achieve neutrality. Carbon offsetting must not under any circumstances take the place of a strategy designed to drastically reduce the Group's emissions, whether direct or indirect. In addition to achieving carbon neutrality by 2050, carbon offsetting can enable a contribution to the transition towards a low-carbon society and meet the expectations of EDF group stakeholders.
Adapting to climate change	EDF group has undertaken to update its climate change adaptation strategy in 2020, adopting a holistic method covering not only physical risks, but also risks relating to transition. This national strategy goes hand in hand with adaptation plans developed by each of the Group's entities, to be updated at least once every five years.
Developing electricity use and energy services	The development of uses of electricity is a key tool to achieve a carbon-free economy, provided that the electricity is mainly carbon-free. The Group actively contributes to this goal through solutions tailored to different markets (residential customers, businesses, and local authorities) and also develops different innovative cross-disciplinary solutions.
Biodiversity	The challenges of carbon neutrality go hand in hand with an approach that nurtures biodiversity longstanding commitment of the Group. In 2020, the Group renewed its commitment through two voluntary schemes supported by the French government: " <i>Entreprises engagées pour la nature</i> " (Companies committed to nature), under the aegis of the French Biodiversity Office (OFB); and " <i>Act4nature International</i> ", under the aegis of the association <i>Entreprises pour l'environnement</i> (Epe) (Companies for the Environment).
Responsible land management	The Group wants to act responsibly with regard to the land it holds or uses. As such, the Group's business lines and subsidiaries shall need to give the utmost importance to the energy density of projects, to prevent pollution risks, to reduce soil sealing and limit soil artificialisation, and to promote innovative solutions for multi-purpose land use.
Integrated and sustainable water management	As a manager and user of water on its sites, the Group promotes responsible and integrated management of this resource, both in terms of quantity and quality, and shares water within the regions where it operates.
Radioactive and conventional waste, and circular economy	Optimising the use of the natural resources consumed by the Group's value chain is an essential component of the Group's corporate responsibility. Within this framework, the Group is committed to promoting a circular economy approach, avoiding the production of conventional waste and promoting the reuse, recycling and recovery of products/materials throughout the value chain, eliminating or substituting substances that pose a risk to the environment and people, and assuming its responsibilities with regard to radioactive waste.
Safety, health and security for all	The Group is committed to protecting the health and safety of all individuals. In this respect, it undertakes, through its business lines and subsidiaries, to apply the highest standards in terms of nuclear and hydraulic safety, health and safety policy and environmental health.
Ethics, compliance and human rights	The EDF group promotes a culture of integrity and applies a zero tolerance policy towards fraud and corruption. Ethical conduct in accordance with the law is the absolute rule for all Group employees, at all levels of the organisation, and without exception. The Group is committed to respecting and ensuring respect for human rights in all its activities and wherever it operates.
Equality, diversity and inclusion	The EDF group is committed to developing concrete action to promote equality in the workplace and occupational and social integration for disabled people, combating sexism, violence and all forms of discrimination and developing support for parents, to maintain and perfect a high level of social dialogue and to secure the skills required for the Group's business lines over the long term, by integrating all aspects of sustainable development into its operations and projects and giving employees an opportunity to develop their employability throughout their careers.
Energy poverty and social innovation	EDF confirms and renews its commitment to its most vulnerable customers, by increasing the understanding of this diverse, complex reality, implementing support solutions based on public solidarity schemes and specific initiatives and developing various forms of social innovation and sponsorship.
Dialogue and consultation with stakeholders	The Group is striving to organise a global initiative of dialogue and consultation which is transparent and open for each new project exceeding an amount of €50 million, and which involves local and indigenous communities throughout the lifecycle of those projects.
Responsible regional development	The EDF group is committed to contributing to the development of the regions where it operates, by creating local jobs, purchasing locally and creating economic value and providing a tax revenue. The EDF group is also committed to developing low-carbon sources of energy and access to energy in developing countries.
Development of industrial sectors	The Group is committed to contributing to the development of the industrial sectors needed for the energy transition (marine energies, offshore wind power, floatovoltaics, batteries, hydrogen, etc.) or their revitalisation (nuclear) by redeploying and developing the necessary skills and setting up support, retraining and protection schemes for employees for a just transition.
A data responsible company	The Group is committed to the security of information systems and tangible and intangible assets, both in terms of the technical expertise and systems required and the conduct of users, addressed through all types of awareness-raising initiatives. The Group is committed to a responsible, sober and digital transformation, reducing the carbon footprint of both the Group and its customers. The Group also strives to improve the accessibility of information (open data), with a view to innovation and inclusion.

(1) Sustainable Development Council, see section 3.6.3.1.

3.6.3.3 Details on the relationship between the CSR issues arising from the materiality matrix and the major sustainability risks arising from the Group's major risk mapping ⁽¹⁾

The relationship between the CSR issues derived from the materiality matrix and the sustainability risks derived from the Group's major risk mapping is set out in the introduction to Chapter 3 in the summary of the EDF group's 16 CSR commitments.

3.6.3.4 Details on performance indicators (KPI)

Commitment to a bold carbon strategy

KPI: Carbon intensity: specific CO₂ emissions from electrical generation and heat

The indicator is the ratio of the direct CO₂ emissions of electricity and heat generating plants to their related generation. The scope covers the Group. The 2022 value for this indicator is subject to reasonable assurance check by Deloitte & Associés (✓). The indicator's scope covers the Group.

Commitment relating to carbon offsetting solutions

KPI: Deployment rate of the framework guidelines on carbon offsetting solutions

In order to raise the awareness of the entities to the notion of offsetting and to provide them with a framework for their offsetting initiatives and purchases of carbon credits, EDF's Impact Department finalised a policy application guide on 18 May 2021. The calculation of the indicator is based on the design and deployment of this guide in the entities, and its implementation within the relevant entities. The indicator's scope covers the Group.

Commitment relating to climate change adaptation

KPI: Deployment rate of new climate change adaptation plans within concerned entities

The calculation of the indicator is linked to the deployment stages of the new climate change adaptation plans. In line with the requirements of the TCFD and the challenge of adapting the Group's facilities to the risks associated with climate change, EDF reviews its adaptation plans every five years. The indicator is calculated on the basis of the progress of the implementation of the new plans between 2021 and 2022 within the relevant entities. The indicator's scope covers the Group.

Commitment relating to the development of electricity uses and energy services

KPI: Avoided CO₂ emissions thanks to sales of innovative goods and services

In 2022, EDF calculated the emissions saved through the following activities carried out by EDF, Dalkia, Luminus, EDF UK, and Edison: development of renewable energies in heating networks; energy efficiency; photovoltaic production (installations sold to customers and self-consumption, excluding EDF installations injecting their production into the network); electric mobility; and residential heat pumps. The indicator corresponds to the gap in emissions from the product or service sold and emissions in a baseline scenario established for each product or service. This indicator is calculated by including direct and indirect emissions from the life cycle analysis on an annual basis.

Biodiversity commitment

KPI: Achievement rate of "Act4nature international" commitments

EDF has introduced this indicator in 2020, replacing the previous indicator relating to the ecological knowledge of land. This new indicator reflects the Group's commitments in the Act4nature international system which is a Group-wide initiative.

The objectives are labelled in the external "Act4nature international" scheme, supported by the "Business for Nature" initiative. This indicator is calculated in the form of an achievement rate for the actions undertaken from 2020 to 2022 and extended in 2023. These actions relate to taking biodiversity issues into account in the biomass policy, CO₂ emissions, R&D, internal governance, Green Bonds, awareness-raising and training, etc. The indicator's scope covers the Group.

Responsible land management commitment

KPI: Implementation rate of innovative solutions encouraging multifunctional land use

The introduction of innovative solutions for multi-use of land is based on the commissioning of agrivoltaic projects and/or floating PV projects. The commissioning of the Group's flagship projects by 2026 at the latest shall signal full deployment. The indicator's scope covers the Group.

Integrated and sustainable water management commitment

KPI: Water intensity: water consumed/electricity generated by fleet (l/KWh)

The indicator is the ratio of water consumed to the electrical generation of the Group's fleet. Water consumption for heat generation and other Group activities is not taken into account to calculate the indicator. The indicator's scope covers the Group. The 2022 value for this indicator is subject to reasonable assurance check by Deloitte & Associés (✓).

Commitment relating to radioactive and conventional waste and the circular economy

KPI: Annual rate of conventional waste directed towards a waste recovery industry

The denominator of the indicator corresponds to the total quantity of conventional hazardous and non-hazardous waste disposed of over a one-year period. The tonnages of conventional hazardous and non-hazardous waste corresponding to the reporting period take into account waste: associated with normal activity (normal operating production) or exceptional activity (site, works, construction, dismantling, etc.); generated over a previous period, stored on site since then due to the absence of a suitable treatment channel or pending massification before disposal, but disposed of over the period in question (destocking of waste generated over a previous period). The result of the performance indicator corresponds to the proportion of conventional hazardous and non-hazardous waste directed to a recovery channel compared to the sum of conventional hazardous and non-hazardous waste disposed of. The indicator's scope covers the Group.

Safety, health and security for all commitment

KPI: Global LTIR (employees and providers)

The Group's overall Lost Time Incident Rate (LTIR) represents the number of work-related accidents (employees and service providers, regardless of the level of subcontracting, including co-contracting and temporary employees) having resulted in one day or more of absence over a 12-month period per million hours worked. The hours worked used for calculating the frequency rate are actual hours corresponding to the hours of "exposure to risks" according to CNAM (French national insurance body). The indicator's scope covers the Group.

As regards temporary employees and service providers, the accidents are declared by the temporary employment agency and by the service provider's employer in accordance with applicable local labour regulations. These include accidents that occurred in the course of work performed on behalf of EDF group on its facilities,

(1) See Chapter 2 of this URD.

equipment, sites, networks, etc. Activities conducted by service providers on their own sites, outside EDF group's facilities, are not taken into account.

For a "contracting" company, subcontracting involves entrusting a company, known as the "service provider", with carrying out one or more projects involving studies, design, development, manufacturing, implementation or maintenance. These include any interventions carried out by subcontractors under a contract on EDF group's facilities, equipment (sites, networks, etc.) within the scope of subcontracting as set out in section 3.4.2.3.5 "Responsible subcontracting". These include the number of workplace accidents declared in accordance with applicable local labour regulations, the circumstances of which demonstrate that they are work-related. Dizzy spells and accidents during team-building activities, and accidents in daily life occurring in the workplace are not taken into account.

Ethics, compliance and human rights commitment

KPI: Annual rate of response to whistleblowers within the one-month time limit, informing them of the admissibility of their report and the next steps of the procedure

The target for this KPI is 100% each year. The timeframe should not exceed one month from receipt of the alert. The key performance indicator selected concerns the reports made on the BKMS® System platform. This platform guarantees data encryption and storage on a confidential external server, not connected to the EDF group's information systems. This indicator serves to illustrate on an ongoing basis the importance that EDF attaches to taking alerts seriously and the resources implemented to process alerts made by whistleblowers via the Group-level whistleblower system.

Commitment to equality, diversity and inclusion

KPI: Gender balance index, percentage of women in the Management Committees of the Group's entities

Management Committees are decision-making bodies with part or all of the following features:

- the Chairman of the Committee is an executive manager or senior manager;
- the Chairman of the Committee has a delegation of authority over capital expenditure related to the Company's objects;
- the Chairman of the Committee has disciplinary authority over all or some of the entity's employees;
- the number of members of the Committee represents 1.5-2% of the entity's total staff;
- the Committee meets at least once a month.

Members of more than one Executive Committee within one subsidiary, or members of both a subsidiary's Executive Committee and an EDF group Executive Committee are only counted once. This indicator is calculated by finding the ratio of the number of women on Executive Committees to the number of people on the Executive Committees. The indicator's scope covers the Group. All female members of the Management Committee are counted, regardless of their status (statutory or non-statutory employees, permanent employment contract, fixed-term employment contract, AMADOE (staff placed at the disposal of an outside organisation), secondment, etc.). The figures are as at the end of November and not as at 31 December. The reporting therefore covers the period from November N-1 to November N.

Commitment relating to energy insecurity and social innovation

KPI: Advisory actions carried out with customers within the framework of the Energy Support Service

Energy Support is a telephone system using customer support staff and solidarity advisors. This service is aimed at any customer experiencing difficulties, particularly payment difficulties. After analysing the situation, the customer support staff member proposes the most appropriate solutions: personalised advice on payment methods, energy savings and, if necessary, thermal renovation measures. The initial collection is carried out directly by the customer support staff and solidarity advisors and recorded in the Sales IS tools provided for this purpose. The KPI records

(1) equator-principles.com

the number of advisory actions carried out with customers within the framework of the Energy Assistance system. The indicator's scope covers EDF and is calculated in calendar years.

Commitment to dialogue and consultation with stakeholders

KPI: Annual rate of projects for which a dialogue and consultation procedure is engaged

This is the number of projects over €50 million for which an appropriate dialogue and consultation process has been undertaken in line with the so-called "Equator" ⁽¹⁾ Principles in relation to the number of projects in the scoping phase or in the commitment phase at the Group Executive Committee Commitments Committee. The indicator is obtained on the basis of the CSR screening grid used to evaluate projects that have passed through the Group Executive Committee Commitments Committee. The indicator's scope covers the Group and is calculated on a calendar year basis.

Responsible territorial development commitment

KPI: Annual rate of procurement from SMEs in France

The indicator is the ratio, expressed as a percentage, of the annual volume of procurement by EDF and Enedis from SMEs located in France, to the annual volume of total procurement in France by EDF and Enedis. SMEs are identified based on INSEE (French National Institute of Statistics & Economic Studies) categories, stipulating that an SME (Small- and Medium-Sized Enterprise) has fewer than 250 staff and annual turnover not exceeding €50 million. Suppliers are ranked in the SME category by a service provider that EDF tasks with analysing the supplier list, checking that these SMEs are not controlled above 25% by a Big Business or by an MMC. The scope covers France, where the SMEs' locations are certified based on their French business number (SIREN). The indicator's scope covers EDF and Enedis and is calculated on a calendar year basis.

Development of industrial sectors commitment

KPI: Achievement rate of supporting actions backed by EDF encouraging relocation and maintaining nuclear industry skills ("France Relance" Programme)

The indicator is the ratio, expressed as a percentage, between the number of actions carried out (completed) and the total number of actions programmed among the EDF actions supported by the France Relance programme. This action plan includes three main areas: contribution to a support fund for SMEs/intermediate-sized enterprises in the nuclear industry, skills development and reindustrialisation.

This indicator's scope covers France.

Commitment relating to the responsible digital development

KPI: Achievement rate of EDF commitments towards French Responsible Digitalization Institute (INR)

The indicator is the ratio, expressed as a percentage, between the number of actions carried out (completed) and the total number of actions to which EDF has committed as part of its Digital Responsibility approach. This action plan stems from the commitments made by EDF as part of its Digital Responsibility certification by the French Responsible Digitalization Institute (INR). These commitments shall also be subject to an audit by Bureau Veritas. It covers several areas, including communication, the workplace, skills, procurement policy, responsible design and data centres.

The indicator's scope covers EDF.

3.6.3.5 Further details on social, environmental and societal data from the Statement of non-financial performance

The environmental and societal data in the Statement of non-financial performance are based on methodological sheets. This is the Group's standard for sustainability reporting in force in 2022. All of the indicators relating to consumption and emissions are produced based on the processes for electricity and heat generation and marketing, and the other processes related to these activities. If data are missing, particularly during the last days of the year, estimates are made on the basis of the best information available on that date.

Dalkia's environmental indicators in relation to energy are consolidated over a sliding year, from 1 December N-1 to 30 November N. Other indicators are reported over year N.

Details of the Group's greenhouse gas report

The EDF group's GHG report covers the 3 scopes of the GHG protocol ⁽¹⁾, including emissions of the six Kyoto protocol greenhouse gases (CO₂, CH₄, N₂O, HFC, PFC, SF₆) expressed in CO₂ equivalent (CO₂e) for all significant items listed by the GHG Protocol, ranging from fuel production to employee office life.

- scope 1 covers the direct emissions generated by our assets: CO₂, CH₄ and N₂O emissions from power and heat generation plants, consumption of fossil fuels for heating, fuel consumption of the fleet of vehicles and machinery, fugitive emissions from hydropower plant reservoirs, fugitive emissions of SF₆ and refrigerating agents;
- scope 2 covers indirect emissions linked to losses in the electricity networks of our electricity distribution companies and those linked to the purchase of energy for our own needs: electricity consumption of tertiary buildings and data centres, consumption of heating and chilled water networks for our own use;
- scope 3, which comprises 15 categories (GHG Protocol), covers other indirect emissions generated by our suppliers (purchases of goods and services, upstream of fuels including nuclear, leased assets, downstream freight of by-products), and by our customers (upstream and combustion of gas purchased for resale to end customers, production of electricity and heat purchased for resale to end customers) or at our facilities (depreciation of emissions linked to the manufacture of fixed assets, emissions from non-consolidated investments, upstream and losses of electricity, heat and cold consumption for own use, waste management, travels of employees, etc.) ⁽²⁾.

The EDF group's GHG report scope includes the following businesses and their subsidiaries, based in France and more than thirty other countries: EDF, EDF PEI, Dalkia, Edison, Enedis, Électricité de Strasbourg, EDF Trading North America, EDF Energy Services, EDF in the UK, Framatome, EDF Renewables, Norte Fluminense, MECO, Luminus, EDF China. The main companies not controlled by the EDF group and included in scope 3 of the Group GHG report are as follows: Shandong Zhonghua, Datang San Men Xia, Fuzhou, Sloe, Nam Theun, Sinop, Enercal, Électricité de Mayotte, Generadora Metropolitana, Elpedison and Ibiritermo. The emissions of these companies are included on the basis of the Group's share of ownership of the Company. The emissions of companies not taken into account in the 2022 EDF group GHG report were considered to be non-significant as they account for less than 5% of the emissions covered.

Due to the complexity of gathering information in January, certain categories of GHG Protocol items are estimated based on the GHG report for the year N-1 (2021) and updated in the current year for the following fiscal year. The total emissions of these estimated items only account for 0.8% of the emissions of the 2022 GHG report.

Details on the EDF group direct greenhouse gas emissions ⁽³⁾ (scope 1)

The EDF group scope 1 emissions (CO₂ equivalent) are comprised of direct emissions of CO₂, N₂O, CH₄, SF₆ and other minor emissions, estimated based on the full GHG report for year N-1 (2021). The Global Warming Potential (GWP) coefficients were updated based on the reference from the latest IPCC report (see 5th IPCC report: www.ecoinvent.org/database). They are 30 for CH₄, 23,500 for SF₆ and 265 for N₂O. The scope covers the Group. The 2022 value for this indicator is subject to reasonable assurance check by Deloitte & Associés (√).

NB: With regard to the quantity of electricity and heat generated from renewable energies, in the specific case of Dalkia, and for reasons of technical collection within the given timeframe, the quantity of electricity is measured, while the quantity of heat generated from renewable energies is estimated on the basis of reference yields for the consumption of renewable fuels.

Details on the net installed renewable capacity (in GWe)

The net renewable electricity capacities correspond to the electricity generation capacities of the entities in which the Group has a significant stake, and whose capacities are consolidated in proportion to the percentage of ownership.

Details on the rate of regional monographs in the framework of the CEMA Action Plan (ADAPT)

This is an indicator to measure the progress of the ADAPT programme CEMA plan (see section 3.1.2.5). The target is to have completed the monographs of the following 12 metropolitan regions by 2025: Auvergne-Rhône-Alpes, Bourgogne-Franche-Comté, Bretagne, Centre-Val de Loire, Grand Est, Hauts-de-France, Île-de-France, Normandie, Nouvelle-Aquitaine, Occitanie, Pays de la Loire, Provence-Alpes-Côte d'Azur.

Details on the number of smart meters installed

The indicator takes account of the total number of smart meters installed (set up) on 31 December of the fiscal year. This total includes all meters installed since the start of the smart meter deployment programme. The Group's only entities with this activity are Enedis, IES, EDF in the UK and the International Division. The scope covers the Group.

Details on the EDF group's Electric Vehicles rate in the fleet of light vehicles

The indicator is the ratio between the number of electric vehicles (according to the low carbon criteria of the EV100 initiative) ⁽⁴⁾ and the total number of vehicles in the EDF group's fleet of registered light vehicles at 31 December of each year (owned or long-term leased). It should be noted that although this does not have a significant impact on the Group's figures, the number of light vehicles in the fleet of certain companies is not updated on an annual basis. In the future, emergency response vehicles shall be removed from the total number of EDF group vehicles (as their electrification could cause safety problems, for example in the case of a vehicle without the necessary autonomy or charge to carry out its mission at a given moment). The scope covers the Group.

(1) The GHG Protocol is the carbon compatibility method most widely recognised internationally. Launched in 1998 by the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), it was developed in partnership with businesses, NGOs and governments. It provides a set of resources, tools and data to calculate carbon footprints.

(2) The results of the Group's greenhouse gas balance in 2022 are presented in section 3.1.1.2.3.

(3) Direct carbon emissions, excluding life cycle analysis of generation plants and fuel.

(4) 100% electric battery-powered vehicle, rechargeable hybrid vehicle with an electrical range of at least 50km, vehicle equipped with a range extender with an electrical range of 50km, hydrogen vehicle.

Further details on the indicators relating to water

Indicators on cooling water include water withdrawn and water returned to rivers, the sea and water tables. For nuclear power electricity plants located on coastlines and for thermal power plants, the amounts of cooling water withdrawn and water returned are calculated on the basis of the operating time and nominal debit of pumps.

This indicator does not include data for the MECO company, as water consumption is negligible (open cooling circuit). Furthermore, these indicators are not collected for the Edison operating centres managed by Fenice.

Further details on air emissions

Air emissions from thermal power plants of the EDF group are measured or calculated on the basis of analyses of the fuels or based on standard emissions factors. The Group's SF₆ emissions are calculated, as a matter of priority, on the basis of a mass balance or, to a lesser extent, using an estimation method approved by Executive Management at the entity in question (for example, application of a leakage rate). Emissions from certain power plants are not material for the Group and as such are not reported. This is the case for dust emissions from CCGT power plants (excluding EDF), N₂O and SF₆ emissions from MECO's CCGT power plant, and emissions from Dalkia Barkantine's power plant in the United Kingdom. The indicator's scope covers the Group.

Further details on radioactive waste

EDF

Indicators pertaining to "short-lived Very Low Level radioactive Waste (VLLW) from operations and from decommissioning" take into account the actual volume of the short-lived VLLW directly evacuated from the Industrial Gathering, Storing, and Stockpiling Centre (*Centre industriel de regroupement, d'entreposage et de stockage* – CIREs) from the production sites:

Indicators pertaining to "Short Lived Low and Intermediate Level radioactive Waste (short lived LLW and ILW) from activity and from decommissioning" take into account the actual volume of the short-lived LLW and ILW waste directly evacuated to the Aube Storage Centre (CSA) from the production sites.

In each case, those volume correspond:

- to the volume of waste produced in the year for operating;
- to the volume of waste shipped in the year for sites being decommissioned.

Since 2016, the reduction in the volume contributed by treatment before storage (by ANDRA) has applied to short-lived VLLW and to packages sent by Centrac, where applicable. It includes the reduction in volume resulting from treatment before storage (the case of super-compacted waste).

For the indicator "Long-Lived High- and Intermediate-Level solid radioactive Waste" (HLLW-LL), the packaging of the waste is taken into account in the calculation.

Given the technical constraints linked to processing operations, the packages are produced approximately ten years after the fuel has effectively generated waste. The indicator is thus an estimate that relies on the long existence of current practices of packaging of Long-Lived waste that projects the current packaging ratio into the near future (number of packages effectively created following the processing of one tonne of fuel). This ratio essentially depends on the mixtures used to optimise the operations:

- for waste generated directly by spent fuel: it is produced by factors from the National Inventory of Radioactive Materials and Waste carried out by the National Agency for Radioactive Waste Management (ANDRA);
- for waste not generated directly from fuel (control rods, etc.) and for which an average lifespan of 10 years is assumed: it is produced on the basis of feedback.

Framatome

Radioactive waste data from Framatome in France is similar to EDF's dismantling waste and so can be consolidated. Internationally, Class A waste (USA and Belgium), comparable to very low level waste (Germany), are not consolidated. Radioactive waste is shipped and handled in accordance with domestic regulations in force in each country.

EDF in the UK

The data relating to the indicator "Intermediate-Level radioactive Waste" of nuclear activities of EDF in the UK, are founded on the inventory of radioactive waste produced during the year, established by the Nuclear Decommissioning Authority. This is an estimate of the annual volume of waste that will be considered and classified as Intermediate-Level radioactive Waste at the end-of-life of the nuclear generation sites. These estimates include packaging necessary to allow the transport of wastes off site. All of the Intermediate-Level radioactive Waste is temporarily stored at the nuclear generation sites while waiting for a national decision on their final processing. An update of the national inventory was performed in 2019 and the inventory was published on the official site of the "UK Radioactive Waste Inventory". "Low Level radioactive Waste" includes desiccants that are sent for processing in the form of Intermediate-Level Waste in compliance with applicable regulations.

Further details on solid radioactive waste from operations

The indicator concerns solid waste from the active nuclear generating fleet. In France, the indicator covers long-lived high- and intermediate-level waste. In the UK, the indicator covers low-level waste (only category of radioactive waste transported off generation sites). The scope covers the Group where radioactive waste-related activities concern: EDF and EDF in the UK.

Details on the number of significant level 2 events on the INES scale

The indicator concerns the number of level-2 major events on the INES (International Nuclear Event Scale). The indicator's scope covers the Group.

Number of fatal accidents connected to business-specific risks (employees and providers)

The indicator takes account of the number of fatal accidents linked to business risks occurring in the year. The indicator's scope covers the Group.

Fatal accidents involving employees linked to business risks correspond to fatal accidents of employees at work, employees of the Company, including work-study students and apprentices. Fatal malaises are excluded from this scope. Employee transit accidents while on work-related business are taken into account, excluding those occurring in transit between home and work.

Fatal accidents involving service providers linked to business risks include fatal accidents involving service providers that occurred during the course of work performed on behalf of the Company regardless of the level of subcontracting. Fatal malaises are excluded from this scope. Traffic accidents on duty and commuting accidents between home and the usual place of work are not included in the published figure taken into account.

Percentage of employees who have benefited from a skills development action

The indicator is calculated by finding the ratio of the number of employees having benefited from a skills development action to the actual workforce at the end of the period. Skills development actions include training courses, hours spent in school by people on professionalisation contracts and professionalisation actions. The employees counted are those (including professionalisation contracts) who are present or not in the workforce at the end of the period and who have participated in at least one skills development action during the year.

Professionalisation actions are intended to transform theoretical skills and knowledge taught mainly in training into practical skills, anchored by their implementation in work situations. They have been formally integrated into the definition of the indicator for 2021. The trainings for which supporting documentation is not received on the date of closure of the reporting and professionalisation actions which are not registered with a supporting document are not taken into account. All professionalisation initiatives are recorded in the MyHR Group tool, which will make it easier to monitor them. The indicator's scope covers the Group.

Further details on the workforce and transfers

Since 2011, the population considered in data collection is all employees who have a non-suspended employment contract with one of the Group's companies. For entities having left the consolidation scope during the year in question:

- the indicators calculated in aggregate since the start of the year take into account those entities for the period during which they belonged to the scope of consolidation;
- indicators measured at 31 December represent the situation at the end of the year and do not take into account the entities which have left the scope of consolidation.

The workforce includes employees shared between EDF and ENGIE. An employee working 50% for EDF is counted for 0.5 in the published workforce.

The "Other arrivals" and "Other departures" indicators are therefore not included in hirings, resignations or dismissals. They include in particular:

- movements between companies of the Group;
- movements of workers in the electricity and gas industry;
- movements of certain categories of employees, in particular those with rotating shifts, doctors and personnel made available by outside entities.

The 2022 value for this indicator are subject to reasonable assurance check by Deloitte & Associés (√).

Further details regarding the number of hours worked

- Number of hours worked by employees: the value to take into consideration is the number of hours worked and the "time an employee is exposed to risk under the orders of an employer". An additional hour counts as an hour worked regardless of the manner or level of remuneration.
- Number of hours worked by service providers: the number of hours worked by service providers can be calculated in various ways depending on the type of contract or the nature of the service performed. When there is no way to formally ascertain the number of hours worked, the hours can be counted using time sheets from services provider employers, through time tracking tools or estimated based on a predetermined fixed hourly rate. Activities conducted by service providers on their own sites, outside EDF group's facilities, are not taken into account. The hours worked during services involving the transport of equipment or merchandise are not taken into account.

Further details on calculating absenteeism

At the Group level, the "average number of absences per employee and per year" is the sum of absences due to sickness, transit accidents and domestic accidents, counted in days worked in proportion to time worked by employees and absences due to work-related accidents, counted in calendar days.

In its calculation of absenteeism, EDF includes absences for the following reasons: absences due to sickness, work and travel related injuries as well as domestic accident. Legal absences due to maternity (excluding pathologies) are not taken into account. Absences related to company and union activities, pre-retirement leave and maternity leave are not included. The number of hours worked used in the calculation of the absenteeism rate is the number of hours theoretically worked.

Absences due to part-time work on health grounds are taken into account to the tune of 50% of the contractual working time.

Further details on counting occupational diseases:

Since 2020, the number of occupational illnesses is published at Group level according to the definition shared by all the Group's subsidiaries, *i.e.* the number of employees present on the 31 December having declared an occupational illness during the fiscal year that has not been rejected by CPAM.

Further details on the indicators on employees with disabilities

In countries in which regulations do not impose any mandatory declaration of the number of employees with disabilities, the reported data are provided on the basis of voluntary statements of employees.

Further details of expenditures for skills development actions

Skills development expenditure corresponds to all expenditure incurred for the training and professionalisation of employees (whether or not present at the workforce on 31/12) between 01/01 and 31/12 (based on the completion dates of the actions concerned).

Details on the number of customer visits on digital consumption monitoring platforms

This indicator counts the number of domestic customer visits on digital consumption monitoring platforms (e-équilibre, EDF & moi). The scope covers EDF (excluding overseas department and Corsica) given that the deployment of digital platforms in those areas has not been finalised. The indicator's scope covers EDF.

Details on the rate of employees covered by a collective bargaining agreement

The social dialogue indicator measures the existence of collective agreements in the key companies controlled. Collective bargaining agreements guarantee the reality of negotiations with employee representatives with a view to defining the status of employees and may be national, regional, or specific to a sector, an organisation or a site, in line with ILO principles. There are two types of collective bargaining agreements: collective bargaining agreements for divisions are written agreements on working conditions with an employer, a group of employers or one or more professional organisations; collective bargaining agreements for employees are agreements involving one or more employees representative organisations or, in the absence of such bodies, the representatives officially elected by the employees and authorised by the employees to represent them, in accordance with national laws and regulations in force.

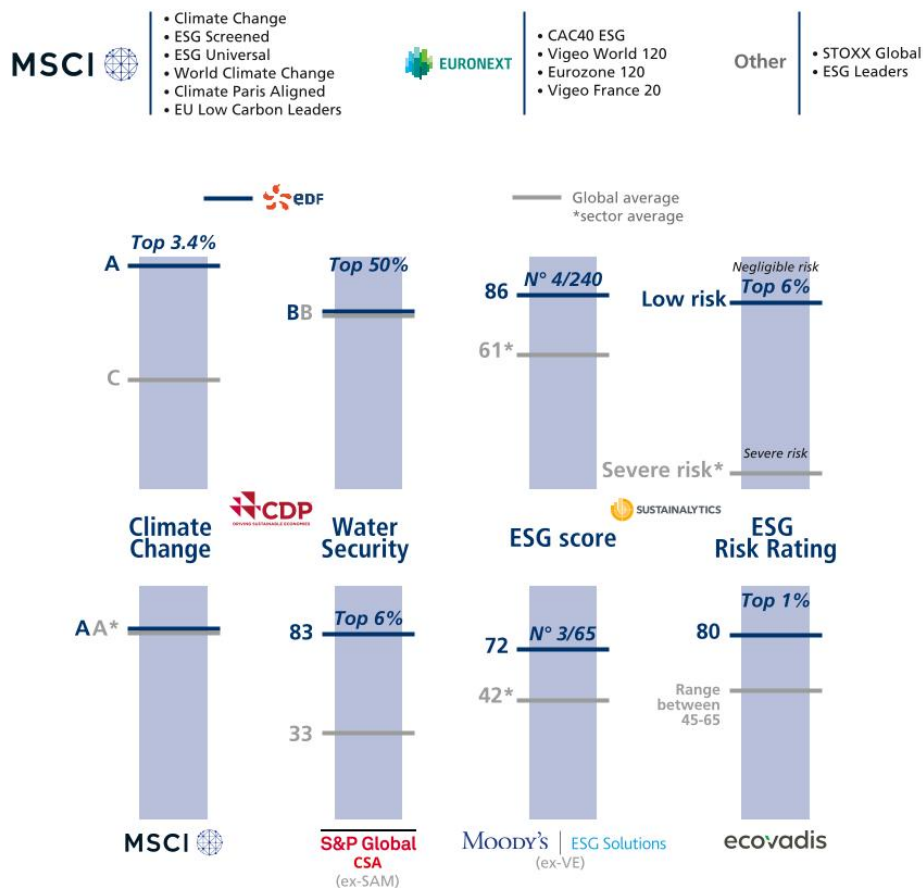
Through the channel of HR managers, each division or subsidiary reports once a year on the number of employees benefiting from a collective agreement. The indicator is the ratio between these employees and the actual workforce at 31 December. The indicator's scope covers the Group.

3.7 Non-financial rating

Evaluations by the main specialised rating agencies and managers of ethical funds indicate the Group's CSR performance, in its benchmark sector. Assessments and rewards underscore external recognition of the Group's sustainable development performance. In 2022, EDF maintained its excellent standing with non-financial rating agencies.

RANKING MAINTAINED IN MAIN NON-FINANCIAL INDICES

(non-exhaustive list)
















MAIN INTERNATIONAL COALITIONS OF EDF



3.8 Appendices and Independent Third-Party report

3.8.1 Contribution to UN Sustainable Development Goals

















As part of its work, the WBCSD ⁽¹⁾ has identified priority Sustainable Development Objectives to which companies in the electricity sector must contribute in order to maximise their positive impacts or minimise their negative impacts ⁽²⁾. The following table summarises EDF's contribution in relation to this analytical grid, and assesses its contribution in relation to the commitments, policies and actions undertaken (with cross-references to the relevant sections of the Statement of non-financial performance).

Sustainable development objectives		Priority contribution using WBCSD criteria for the electric utilities sector		Details of commitments, policies and actions carried out by EDF (§DPEF)	EDF's contribution to each of the Objectives
		Maximising positive impact	Minimising negative impact		
	Gender equality	X		Equality, diversity and inclusion § 3.3.3	
	Sustainable water management for all		X	Integrated and sustainable water management § 3.2.3; Responsible regional development § 3.4.2 Integrating the maximisation of positive impacts	
	Affordable and clean energy	X	X	Group carbon trajectory § 3.1.1 ; Carbon Offsetting Solutions § 3.1.1.6 ; Adapting to climate change § 3.1.2 ; Developing sobriety in electricity uses and innovative energy services § 3.1.4 ; Integrated and sustainable water management § 3.2.3 ; Radioactive and conventional waste, and circular economy § 3.2.4 ; Energy poverty and social innovation § 3.3.4 ; Responsible regional development § 3.4.2	
	Decent work and economic growth	X		Developing sobriety in electricity uses and innovative energy services § 3.1.4 ; Responsible regional development § 3.4.2	
	Industry, Innovation and Infrastructure	X		Integrated and sustainable water management § 3.2.3; Radioactive and conventional waste, and circular economy § 3.2.4; Responsible regional development § 3.4.2; Responsible development of industrial sectors § 3.4.3	
	Sustainable cities and communities	X		Developing sobriety in electricity uses and innovative energy services § 3.1.4 ; Responsible regional development § 3.4.2	
	Responsible Production and Consumption		X	EDF's Nature issues, commitments and governance § 3.2.1; Biodiversity and responsible land management § 3.2.2; Integrated and sustainable water management § 3.2.3; Radioactive and conventional waste, and circular economy § 3.2.4; Safety, health and security for all § 3.3.1; Ethics, compliance and human rights § 3.3.2; Dialogue and consultation with stakeholders § 3.4.1; Responsible regional development § 3.4.2; Sustainable and inclusive digitalization § 3.4.4 Integrating the maximization of positive impacts	
	Climate action	X	X	Group carbon trajectory § 3.1.1 ; Carbon Offsetting Solutions § 3.1.1.6 ; Adapting to climate change § 3.1.2 ; Developing sobriety in electricity uses and innovative energy services § 3.1.4 ; Integrated and sustainable water management § 3.2.3 ; Sustainable and inclusive digitalization § 3.4.4	
	Life on land		X	EDF's Nature issues, commitments and governance § 3.2.1 ; Biodiversity and responsible land management § 3.2.2 ; Radioactive and conventional waste, and circular economy § 3.2.4 Integrating the maximization of positive impacts	

(1) The World Business Council for Sustainable Development (WBCSD) is a coalition of international companies created in 1995 and united by a ordinary commitment to sustainable development.

(2) WBCSD, *Sector Transformation: An SDG Roadmap for Electric Utilities*, 2020.

The following table assesses the EDF group's contribution to the other UN Sustainable Development goals:

Sustainable development Objectives	EDF's contribution to each of the Objectives	Details of commitments, policies and actions carried out by EDF (§ DPEF)
 Eradication of poverty		Equality, diversity and inclusion § 3.3.3 ; Energy insecurity and social innovation § 3.3.4
 Food security and sustainable farming		Integrated and sustainable water management § 3.2.3
 Health and well-being		Security, health and safety for all § 3.3.1
 Quality education		EDF's Nature issues, commitments and governance § 3.2.1 ; Ethics, compliance and human rights § 3.3.2 ; Responsible development of industrial sectors § 3.4.3
 Reduced inequalities		Ethics, compliance and human rights § 3.3.2 ; Responsible regional development § 3.4.2
 Marine aquatic life		EDF's Nature issues, commitments and governance § 3.2.1 ; Integrated and sustainable water management § 3.2.3
 Peace, justice and strong institutions		Ethics, compliance and human rights § 3.3.2 ; Dialogue and consultation with stakeholders § 3.4.1
 Partnerships to meet objectives		Responsible regional development § 3.4.2

3.8.2 Accountability with regard to the recommendations of the High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (UN HLEG)

This table summarises the alignment of the EDF group's commitments with regard to UN HLEG recommendations

Recommendation	Description	EDF group's level of alignment
1. Net zero announcement	Businesses that commit to achieving net zero must have this commitment validated by a third-party organisation (e.g., SBTi, TPI, ISO, PCAF, PACTA). This commitment must cover 3 emissions scopes, for all the business's activities and all geographical zones, and must target net zero no later than 2050.	Net zero commitment still requiring validation by a third-party organisation
2. Net zero objectives	Businesses' net zero commitments must cover the full carbon trajectory, and not only the long-term objective. The trajectory must be aligned with the IEA NZE scenario or with the NGFS, OECM or IPCC 1.5°C scenarios with limited or zero overshoot. Intermediate emissions reduction objectives for 2025, 2030 and 2035 must be set (in absolute emissions and not only in intensity, halving emissions between 2020 and 2030) as well as specific objectives for methane when relevant.	1.5°C alignment still requiring validation by a third-party organisation
3. Carbon offsetting	Businesses are "strongly encouraged" to use carbon credits but these cannot be used to achieve intermediate emissions reduction objectives. Only high environmental and societal integrity carbon credits based on carbon sinks can be used to neutralise a business's residual emissions to achieve net zero. Emissions relating to carbon sinks and land use must be accounted for separately.	Aligned
4. Transition plan	Corporate transition plans must contain the following: emissions reduction objectives, GHG emissions assessment verification method, emissions reduction action plan, specific action plan to reduce emissions relating to services and products sold by the business, supplier engagement plan, carbon capture, governance, management profit-sharing, investments (based on the taxonomy), R&D expenditure, stranded assets, public positions on the climate, just transition, and protection of ecosystems. Transition plans must be updated every 5 years and progress reported annually.	Aligned but more in-depth measures required in accordance with the CSRD
5. Exiting fossil fuels and accelerating renewables	Businesses must commit to exiting coal for generating electricity by 2030 for the OECD and by 2040 for the rest of the world; Use of other fossil fuels must be progressively reduced in line with the IEA NZE scenario. This transition must "avoid" being based on the sale of assets. Businesses must set themselves specific renewable energy supply objectives.	Aligned
6. Lobbying and advocacy	Businesses must publish the list of their equity holdings in professional associations as well as their positions on climate policies to achieve 1.5°C and on carbon pricing.	Aligned

Recommendation	Description	EDF group's level of alignment
7. Biodiversity	Businesses must target zero deforestation by 2025 (including <i>via</i> suppliers) and zero land take from remaining natural ecosystems by 2030. Businesses must invest in protecting and restoring ecosystems beyond their own value chain, including by purchasing high-integrity carbon credits. Businesses must anticipate the implementation of the TFND.	Aligned but more in-depth measures required in accordance with the TNFD.
8. Transparency and accountability	Businesses must annually report their GHG emissions assessment verified by a third-party organisation and their progress towards their net zero objectives, in a format compatible with the future UNFCCC platform. Businesses are required to conduct external assessments also covering their climate governance, KPIs, and internal control processes.	Aligned
9. Just transition	Businesses with activities in developing countries must demonstrate how they contribute to the economic development of these regions, their resilience, access to energy, combating inequality, etc.	Aligned (Just transition plan)
10. Regulation	Not applicable to businesses	Non-applicable

3.8.3 Compliance with best international standards

Global Compact ⁽¹⁾



The United Nations Global Compact brings together, under the aegis of the UN, companies and NGOs committed to 10 guiding principles articulated in four areas: human rights, labour rights, the environment and the fight against corruption. EDF has been committed to the United Nations Global Compact since 2001 and has published a Communication on Progress (CoP) at the "Advanced" level every year since 2012.

The Group also complies with the Declaration of the Rights of the Child, the Convention on the Elimination of All Forms of Discrimination Against Women, the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, and the United Nations Convention against Corruption. EDF promotes international human rights law by recognising the ILO's fundamental conventions, which guarantee fundamental labour principles and rights, and the fight against discrimination.

Global reporting Initiative (GRI) ⁽²⁾



The GRI is an independent international non-profit organisation created in 1997 by the non-profit CERES (Coalition for Environmentally Responsible Economies) and the UNEP (United Nations Environment Programme). GRI helps companies and governments around the world to understand and communicate their impact on critical sustainable development issues such as climate change, human rights, governance and social well-being. This enables concrete actions to be taken to create social, environmental and economic benefits for all.

EDF has a long history of integrating GRI Standards as they evolve. A table comparing the Group's indicators and those proposed by the GRI is available on the edf.fr website and in the ESG Pack.

Sustainability Accounting Standards Board (SASB) ⁽³⁾



Created in 2011, the SASB (Sustainability Accounting Standards Board) is an independent, non-profit standard-setting body that develops and maintains reporting standards enabling companies around the world to identify, manage and communicate non-financial and financial information of material importance to investors. The SASB standards are evidence-based, developed with broad market participation and designed to be beneficial to companies and useful to investors. The SASB has established standards specific to 77 industry sectors identified in its Sustainable Industry Classification System[®] (SICS[®]).

EDF is the first European energy company to act as an advisor within the SASB organisation ⁽⁴⁾. As such, EDF has been proactively involved since 2020 in the process of revising this standard to enable its use worldwide. EDF was one of the main contributors to the SASB "Globalization Project" ⁽⁵⁾, which remains to this day, for certain subjects, specific to the American market, particularly in terms of the environment or regulation.

For items for which the standard is identical (e.g. GHG protocol) or close to the standards used in France and Europe, EDF's 2022 Statement of Non-Financial Performance covers most of the reporting topics required by the SASB for the "Electric Utilities & Power generators" sector:

	NFPS Sections
Greenhouse Gas Emission & Energy Resources Planning	Section 3.1.1
Air Quality	Section 3.3.1.5
Water Management	Section 3.2.3
Coal Ash Management	Section 3.2.4.3.2
Energy Affordability	Sections 1.4.2.1.2, 1.4.2.1.3, 1.4.2.2.1.1 and section 3.3.4
End use efficiency and Demand	Section 3.1.4.3
Nuclear Safety and Emergency management	Section 3.3.1.1
Grid Resiliency	Section 3.1.4.2.1

(1) globalcompact-france.org

(2) globalreporting.org

(3) sasb.org

(4) sasb.org/standard-setting-process/standards-advisory-group/#if

(5) sasb.org/standard-setting-process/active-projects/standards-internationalization-advancement/

3.8.4 Details on the taxonomy

3.8.4.1 Regulatory framework

On 4 June 2021, the European Commission, pursuant to regulation 2020/852 of 18 June 2020 (known as "Taxonomy regulation"), adopted the Delegated Act to determine the conditions under which economic activities can be considered as contributing substantially to climate objectives. On 6 July 2021, the Delegated Act known as "Article 8" relating to the content and presentation of the information to be communicated was adopted. Finally, on 9 March 2022 the Complementary Delegated Act covering certain activities in the nuclear and gas sectors was adopted.

With a view to contributing to the achievement of carbon neutrality by 2050, the objective of this regulation is to determine which economic activities are considered environmentally sustainable in order to direct capital flows towards them, according to transparent criteria.

In accordance with the Taxonomy regulation and the procedures defined by the "Article 8" Delegated Act, three indicators based on the Group's consolidated financial statements are presented below: the proportion of turnover, of capital expenditure ("CAPEX") and of operating expenditure ("OPEX") associated with economic activities considered, on the one hand, as eligible and, on the other hand, as aligned with the technical criteria of Taxonomy, as detailed in section 3.8.4.2 below.

For the second year, EDF published the proportion of its activities aligned with, eligible for and ineligible for the Taxonomy for the three aforementioned indicators, broken down by activity and by objective.

Due to the sometimes insufficiently precise nature of the European regulatory framework for the classification of activities, the Group has had to adopt assumptions that are described in this document whenever they are material.

3.8.4.2 Definition of eligibility and alignment

The Taxonomy regulation creates a framework and principles for assessing the contribution of economic activities to the following six environmental objectives:

Climate change mitigation	Climate change adaptation	Sustainable use and protection of water and marine resources	Transition to a circular economy	Pollution prevention and control	Protection and restoration of biodiversity and ecosystem
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In accordance with the Delegated Act adopted on 4 June 2021, an activity is considered **eligible** if it is included in the list of activities in Annexes I and II or in the Complementary Delegated Act of 9 March 2022.

An activity can contribute to the climate goals:

- based on its own **performance** (for example, in the case of the EDF group: the production of electricity from renewable sources); or
- when it directly enables the exercise of other sustainable activities. It is then qualified as an **enabling** activity (for example, in the case of the EDF group: the electricity transmission activity); or
- if it supports the transition to a climate-neutral economy and there is no technologically and economically feasible low-carbon alternative. It is then qualified as **transitional**. This is the case for certain activities in the nuclear and gas sectors specified in the Complementary Delegated Act of 9 March 2022.

An eligible activity will be considered **"aligned" with the Taxonomy** if:

- in addition, it complies with the technical criteria of contributing substantially to one of the six environmental objectives (e.g. in relation to emission thresholds);
- it meets the so-called "Do No Significant Harm" (DNSH) criteria, i.e. it does not significantly harm the other environmental objectives; and
- it is carried out in compliance with the minimum safeguards relating to human rights or fundamental labour rights.

3.8.4.3 Analysis of EDF group activities with regard to texts in force

3.8.4.3.1 Eligibility of Group activities for the Taxonomy

Through its low-carbon power generation activity and as a supplier of energy services, the Group mainly contributes to the climate change mitigation objective. As the proportion of its activities contributing exclusively to the climate change adaptation objective is marginal and to avoid any double counting, the Group's Taxonomy ratios are therefore presented only with regard to climate change mitigation.

3.8.4.3.1 EDF group activities eligible for the taxonomy

Under the previous definition, the following Group activities contribute substantially to mitigating climate change:

- **Nuclear energy related activities conducted in countries within the European Union** (NACE codes M72, M72.1, D35.11 and F42.22) which cover:

- > safe construction and operation of new nuclear reactors to produce electricity or heat, including to produce hydrogen, using best available technologies (4.27):

Projects authorised no later than 2045 by the competent authorities for the construction and safe operation of best available technologies nuclear reactors (covers the production of electricity, heat and hydrogen, as well as the upgrading of these reactors). For the Group, these activities mainly concern the Flamanville 3 power plant, as well as studies conducted in connection with SMR and EPR2 projects in France,

- > producing electricity from nuclear energy at existing facilities (4.28):

Projects authorised no later than 2040 by the competent authorities to extend the operating life of existing reactors (4.28). This last activity in France was analysed by taking into account operation and maintenance activities (regulatory controls, maintenance programmes, etc.), modifications, replacements of large components, and operations that comply with the generic ASN notices received (900MWe series) or to be received by 2040 (1,300MWe and 1,450MWe series) and with the technical requirements that allow the French nuclear power plants to continue operating beyond 40 years. All activities across the nuclear fleet in operation in France are eligible under activity 4.28.

Therefore, pursuant to regulation, eligible activities selected by the Group concern only activities carried out in European Union countries (excluding the United Kingdom) and countries that have chosen to make nuclear energy an energy of the future (excluding Belgium).

The exclusion of the United Kingdom from the European taxonomy on nuclear activities affects substantially the taxonomy ratios of the Group, which has particularly made major investments in connection with the HPC project.

- **Electricity distribution** (NACE codes D35.12 and D35.13): construction and operation of interconnected electricity distribution and transmission networks (4.9).
- **Electricity generation from renewable energy sources excluding hydro** (NACE codes D35.11 and F42.22), which include:
 - > electricity generation using solar photovoltaic technology (4.1);
 - > electricity generation from onshore and offshore wind power (4.3);
 - > electricity storage (4.10);
 - > maintenance and repair of renewable energy technologies (7.6).
- **Electricity generation from hydropower** (NACE codes D35.11 et F42.22): construction and operation of power generation facilities using hydroelectric power plants (reservoir power plants, run-of-river power plants, and pumped storage power stations – 4.5; 4.10).
- **District heating/cooling distribution, cogeneration of heat/cold and power from bioenergy** (4.15; 4.20).
- **Energy efficiency and performance services, research and development** that correspond to:
 - > installation, maintenance and repair of energy efficiency equipment (7.3), and professional services related to the energy performance of buildings (9.3);
 - > research, development and innovation expenditures to reduce or avoid emissions (9.1).
- **Fossil gas related activities** (NACE codes D35.11, F422.22), which cover:
 - > electricity generation from fossil gaseous fuels (4.29);
 - > high-efficiency co-generation of heat/cold and power from fossil gaseous fuels (4.30).

This table summarises nuclear energy and fossil gas related activities. It is applicable for every Taxonomy indicator (see section 3.8.4.4):

Nuclear energy related activities		
1	The undertaking carries out, funds or has exposures to research, development, demonstration and deployment of innovative electricity generation facilities that produce energy from nuclear processes with minimal waste from the fuel cycle. (4.26)	NO
2	The undertaking carries out, funds or has exposures to construction and safe operation of new nuclear installations to produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production, as well as their safety upgrades, using best available technologies. (4.27)	YES
3	The undertaking carries out, funds or has exposures to safe operation of existing nuclear installations that produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production from nuclear energy, as well as their safety upgrades. (4.28)	YES
Fossil gas related activities		
4	The undertaking carries out, funds or has exposures to construction or operation of electricity generation facilities that produce electricity using fossil gaseous fuels. (4.29)	YES
5	The undertaking carries out, funds or has exposures to construction, refurbishment, and operation of combined heat/cool and power generation facilities using fossil gaseous fuels. (4.30)	YES
6	The undertaking carries out, funds or has exposures to construction, refurbishment and operation of heat generation facilities that produce heat/cool using fossil gaseous fuels. (4.31)	NO

3.8.4.3.1.2 Group activities not explicitly mentioned in the regulation

Some of the Group's activities are not explicitly mentioned in the regulation but, after analysis, have been considered as contributing substantially to mitigating climate change because they can be linked to eligible activities.

Therefore, **sale of electricity from purchase obligations**: this legislative and regulatory mechanism in force in France obliges EDF to purchase electricity produced by certain 100% renewable energy sources and to resell it to customers on the same basis as EDF's own production.

On the other hand, with regard to the aggregation activity: this activity consists of selling the electricity purchased from (renewable) electricity producers or from players with load-shedding capacities. Even though aggregation plays a key role in the development of renewable energy, and therefore in the mitigation of climate change, it was not selected as eligible because the core of the business model is similar to marketing, which is excluded from the Taxonomy.

3.8.4.3.1.3 Activities not eligible under current legislation

The activities below are those for which the Group has not identified a direct contribution to one or more objectives of the European Taxonomy and are not covered by regulation:

- marketing of electricity not produced by EDF or whose source of production is not eligible;
- marketing of gas;
- purchases and sales on wholesale markets in connection with electricity and gas optimisation transactions;
- generating electricity from nuclear energy outside the European Union and nuclear services.

Please note that **turnover_T**, defined by the Taxonomy is the total amount of turnover within the scope of the IFRS 15 standard "Revenue from Contracts with Customers".

For the Group, this definition therefore excludes "Trading" activity margin from the Taxonomy turnover, despite this is disclosed in turnover in the financial statements.

3.8.4.3.2 Analysis of the alignment

3.8.4.3.2.1 Substantial contribution criteria

In order to assess the alignment of its activities, each Group entity has verified compliance with the criteria for substantial contribution to climate change mitigation.

- **Nuclear activities**: the alignment of nuclear activities covered by the Taxonomy is specified in section 3.8.4.3.2.4.
- **Fossil gas related activities**: to date, due to technical criteria particularly in terms of maximum emissions level (gCO₂/KWh), all the Group's gas-fired energy production activities are eligible, but not aligned.
- **Electricity distribution**: all the technical criteria are met and this activity is aligned.
- **Power generation from renewable energies (other than hydropower)**: all the technical criteria are met and this activity is aligned.
- **Eligible heating or cooling networks and cogeneration facilities**: those using more than 50% renewable energy, 50% waste heat, 75% heat from co-generation, or 50% a combination of these types of energy or heat were considered aligned.
- **Electricity generation from hydropower**: only a tiny fraction of the activities does not meet the technical criteria for substantial contribution.

- **Eligible energy efficiency and performance, research and development services:** they were considered as aligned with the Taxonomy.

3.8.4.3.2.2 DNSH criteria analysis

When analysing the **DNSH criteria**, EDF relies on its **Environmental Management System (EMS)**, its Corporate Social Responsibility (CSR) policy, as well as its Ethics Charter that commits its entities to a precautionary approach, to acting responsibly and to developing technologies which respect the environment. Management of identified risks, including those associated with climate change, is fully integrated into the Group's global risk management process and internal control system. The most significant risks are covered in risk control plans in conjunction with the CSR.

Pursuant to the policy, the EDF group undertakes to evaluate the impacts of climate change on future and existing activities; adapt existing installations to make them less sensitive to climatic conditions and more resilient to extreme weather events; incorporate climate change scenarios in the design of new installations, adapt the Group's solutions, internal operations, and expertise to encompass climate change and take into account the eco-systemic dimension of climate change.

All EDF group entities are required to take account of climate risks in mapping their risks, including both physical risks and so called transition risks.

The Group's EMS covers the environmental objectives of the Taxonomy as described in the paragraphs below.

As a manager of reservoirs and major user of water resources, the EDF group is committed to **integrated and responsible water management**, both in terms of quantity and quality. The Group also ensures that water is shared within the regions in which it operates by fully taking into account the local water situation (multi-use under climate constraints).

With regard to **waste management and the circular economy**, optimising the use of the natural resources consumed by the Group's value chain is an essential component of the Group's corporate responsibility (see section 3.2.4). The Group's action therefore focuses on three priorities: eco-social-design, the functional economy and industrial ecology.

The Group also takes full responsibility for radioactive waste and, in France, uses procedures to decommission closed nuclear power plants that are completely safe and protect the environment. It optimises and manages the operating and decommissioning radioactive waste for which it is responsible and develops treatment processes to reduce the volume of stored waste.

With regard to **the prevention and control of pollution**, when it is technically feasible, in order to reduce the pollution risks, the Group's entities have also implemented a programme to eliminate or substitute certain chemical substances with more environmentally-friendly products. This work focuses as a priority on CMR (carcinogenic, mutagenic, or reprotoxic) substances or those considered subject for concern. The application of BAT (best available techniques) in facilities' pollution management processes ensures optimised management of the waste produced.

Nuclear safety is the Group's top priority and a major, ongoing concern for the Group throughout the entire cycle, from procurement of fuel to decommissioning and waste management. It is based on technical and organisational specifications aimed at preventing a nuclear accident, and in the hypothetical case of such an accident, at limiting the consequences thereof.

Protection and restoration of biodiversity and ecosystem is also a major challenge for the EDF group. The action taken by the Group is structured around the following priorities: reducing the contribution of its operations to major biodiversity pressures, recreating spaces and conditions promoting biodiversity, improving and sharing knowledge, strengthening governance and raising awareness of biodiversity-related issues.

Furthermore, the Group made commitment towards biodiversity through two voluntary schemes: *Entreprises engagées pour la nature* and *Act4nature international*.

The DNSH criteria were analysed for each activity.

3.8.4.3.2.3 Compliance with minimum social guarantees

The Group's compliance with the minimum guarantees criterion relies on robust processes regarding protection of human rights (see section 3.3.2.3 "Human rights"), combatting corruption (see section 3.3.2.2 "Anti-corruption and other compliance programmes"), taxation (see section 3.4.2.2.1 "Group tax policy"), and combating anti-competitive practices (see section 3.3.2.2.5 "Preventing breaches of competition law").

These commitments are also published in its "Human rights and fundamental freedoms, Health and safety, Environment, and Business ethics: the EDF group's commitments and requirements" ⁽¹⁾ standards. It is based on principles of action that apply to all of the Group's activities, and which aim, as part of an approach to progress, to carry out in particular:

- initial and ongoing screening and management of environmental and societal impacts and risks, including those caused by operations as part of its business relationships;
- organisation, throughout the world, of transparent dialogue and consultations for each new project. EDF strives to implement its commitments in the early stages of its investment processes, including in its business relationships by requiring its suppliers and subcontractors to comply with CSR requirements for operations related to their joint business relationships, with a specific focus on the rights of local and indigenous communities and vulnerable groups;
- systems for collecting and processing reports of wrongdoing, that are accessible and notified to anyone who could be impacted by the Company's operations, guaranteeing the confidentiality of the reports and protecting internal whistleblowers (employees and external staff). These reports are evaluated and, if necessary, remedial measures are taken;
- in the event that a group entity is warned, sanctioned or convicted by authorities in the field of human rights, taxation, combating corruption or anti-competitive practices, the Group reviews the relevant processes and puts in place remedial actions to ensure continued compliance with the minimum guarantees.

This public document applies to EDF and the companies it controls ⁽²⁾. As far as Enedis is concerned, the subsidiary has drawn up its own vigilance plan to meet the requirements of French Act 2017-399 of 27 March 2017.

3.8.4.3.2.4 Analysis of nuclear activity

Following the publication in the Official Journal of the EU on 15 July 2022 of the Complementary Delegated Act relating to nuclear activities, the Group analysed technical and environmental alignment criteria specific to its nuclear activities in France, both for the existing nuclear fleet and for projects to construct and operate new facilities (Flamanville 3 power plant; studies ongoing for the EPR 2 and SMR).

As a reminder, in terms of eligibility, the Group had already concluded that these activities were eligible based on the draft Complementary Delegated Act adopted by the European Commission on 2 February 2022 and published proforma Taxonomy indicators on this basis in its non-financial performance statement on 31 December 2021.

In summary, evidence of meeting the technical criteria is particularly based on:

- the transposition into French law of the Euratom directives and compliance with the Euratom treaty and European Union legislation on environmental law (criteria 1.a and 1.b);
- the legal and regulatory framework set up in France to secure the financing of long-term expenses relating to decommissioning of basic nuclear facilities as well as long-term storage of radioactive waste, *via* the obligation for operators of nuclear facilities to create funds (dedicated assets); the entire system is overseen by the administrative authorities (criteria 1.c, 1.d and 4);
- the existence of operational permanent storage facilities in France for all very low-level and short-lived low- and intermediate-level radioactive waste from nuclear facilities in operation or being decommissioned, as well as the French national radioactive substance and waste management plan (PNGMDR - *Plan national de gestion des matières et déchets radioactifs*) governing the commissioning in France of high-level radioactive waste storage facilities⁽³⁾ (criteria 1.e, 1.f and 7 for activity 4.27, criteria 1.e, 1.f and 7 for activity 4.28);

(1) Framework available on EDF website <https://www.edf.fr/edf/dispositif-alerte-groupe>

(2) Excluding Enedis, the distribution network operator, a subsidiary managed in compliance with the rules of management independence, as defined in the French Energy Code.

(3) The Cigéo project is also the French deep geological storage facility project for long life medium and high level radioactive waste. It is designed to store highly radioactive and long-lived waste produced by all French nuclear facilities.

- EDF's compliance with applicable nuclear safety requirements, as demonstrated by the results of the inspections by the Nuclear Safety Authority (*Autorité de sûreté nucléaire*), particularly regarding the performance of metallic nuclear fuel cladding in the event of an accident (criterion 2);
- the implementation of the project notification process in accordance with Article 41 of the Euratom treaty currently in force (criterion 3);
- compliance with the safety criterion defined by Directive 2009/71/Euratom, particularly relating to extreme natural risks established by the regulation and the most recent IAEA and WENRA international guidelines. This compliance was demonstrated, in terms of the existing nuclear fleet, by the periodic safety review process implemented regarding facilities and governed by law (criteria 5 to 7 for activity 4.27 and criteria 5 and 6 for activity 4.28).

Environmental criteria were analysed based on:

- the Life-Cycle Assessment of EDF's nuclear KWh published in 2022 concluded on a carbon content below 4gCO₂e/KWh, very well below the threshold of 100g CO₂e/KWh (substantial contribution criterion);
- the safety review system implemented during periodic reviews, which aims to improve protection against risks or disadvantages of basic nuclear facilities regarding safety, health and public health or protection of nature and the environment as much as possible, under economically acceptable conditions, taking account of the state of knowledge, techniques and practices, and the characteristics of the facility's environment (Article L. 593-18 of the French Environmental Code, DNSH criterion "climate change adaptation");
- the regulatory framework specific to each nuclear power plant defining the requirements to be met regarding water sampling conditions, radioactive, chemical and thermal waste discharge limits, and the obligation to regularly monitor the environment, make declarations to the public authorities, and inform the public (DNSH criterion "sustainable use of water and marine resources");

- the implementation by the Group, within the regulatory framework set for it, of the nuclear fuel cycle closure strategy as defined in national energy policy guidelines. Furthermore, the Group optimises and manages conventional and radioactive waste relating to operation and deconstruction for which it is responsible and develops treatment channels to reduce the volume of stored waste (DNSH criterion "transition towards a circular economy");
- the implementation of administrative procedures defined by regulations, required to obtain the necessary authorisations in terms of radioactive discharges. In terms of management of spent fuel and waste, the PNGMDR complies with the Euratom directives and is designed to guarantee sustainable management of radioactive substances and waste in accordance with the protection of personal health, safety, and the environment (DNSH criterion "pollution prevention and control");
- the impact assessments and analyses of effects on the environment conducted for each facility upstream from its construction and updated taking account of regulatory changes, modifications to facilities and new environmental data according to the criteria defined by amended directive 2011/92/EU (DNSH criterion "prevention and restoration of biodiversity and ecosystems").

Following the analyses conducted, the Group concluded that its nuclear activities in France are aligned with the Green Taxonomy for the fleet in operation and for new facility construction projects. This conclusion was presented to the French authorities.

3.8.4.4 Taxonomy indicators

The three Taxonomy indicators (proportion of turnover, capital expenditures "CAPEX" and operational expenditures "OPEX") are based on the Group's consolidated data.

When the definitions in the regulation do not provide sufficient precision, the main rules applied by the Group are specified.

SUMMARY OF THE DISTRIBUTION OF ACTIVITIES

	Share of CAPEX		Share of turnover		Share of OPEX	
	2022	2021 proforma*	2022	2021 proforma*	2022	2021 proforma*
Eligible and aligned activities	66%	63%	38%	57%	72%	66%
Eligible but non-aligned activities	3%	4%	6%	3%	2%	2%
Other non-eligible activities	31%	33%	56%	40%	26%	32%

* Restatement of 2021 Taxonomy indicators.

To ensure consistency between data published for 2022 and data on 2021, 2021 data published last year has been restated to take account of the coming into force in 2022 of the Complementary Delegated Act on nuclear and gas activities.

Accordingly, nuclear power generation activities for the French fleet are now presented as an eligible and aligned activity (ineligible at the time of the 2021 publication in the absence of an applicable text); activities generating electricity

from gaseous fossil fuels in Italy and France are presented as eligible, non-aligned activities (ineligible at the time of the 2021 publication in the absence of an applicable text).

The transition from published data to proforma data for the 2021 fiscal year is presented in section 3.8.4.4.4.

3.8.4.4.1 Analysis of the "CAPEX_T" investment indicator

Definition of the indicator and calculation method

The "CAPEX_T" ratio referred to in Article 8(2)(b) regulation (EU) 2020/852 is calculated using:

- **in the denominator:** all investments known as "CAPEX_T", including gross additions to property, plant and equipment, intangible assets and rights of use (IFRS 16 Leases), including those resulting from business combinations (acquisition of a subsidiary) in the consolidated accounts. It therefore does not include financial investments made by the Group in companies accounted for using the equity method, or investments made by these entities. CAPEX_T do not include investment grants;
- **in the numerator:** capital expenditures related to:
 - > an eligible (or aligned) activity: CAPEX related to assets or processes associated with Taxonomy-eligible (or -aligned) activities,

- > a CAPEX plan whose objective is to create or transform an activity that will be Taxonomy-eligible or -aligned,
- > individually eligible (or aligned) investments that are not related to a core eligible (or aligned) business (not significant for the Group). The main individual investments for which alignment is not analysed concern leased buildings and car fleets.

Calculation methods - rules applied

Supporting assets such as IT systems have been considered aligned when they relate to entities whose overall activities have been classified as aligned. For entities with a complex allocation of support functions between aligned and non-aligned activities, support assets are classified as non-aligned.

Breakdown of CAPEX_T by activity according to the Taxonomy

Proportion of CAPEX from products or services associated with Taxonomy-aligned economic activities – 2022 (in millions of euros)

Proportion of CAPEX from products or services associated with Taxonomy-aligned economic activities – 2022 (in millions of euros)				Substantial contribution criteria	
Economic activities	Code(s) (2)	absolute CAPEX (3)	Proportion of CAPEX (4)	Climate change mitigation (5)	Climate change adaptation (6)
A. TAXONOMY-ELIGIBLE ACTIVITIES					
A.1 Environmentally sustainable activities (Taxonomy-aligned)					
Electricity generation from nuclear energy in existing installations	4.28	4,456	23%	100%	-
Transmission and distribution of electricity	4.9	4,807	25%	100%	-
Construction and safe operation of new nuclear power plants	4.27	601	3%	100%	-
Electricity generation from hydropower	4.5	367	2%	100%	-
Electricity generation from wind power	4.3	1,121	6%	100%	-
Electricity generation using solar photovoltaic technology	4.1	893	5%	100%	-
Storage of electricity	4.10	82	0%	100%	-
District heating/cooling distribution	4.15	179	1%	100%	-
Energy efficiency and performance services ⁽²⁾	9.3, 7.3	132	1%	100%	-
Other activities ⁽²⁾		48	0%	100%	-
CAPEX of environmentally sustainable activities (Taxonomy-aligned) (A.1)		12,686	66%	100%	
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					
Electricity generation from fossil gaseous fuels	4.29	505	3%		
Other activities ⁽²⁾		89	0%		
CAPEX of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		594	3%		
Total (A.1 + A.2)		13,280	69%		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES					
Nuclear power generation activity		4,661	24%		
Other non-eligible activities		1,374	7%		
CAPEX of Taxonomy-non-eligible activities (B)		6,035	31%		
TOTAL (A + B)		19,315	100%		

(1) These activities may be enabling or transitional, or neither.

(2) The amounts of the activities presented are individually immaterial.

	DNSH criteria ("Does Not Significantly Harm")											
	Climate change mitigation (11)	Climate change adaptation (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)	Minimum safeguards (17)	Taxonomy- aligned proportion of CAPEX -2022 (18)	Taxonomy- aligned proportion of CAPEX -2021 (19)	Category (enabling activity) (20)	Category "(transitional activity)" (21)	
	-	yes	yes	yes	yes	yes	yes	23%	24%	no	yes	
	-	yes	yes	yes	yes	yes	yes	25%	25%	yes	no	
	-	yes	yes	yes	yes	yes	yes	3%	1%	no	yes	
	-	yes	yes	yes	yes	yes	yes	2%	1%	no	no	
	-	yes	yes	yes	yes	yes	yes	6%	6%	no	no	
	-	yes	yes	yes	yes	yes	yes	5%	5%	no	no	
	-	yes	yes	yes	yes	yes	yes	0%	0%	yes	no	
	-	yes	yes	yes	yes	yes	yes	1%	1%	(1)	(1)	
	-	yes	yes	yes	yes	yes	yes	1%	0%	(1)	(1)	
	-	yes	yes	yes	yes	yes	yes	0%	0%	(1)	(1)	
	66%								63%			
											no	yes
											(1)	(1)

CAPEX_T investments for the financial year increased by €555 million to €19.3 billion in 2022 compared to €18.8 billion in 2021. Their breakdown between activities remained stable and the proportion of CAPEX_T relating to aligned activities increased from 63% in 2021 (proforma data) to 66% in 2022. They were largely made in electricity distribution activities (deployment of network, meters), nuclear activities (particularly the *Grand Carénage* programme) and renewable energies.

As indicated earlier, the exclusion of the United Kingdom from the taxonomy on nuclear activities affects the ratios of the Group, which has particularly invested significant amounts in connection with the HPC project.

The ratio of aligned investments to eligible investments is very high (95.5%).

Economic activities	Activities*	2022		2021 PROFORMA		Variations
		CAPEX (in millions of euros)	CAPEX ratio	CAPEX (in millions of euros)	CAPEX ratio	(in millions of euros)
A.1 Aligned activities						
Electricity generation from nuclear energy and construction of new nuclear power plants	4.28, 4.27	5,057	26%	4,618	25%	439
Electricity distribution	4.9	4,807	25%	4,636	25%	171
Electricity generation from wind power and using solar photovoltaic technology, storage	4.3, 4.1, 4.10	2,096	11%	2,007	11%	89
Electricity generation from hydropower	4.5	367	2%	296	1%	71
Other activities	4.15, 9.3	359	2%	281	1%	78
Total aligned activities		12,686	66%	11,838	63%	848
A.2. Eligible non-aligned activities						
Electricity generation from fossil gaseous fuels	4.29	505	3%	324	1%	181
Other activities		89	0%	482	3%	(393)
Total eligible-non-aligned activities		594	3%	806	4%	(212)
Total eligible activities		13,280	69%	12,644	67%	636
B. Non-eligible activities						
Nuclear power generation activity		4,661	24%	4,692	25%	(31)
Other activities		1,374	7%	1,424	8%	(50)
Total non-eligible activities		6,035	31%	6,116	33%	(81)
TOTAL CAPEX_T		19,315	100%	18,760	100%	555

* Group activities referred to in section 3.8.4.3.

Information on the CAPEX plan

The allocation of CAPEX_T does not need to be significantly modified over the next 3 years.

Information on “green” financing

In July 2022, the Group published the 4th version of its Green Bond Framework, currently the Green Financing Framework, covering all its “green” financing. Eligible projects must meet the criteria of the European Taxonomy. Its scope covers categories previously eligible for previous financing frameworks (wind and solar projects, investments in renovating and modernising hydropower assets in mainland France and abroad, energy efficiency projects and biodiversity

preservation projects), plus two new categories: distribution networks and nuclear generation assets. Accordingly, on 5 October 2022 the Group issued a €1.25 billion tranche to finance distribution network activities. Most of the funds were allocated in accordance with the look back clause to investments made during the second half of 2021.

Furthermore, this Green Financing Framework was reviewed by an independent third party confirming its compliance with Green Loans market best practices (Loan Syndications and Trading Association’s Green Loan Principles).

The allocation of funds raised *via* Green Bonds issued by EDF was certified by one of the Statutory Auditors (see section 6.7 of the Universal Registration Document). It is available on the page dedicated to sustainable finance on the EDF website.

Reconciliation between CAPEX_T and investments presented in the consolidated cash flow statements and in the cash flow statement table.

The following table reconciles net investments presented in the consolidated cash flow statement in the consolidated financial statements (see section 6.1) and the cash flow statement (CFS) in the review of the financial situation and results 2022 (see section 5.1.4) and the Taxonomy CAPEX_T.

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
CAPEX_T	19,315	18,760
Effect of changes in the scope of consolidation	(213)	(222)
Increase of the right of use asset (leases)	(390)	(789)
Change in payables on acquisition of fixed assets	(388)	(143)
Intangible and tangible investments in the CFS (see section 6.1)	18,324	17,606
Investment grants	(554)	(536)
Other including effects of deconsolidation	(1,375)	(1,345)
Net investments (see section 5.1.4)	16,395	15,725

Additional information on nuclear energy and fossil gas related activities regarding CAPEX_T

	Taxonomy-aligned economic activities (denominator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros	%	In millions of euros	%	In millions of euros	%
1	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	601	3%	601	3%	-	0%
3	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	4,456	23%	4,456	23%	-	0%
4	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX	7,629	40%	7,629	40%	-	0%
8	TOTAL APPLICABLE CAPEX_T	19,315	100%	19,315	100%	-	0%

Taxonomy-aligned economic activities (numerator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
	In millions of euros	%	In millions of euros	%	In millions of euros	%
1 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
2 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	601	5%	601	5%	-	0%
3 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	4,456	35%	4,456	35%	-	0%
4 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
5 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
6 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the numerator of CAPEX	-	0%	-	0%	-	0%
7 Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of CAPEX	7,629	60%	7,629	60%	-	0%
8 Total amount and proportion of taxonomy-aligned economic activities in the numerator of CAPEX_T	12,686	100%	12,686	100%	-	0%

	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros	%	In millions of euros	%	In millions of euros	%
1	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	505	3%	505	3%	-	0%
5	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	50	0%	50	0%	-	0%
6	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX	39	0%	39	0%	-	0%
8	Total amount and proportion of taxonomy eligible but not taxonomy- aligned economic activities in the denominator of CAPEX_T	594	3%	594	3%	-	0%

Taxonomy non-eligible economic activities		In millions of euros	%
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%
2	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	4,348	22%
3	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	313	2%
4	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%
5	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%
6	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of CAPEX	-	0%
7	Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX	1,374	7%
8	Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of CAPEX_T	6,035	31%

3.8.4.4.2 Analysis of the “Turnover_T” indicator

Definition of the indicator and calculation method (numerator/denominator)

The “turnover_T” ratio referred to in Article 8(2)(a) of regulation (EU) 2020/852 is calculated as the share of net turnover derived from products or services associated with Taxonomy-eligible or Taxonomy-aligned economic activities (numerator) divided by consolidated turnover excluding trading activities (denominator) (see section 6.1, note 5.1.2 of the consolidated financial statements for the year ending 31 December 2022). It therefore does not include turnover generated by companies accounted for using the equity method.

Calculation methods - rules applied

In France, the EDF group manages its generation in an integrated manner and optimise its generating facilities based on the upstream-downstream balance. Consequently, turnover accounted for is allocated based on volumes produced by different production channels, and taking account of market purchases/sales, based on the published electricity report (see section 5.1.3.1.1.1).

Breakdown of turnover_T by activity according to the Taxonomy

Proportion of turnover from products or services associated with Taxonomy-aligned economic activities – 2022 (in millions of euros)

				Substantial contribution criteria	
Economic activities	Code(s) (2)	absolute turnover (3)	Proportion of turnover (4)	Climate change mitigation (5)	Climate change adaptation (6)
A. TAXONOMY-ELIGIBLE ACTIVITIES					
A.1 Environmentally sustainable activities (Taxonomy-aligned)					
Electricity generation from nuclear energy in existing installations	4.28	18,714	14%	100%	-
Transmission and distribution of electricity	4.9	16,052	12%	100%	-
Electricity generation from hydropower	4.5	2,563	2%	100%	-
Electricity generation from wind power	4.3	5,364	4%	100%	-
Electricity generation using solar photovoltaic technology	4.1	2,668	2%	100%	-
Other renewable energies ⁽²⁾	7.6, 4.10	1,166	1%	100%	-
Heating/cooling networks, Cogeneration of heat/cold and power from bioenergy ⁽²⁾	4.15, 4.20	2,773	2%	100%	-
Energy efficiency and performance services ⁽²⁾	9.3, 7.3	2,284	1%	100%	-
Other activities ⁽²⁾		611	0%	100%	-
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)		52,195	38%	100%	
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					
Electricity generation from fossil gaseous fuels	4.29	6,780	5%		
Installation, maintenance and repair of energy efficiency equipment	7.3	955	1%		
Other activities ⁽²⁾	4.15, 4.30	427	0%		
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		8,162	6%		
Total (A.1 + A.2)		60,357	44%		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES					
Nuclear power generation activity		4,423	3%		
Other non-eligible activities		71,658	53%		
Turnover of Taxonomy-non-eligible activities (B)		76,081	56%		
TOTAL (A + B)		136,438	100%		

(1) These activities may be enabling or transitional, or neither.

(2) The amounts of the activities presented are individually immaterial.

DNSH criteria ("Does Not Significantly Harm")						Minimum safeguards (17)	Taxonomy- aligned proportion of turnover - 2022 (18)	Taxonomy- aligned proportion of turnover - 2021 (19)	Category (enabling activity) (20)	Category "(transitional activity)" (21)
Climate change mitigation (11)	Climate change adaptation (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)					
-	yes	yes	yes	yes	yes	yes	14%	24%	no	yes
-	yes	yes	yes	yes	yes	yes	12%	20%	yes	no
-	yes	yes	yes	yes	yes	yes	2%	3%	no	no
-	yes	yes	yes	yes	yes	yes	4%	4%	no	no
-	yes	yes	yes	yes	yes	yes	2%	1%	no	no
-	yes	yes	yes	yes	yes	yes	1%	1%	(1)	(1)
-	yes	yes	yes	yes	yes	yes	2%	2%	(1)	(1)
-	yes	yes	yes	yes	yes	yes	1%	1%	(1)	(1)
-	yes	yes	yes	yes	yes	yes	0%	1%	(1)	(1)
38%								57%		
									no	yes
									yes	no
									(1)	(1)

Turnover_T (excluding trading activities) increases strongly in 2022 compared to 2021. It reached €136.4 billion compared to €82.9 billion last year, due to energy sales (electricity and gas) made in a high market price context. However, this increase particularly benefited commercialisation activities (ineligible) and gas activities (non-aligned). Furthermore, the sharp reduction in nuclear generation in 2022 (-81.7TWh) particularly relating to the issue of stress corrosion meant that energy purchases had to be made on the markets, which affects the proportion of

aligned turnover_T relating to nuclear power generation in France. These different issues resulted in Taxonomy ratios where the proportion of turnover_T of aligned activities fell markedly, dropping from 57% in 2021 to 38% in 2022: this ratio was largely non-structural.

Aligned turnover relating to “Renewable Energies” significantly increased as a result of sales from buying obligations in France, mainly due to a price effect.

Economic activities	Activities*	2022		2021 PROFORMA		Variations (in millions of euros)
		Turnover (in millions of euros)	Turnover ratio	Turnover (in millions of euros)	Turnover ratio	
A.1 Aligned activities						
Electricity generation from nuclear energy	4.28	18,714	14%	19,955	24%	(1,241)
Electricity distribution	4.9	16,052	12%	16,192	20%	(140)
Electricity generation from wind power and using solar photovoltaic technology, installation, maintenance and repair, storage	4.3, 4.1, 7.6, 4.10	9,198	7%	5,390	6%	3,808
Electricity generation from hydropower	4.5	2,563	2%	2,664	3%	(101)
Cogeneration of heat/cold and power from bioenergy	4.15, 4.20	2,773	2%	1,759	2%	1,014
Energy efficiency and performance services	9.3, 7.3	2,284	1%	709	1%	1,575
Other activities		611	0%	353	1%	258
Total aligned activities		52,195	38%	47,022	57%	5,173
A.2. Eligible non-aligned activities						
Electricity generation from fossil gaseous fuels	4.29	6,780	5%	2,670	3%	4,110
Installation, maintenance and repair of energy efficiency equipment	7.3	955	1%	-	0%	955
Other activities		427	0%	255	0%	172
Total eligible-non-aligned activities		8,162	6%	2,925	3%	5,237
Total eligible activities		60,357	44%	49,947	60%	10,410
B. Non-eligible activities						
Nuclear power generation activity		4,423	3%	3,858	5%	565
Other activities		71,658	53%	29,138	35%	42,520
Total non-eligible activities		76,081	56%	32,996	40%	43,085
TOTAL TURNOVER_T		136,438	100%	82,943	100%	53,495

* Group activities referred to in section 3.8.4.3.

Additional information on nuclear energy and fossil gas related activities regarding turnover_T

Taxonomy-aligned economic activities (denominator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
	In millions of euros	%	In millions of euros	%	In millions of euros	%
1 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
2 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
3 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	18,714	14%	18,714	14%	-	0%
4 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
5 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
6 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
7 Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of turnover	33,481	24%	33,481	24%	-	0%
8 TOTAL APPLICABLE TURNOVER_T	136,438	100%	136,438	100%	-	0%

Taxonomy-aligned economic activities (numerator)	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
	In millions of euros	%	In millions of euros	%	In millions of euros	%
1 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
2 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
3 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	18,714	36%	18,714	36%	-	0%
4 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
5 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
6 Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the numerator of turnover	-	0%	-	0%	-	0%
7 Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of turnover	33,481	64%	33,481	64%	-	0%
8 Total amount and proportion of taxonomy-aligned economic activities in the numerator of turnover_T	52,195	100%	52,195	100%	-	0%

	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros	%	In millions of euros	%	In millions of euros	%
1	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	6,780	5%	6,780	5%	-	0%
5	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	103	0%	103	0%	-	0%
6	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of turnover	1,279	1%	1,279	1%	-	0%
8	Total amount and proportion of taxonomy eligible but not taxonomy- aligned economic activities in the denominator of turnover_T	8,162	6%	8,162	6%	-	0%

Taxonomy non-eligible economic activities		In millions of euros	%
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%
2	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%
3	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	4,423	3%
4	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%
5	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%
6	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of turnover	-	0%
7	Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of turnover	71,658	53%
8	Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of turnover_T	76,081	56%

3.8.4.4.3 Analysis of the “OPEX_T” indicator

Definition of the indicator and calculation method (numerator/denominator)

The “OPEX_T” ratio referred to in Article 8(2)(b) regulation (EU) 2020/852 is calculated by dividing the numerator by the denominator, determined as follows:

- The denominator corresponds to the direct non-capitalised costs related to research and development, building renovation measures, short-term lease (not accounted for under IFRS 16), maintenance and repairs, as well as any other direct expenditure related to the day-to-day servicing of assets of property, plant and equipment that are necessary to ensure the continuous and efficient operation of these assets.
- The numerator takes into account the operational expenditures included in the denominator which:
 - > are related to an eligible (or aligned) activity: OPEX related to assets or processes associated with Taxonomy-eligible (or -aligned) activities;
 - > are part of an OPEX plan whose objective is to create/expand an activity aligned to the Taxonomy; or
 - > are individually eligible (or aligned) OPEX_T or purchases of goods or services related to activities eligible (or aligned) with the Taxonomy, but which are not part of the Company’s core eligible (or aligned) activities.

All OPEX under the Taxonomy are included in the lines of the Group’s consolidated income statement: “Other external expenses” and “Personnel expenses” (net of inventories and capitalised production), and also include expenses relating to repairs of circuit welds at the Flamanville 3 power plant presented in Other operating income and expenses (see section 6.1, note 7 of the consolidated financial statements for the year ending 31 December 2022). They therefore do not include OPEX incurred by companies accounted for using the equity method. Under these costs, only the types of expenses specified above have been taken into account in the ratios, based on general accounting or cost accounting where necessary.

Calculation methods - rules applied

Under “Other expenses relating to the day-to-day maintenance of property, plant and equipment”, the Group has included personnel expenses and purchases relating to the maintenance and upkeep of production assets, including, for the nuclear fleet in operation, expenses related to control operations, *i.e.*, facility monitoring expenses, in the OPEX of the Taxonomy. This excludes operational expenditures related to production itself.

Expenditures for support functions directly related to maintenance and upkeep have been included in Taxonomy OPEX.

In the case of the hydropower business and the electricity distribution business, expenses relating to concession fees have been excluded from the calculation of operational expenditures.

Breakdown of OPEX_T by activity according to the Taxonomy regulation

Proportion of OPEX from products or services associated with Taxonomy-aligned economic activities – 2022 (in millions of euros)

Proportion of OPEX from products or services associated with Taxonomy-aligned economic activities – 2022 (in millions of euros)				Substantial contribution criteria	
Economic activities	Code(s) (2)	absolute OPEX (3)	Proportion of OPEX (4)	Climate change mitigation (5)	Climate change adaptation (6)
A. TAXONOMY-ELIGIBLE ACTIVITIES					
A.1 Environmentally sustainable activities (Taxonomy-aligned)					
Electricity generation from nuclear energy in existing installations	4.28	2,902	32%	100%	-
Construction and safe operation of new nuclear power plants	4.27	798	9%	100%	-
Transmission and distribution of electricity	4.9	993	11%	100%	-
Electricity generation from hydropower	4.5	467	5%	100%	-
Installation, maintenance and repair of renewable energy technologies	7.6	250	3%	100%	-
Electricity generation from wind power	4.3	215	2%	100%	-
Professional services related to the energy performance of buildings	9.3	436	5%	100%	-
District heating/cooling distribution	4.15	226	2%	100%	-
Research, development and innovation	9.1	143	2%	100%	-
other activities ⁽²⁾		116	1%	100%	-
OPEX of environmentally sustainable activities (Taxonomy-aligned) (A.1)		6,546	72%	100%	
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)					
Electricity generation from fossil gaseous fuels	4.29	166	2%		
Other activities ⁽²⁾		64	0%		
OPEX of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		230	2%		
Total (A.1 + A.2)		6,776	74%		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES					
Nuclear power generation activity		295	3%		
Other non-eligible activities		2,049	23%		
OPEX of Taxonomy-non-eligible activities (B)		2,344	26%		
TOTAL (A + B)		9,120	100%		

(1) These activities may be enabling or transitional, or neither.

(2) The amounts of the activities presented are individually immaterial.

NON-FINANCIAL PERFORMANCE

Appendices and Independent Third-Party report

DNSH criteria ("Does Not Significantly Harm")						Minimum safeguards (17)	Taxonomy- aligned proportion of OPEX -2022 (18)	Taxonomy- aligned proportion of OPEX -2021 (19)	Category (enabling activity) (20)	Category "(transitional activity)" (21)
Climate change mitigation (11)	Climate change adaptation (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)					
-	yes	yes	yes	yes	yes	yes	32%	31%	no	yes
-	yes	yes	yes	yes	yes	yes	9%	8%	no	yes
-	yes	yes	yes	yes	yes	yes	11%	11%	yes	no
-	yes	yes	yes	yes	yes	yes	5%	4%	no	no
-	yes	yes	yes	yes	yes	yes	3%	2%	yes	no
-	yes	yes	yes	yes	yes	yes	2%	2%	(1)	(1)
-	yes	yes	yes	yes	yes	yes	5%	3%	yes	no
-	yes	yes	yes	yes	yes	yes	2%	2%	(1)	(1)
-	yes	yes	yes	yes	yes	yes	2%	2%	yes	no
-	yes	yes	yes	yes	yes	yes	1%	1%	(1)	(1)
							72%	66%		
									no	yes
									(1)	(1)

3

OPEX_T remained stable between 2022 and 2021 at €9.1 billion. The proportion of aligned OPEX_T increased from 66% in 2021 to 72% in 2022 across all activities.

Economic activities	Activities*	2022		2021 PROFORMA		Variations (in millions of euros)
		OPEX (in millions of euros)	OPEX ratio	OPEX (in millions of euros)	OPEX ratio	
A.1 Aligned activities						
Electricity generation from nuclear energy and construction of new nuclear power plants	4.28, 4.27	3,700	41%	3,533	39%	167
Electricity distribution	4.9	993	11%	960	11%	33
District heating and cooling distribution and services related to the energy performance	4.15, 9.3	662	7%	413	5%	249
Electricity generation from hydropower	4.5	467	5%	345	4%	122
Electricity generation from wind power, installation, maintenance and repair	4.3, 7.6	465	5%	411	4%	55
Other activities		259	3%	282	3%	(24)
Total aligned activities		6,546	72%	5,944	66%	602
A.2. Eligible non-aligned activities						
Electricity generation from fossil gaseous fuels	4.29	166	2%	144	2%	22
Other activities		64	0%	65	0%	(1)
Total eligible-non-aligned activities		230	2%	209	2%	21
Total eligible activities		6,776	74%	6,153	68%	623
B. Non-eligible activities						
Nuclear power generation activity		295	3%	204	2%	91
Other activities		2,049	23%	2,729	30%	(680)
Total non-eligible activities		2,344	26%	2,933	32%	(589)
TOTAL OPEX_T		9,120	100%	9,086	100%	34

* Group activities referred to in section 3.8.4.3.

Additional information on nuclear energy and fossil gas related activities regarding OPEX_T

Taxonomy-aligned economic activities (denominator)		CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros	%	In millions of euros	%	In millions of euros	%
1	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	798	9%	798	9%	-	0%
3	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	2,902	32%	2,902	32%	-	0%
4	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of OPEX	2,846	31%	2,846	31%	-	0%
8	TOTAL APPLICABLE OPEX_T	9,120	100%	9,120	100%	-	0%

Taxonomy-aligned economic activities (numerator)		CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros	%	In millions of euros	%	In millions of euros	%
1	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	798	12%	798	12%	-	0%
3	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	2,902	44%	2,902	44%	-	0%
4	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
5	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
6	Amount and proportion of taxonomy- aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the numerator of OPEX	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of OPEX	2,846	44%	2,846	44%	-	0%
8	Total amount and proportion of taxonomy-aligned economic activities in the numerator of OPEX_T	6,546	100%	6,546	100%	-	0%

	Taxonomy-eligible but not taxonomy-aligned economic activities	CCM + CCA		Climate change mitigation (CCM)		Climate change adaptation (CCA)	
		In millions of euros		In millions of euros		In millions of euros	
			%		%		%
1	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
2	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
3	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
4	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	166	2%	166	2%	-	0%
5	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	10	0%	10	0%	-	0%
6	Amount and proportion of taxonomy- eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%	-	0%	-	0%
7	Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of CAPEX	54	0%	54	0%	-	0%
8	Total amount and proportion of taxonomy eligible but not taxonomy- aligned economic activities in the denominator of OPEX_T	230	2%	230	2%	-	0%

Taxonomy non-eligible economic activities		In millions of euros	
			%
1	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.26 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%
2	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.27 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	74	1%
3	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.28 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	221	2%
4	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.29 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%
5	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.30 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%
6	Amount and proportion of economic activity referred to in row 1 of Template 1 that is taxonomy-non-eligible in accordance with Section 4.31 of Annexes I and II to delegated regulation 2021/2139 in the denominator of OPEX	-	0%
7	Amount and proportion of other taxonomy-non-eligible economic activities not referred to in rows 1 to 6 above in the denominator of OPEX	2,049	23%
8	Total amount and proportion of taxonomy-non-eligible economic activities in the denominator of OPEX_T	2,344	26%

3.8.4.4.4 Proforma 2021 Taxonomy indicators

CAPEX_T

Economic activities	Activities*	2021 published		Restatements	2021 proforma	
		CAPEX (in millions of euros)	CAPEX ratio	CAPEX (in millions of euros)	CAPEX (in millions of euros)	CAPEX ratio
A.1 Aligned activities						
Electricity generation from nuclear energy and construction of new nuclear power plants	4.28, 4.27	-	0%	4,618	4,618	25%
Electricity distribution	4.9	4,636	25%	-	4,636	25%
Electricity generation from wind power and using solar photovoltaic technology, storage	4.3, 4.1	2,007	11%	-	2,007	11%
Electricity generation from hydropower	4.5	296	1%	-	296	1%
Other activities		532	3%	(251)	281	1%
Total aligned activities		7,471	40%	4,367	11,838	63%
A.2. Eligible non-aligned activities						
Acquisition and ownership of buildings and other	7.7, 7.6	482	3%	-	482	3%
Electricity generation from fossil gaseous fuels	4.29	-	0%	324	324	1%
Total eligible-non-aligned activities		482	3%	-	806	4%
Total eligible activities		7,953	43%	4,690	12,644	67%
B. Non-eligible activities						
Nuclear power generation activity		9,078	48%	(4,386)	4,692	25%
Other activities		1,729	9%	(304)	1,424	8%
Total non-eligible activities		10,807	57%	(4,690)	6,116	33%
TOTAL CAPEX_T		18,760	100%	-	18,760	100%

* Group activities referred to in section 3.8.4.3.

TURNOVER_T

Economic activities	Activities*	2021 published		Restatements	2021 proforma	
		Turnover (In millions of euros)	Turnover ratio	Turnover (In millions of euros)	Turnover (In millions of euros)	Turnover ratio
A.1 Aligned activities						
Electricity generation from nuclear energy	4.28	-	0%	19,955	19,955	24%
Electricity distribution	4.9	16,192	19%	-	16,192	20%
Electricity generation from wind power and using solar photovoltaic technology, installation, maintenance and repair, storage	4.3, 4.1, 7.6, 4.10	5,390	6%	-	5,390	6%
Electricity generation from hydropower	4.5	2,664	3%	-	2,664	3%
Cogeneration of heat/cold and power from bioenergy	4.15, 4.20	1,759	2%	-	1,759	2%
Energy efficiency and performance services	9.3, 7.3	709	1%	-	709	1%
Other activities		353	1%	-	353	1%
Total aligned activities		27,067	32%	19,955	47,022	57%
A.2. Eligible non-aligned activities						
Electricity generation from fossil gaseous fuels	4.29	-	0%	2,670	2,670	3%
Other activities		255	1%	-	255	0%
Total eligible-non-aligned activities		255	1%	2,670	2,925	3%
Total eligible activities		27,322	33%	22,625	49,947	60%
B. Non-eligible activities						
Nuclear power generation activity		23,813	28%	(19,955)	3,858	5%
Other activities		33,326	39%	(4,188)	29,138	35%
Total non-eligible activities		57,139	67%	(24,143)	32,996	40%
Total Turnover_T 2021		84,461	100%	(1,518)	82,943	100%
Trading turnover		(1,518)				
TOTAL RESTATED TURNOVER_T		82,943				

* Group activities referred to in section 3.8.4.3.

OPEX_T

Economic activities	Activities*	2021 published	OPEX ratio	Restatements	2021 proforma	OPEX ratio
		OPEX (in millions of euros)		OPEX (in millions of euros)	OPEX (in millions of euros)	
A.1 Activités alignées						
Electricity generation from nuclear energy and construction of new nuclear power plants	4.28, 4.27	-	0%	3,533	3,533	39%
Electricity distribution	4.9	960	11%	-	960	11%
District heating and cooling distribution and services related to the energy performance	4.15, 9.3	413	5%	-	413	5%
Electricity generation from hydropower	4.5	345	4%	-	345	4%
Electricity generation from wind power, installation, maintenance and repair	4.3, 7.6	411	4%	-	411	4%
Other activities		282	3%	-	282	3%
Total aligned activities		2,411	27%	3,533	5,944	66%
A.2. Eligible non-aligned activities						
Electricity generation from fossil gaseous fuels	4.29	-	0%	72	72	1%
Other activities		65	0%	-	65	0%
Total eligible-non-aligned activities		65	0%	72	137	2%
Total eligible activities		2,476	27%	3,605	6,081	67%
B. Non-eligible activities						
Nuclear power generation activity		3,737	41%	(3,533)	204	2%
Other activities		2,873	32%	(72)	2,801	30%
Total non-eligible activities		6,610	73%	(3,605)	3,005	32%
TOTAL OPEX_T		9,086	100%	-	9,086	100%

* Group activities referred to in section 3.8.4.3.

3.8.5 Report of one of the Statutory Auditors, appointed as independent third party, on the verification of the consolidated non-financial performance statement

Year ended 31 December 2022

This is a free English translation of the report by one of the Statutory Auditors issued in French and is provided solely for the convenience of English-speaking readers. This report should be read in conjunction with, and construed in accordance with, French law and professional standards applicable in France.

To the Annual General Meeting,

In our capacity as Statutory Auditor of EDF (hereinafter the "Company"), appointed as independent third party ("third party") and accredited by the French Accreditation Committee (Cofrac), under number 3-1886 (Cofrac Inspection Accreditation, scope available at www.cofrac.fr), we have conducted procedures to express a limited assurance conclusion on the historical information (observed or extrapolated) in the consolidated non-financial performance statement, prepared in accordance with the Company's procedures (hereinafter the "Guidelines"), for the year ended 31 December 2022 (hereinafter the "Information" and the "Statement", respectively), presented in the Group management report pursuant to the legal and regulatory provisions of Articles L. 225-102-1, R. 225-105 and R. 225-105-1 of the French Commercial Code (*Code de commerce*).

It is also our responsibility to express, at the request of the Company and outside the scope of our accreditation, a reasonable assurance conclusion on the fact that some information selected by the Company and presented in the Statement has been prepared, in all material aspects, fairly in accordance with the Guidelines.

Conclusion of limited assurance on the consolidated of non-financial performance statement in accordance with Article L. 225-102-1 of the French Commercial Code (*Code de commerce*)

Based on our procedures as described in the section "Nature and scope of procedures" and the evidence we have obtained, no material misstatements have come to our attention that cause us to believe that the non-financial performance statement does not comply with the applicable regulatory provisions and that the Information, taken as a whole, is not fairly presented in accordance with the Guidelines.

Conclusion of reasonable assurance on selected information included in the Statement

In our opinion, the following information selected by the Company and identified by the sign √ within the Statement has been prepared fairly, in all material aspects, in accordance with the Guidelines:

- Workforce as of 31 December 2022 and breakdown by gender and age;
- EDF group direct greenhouse gas emissions (scope 1);
- Carbon intensity: specific CO₂ emissions from electricity and heat generation;
- Water intensity: water consumed/electrical generated by fleet;

Preparation of the non-financial performance statement

The absence of a generally accepted and ordinarily used reference framework or established practices on which to base the assessment and measurement of the Information enables the use of different but acceptable measurement techniques that may impact comparability between entities and over time.

Accordingly, the Information must be read and interpreted with reference to the Guidelines, the material elements of which are available on the Company's website.

Limits inherent in the preparation of the information relating to the Statement

The Information may be subject to uncertainty inherent to the state of scientific and economic knowledge and the quality of external data used. Some information is sensitive to the choice of methodology and the assumptions or estimates used for its preparation and presented in the Statement.

Responsibility of the Company

Management is responsible for:

- selecting or determining the appropriate criteria for the preparation of the Information;
- preparing a Statement pursuant to legal and regulatory provisions, including a presentation of the business model, a description of the main non-financial risks, a presentation of the policies implemented with respect to these risks as well as the outcomes of these policies, including key performance indicators

and the information set-out in Article 8 of Regulation (EU) 2020/852 (Green taxonomy);

- implementing such internal control as it determines is necessary to enable the preparation of Information that is free from material misstatement, whether due to fraud or error.
- The Statement has been prepared by applying the Company's Guidelines as referred to above.

Responsibility of the Statutory Auditor appointed as independent third party

Based on our work, our responsibility is to express a limited assurance conclusion on:

the compliance of the Statement with the requirements of Article R. 225-105 of the French Commercial Code;

the fairness of the information provided pursuant to part 3 of sections I and II of Article R. 225-105 of the French Commercial Code, *i.e.* the outcomes of policies, including key performance indicators, and measures relating to the main risks, hereinafter the "Information."

As it is our responsibility to issue an independent conclusion on the information prepared by management, we are not authorised to participate in the preparation of the Information, as this could compromise our independence.

It is not our responsibility to provide a conclusion on:

- the Company's compliance with other applicable legal and regulatory provisions (particularly with regard to the information set-out in Article 8 of Regulation (EU) 2020/852 (Green taxonomy), the duty of vigilance and the fight against corruption and tax evasion);
- the fairness of information set-out in Article 8 of Regulation (EU) 2020/852 (Green taxonomy);
- the compliance of products and services with the applicable regulations.

Applicable regulatory provisions and professional guidance

We performed the work described below in accordance with our audit verification programme in application of Articles A. 225-1 *et seq.* of the French Commercial Code, the professional guidance issued by the French Institute of Statutory Auditors (Compagnie nationale des commissaires aux comptes) relating to this engagement and with the international standard ISAE 3000 (revised - Assurance engagements other than audits or reviews of historical financial information).

Independence and quality control

Our independence is defined by Article L. 822-11-3 of the French Commercial Code and French code of ethics for Statutory Auditors (*Code de déontologie*). In addition, we have implemented a system of quality control including documented policies and procedures aimed at ensuring compliance with applicable legal and regulatory requirements, ethical requirements and the professional guidance issued by the French Institute of Statutory Auditors (Compagnie nationale des commissaires aux comptes) relating to this engagement.

Means and resources

Our work engaged the skills of eleven people between September 2022 and February 2023 and took a total of about twenty weeks.

To assist us in conducting our work, we referred to our corporate social responsibility and sustainable development experts. We conducted around fifty interviews with people responsible for preparing the Statement.

This work involved the use of information and communication technologies allowing the work and interviews to be carried out remotely, without hindering the good execution of the verification process.

Nature and scope of procedures

We planned and performed our work taking account of the risk of material misstatement of the Information.

We consider that the procedures conducted in exercising our professional judgement enable us to express a limited assurance conclusion:

- We familiarized ourselves with the activities of all companies in the consolidation scope and the description of the principal risks.

- We assessed the suitability of the Guidelines with respect to their relevance, completeness, reliability, neutrality and clarity, taking into account, where appropriate, best practices within the sector.
- We verified that the Statement covers each category of information stipulated in section III of Article L. 225-102-1 governing social and environmental affairs, respect for human rights and the fight against corruption and tax evasion.
- We verified that the Statement provides the information required under Article R. 225-105 II of the French Commercial Code where relevant with respect to the principal risks, and includes, where applicable, an explanation for the absence of the information required under Article L. 225-102-1 III, paragraph 2 of the French Commercial Code.
- We verified that the Statement presents the business model and a description of the principal risks associated with the activities of all the consolidated entities, including where relevant and proportionate, the risks associated with their business relationships, their products or services, as well as their policies, measures and the outcomes thereof, including key performance indicators associated to the principal risks.
- We referred to documentary sources and conducted interviews to:
 - > assess the process used to identify and confirm the principal risks as well as the consistency of the outcomes, including the key performance indicators used, with respect to the principal risks and the policies presented; and
 - > corroborate the qualitative information (measures and outcomes) that we considered to be the most important presented in Appendix 1 and for which our work was carried out on the consolidating entity;
- We verified that the Statement covers the consolidated scope, *i.e.* all companies within the consolidation scope in accordance with Article L. 233-16, with the limits specified in the Statement.
- We obtained an understanding of internal control and risk management procedures implemented by the Company and assessed the data collection process aimed at ensuring the completeness and fairness of the Information.
- For the key performance indicators and other quantitative outcomes that we considered to be the most important presented in Appendix 1, we implemented:
 - > analytical procedures that consisted in verifying the correct consolidation of collected data as well as the consistency of changes thereto;
 - > substantive tests, on a sample basis and using other selection methods, that consisted in verifying the proper application of definitions and procedures and reconciling data with supporting documents. These procedures were conducted for a selection of contributing entities presented in Appendix 2 and covered between 21% and 100% of the consolidated data selected for these tests.
- We assessed the overall consistency of the Statement in relation to our knowledge of the entire Company.

The procedures conducted in a limited assurance review are substantially less in scope than those required to issue a reasonable assurance opinion in accordance with the professional guidelines of the French National Institute of Statutory Auditors (Compagnie nationale des commissaires aux comptes); a higher level of assurance would have required us to carry out more extensive procedures.

Pursuant to the request of the Company, we performed additional work with the aim of providing a reasonable assurance conclusion on the following Information, otherwise identified by the sign √ within the Statement:

- workforce as of 31 December 2022 and breakdown by gender and age;
- EDF group direct greenhouse gas emissions (scope 1);
- carbon intensity: specific CO₂ emissions from electricity and heat generation;
- water intensity: water consumed/electrical generated by fleet;

The work carried out was of the same nature as that described in the section on limited insurance above, but more in-depth, particularly regarding:

- analytical procedures that consisted in verifying the correct consolidation of collected data as well as the consistency of changes thereto;
- substantive tests, on a sample basis that consisted in verifying the proper application of definitions and procedures and reconciling data with supporting documents.

The selected sample represents between 50% and 93% of the information identified with the sign √.

Paris-La Défense, 16 February 2023

One of the Statutory Auditors,

Deloitte & Associés

Christophe Patrier
Partner, Audit

Catherine Saire
Partner, Sustainable Development

Appendix 1

Selected qualitative information

Environmental Information

- **Group policy and commitments on climate change adaptation** (Policy; From climate disaster plan to global resilience strategy; A high level internal Climate Department; The ADAPT programme and the CEMA action plan; Summer transition and winter transition)
- **Adaptation of hydroelectric facilities**
- **Decarbonisation solutions for industry** (Decarbonisation consultancy; Process electrification; Low-carbon heat; Energy efficiency; Full-scope support)
- **Water quality and reduction of pressure on environments** (Monitoring around industrial Sites; Specific monitoring for nuclear power plants)

Social Information

- **Health and safety management** (The basis of health and safety management; The ISO 45 001/MASE or VCA certifications; "Safety Stop"; Sharing the analysis of "High Potential Events" (HPE); Health & Safety audits)

Selected quantitative information

Social key performance indicators and outcomes

Level of assurance

- Workforce as of 31/12/2022 and breakdown by gender and age Reasonable
- Gender balance index: percentage of women in the Management Committees of the Group's entities Limited
- Percentage of employees who have taken part in a skills development initiative during the year Limited
- Number of fatal accidents connected to business-specific risks - Employees and providers Limited
- Global Lost Time Incident Rate (LTIR) - Employees and providers Limited
- Accident severity rate - Employees Limited

Societal key performance indicators and outcomes

Level of assurance

- Nuclear safety: Number of significant level 2 events on the INES scale Limited
- Annual rate of feedback to whistleblowers within a maximum of one month, informing them of the admissibility and further processing of their alert Limited
- Individual guidance provided every year to our clients as part of the "Energy Support" framework (number of actions) Limited
- Annual rate of projects for which a dialogue and consultation procedure is engaged Limited
- Annual rate of procurement from SMEs in France Limited
- Achievement rate of supporting actions backed by EDF, encouraging relocation and maintaining nuclear industry skills ("France Relance" Programme) Limited
- Achievement rate of EDF commitments towards French Responsible Digitalization Institute (INR) Limited
- Number of customer visits on digital consumption monitoring platforms Limited
- Number of smart meters installed Limited

Environmental key performance indicators and outcomes

Level of assurance

- **EDF group direct greenhouse gas emissions (scope 1)*** Reasonable
- **Carbon intensity: specific CO2 emissions from electricity and heat generation** Reasonable
- **Water intensity: water consumed/electrical generated by fleet** Reasonable
- EDF group indirect greenhouse gas emissions (scope 2)* Limited
- EDF group indirect greenhouse gas emissions (scope 3)* Limited
- Emissions from electricity purchased and sold to end customers Limited
- Emissions from gas sold to end customers Limited
- Installed net renewable electricity generating capacities Limited
- Deployment rate of the framework guidelines on carbon offset solutions Limited
- Deployment rate of new climate change adaptation plans Limited
- EDF group's Electric Vehicles rate in the fleet of light vehicles Limited
- Avoided CO₂ emissions thanks to our sales of innovative goods and services Limited
- Implementation rate of innovative solutions encouraging multifunctional land use Limited
- Achievement rate of "Act4nature international" commitments Limited
- Radioactive waste from operations – France: volume of long-lived high and intermediate level solid radioactive waste Limited
- Radioactive waste from operations – UK: volume of low-level radioactive solid waste generated Limited
- Very-Low Level solid radioactive Waste – EDF Limited

Environmental key performance indicators and outcomes	Level of assurance
• Short-Lived Low and Intermediate Level solid radioactive Waste – EDF	Limited
• Very-Low Level radioactive Waste (VLLW) from decommissioning and associated industrial activities – Group in France	Limited
• Low and Intermediate Level radioactive Waste (LLW and ILW) from decommissioning and associated industrial activities – Group in France	Limited
• Annual rate of conventional waste directed towards a waste recovery industry	Limited

* The verification rates and coverage rates for indicators relating to greenhouse gas emissions for the Group's scopes 1, 2 and 3 are presented in Appendix 3.

Appendix 2

Selected contributing entities

Within EDF	<ul style="list-style-type: none"> • EDF head office • Division Production Nucléaire (DPN): Head office; Plants: nuclear power plants of Saint-Laurent and Dampierre • Division Thermique Expertise et Appui Industriel Multi-métiers (DTEAM): Thermal power plant in Blénod-lès-Pont-à-Mousson • Statistiques-optimisation DATA (SoDATA): Head office
Within EDF Hydro	<ul style="list-style-type: none"> • EDF Hydro head office • Groupement d'Exploitation Hydraulique (GEH) Durance
Within EDF Systèmes Energétiques Insulaires (EDF IES)	<ul style="list-style-type: none"> • Plant: Thermal power plant of Vazzio (Corse)
Within Enedis	<ul style="list-style-type: none"> • Enedis head office • Direction Régionale Sillon Rhodanien
Within Dalkia	<ul style="list-style-type: none"> • Dalkia head office • Subsidiaries: Dalkia Poland; Dalkia Electrotechnics • Regional Directions: Direction régionale Centre Est; Direction régionale Centre Ouest; Direction régionale Sud-Ouest; Direction régionale Nord-Ouest; Direction régionale Est
Within Groupe Luminus	<ul style="list-style-type: none"> • Groupe Luminus/Luminus SA head office • Plant: Ringvaart (Pays-Bas)
Within EDF Energy	<ul style="list-style-type: none"> • EDF Energy head office • Plant: Nuclear power station of Sizewell B
Within EDF Renouvelables	<ul style="list-style-type: none"> • EDF Renouvelables France; EDF Renouvelables Brésil
Within Edison	<ul style="list-style-type: none"> • Edison head office

Appendix 3

EDF group's verified greenhouse gas emissions assessment

Verified greenhouse gas emissions Summary of the 2022 GHG assessment	Tons of CO ₂ equivalent verified	Level of assurance Representation of the selected sample (%)
100% of the direct scope 1 greenhouse gas emissions	24MtCO ₂ e	Reasonable 50%
100% of the indirect scope 2 greenhouse gas emissions	0.4MtCO ₂ e	Limited 82%
100% of the indirect scope 3 greenhouse gas emissions	96MtCO ₂ e	Limited 21%

3.9 Vigilance Plan

3.9.1 The EDF group's CSR commitment and its duty of vigilance framework

EDF has a long track record of running a responsible business, based on the values of respect, solidarity and responsibility, promoting sustainable solutions for individuals and the environment.

EDF's *raison d'être* has been modified to read "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development" and this statement was added to its articles of association at the General Shareholders' Meeting held on 7 May 2020. The Group's *raison d'être* is broken down into 16 CSR commitments ⁽¹⁾, which are ranked and grouped into four key issues: carbon and climate neutrality, preserving the planet's resources, well-being and solidarity, and responsible development of the EDF group's activities.

Legal Framework

French Act No. 2017-399 of 27 March 2017 on the Duty of Vigilance of parent companies and ordering companies introduced the obligation, in Article L. 225-102-4 of the French Commercial Code, to draw up and implement a Vigilance Plan.

This plan must include "reasonable vigilance measures to identify risks and prevent serious violations of human rights and fundamental freedoms, the health and safety of individuals, and the environment" that may result from the activities of the company and its controlled subsidiaries, as well as those of suppliers or subcontractors with whom it has an established business relationship, when these activities are tied to that relationship.

It must also include five measures:

1. risk mapping to identify, analyse and prioritise risks;
2. procedures for regular evaluation of the situation of controlled subsidiaries, subcontractors and suppliers based on risk mapping;
3. appropriate risk mitigation or serious harm prevention actions;
4. a mechanism for reporting and collecting information on the existence or realisation of risks;
5. a system for monitoring the measures implemented and evaluating their effectiveness.

The Group's Vigilance Plan sets out these five measures as follows:

- 3.9.1 The EDF group's CSR commitment and its duty of vigilance framework
- 3.9.2 Governance, steering and stakeholder involvement
- 3.9.3 Main characteristics of EDF as regards the "Duty of Vigilance" law
- 3.9.4 Methodology regarding Group risk mapping
- 3.9.5 Major improvements of the EDF group's vigilance plan in 2022
- 3.9.6 Salient risks and risk prevention and mitigation measures
 - > 3.9.6.1 Human Rights and Fundamental Freedoms
 - > 3.9.6.2 Environment
 - > 3.9.6.3 Health & Safety
 - > 3.9.6.4 Suppliers and subcontractors
- 3.9.7. Group whistleblowing system
- 3.9.8. Monitoring procedure

The Group's framework relating to its commitments and requirements with respect to the environment, human rights, and health and safety

EDF's Vigilance Plan was determined within the framework of the UN Guiding Principles on Business and Human Rights, OECD Guiding Principles, the fundamental conventions of the International Labour Organisation and UN International Bill of Human Rights.

In this context, the Group has published on its website its Duty of Vigilance standards in a document entitled "Human rights and fundamental freedoms, Health and safety, Environment, and Business ethics: the EDF group's commitments and requirements of the EDF group (EDF and the companies it controls, see section 3.9.3 "Main characteristics of EDF as regards the Duty of Vigilance law") and the fundamental requirements with regard to its business relationships in terms of respect for human rights and fundamental freedoms, environmental protection, guaranteeing the health and safety of individuals, and business ethics (see section 3.9.5 "Major improvements of the EDF group's Vigilance Plan in 2022 – Creation, promotion and publication of a set of Duty of Vigilance standards").

This set of standards refers to all the Group's public documents and internal policies, including:

- mandatory Group procedures binding on all controlled entities ⁽²⁾: risk management and internal control, governance of subsidiaries and holdings, project management, ethics and compliance, CSR, health and safety, procurement;
- internal documents made public: Ethics Charter, code of conduct Ethics and Compliance, Sustainable Development Charter for Suppliers, Global Framework Agreement on Corporate Social Responsibility;
- external sources: UN Global Compact, UN Guiding Principles on Business and Human Rights, OECD Guidelines for Multinational Enterprises, WBCSD CEO Guide to Human Rights, Conventions of the International Labour Organisation (ILO) guaranteeing fundamental principles and rights at work and combatting for the elimination of discrimination, Declaration on the Rights of the Child, Declaration on the Elimination of All Forms of Discrimination against Women, Global Reporting Initiative (GRI), Supplier Relations and Responsible Procurement Label (RF&AR).

(1) Corporate Social Responsibility.

(2) In compliance with the principle of the independent management of the operator of regulated infrastructures.

EDF's Vigilance Plan reports on the various steps taken for each of the Group's CSR issues and commitments throughout chapter 3 of this document as follows:

Salient risks related to the duty of vigilance			Stakes and commitments of the EDF group	
Area	Type of risk	Risk	Descriptions of the 2022 mitigations and actions in the different sections of the DPEF	
Human rights and fundamental freedoms	Transverse	Risks related to harassment and discrimination	Sections 3.3.3 "Equality, diversity and inclusion" and 3.3.4 "Energy poverty and social innovation"	Sections 3.4.1 "Dialogue and consultation with stakeholders" and 3.3.2.4 "The EDF group whistleblowing procedure"
	Activities and projects	Risk of infringement of the rights of communities, indigenous peoples and vulnerable groups: these risks are linked in particular to land issues and population displacements or to consultations with indigenous populations that may prove insufficient given the complexity of the consultation process with indigenous populations (or ethnic minorities) or the management of this process in whole or in part carried out by an administration thus limiting EDF's control over this risk.	Section 3.3.2.3 "Human Rights"	
	Activities and projects	Risk of infringement of workers' rights including risks related to decent working conditions at the Group's construction sites.	Section 3.3.2.3 "Human rights"	
	Activities and projects	Risks related to the use of security forces for projects near conflict zones or security regimes.	Section 3.3.2.3 "Human rights"	
Environment	Transverse	Climate impact: the climate change and greenhouse gas emission.	Section 3.1 "Carbon neutrality and the climate"	
	Transverse	EDF impact on air, water, soils, biodiversity and waster production.	Section 3.2 "Preserving the planet's resources"	
Health-Safety	Employees and subcontractors	Work-related accidents, work-related diseases (asbestos, chemicals, ionizing radiation and noise).	Section 3.3.1 "Security, health and safety for all"	
	Employees and subcontractors	Musculoskeletal disorders, anxiety-depressive disorders, including stress.	Section 3.3.1 "Security, health and safety for all"	
	Consumers and residents	The safety of nuclear and hydraulic facilities.	Sections 3.3.1.1 "Nuclear safety" and 3.3.1.2 "Hydropower safety"	
	Consumers and residents	Air quality, noise and acoustic nuisance.	Sections 3.3.1.6 "Air quality" and 3.3.1.4 "Consumer health and safety"	
Suppliers	Purchase category	IT and electronic services and materials regarding human rights risks in relation to the supply chain.	Sections 3.4.2.3 "Contribution to development through purchasing" and 3.3.2.3.4 "Implementation of human rights commitments"	
	Purchase category	Work and maintenance services in an industrial environment regarding the increased safety risk.	Section 3.4.2.3 "Contribution to development through purchasing"	
	Purchase category	Decommissioning/depollution services regarding environmental risk (waste production).	Section 3.4.2.3 "Contribution to development through purchasing"	
	Specific	In 2022, the risks of human rights and in particular of forced labour in connection with the supply chain were clarified in the areas of procurement of IT and instrumentation & control, textiles and solar panels regarding forced labour risks.	Sections 3.4.2.3 "Contribution to development through purchasing" and 3.3.2.3.4 "Implementation of human rights commitments"	

3.9.2 Governance, steering and stakeholder involvement

EDF has strengthened its oversight of the Vigilance Plan with the appointment, in December 2020, of a Group Duty of Vigilance Compliance Officer by two members of the Executive Committee: the Group Corporate Secretary and the Group Executive Director in charge of Innovation, Corporate Responsibility and Strategy. This officer is responsible for the development, deployment and coordination of the vigilance plan and its application within the Group.

The Vigilance Plan and the resulting actions are validated by the CSR Strategy Committee chaired by the Group's Chairman, and submitted to the Corporate Responsibility Committee, a Committee of the Board of Directors dedicated to social and environmental responsibility issues.

The Vigilance Plan is designed and managed in collaboration with the Legal Department and the Impact Department within a Steering Committee and a Strategic Committee that also includes the Human Resources Department, the Purchasing Department, the Risk Department, the International Department, the Ethics and Compliance Department, the Export Control and International Sanctions Department, and, when applicable, representatives of subsidiaries with particularly exposed activities. The Strategic Committee defines the orientations and objectives of the Vigilance Plan in a collegial manner, based on proposals from the Steering Committee. It ensures that these objectives are achieved and may redefine them according to the operational progress reported by the Steering Committee that meet on a quarterly basis.

The deployment and coordination of the Vigilance Plan is based on a network of Duty-of-Vigilance Officers appointed in each Group entity concerned (see section 3.9.5 "Main improvements of the EDF group's Vigilance Plan in 2022").

Stakeholder association

Dialogue with stakeholders is a major part of EDF's culture. It forms the basis of our cooperation with our stakeholders.

The Global Framework Agreement on Corporate Social Responsibility signed by EDF in 2018 and extended for two years on 29 November 2021 with the Group's trade unions and two international trade union federations (IndustriAll and ISP) states that EDF's Vigilance Plan will be "developed and set up in association with the

Company stakeholders, including workers' representative organisations" (see section 3.5.3.1.1. "The Global Social Responsibility Agreement"). Since 2018, the Committee for Dialogue on Social Responsibility (CDRS), made up of representatives of all the signatories of the agreement, has been working on numerous topics related to the Duty of Vigilance (health and safety, exercise of the Group's responsibility in the context of international projects, impacts of the pandemic, etc.) and on the actions to be implemented to roll out and improve the Group's Vigilance Plan. Thus, in 2022, CDRS members learned from its meetings about the progress of the 2021 Vigilance Plan, and also shared about the vigilance actions in 2022. In terms of legal framework, the proposed European directive on the corporate duty of vigilance in terms of sustainability was also presented to members, along with changes to the EDF group's whistleblowing system relating to the transposition into French law of the European directive on the legal protection of whistleblowers. These CDRS meetings also feature discussions designed to answer members' questions or examine key local issues of which members are aware.

Externally, EDF participated in discussions with other companies, lawyers, NGOs, and trade union federations within the framework of the "*Entreprises pour les droits de l'homme*" (Businesses for Human Rights) (EDH⁽¹⁾) non-profit organisation, in order to openly exchange on the expectations of all stakeholders, practices and improve Vigilance Plan preparation processes.

In November 2021, EDF also took part in a peer review on the Vigilance plan, organised by Global Compact⁽²⁾, bringing together other groups subject to the law, and personalities from the world of non-profits and research.

In 2022 a specialist in businesses and human rights was appointed to the Group Stakeholder Council (see section 3.4.1.1.1.1 "EDF: a pioneer in the implementation of stakeholder panels") to boost the Council's expertise in this field. In June 2022, EDF submitted its Vigilance Plan and its Group-wide implementation to the Stakeholder Council.

At the same time, the Group is steadfastly pursuing discussions opened with a range of members of civil society (non-profits, leading figures) keen to maintain this dialogue, with the aim of continuously improving its Vigilance Plan.

3.9.3 Main characteristics of EDF as regards the "Duty of Vigilance" law

The EDF group is an integrated energy company engaged in activities involving risks in three fields where the Duty of Vigilance applies. EDF is active in all areas of the electricity industry and some areas of the gas industry: power generation using nuclear, renewable and thermal energies; electricity transmission and distribution⁽³⁾; sales; energy services; energy trading (see section 1.4 "Description of the Group's activities").

Main countries of activity

The Group's activities are mainly located in OECD countries (see section 1.4.5 "International activities"). Countries considered to be "higher-risk countries" receive special care, including in terms of relations with partners.

The EDF group is a major energy provider on four key European markets: France, the UK, Italy and Belgium. The Group is seeking to move into new geographical areas,

developing low-carbon solutions in growing countries and strengthening its positions in Europe.

The Group most often develops its overseas projects as minority shareholder, mainly in the following countries: Brazil, Chile, the Middle East (Saudi Arabia and the United Arab Emirates), Western and Central Africa (Cameroon, Côte d'Ivoire, Togo), India, the United States, Germany and Spain.

Group-wide, EDF Renewables develops projects on its own or with partners, operates and maintains renewable power generation facilities (mainly wind and solar) in more than 20 countries. The main zones in which it has historically operated are North America (United States, Canada and Mexico) and Europe, starting with France and the United Kingdom. EDF Renewables has also rebalanced its business in geographical terms, increasing its presence in other countries with high potential for the development of renewable energy, including South Africa, Brazil, China, India, UAE, Saudi Arabia, Morocco, and Egypt.

(1) e-dh.org

(2) Pacte mondial réseau France (<https://pactemondial.org/>).

(3) In accordance with the principle of independent management of regulated infrastructure operators.

EDF R net installed capacity in solar and wind power (in %):

North America	40%
Europe	28%
China, Vietnam and India	12%
South America	11%
Saudi Arabia and United Arab Emirates	5%
Israel	2%
Egypt and Morocco	1%
South Africa	1%

EDF group has operations in Russia in energy services through the Dalkia subsidiary Dalkia Rus and through its Moscow-based office which is in charge of the promotion and development of the Group's business and new activities in energy transition in Russia. Following the Russia-Ukraine conflict, EDF ceased operations in Russia, taking the decision in March to close its Moscow office, then announcing on 23 May 2022 the sale of Dalkia's Russian subsidiary (see 3.9.6.1.2 "Main prevention, mitigation and monitoring measures implemented" – "Conflict between Russia and Ukraine").

Suppliers and subcontractors

The scope of suppliers and subcontractors managed by the Group Purchasing Department represents approximately 11,000 tier-1 suppliers. More than 97% of its purchases are made in France and 99.4% in Europe ⁽¹⁾. Suppliers of certain subsidiaries or suppliers involved in international projects are subject to special vigilance measures. Because the Group's activities are mainly in the industrial field, EDF exercises upstream vigilance, with regard to any risk of violation of persons' rights or risk to their health (employees, service providers, local residents, local communities and customers) or risk to the environment prior to making investment decisions, particularly to build, operate, maintain or dismantle facilities.

Scope of the Vigilance Plan

The scope of the Vigilance Plan covers EDF's activities, the activities of subsidiaries it controls ⁽²⁾, as well as the activities of its suppliers and subcontractors with which the Group has established commercial relations to the extent their activities are related to those relations.

The Organisation of the Group is detailed in section 1.2.1 "Organisation of the Group".

Dalkia and Framatome subsidiaries with a headcount of over 5,000 employees are integrated in the plan, together with all French and foreign subsidiaries.

RTE and Enedis, respectively the French power transmission and distribution system operators, are independently managed subsidiaries, and therefore publish their own Vigilance Plans.

3.9.4 Methodology regarding Group risk mapping

The process for identifying and prioritising risks used to develop the Vigilance Plan is based on two complementary approaches: Group risk mapping, which includes several risks related to the duty of vigilance, and additional risk mapping, specifically focused on the entities most exposed because of their activity and/or their location.

Under the Group approach described in section 2.1 "Risk management and control of activities", each Group entity conducts a risk mapping exercise, under the responsibility of management, using a risk typology designed to cover all categories of risk, whether internal or external, operational or strategic, to which the Group is exposed.

It is made up of 5 successive steps: Risk identification, risk assessment, prioritisation, control through the definition of an action plan, managing the action plan which includes monitoring the action plan's deployment, and measuring its effectiveness.

Risk identification

In order to reasonably ensure that the main risks are being identified, a separate approach for each business process and each asset is combined with a separate approach for each major risk type. In addition, feedback, events, incidents, and near-misses are taken into consideration as a source of risk identification, as well as the results of audits. The identification of risks is the result of a discussion between the main actors: Managers, experts and stakeholders.

Risk assessment and prioritisation

The identified risks are qualitatively prioritised according to:

- their impact, *i.e.* their potential criticality, assessed using multiple criteria, including the assessment of the impact on the physical or human environment;
- their probability of occurrence, *i.e.* its degree of likelihood evaluated over a relevant time horizon, estimated on the basis of the history of the activity, feedback, or internal or external expertise;
- their level of risk control, *i.e.* the efficiency of the actions implemented.

The main purpose of the general risk mapping exercise is to define and implement action plans (prevention, protection, mitigation etc.) to reduce the impact of the risks and/or risk probability.

Group risk governance

The EDF group's risk map is based on the entities' risk maps, internal control self-assessments, and cross-analyses of feedback from operational and functional entities.

The Group Risk Management Department identifies and assesses Group-level risks and draws up a Group risk map, which is validated by the Risk Committee chaired by the Group's Chairman and then presented to the Board of Directors' Audit Committee.

How Group risk assessment shaped the Vigilance Plan in 2022

Through this approach, the main risks presented in section 2.2 "Risks to which the Group is exposed" have been identified, at the level of the EDF group.

Several of these risks are of strategic importance for the Vigilance Plan:

- ethics or compliance risk (see section 2.2-1D "Ethics or compliance violations"): since 2019, this risk has included a "duty of vigilance" component, implementing a Group action programme and requiring Group entities to report back on their own action in this area;
- adaptation to climate change – physical risks and transition risks (3B): this risk specifically includes a component focused on the impact of the Group's operations on the climate (see section 3.1.3.2.3 "Climate risk and opportunity scenario analysis");
- industrial safety violations and impact on environmental assets including biodiversity (4H), with a special focus on nuclear safety (5C) and hydropower safety (4E);

(1) Including European Union, Switzerland, United Kingdom.

(2) Subsidiaries integrated into the scope of consolidation using the full consolidation method pursuant to Article L. 233-16 II of the French Commercial Code (in France and abroad) (see note 3.3 to the consolidated financial statements for the year ended 31 December 2022).

- the risk of managing complex major industrial projects, including EPR projects (4A): this risk includes a component regarding potential impacts of projects on human rights, the environment, health and safety;
- risk operational continuity of supply chains and contractual relationships (4B): this risk specifically includes vigilance-based measures during the contractualisation and contract monitoring stages.

The risks specific to the Duty of Vigilance are detailed by area in section 3.9.6 “Salient risks and risk prevention and mitigation measures”:

- salient risks related to human rights and fundamental freedoms: see section 3.9.6.1.1.
- salient risks relating to the environment: see section 3.9.6.2.1.
- salient risks relating to personal health and safety: see section 3.9.6.3.1.
- salient risks relating to suppliers and sub-contractors: see section 3.9.6.4.1.

3.9.5 Major improvements of the EDF group’s vigilance plan in 2022

In 2022, several projects and actions were initiated as part of a continuous improvement process of the Group vigilance plan:

Adaptation and roll-out of human rights commitments included in Duty of Vigilance standards

In March 2021, EDF drew up a set of guidelines listing the commitments of the Group (EDF and its controlled subsidiaries) and the fundamental requirements for its business relationships in terms of human rights and fundamental freedoms, environmental protection, protection of personal health and safety and business ethics. The Group has summarised its Duty of Vigilance commitments in these standards, and spells out its requirements for its partners, financiers, suppliers, and subcontractors. This document, submitted to the members of the CDRS ⁽¹⁾ (see section 3.9.2 “Governance, steering and stakeholder involvement”), was signed by the Chairman of the EDF group. It is available in French and English on edf.fr website (www.edf.fr/sites/groupe/files/2023-02/edfgroup_rse_referentiel-ddv-2021_en.pdf).

In 2022, EDF began adapting each of human rights commitments featured in its standards with the aim of explaining, contextualising, and rolling them out. Each commitment has its own human rights guide highlighting the international frames of reference and related definitions, and the main risk factors, main risk management actions and, if necessary, available tools. By the end of 2022, the guides focusing on discrimination, harassment, and use of security forces had been finalised.

More in-depth analysis of country risks

The Group has developed an in-house country profiling tool to assess a country’s context in terms of risks related to the duty of vigilance. It gathers the values of eight indicators (such as the Gender Gap Index or the Children’s Rights in the Workplace Index) for more than 180 countries covering the three Duty of Vigilance themes (Human Rights, Environment, Health and Safety) as well as the country’s socio-economic situation.

To complete this tool, in 2021 the Group has subscribed to *Verisk Maplecroft*® to have access to the human rights indices in order to refine and specify the human rights risks that the Group could face in the countries where it operates, purchases and develops. This subscription was renewed and extended to a wider range of indices to enable the Group’s different entities to carry out more in-depth analyses.

Reinforced integration of the duty of vigilance in the purchasing process of the Group Purchasing Department

The Group Purchasing Department has carried out a review to assess the integration of the duty of vigilance in its contracting phases. In 2021, the compliance commitment for bidders (which is mandatory to participate in the tender), covering the themes of corruption, money laundering, financing of terrorism, conflicts of interest and international sanctions, was finalised. Bidders

now commit to comply with EDF’s requirements relating to the French Duty of Vigilance Act (see section 3.4.2.3.2.4 “Sustainable Procurement process”). In 2022, the CSR charter between EDF and its suppliers, which is a contract document, was updated to include compliance with obligations relating to the duty of vigilance, as well as details of CSR commitments (human rights, the environment, and health & safety) that the Group requires its suppliers and sub-contractors to both comply with themselves and make their own suppliers comply with. The rest of this review will take place in 2023 and will contribute to improving the integration of the duty of vigilance at all levels of the contracting process.

Addition of the duty of vigilance to the methodological guide on ethics and compliance investigations to be conducted in connection with EDF external growth transactions

The EDF group is regularly required to carry out transactions to subscribe for or acquire securities in French or foreign entities as part of partnerships, major projects, or external growth or investment transactions. In 2023, EDF finalised a methodological guide providing a practical list and presentation of the different due diligence measures required in terms of ethics and compliance. These due diligence measures are based on the Ethics & Compliances Policy, which lists the Group’s compliance programmes, particularly the corruption and influence peddling prevention programme, compliance with international sanctions, preventing the risk of money laundering and financing of terrorism, preventing breaches of competition law, export control, and the duty of vigilance. This guide sets out a series of due diligence measures to take or actions to implement chronologically and gradually at every phase of an acquisition project/partnership/project based on the level of risk identified at each stage of the project.

Group-wide awareness campaigns and roll-out of the vigilance plan

The network of Duty of Vigilance Managers, appointed at relevant Group entities, has been strengthened. At their entities, these Managers take on duties relating to CSR, Ethics & Compliance, or Internal Control. Five network management sessions were held in 2022, particularly focusing on the following subjects:

- issuing a duty of vigilance roll-out kit for staff newly appointed to these duties at their entities;
- sharing the setup of vigilance measures at certain Group subsidiaries;
- a half-day focusing on human rights, including a talk by an expert and practical case studies in smaller groups;
- regulatory monitoring: the proposed directive on the corporate duty of vigilance in terms of sustainability, the draft European regulation prohibiting products made using forced labour, plus changes to the EDF group whistleblowing system relating to the transposition into French law of the European directive on legal protection of whistleblowers.

(1) Committee for Dialogue on Social Responsibility (CDRS).

With regard to training, in 2021, the Group developed an e-learning module dedicated to the duty of vigilance to raise awareness and help deploy the Group's compliance plan. It provides a definition of the duty of vigilance, its scope of application, the actors involved and the associated obligations, and identifies the risks and remedial actions through concrete examples relating to the Group's

activities. By the end of December 2022, approximately 1,500 employees had attended e-learning sessions.

These actions in 2022 are part of a year-round improvement process based on a regularly reviewed action plan.

3.9.6 Salient risks and risk prevention and mitigation measures

Global actions to prevent and mitigate risks related to the duty of vigilance

Risk prevention and mitigation measures are implemented by each relevant entity by way of applying cross-functional and sectorial policies and using ordinary Group methodology for risk control as a basis. This methodology provides a description of risk treatment action plans and an evaluation of their efficacy. Industrial projects are subject to a risk analysis within the scope of application of the duty of vigilance, taking into account their nature, size, technical features and location. For this purpose, environmental and social impact assessments are based on the most demanding international standards (mostly IFC, WB, ADB ⁽¹⁾).

In addition, issues relating to the environment, personal health and safety and human rights are systematically addressed as part of the assessment process for projects submitted to the Group Executive Committee's Commitments Committee (CECEG) and to the Committee that validates the Group's international development projects, the International Business Development Committee (CBDI), in the form of an identification of the risks associated with projects, to ensure that EDF's commitments in this area are not overlooked. Concretely, this takes the form of identifying the risks associated with the projects for the activities developed and for the supplier and subcontractors relationships envisaged in the framework of the project. This identification will be facilitated by the providing of a regularly updated grid screening, which will allow for an analysis of projects that are consistent with the Group's *raison d'être*, CSR commitments, and guidelines, as well as with international standards. This grid takes into account environmental, health and safety, human rights, and ethical dimensions.

3.9.6.1 Human Rights and Fundamental Freedoms

3.9.6.1.1 Identifying salient risks

In the area of human rights and fundamental freedoms, the Group's ethics and compliance policy, which includes the duty of vigilance, has led the EDF group to implement an approach that results in the identification of key risks and associated mitigation measures, assessed according to the Group's activities and the countries where the Company and its subsidiaries operate.

Two categories of salient risks related to human rights and fundamental freedoms were identified:

- at the cross-functional/global level: risks related to harassment and discrimination;
- in the Group's international activities and projects, and in particular in geographical areas where local practices and situations, as well as legislation, are less demanding than the standards of OECD countries:
 - > risks of infringing on the rights of local communities: these risks are linked to land issues and population displacements, or to the consequences of inadequate consultation of local communities, particularly indigenous ones,
 - > risk of infringement of workers' rights including risks related to decent working conditions at the Group's construction sites,
 - > risks related to the use of security forces for projects near conflict zones or security regimes.

3.9.6.1.2 Main prevention mitigation and monitoring measures implemented

The implementation of human rights commitments is part of the deployment of the EDF's group Global Social Responsibility Agreement and of the Group's reference framework (see section 3.3.2.3 "Human rights").

Preventing and dealing with any physical or psychological violence, intolerance or injustice in the workplace

Executives must take all necessary steps to prevent discrimination, harassment and physical and emotional abuse within their entities by striving to make employees aware of such risks. They must provide regular information about the Group whistleblowing system and take appropriate disciplinary action in the event of proven wrongdoing (see section 3.3.2.2.2 "Prevention of harassment and discrimination").

Combating sexism and all forms of discrimination:

The EDF group is committed to developing concrete action to promote equality in the workplace and occupational and social integration for disabled people, combating sexism, violence and all forms of discrimination and developing support for parents. Among the many prevention actions described in section 3.3.3 "Equality, diversity and inclusion", the following major prevention and mitigation actions are carried out by the Group:

The EDF group's professional equality policy is based on principles such as equal treatment of women and men throughout their professional lives; condemning any behaviour or practice that discriminates against employees; and EDF's contribution to changing attitudes. In 2021, the EDF Executive Committee wanted to further the Group's diversity aims, particularly adding a new Group-wide goal of increasing the number of women at all levels of the Group: 33% in 2026 and 40% in 2030 (see section 3.3.3.1.1 "Reinforcing the Group's commitment").

The EDF group and some of its subsidiaries have decided to apply for an international certification (GEEIS certification) to assess the quality and relevance of their commitments to gender diversity and equality in the workplace. The certification was renewed in 2019 and, for the very first time, it was extended to all the Group's other fields of action in terms of diversity and inclusion. Signing a GEEIS commitment charter, marking the Group's commitment to fighting stereotypes by deploying inclusive artificial intelligence without gender stereotypes in all business processes and environments.

The EDF group is committed to preventing and combating all forms of violence against women, in the workplace (sexism, harassment) and also domestic and family violence (support, guidance and job retention). The aim is to train and raise the awareness of managers and Human Resources personnel on the subjects of sexism and both moral and sexual harassment. Thus, with the help of the "ENERGIES mixité!" network, a new "sexism barometer" was set up as part of the #StOpE multi-company initiative, of which EDF has been a member since the beginning. Operational implementation of such measures was carried out in partnership with the Company's medical and social teams and the "FIT, une femme un toit" association in particular. In 2022, EDF took care of, assisted, supported and advised 122 female employees who were victims of domestic violence. Overall, more than 485 employees (465 women and 20 men) were assisted between 2019 and 2022.

The EDF group is committed to societal and professional integration of disabled people, with its 12th EDF agreement for equal rights and equal opportunity and the occupational integration of disabled people, entered into on 11 January 2023 for the 2023-2025 period. The issues we face change over time, such as digital technologies, which were made a special point of focus in the latest EDF disability agreements, resulting in the signing of a first EDF digital accessibility policy in February 2022. EDF Renewables also renewed its agreement in December 2022 for the same period. Framatome has a valid agreement until the end of 2023.

(1) IFC: International Finance Corporation. WB: World Bank. ADB: Asian Development Bank.

In order to prevent racial discrimination, the EDF group addressed the issue of its origins, and more specifically racism in the workplace, in a reference document for its managers and Human Resources (RH) Officers.

The EDF group has been committed to respecting religion in the workplace since 2008, and published a first set of guidelines in 2010 (updated in 2016), setting out guidelines for managers and HR officers to help them understand, analyse and act in compliance with the law.

EDF is also partner of *L'Autre Cercle* ⁽¹⁾, of the Energy association ⁽²⁾ since 2010, and has been a signatory of the LGBT charter since 2015. EDF's HR staff and managers have been provided since 2015 with guidelines on "Respect for sexual orientations in the workplace". EDF has also designed, in partnership with Energyay, a process to accompany and support transitioning employees within the Group. "Supporting transitioning employees at EDF – Respect for gender identity" guidelines were published.

To implement these policies of inclusion and equal opportunity, EDF has produced educational and training materials for its entire workforce, whilst still providing managers and HR staff with more targeted materials. The Company trains everyone involved in its recruitment process, using training course on how to "recruit without discrimination". To raise awareness about diversity among employees and promote the emergence of inclusive practices and organisations, the Group set up a range of digital training courses called "*Vivre Ensemble La Diversité*" (i.e., diversity and togetherness) in the form of serious games played by 1,708 employees in 2022 (i.e., 16,155 employees overall since they were launched).

A toll-free hotline ⁽³⁾ for all employees of the Company, operating seven days a week, to allow employees to confide in someone and obtain advice on all harassment and discrimination issues; a support team (with internal and external skills) intervenes in investigations carried out when alerts are reported.

Preventing risks related to the Group's international activities and projects concerning violations of the rights of communities and workers and the use of security forces

The EDF group does not tolerate any infringement of human rights or fundamental freedoms in its operations or in those of its business relationships for operations related to the relationship. All the Group's commitments relating to human rights are described in section 3.3.2.3 "Human rights".

These commitments are implemented and based on the principles of action that apply to all Group operations such as:

1. initial and ongoing screening and management of environmental and societal impacts and risks, including those caused by operations as part of its business relationships;
2. organising, worldwide, a transparent, all-inclusive dialogue and consultation process focusing on each new facility-related project involving a budget of over €50 million with a significant impact on the local area or environment;
3. implementation and monitoring of these commitments and requirements is ensured under the Group's internal policies or agreements, in particular the CSR policy, the ethics and compliance policy, the purchasing policy, the health and safety policy, the global CSR agreement, the Ethics Charter and the roll-out of the Vigilance Plan;
4. implementation of systems for collecting and processing reports of wrongdoing, that are accessible and notified to anyone who could be impacted by the Company's operations, guaranteeing the confidentiality of the reports and protecting internal whistleblowers (employees and external staff ⁽⁴⁾).

Depending on the context of the project, a Human Rights Impact Assessment (HRIA) is conducted. It is based on the principles defined by the UN Guiding Principles on Business and Human Rights, as developed for example by the Danish Institute for Human Rights. These studies place the identification of impacted human rights at the centre of the analysis. They include an assessment of the state of human rights in the country as well as in the project area, a mapping of human rights-oriented stakeholders (listing "rights-holders" and "duty bearers"), an analysis of the project's impacts on these rights, and the development of mitigation measures. This type of study identifies the activities at risk according to their importance and sensitivity.

These studies are generally entrusted to national or international consultants specialising in the topic, and managed by EDF's internal CSR referents.

The conclusions of these studies are intended to be integrated into all development, construction, operation and end-of-life activities of the project, via an *ad hoc* management system (internal CSR policy, CSR contact and correspondents, contractual tools, audits and performance monitoring, reporting, etc.). They concern both affected communities and workers, the use of security forces, the whistleblowing system and the protection of whistleblowers, etc.

With regard to decent working conditions, external inspection and audit missions carried out on the sites of internationally financed projects (such as the Nachtigal project) enable the Group to detect breaches of the Group's commitments at each stage of the project's life.

At the level of the investment decision-making process, a strong focus on human rights, through the Group's commitments framework, is integrated into each analysis files of projects presented to the Group Executive Committee's Commitments Committee (CECEG), as well as to the Validation Committee for the Group's international development projects (CBDI). Efforts are also systematically made to identify project-related risks of violation of human rights relating to both developed activities and relationships with suppliers and sub-contractors being considered for projects. This identification will be facilitated by the construction of a screening grid which will allow for an analysis of projects that are consistent with the Group's *raison d'être*, commitments and guidelines, as well as with international standards. This grid takes into account all of the Group's human rights commitments and requirements, such as compliance with the ILO's fundamental conventions (on child labour, forced labour, freedom of association, discrimination), the rights of local communities, and health and safety conditions for the populations in question.

In operational terms, several projects are presented in section 3.3.2.3.4 "Implementation of human rights commitments" including some managed by EDF Renewables or by the Group's International Department:

Wind project in Chili

As part of an onshore wind project in the Antofagasta region, EDF Renewables Chile conducted an anthropological survey of the indigenous Chango community, based on interviews with five organisations from the Chango community, which has begun the process of reconstructing its past. The information collected will be added to the preliminary impact study carried out as part of EDF Renewables' project.

Solar park in Israel

The Gevim project, on which construction was completed in March 2022, is located near the Gevim Kibbutz – a typical Israeli collectivist village. Representatives of the kibbutz and the district committee's environmental team identified that the photovoltaic facility would have a visual impact on the kibbutz's inhabitants and that the unique landscape would be affected as a result. So it was decided that a buffer zone of vegetation would be set up between the facility and the kibbutz, and that the facility must be made to blend into its environment as much as possible. A wide strip made up of trees and local plants requiring only limited watering was planted between the facility and the kibbutz.

(1) *L'Autre Cercle* is an LGBT+ non-profit organisation (lesbian, bisexual, gay and transgender people, plus any people who do not identify as heterosexual and/or cisgender) whose main aim is to combat discrimination in the world of work (www.autrecercle.org).

(2) Energyay is the LGBT association for the electric and gas industries and their www.energyay.org

(3) Toll-free hotline 0800 30 40 40.

(4) Occasional staff (trainees, work-study trainees, etc.) but also service providers or partners.

On the EDF group International Department projects, human rights risks are examined and managed at different stages of projects:

- During the pre-development phase, for “new” countries a “country” assessment is carried out using the Verisk Maplecroft® tool, an in-house country profiling tool (see section 3.9.5 “Major improvements of the EDF group’s Vigilance Plan in 2022” – More in-depth analysis of country risks) or other sources. Specific due diligence measures can also be taken for specific industries: accordingly, a Human Rights Risks study was conducted in 2022 in Colombia to assess issues specific to the hydroelectricity sector, focusing on possible development zones, resulting in the creation of a risk matrix (for EDF activities, local communities, and suppliers & sub-contractors) and issuing of management recommendations. Identified risks include, among others and depending on zones:
 - > lack of community participation in and mistrust of projects, particularly in mining regions;
 - > possible conflicts over water resources;
 - > deteriorating security conditions, and use of security forces;
 - > protection of whistleblowers (environmental and social), etc.
- During the development phase, depending on identified country risks, combined with project specifics, a Human Rights Impact Assessment & Management (HRIAM) study will be set up. This is currently the case in Malawi on the Mpatamanga project, for which EDF was selected with SCATEC as “strategic sponsor”. The aim of this study is to:
 - > specify the “Human Rights” context in the project zone, in connection with future development and construction activities;
 - > draw up a matrix of risks and opportunities generated by the project regarding human rights;
 - > identify “rights-holders”;
 - > identify social and environmental studies that need to incorporate a human rights component;
 - > submit a Human Rights Policy proposal for the project.
- Human Rights clauses are also systematically included in construction contracts (“EPC”) to build major infrastructure such as hydroelectric facilities, but also for smaller contracts such as photovoltaic generators for “B&I” (Business & Industry) clients, particularly in Sub-Saharan Africa.
- During the construction phase, claim and complaint management systems are set up for workers and communities (in addition to systems provided by EDF and any lessors).

Conflict between Russia and Ukraine:

Before the start of the war in Ukraine, the EDF group operated in Russia in two ways. Firstly, in the energy services field, via Dalkia’s subsidiary in Russia, the company Dalkia Rus. Then, via its Moscow office that was tasked, in Russia, with (i) promoting Group business lines and (ii) developing new activities relating to the energy transition. Since the start of the war in Ukraine, the EDF group has relied on the measures set out in its vigilance plan to make sure that neither its activities nor the activities of entities with which it is in business feature risks of serious violation of human rights, health and safety, or the environment. It has also relied on the provisions of the OECD Guide⁽¹⁾, which recommends that businesses assess any plans to terminate a business relationship based on the importance of this relationship, the legal consequences of the pursuance or termination of the relationship, changes that termination would cause in the field, as well as any credible information regarding potential negative economic and/or social impacts of the termination decision.

Accordingly, EDF suspended its operations in Russia, taking the decision in March 2022 to close its Moscow office, then announcing on 23 May 2022 the sale of Dalkia’s Russian subsidiary, Dalkia Rus.

Plus, to ensure that no contractual relationships breached the packages of sanctions adopted against Russia, the EDF group relied on its organisation and guidelines in terms of export control & sanctions. More generally, the decision to pursue certain relationships was always taken in accordance with international sanctions and restrictions imposed by Russia, the absolute need not to violate human rights, fundamental liberties, personal health and safety, and the environment, or to jeopardise nuclear security, plus continuing to secure the electricity supply of France and European countries, which – given the current geopolitical and economic situation – is a key goal as electricity is an essential product.

Ongoing litigation in Mexico

In 2018, an NGO referred the planned Gunaa Sicaru wind farm, managed by a subsidiary of EDF Renewables in Mexico, to the OECD’s French national contact point (NCP). During the course of the OECD mediation process, the EDF group took part in two dialogue meetings with the plaintiffs and provided some responses to the concerns raised. The NCP closed the matter in spring 2020. The indigenous consultation process conducted by the Mexican authorities was suspended following the earthquake in 2018, and since 2020 due to the Covid-19 pandemic. The process is now taking its course after the judge ordered the resumption of the consultation. Likewise, in December 2019, EDF responded to a formal notice for the same project sent pursuant to the French “Duty of Vigilance” Act by that NGO and four individuals. EDF was then summoned on 13 October 2020 to appear before the Paris Court of Justice (*tribunal judiciaire*) under the French “Duty of Vigilance” Act. The applicants have asked the court to order changes to the Vigilance Plan produced by EDF to better address, in particular, the risks posed to the rights of indigenous communities and to order compensation for the damage caused by its failure to fulfil its duty of vigilance. EDF has challenged these two applications. On 30 November 2021, the pre-trial judge rejected the non-profits’ request for a precautionary suspension of the project as well as their request for an injunction against EDF’s Vigilance Plan, due to the lack of a prior formal notice. The applicants appealed the judgment of the pre-trial judge. The Tribunal proposed mediation, which EDF accepted. Since then, the process has been ongoing at the court of appeal. On 12 July 2022, the French NCP published a press release noting the bolstering of EDF’s corporate policy and the work done on human rights, as well as engagement with stakeholders. As these measures met its recommendations, the NCP accordingly ended its monitoring⁽²⁾. Developments in the case are also being monitored by members of the CDRS (see section on CDRS).

A website dedicated to the project is available in English and Spanish: <https://www.gunaa-sicaru.com/>.

3.9.6.2 Environment

3.9.6.2.1 Identifying salient risks

Group mapping of risks is performed based on the Group’s line of industrial activities. Environmental risks are identified, assessed, and prioritised through the environmental management system (EMS) and the internal control system linked to Group risk management (see section 3.5.4.2 “Environmental management system (EMS)”). The identification of environmental risks is part of the Group’s overall risk management system (see chapter 2 “Risk factors and control framework”). Each company draws up its own risk map, based on the Group’s methodology, and defines action plans to reduce and limit its risks.

The 2022 risk mapping update reconfirmed the 2021 risk analysis and did not highlight new environmental risks. The main change concerns the observation of the effects of climate change with higher temperatures in summer and droughts increasing the pressure on both environments and some of the Group’s business lines such as hydropower and nuclear activities.

(1) OECD due diligence guide for responsible business conduct, published on 20 March 2018 (<http://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf>).

(2) <https://www.tresor.economie.gouv.fr/Articles/2022/07/26/pcn-francais-edf-et-edf-renouvelables-au-mexique>

The salient environmental risks are as follows:

Salient risks	Generation activities most exposed
<ul style="list-style-type: none"> ● Impact on the climate: climate change and GHG emissions. 	Power and heat generation activities from fossil fuel.
<ul style="list-style-type: none"> ● The impacts of EDF's activities on the air, water and soil and the production of waste. ● Protection of biodiversity and services provided by ecosystems. ● The management of water resources. 	Power generation activities (nuclear, thermal, hydropower, wind and solar power).

3.9.6.2.2 Main prevention, mitigation and monitoring measures implemented

To prevent and mitigate risks of serious harm to the environment, EDF relies on its Environmental Management System (EMS) and its CSR policy to commit its entities to a precautionary approach and acting responsibly. The most significant risks are covered in risk control plans in conjunction with the Group's CSR policy.

In order to implement the environmental goals and related actions based on its CSR commitments and policy, the EDF group has set up a Group-wide environmental management mechanism using an EMS (see section 3.5.4.2 "Environmental management system (EMS)"). This management system relies on EDF's governance bodies, which define the environmental guidelines and objectives to be achieved, in line with the expectations of external and internal stakeholders (see chapter 4 "Corporate governance" and section 3.5.2 "CSR Governance").

In accordance with the requirements of the CSR policy, each of the Group's entities ⁽¹⁾ is implementing an environmental management approach adapted to its own issues.

The EMS' operation is carried out by Group and business processes that allow for certification to stakeholders:

- controls environmental risks and ensures that the EDF group complies with regulations and its commitments: each entity draws up and implements an environmental programme or action plan that takes into account the Group's commitments concerning it, its significant environmental aspects, and its regulatory obligations, considering its risks and opportunities;
- improve the efficiency of its organisations in a way that is appropriate to the issues at stake: each entity is responsible for its own internal control, internal and external audits of its EMS, and interfaces with the Group EMS;
- mandatory non-financial reporting of the environmental activities of the entities: each entity collects and communicates the required environmental information to the Sustainable Development Department.

The Group's EMS is certified by an external body, AFNOR, according to the international standard ISO 14001. All industrial sites are covered by an EMS, 80% of which are certified.

In 2022, the results of the certification audits conducted by AFNOR confirm the quality of the leadership, strategies, and policies built in alignment with regional issues and the needs and expectations of stakeholders. The auditors also underlined the effective and rigorous coordination of environmental management systems at certified entities and subsidiaries, and noted progress on management of environmental impacts on business lines, with issues relating to CO₂ and biodiversity increasingly taken into account. These audits revealed 11 new minor non-compliances; the 14 minor non-compliances from the previous audit campaign were resolved. The main area in which progress is expected is the systematic taking into account of environmental impacts from the design phase, based on the principles of the circular economy and development of a Group-wide prevention and prediction culture by better analysing causes and monitoring the effectiveness of corrective actions. Increasing internal audits, which drive progress, would also be beneficial.

3.9.6.2.2.1 Prevent impacts on the climate

The EDF group recognises the urgency of acting against climate change. It has aligned its ambitions with the Paris Climate Agreement, whose goal is to limit global warming to well below 2, preferably 1.5°C, relative to pre-industrial levels. The Group's CO₂ emission reduction trajectory has been validated by Science Based Targets. The EDF group has set up a dedicated governance structure in line with the best practices recommended by the Task Force on Climate-Related Financial Disclosure (TCFD). The Group's climate strategy, aligned with CAP 2030, is accompanied by four CSR commitments: an ambitious carbon trajectory, carbon-offsetting solutions, adaptation to climate change, and the development of electricity uses and innovative energy services, which form the EDF group's climate transition plan (see section 3.1.1 "Group carbon trajectory").

Group carbon trajectory

Carbon neutrality by 2050

The EDF group was one of the first companies, way back in 2018, to set itself the goal of contributing to achieving carbon neutrality by 2050. This commitment was strengthened and clarified in March 2020. This involves in practical terms:

- direct emissions: reducing the Group's direct greenhouse gas emissions to zero or virtually zero by 2050;
- indirect emissions: reducing indirect greenhouse gas emissions as much as possible within the framework of national policies;
- Group residual emissions: implementing negative-emission projects to offset the Group's residual emissions by 2050.

This covers emissions of all greenhouse gases for all Scopes (1, 2 and 3) and for all operations of the Group across the globe.

2030 targets recognised by the SBTi

In 2020, the EDF group set new targets to cut its greenhouse gas emissions by 2030, covering both its direct emissions (Scope 1) and its indirect emissions (Scopes 2 and 3). On 7 December 2020, the Science Based Targets initiative ⁽²⁾ confirmed based on its recently-published methodology specially developed for the electrical sector ⁽³⁾ that these goals are in line with Well Below 2°C trajectory. The EDF group thus committed to the following 2030 targets:

- 50% reduction, on 2017 levels for Scope 1 and Scope 2 emissions, also including emissions from non-consolidated assets and emissions associated with electricity purchased (i.e. not generated by it) to be sold to end customers;
- 28% reduction, compared with 2019 levels of emissions from combustion of gas sold to end customers (Scope 3).

In keeping with these targets validated by SBTi, the EDF group has decided to set the following additional 2030 targets: 25MtCO₂ for Scope 1 emissions in 2030, a 28% reduction on 2019 levels of the emissions of the entire Scope 3 by 2030.

In order to reach these targets, a greenhouse gas emissions reduction trajectory has been developed for the three Scopes of the EDF group. This trajectory contains a 2023 milestone, with the following interim targets:

- 28 to 30MtCO₂e for Group Scope 1 emissions in 2023;

(1) Companies with industrial, operational (installation, operation, maintenance), engineering, distribution and marketing activities relating to goods and services.

(2) Initiative launched in the wake of the Paris Agreement in 2015 by the following four organisations: CDP, UN Global Compact, World Resources Institute and World Wild Fund.

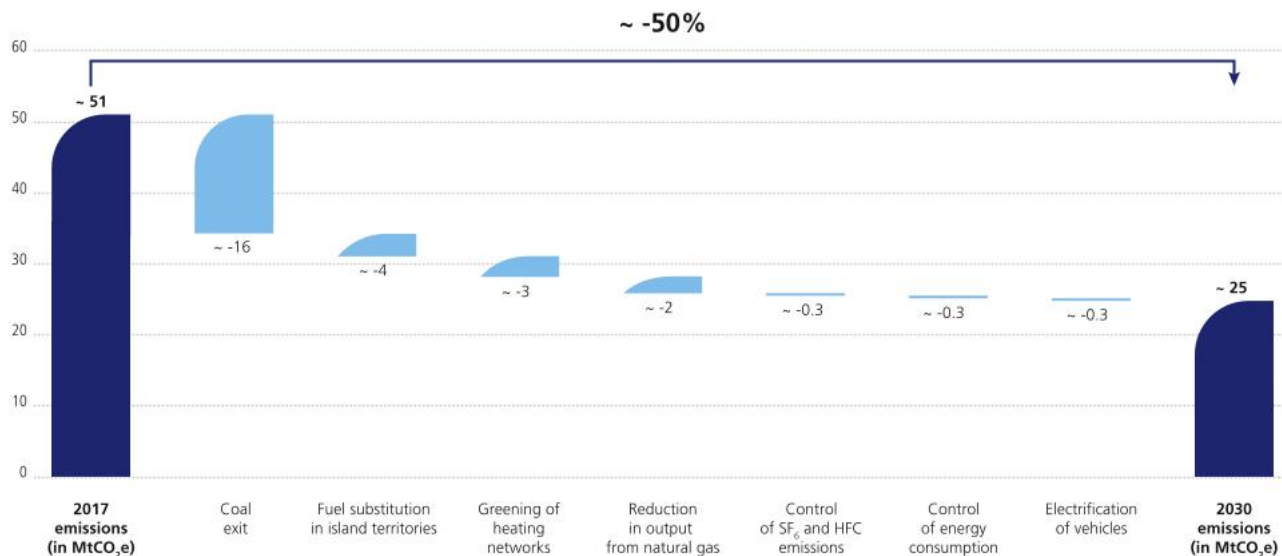
(3) Setting 1.5°C aligned science based targets quick start guide for electric utilities, CDP, June 2020.

- 23% reduction, on 2017 levels for Scope 1 and Scope 2 emissions, also including emissions from non-consolidated assets and emissions associated with electricity purchased (i.e. not generated by it) to be sold to end customers;
- 10% reduction, on 2019 levels for emissions associated with the combustion of gas sold to end customers and an 8% reduction for the entire Scope 3 of the Group.

Main measures implemented to achieve this ambitious goal:

By 2030, and in line with the CAP 2030 projects, the main actions enabling the EDF group to achieve these emission targets covering all three Scopes are as follows:

Impact of our actions on the reduction of the Group's direct GHG emissions (SCOPE1)



Coal-fired power generation, currently representing 0.4% of the total power generation, to be reduced to 0 by 2030

The EDF group is implementing its commitments by closing down coal-fired electricity generating plants. In 2019, the Group committed to ending all coal-fired power generation by 2030 across all geographical zones (see section 3.1.1.3.1 "Coal-fired power generation", which accounts for 0.4% of total generation, reduced to 0 by 2030).

A regulated and limited functioning in the long term: In 2020, coal-fired heat and electricity generation accounted for 0.5% of the EDF group's total in 2022 output. These generation assets are used only during so-called "peak" periods and energy market crises ⁽¹⁾, as was the case for winter 2021-2022 and the coming winter 2022-2023. In France, in accordance with Article R. 311-7-2 of the Energy Code, carbon-fired power generation facilities must not exceed a set emissions limit. To cope with supply issues due to the economic situation, Article 36 of Act 2022-1158 of 16 August 2022 introducing emergency measures to protect spending power and its implementing Decree 2022-1233 of 14 September 2022 temporarily adjusted emissions limits for these generation assets. Accordingly, in case of increased use of coal-fired thermal generation systems, the operators of these facilities must offset any excess emissions due to the increased limit. This offsetting requirement takes the form of a one-off payment of €40/t of CO₂e emitted to a carbon offsetting fund. The purpose of this fund is to finance greenhouse gas reduction or capture projects in France (see in section 3.1.1.6.1 "Policy" - "EDF's offset fund").

Energy transition in island regions

Corsica and the French overseas territories, as Non-Interconnected Zones (NIZ) in terms of the mainland power grid, are covered by specific Multi-Year Energy Programme (PPE), which set ambitious low-carbon and energy independence goals for them (energy independence of overseas territories by 2030 and Corsica by 2050). Among other measures, the EDF group is progressively replacing fuel oil with liquid biomass and shutting down both Combustion Turbines (CT) and the oldest motors (see section 3.1.1.3.2 "Energy transition of island regions").

These 2023 and 2030 Group direct and indirect emissions targets were used to determine emission trajectories for all the Group's business lines and entities (see section 3.1.3 "EDF climate governance").

Greener heating networks

The EDF group, through its subsidiary Dalkia, manages over 330 urban heating and cooling networks. Dalkia has set itself the goal of achieving 65% renewable and recovered energy in its heating networks in France by 2026 (see section 3.1.1.3.3 "Greener heating networks").

Low-carbon thermal energy

Gas activities account for a significant share of the EDF group's GHG report, particularly through three activities: production of electricity from natural gas, production of heat from natural gas, and sale of natural gas to end customers. Because natural gas emits approximately two times less CO₂ than coal, and enables the production of electricity that can be managed ahead of time, it can play a role in the energy transition of some countries, like Italy where it replaces coal. The EDF group has defined a set of internal criteria in order to align its gas business with its climate-related commitments:

- All EDF group's gas activities fit into the carbon trajectories (covering both direct and indirect emissions) set for each of the Group's entities in line with the Group's 2030 goals. All development projects must demonstrate a contribution to the energy transition of the relevant regions and their business plan must ensure compliance with the Group's 2050 carbon neutral target.
- No development of new gas projects (Combined Cycle Gas – CCG), unless the project contributes to reducing the carbon intensity of the country's electrical system or further secures its supply. Whenever technically and economically feasible, the project must use solutions designed to reduce its direct emissions, such as green gas, hydrogen or carbon capture and storage (see the EDF group "low-carbon thermal" project below).
- The EDF group helps its gas customers to shift to energy savings, energy efficiency and a reduction in their emissions through its products and services, expertise and specialised subsidiaries. It develops and encourages alternative solutions to fossil fuels whenever available (low-carbon electricity, heat pumps, renewable gas, renewable heat etc.).
- The EDF group supports the development of the biogas sector whenever a project's business model is viable in the long term. It does so mainly through its subsidiary Dalkia, which operates in biogas production, processing and recovery activities, both for cogeneration and direct reinjection into the natural gas distribution network.

(1) The *Conseil constitutionnel* (i.e., French constitutional council) authorises increased fossil fuel-fired power generation facility emissions limits only in case of a serious threat to power supply security (Decision 2022-843 DC of 12 August 2022).

- Finally, the EDF group is constantly working to optimise the energy and environmental performance of its fossil fuel-fired fleet in order to reduce its CO₂ emissions, as well as to provide more services to the electricity system. (See section 3.1.1.3.4 "Low-carbon thermal energy").

To hit its direct GHG emissions reduction targets, the EDF group is also committed to taking action to manage and reduce SF₆ and HFC emissions (see section 3.1.1.3.6), manage the consumption of Group facilities (see section 3.1.1.3.7), and relating to its fleet of vehicles and staff travel (see sections 3.1.1.3.8 and 3.1.1.3.9).

By 2030, and in line with the CAP 2030 projects, the main actions enabling the EDF group to achieve its targets relating to decarbonised generation are as follows:

The Group is by far the biggest investor in the energy transition in Europe, accounting on its own for more than 20% of industrial investments in the electrical sector.

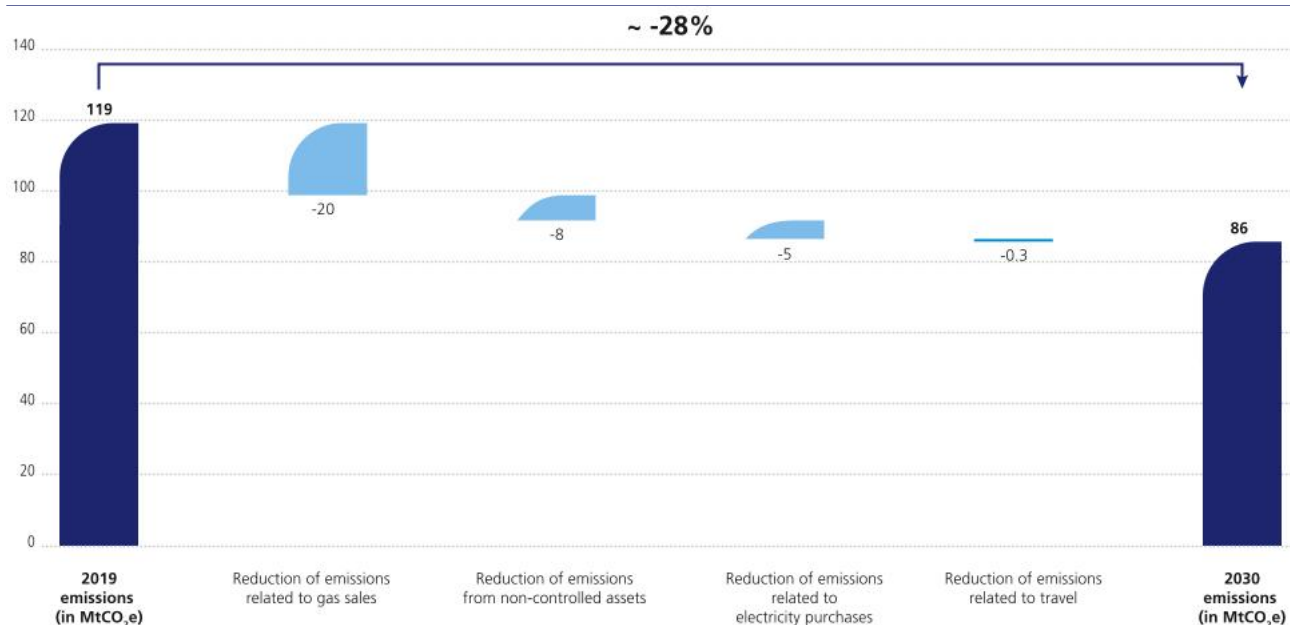
In 2022, nearly 94% of Group investments were made in low-carbon technology, with 50% of investments concerning the nuclear sector. Furthermore, the Group's investments aligned with the European Sustainable Taxonomy in effect as at 31 December 2022 amount to 66% (see section 3.1.1.4 "Roadmap for increasing the Group's decarbonised output").

ROADMAP FOR INCREASING THE GROUP'S CARBON-FREE OUTPUT

Subjects	Actions	Section URD
Grand Carénage	Continued operation of France's nuclear power plants beyond 40 years thanks to the <i>Grand Carénage</i> programme.	3.1.1.4.2
New Nuclear	In February 2022, the French President expressed his desire for 6 new EPR2 nuclear power generation reactors to be built in France and commissioned from 2035, and for 8 additional reactors to be studied. The Head of State also announced the development of the NUWARDTM reactor and innovative reactors.	3.1.1.4.3
Development of renewables	Doubling of installed renewable energy capacity, including hydro, between 2015 and 2030, to reach 60GW net in 2030.	3.1.1.4.4
Flexibility and management of intermittency	Development of electrical storage to improve system flexibility and management of the intermittency of non-controllable renewable energies.	3.1.1.4.5

By 2030, and in line with the CAP 2030 projects, the main actions enabling the EDF group to achieve these indirect GHG emission targets are as follows:

Impact of our actions on the reduction of the Group's indirect (SCOPE 3) GHG emissions



The following table provides details these actions taken by the EDF group:

Action	Description	Section URD
Reduction in emissions relating to the sale of gas	Gas customer portfolio management; Support to consumers in their transition towards energy sobriety, energy efficiency, and the reduction of their emissions via Group offers, expertise, and subsidiaries, in particular by promoting alternative solutions to fossil fuels; increased biomethane injection rate into the natural gas distribution network in line with national strategies.	3.1.4
Reduction in emissions relating to the purchase of electricity	Greening (use of renewable energy Power Purchase Agreements) of purchases of electricity for sale to end customers in countries where electricity has a high carbon intensity; management of portfolios of customers for which the EDF group sells but does not generate power.	3.1.4.2.3
Reducing travel emissions	Reducing emissions from employee travel, in view of the roll-out of the EDF group's new travel policy.	3.2.4.3.2
Reduction of emissions from non-consolidated assets	Disinvestment by 2030 from coal-fired power generation assets located in China in which the EDF group has a minority holding.	

Contribution to carbon sinks

For the EDF group, use of carbon offsetting is the final stage of a process to achieve neutrality, based on the "Avoid-Reduce-Compensate" approach. Carbon offsetting must not under any circumstances take the place of a strategy designed to drastically reduce the Group's emissions, whether direct or indirect (see section 3.1.1.6 "Carbon offsetting solutions").

3.9.6.2.2.2 Prevent the impacts of EDF's activities on the air, water, soil, biodiversity and the production of waste

Nature features four domains: land, oceans, fresh water, and the atmosphere. These domains are home to environmental assets, *i.e.*, living or non-living natural elements. Ecosystems make up a large share of these assets, making the provision of ecosystem services, such as supplying fresh water, possible. Business has positive or negative impacts on nature. Short-term impacts on nature can cause changes to the quality and resilience of environmental assets, which in turn generate medium- and long-term risks for organisations, due to their dependency on them.

Policies on how to preserve natural resources are based on analysis of physical and transition risks, and, among other measures, take the form of public commitments.

The Group organised an assessment of biodiversity issues along the full value chain, including mapping issues upstream and downstream from its activities (Scope 3).

This biodiversity risk assessment, carried out using the double materiality method on dependencies and impacts, was based on the ENCORE database (Exploring Natural Capital Opportunities, Risks and Exposure). The main issues concern not only operations but also activities upstream from the EDF group value chain. Some of these upstream activities, particularly fuel and material supply operations, feature dependency issues relating to nature (resources, regulation services) and pressures (*e.g.* on ecosystems and water resources). The risk materiality analysis (physical and transition risks) shows that risks are correctly identified and covered, with some room for improvement (see section 3.2.1.1 "Physical and transition risks related to Nature").

Group Nature Commitments

The EDF group has a long-standing commitment to minimising the impact of its activities on biodiversity through a dedicated policy. Today, this ambition is reflected in its commitment to two mechanisms (see section 3.2.1.2 "The Group's public commitment").

2020-2022 Nature Commitments	In France: <i>Entreprises engagées pour la nature</i> (EEN) initiative led by the French Office for Biodiversity (OFB).	Commitment themes: Reduced contribution to IPBES pressure factors ⁽¹⁾ ; protection and restoration of natural environments; furthering and sharing scientific knowledge; awareness campaigns and governance.
	Internationally: Act4nature International initiative set up by the French non-profit EpE (<i>Entreprises pour l'environnement</i> , <i>i.e.</i> Enterprises for the Environment).	

These commitments cover all of the Group's business lines, in all geographical areas and within the scope of operational activities that present biodiversity challenges.

In 2022, the Group increased nature governance and dialogue with stakeholders in the field (see section 3.2.1.3 "Governance").

The Group's actions to protect and manage the natural resources impacted by its activities through responsible land management:

The Group's action is based on three pillars (see section 3.2.2 "Biodiversity and responsible land management"):

- reducing the activities' contribution to major pressure factors: Most of the pressures applied to biodiversity are strictly governed by regulations. The IPBES report in 2019 identifies five major pressure factors: changing use of land and sea, overexploitation of resources, climate change, pollution and invasive alien species. EDF has developed its action programme to limit its impact on each of these factors (see section 3.2.2.1.1 "Reducing the activities' contribution to major pressure factors");
- recreating environments with conditions favourable to biodiversity by preserving and restoring environments, as well as protecting endangered environments and species (see section 3.2.2.1.2 "Recreating environments and conditions conducive to biodiversity");

- further improving and sharing knowledge through research and knowledge of land quality (see section 3.2.2.1.3 "Improving and sharing knowledge").

The Group's actions to protect and manage the natural resources impacted by its activities through integrated and sustainable water management:

Water is an essential resource to generate most types of power, either to cool nuclear and thermal power stations, or to drive hydroelectric power stations. It is an issue identified in the Group materiality matrix. This is why the Group committed in its CSR policy to protecting and managing water in an integrated and sustainable manner, both in terms of quantity and quality (see section 3.2.3.2 "Water, a resource to be preserved and saved") and to discuss water issues with the regions in which it operates, fully taking account of the localness of water, particularly multiple uses of water faced with increasing climate issues (see section 3.2.3.3 "Water as a shared resource and a powerful marker of climate change"). In mainland France, dams operated by EDF are used to store billions of cubic metres of water and have an essential role to play during droughts and heat waves.

Group actions regarding radioactive and conventional waste, as well as the circular economy:

Optimising the use of the natural resources consumed by the Group's value chain is an essential component of the Group's corporate responsibility. The Group is committed to promoting a circular economy approach; avoiding the production of conventional waste and promoting the re-use, recycling and recovery of products/materials throughout the value chain; using this waste by reallocating uses internally within the Company during new developments, or in approved recovery channels; and assuming its responsibilities with regard to radioactive waste (see section 3.2.4 "Radioactive and conventional waste, and circular economy").

(1) IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

For impacts on air quality, see section 3.3.1.6 "Air quality".

3.9.6.3 Health & Safety

3.9.6.3.1 Identifying salient risks

The mapping of risks to the health and safety of employees and service providers is carried out by the Health and Safety Division, which is responsible for health and safety management, on the basis of risk analyses carried out by the Group's various entities and subsidiaries, in line with the Group's risk mapping system (see section 2.2. "Risks to which the Group is exposed"). Salient risks to the health and safety of employees and service providers are connected to the operation of industrial facilities (see section 2.2.4 – 4C "Occupational health or safety violations (employees and service providers)") and include:

- occupational accidents, occupational illnesses (asbestos, chemicals, ionising radiation and noise);
- musculoskeletal diseases and anxiety-depressive disorders, including stress.

The risks concerning consumers and local residents are linked to the operation of the industrial facilities (see sections 2.2.4 - 4E "Hydraulic safety violations", 2.2.4 - 4H "Industrial safety violations and impact on environmental assets, including biodiversity", 2.2.5 - 5C "Nuclear safety violations during operation resulting in nuclear civil liability"). Those risks mainly concern:

- the safety of nuclear and hydraulic facilities;
- air quality, noise and light pollution.

3.9.6.3.2 Main mitigation, prevention and monitoring measures implemented

Deployment of the Health and Safety Policy

To prevent and mitigate risks of serious harm to the health and safety of its employees and subcontractors working on its sites, the Group relies on a Health and Safety policy adopted in 2018 and updated in 2021. This Group policy applies to all the companies controlled by the EDF group, in all the countries in which EDF operates. It concerns both its employees and its subcontractors.

The priorities of the policy are primarily to eradicate serious and fatal accidents, and secondarily to reduce the number of accidents and to fight against absenteeism. The policy aims to anchor throughout the Group the foundation formed by the Group's 10 key rules and the BEST ("Building Excellence in Safety Together") health and safety management reference framework, enhanced with new practices that have proved their worth in several entities. This policy is accompanied by a roadmap that mobilises the Group's entities to achieve the objectives set. The Executive Committee reviews health and safety figures and monitors action plans regularly (see section 3.3.1.3.1 "Health and safety policy").

10 key rules were identified following an analysis of fatal accidents in the EDF group over the last 30 years. The review organised in 2021 by the Health and Safety Strategic Committee showed that 100% of the Group's scope had carried out a self-assessment of its health and safety management system according to the BEST reference framework. In October 2022, the Strategic Health & Safety Committee conducted a specific review of Health & Safety requirements regarding relationships with service providers, highlighting the progress made by entities. Among other measures, this review led to the publication of an action plan on how to take greater account of health & safety in the purchasing process (see section 3.9.6.4.2 "Main prevention, mitigation and monitoring measures implemented").

When safety conditions related to key rules are not met, a "NoGo" must be activated to correct the situation before starting. In the same way, when unforeseen circumstances no longer allow the safety rules to be respected, a "safety STOP" should be marked. On 13 October 2022, a pause was observed throughout the Group for each team to discuss how to adapt the new policy to their own situation and ensure its adoption. Service providers are included and involved in major engagement and awareness events organised by the Group. In order to ensure the continuous improvement loop, and to maintain risk awareness, High-Potential

Events (HPE) are collected, analysed, and shared throughout the Group. Nearly 72% of these HPEs are near-misses or dangerous situations. Particular emphasis is placed on those related to the Group's 10 key rules. In 2022, the safety criterion of the EDF profit-sharing agreement focused on developing analyses of accidents requiring shutdown and reducing the number of accidents classified as HPE requiring shutdown or not. Moreover, audits are carried out each year throughout the Group, in particular in the form of site visits. These visits are written up in a site visit report shared locally with the audited teams.

The Health and Safety Policy also sets a framework for progress on the subject of health

EDF is committed to improving the physical and psychological health of its employees at work: both on-site and remotely. Making progress in this field requires the long-term involvement of medical teams, social workers, social partners, managers, prevention specialists and human resources managers in a multidisciplinary approach.

Prevention of anxiety- and depression-related disorders, stress and musculoskeletal disorders (MSD), the three main causes of absenteeism, are regularly targeted by prevention initiatives. The development of team empowerment projects also led to a significant drop in absenteeism among the employees of the teams involved, due to the positive health impacts of the improved quality of life in the groups and the increased levels of commitment.

This approach is illustrated by the social agreements that include a large part of health. Accordingly, there were further changes to work management and organisation methods in 2022, particularly based on changes introduced during the sanitary crisis and the roll-out of the company-wide agreements signed in 2021 at various Group companies. The aim of this change is to find a fresh balance between research and performance, increase group cohesion, and develop the well-being of every employee. For EDF, a "Travailler Autrement, Manager Autrement" ("Work Differently, Manage Differently") agreement was signed at the end of 2021. This global agreement includes a process to make teams accountable plus new working arrangements (updating of the coherence framework for remote working with a maximum of 10 days/month of remote working authorised, increasingly flexible hours by adjusting working hours to best meet employees' needs if necessary, provided the work team's level of performance is unaffected, starting work straight on site). To assist staff with this change, the Group also set up 2 financial aid schemes for remote working: an allowance of up to €20/month (employer contribution to home occupancy fees) and help with purchasing hardware to work remotely under good conditions. EDF also raised awareness among its employees on how to adjust their behaviour and posture when working remotely by publishing a health & safety guide issued in accordance with the "Work Differently, Manage Differently" agreement.

Awareness-raising activities are regularly organised to continue the prevention of cardiovascular risk, a major cause of death by heart attack, as well as the prevention of addictions, including the implementation of drug testing.

The operational departments' risk assessments take into account musculoskeletal disorders and exposure to noise, hazardous chemicals, ionising and electromagnetic radiation, and biological agents, depending on the nature of their activities, and they implement local measures to prevent occupational illness. Based on its assessments, Framatome developed exoskeletons to reduce both hard working conditions and their impacts on musculoskeletal disorders.

The prevention of psycho-social and socio-organisational risks is based on the use of the employee perception survey (MyEDF) read at all levels of the organisation, providing a precise risk assessment highlighting the strengths of the organisation and team, as well as its weaknesses. This makes it possible to establish local action plans adapted to the situations encountered.

The EDF group has drawn up a guide for its entities so that they can develop the retention and return to work of employees who may have experienced health problems. This approach, which is based on the implementation of pre-return visits with medical teams and the holding of return interviews between employees and managers, is aimed at preventing the risk of occupational deintegration.

Safety of nuclear and hydropower facilities

The operational safety of nuclear facilities is taken into consideration from the initial design stage, and is regularly monitored, together with the implementation of an employee motivation policy and large-scale investment programmes. The Group's nuclear safety policy is incorporated into training for both EDF employees and subcontractors. Nuclear safety is subject to internal controls (annual reviews, internal control plans and nuclear inspection audits in France) and external controls (peer reviews between corporate members of WANO and OSART audits conducted by experts from the International Atomic Energy Agency (IAEA)). In France, the safety of nuclear facilities is controlled by the ASN (French Nuclear Safety Authority). In the UK, the Office for nuclear regulation (ONR) is the independent safety regulator in the civil nuclear sector. It monitors compliance with safety rules, including for the transport of radioactive materials. The "EDF group Nuclear Safety" policy was redefined in 2021.

Stress corrosion: see in 1.4.1.1.2.1 "Handling of stress corrosion detected on the auxiliary circuits of a number of nuclear reactors".

Hydropower safety aims to limit risks of structural failure, risks relating to the operation of facilities during times of flooding, as well as watercourse flow variations during operation. The hydropower safety policy aims for a high level of safety and continuous improvement (see section 3.3.1.1 "Nuclear safety").

Air quality

The Group is fulfilling its commitments by closing coal-fired power plants (see section 3.1.1.3.1 "Coal-fired power generation, currently representing 0.4% of the total power generation, to be reduced to 0 by 2030"). In parallel, the EDF group is continuing its process of modernising and improving the environmental performance of its thermal fleet, until it meets European best available techniques requirements. Regarding island systems, actions are taken to reduce NO_x emissions, on a case-by-case basis: optimising exhaust gas processing, or reducing the number of hours of operation for certain turbines. In Brazil, the emission levels of the Combined Gas Cycle power plant in Norte Fluminense are below NO_x limit of 25ppm, mainly due to the high level of equipment maintenance. In Italy, the Marghera Levante power plant replaced less efficient facilities, and authorising not only increases in specific greenhouse gas emissions (up to 40%), but also a significant reduction in nitrogen oxide emissions (more than 50%) into the atmosphere (see section 3.3.1.6 "Air quality").

Noise and light pollution

With regard to noise pollution in particular, acoustic studies are carried out at the design stage and are included in the environmental impact studies. Acoustic measurement campaigns are run in the area surrounding nuclear power plants.

EDF Renewables performs acoustic studies from the initial development phase of the wind turbines and the noise levels of turbines form part of the selection criteria for machinery. The same level of attention is given to noise pollution in the Group's international and French subsidiaries (see section 3.3.1.4 "Consumer health and safety").

With regard to the action taken to prevent light pollution, Citelum has implemented a system of sensors to adjust the intensity of lighting on the road network based on traffic density and driving speeds, which also improves car safety.

3.9.6.4 Suppliers and subcontractors

3.9.6.4.1 Identifying salient risks

The salient risks relating to the duty of vigilance concerning suppliers and subcontractors are identified on the basis of a risk map covering all of EDF's purchasing categories within the scope of purchases covered by the Group

Purchasing Department. The method takes into account all aspects of CSR (environment, working relations and conditions, human rights, ethics and compliance). Its ultimate aim is to determine the degree of residual risk and identify actions for the supplier (see section 3.4.2.3 "Contribution to development through purchasing").

This risk analysis covers approximately 11,000 suppliers who have a contract with EDF. More than 97% of its purchases are made in France and 99.4% in Europe⁽¹⁾.

Risks are assessed per purchasing categories. The evaluation and prioritisation of risks is based on the activities of suppliers, and their geographical location is also a major factor in the assessment of risk.

Major risks have been identified in the various sectors of purchasing, mainly concerning safety, ethics, waste, the use of rare materials and human rights. 15% of the purchasing segments analysed are classified as having a major residual risk; 50% are classified as having a material residual risk and 35% are classified as having a low residual risk.

The largest procurement categories in financial terms for which major residual risks are deemed to remain include the following:

- IT and electronic services and materials regarding human rights risks in relation to the supply chain;
- work and maintenance services in an industrial environment regarding the increased safety risk;
- decommissioning/depollution services regarding environmental risk (waste production).

Some smaller categories are also included, such as airline ticketing.

Supply chain-related human rights risks featured in the risk map in areas including: textile purchasing, computer hardware, and command control. This also applies to solar panels (forced labour risks).

3.9.6.4.2 Main prevention, mitigation and monitoring measures implemented

The Group's new supplier policy, adopted in 2021, defines the shared principles that the senior managers of the various entities are responsible for implementing with regard to purchasing and contract management. It emphasises the Group's CSR requirements and sets out the Group's *raison d'être* and its commitments in terms of responsible purchasing, the use of companies employing disabled workers only, local presence, and supplier awareness.

Group commitments and obligations in respect of responsible procurement apply to every stage of the procurement process, including during prior supplier qualification, as well as during preparation of calls for tenders.

Even when these mechanisms are not directly applied, the Group major department or subsidiaries use equivalent methods of commitment adapted to their specific industrial or geographic characteristics; they are detailed in section 3.4.2.3.2.5 "Other practical procedures within the EDF group".

EDF's Group Purchasing Department takes CSR into account in its relations with its suppliers according to the principles of supplier commitments through:

1. validation of a compliance commitment for all bidders (mandatory to respond to the call for tenders) covering the following areas: corruption, money-laundering, the funding of terrorism, and the absence of any conflict of interest. Bidders also undertake to comply with the requirements of the Duty of Vigilance Act: To respect human rights and fundamental freedoms, to guarantee the health and safety of people at work, to protect the environment, and to comply with the social and environmental regulations applicable to its activities;

(1) European Union, Switzerland and the United Kingdom notably.

2. incorporation of CSR criteria in tenders, including specific criteria in the specifications on the basis of the risks identified for each type of contract and/or to address Group CSR aspirations such as the use of sheltered workshops, local engagement, and the inclusion of SMEs in the supplier panel;
3. development of Productivity Partnerships;
4. integration of a CSR clause covering environmental, human rights and health and safety commitments in the General Purchasing Conditions;
5. systematic inclusion of a CSR Charter between EDF and its suppliers as a contract document, updated on December 2022 to add the Group's *raison d'être* and CSR commitments made by the Group, as well as to take better account of the duty of vigilance;
6. ensuring these principles are upheld by suppliers (see section 3.4.2.3.3 "Supplier monitoring").

Climate and health & safety issues better taken into account in the purchasing process

In May 2022, as part of its adaptation of its *raison d'être*, the Group Purchasing Department decided to take further measures to tackle and focus on climate issues and natural resources in its purchasing process with prescribers and suppliers to reduce carbon emissions and preserve natural resources. Its main goals are to:

- take account of sustainability issues upstream from the launch of invitations to tender based on lifecycle cost analysis;
- set up a coal and resources incentive system for our suppliers;
- get Group Purchasing Department staff engaged with these key issues.

This project particularly includes assisting EDF's supply chain to "go low-carbon", helping prescribers to take account of these issues upstream from purchasing, and creating the tools needed to cover the purchasing process from A to Z.

Furthermore, following the EXCOM of 21 March 2022, it was decided that every business must require that a high level of health & safety standards be met when selecting businesses and that these standards must be increased at every stage of the purchasing process. To do so, an approach has been developed for each health & safety issue per purchasing category to identify the most exposed categories (e.g., rotating machine maintenance) in order to take appropriate actions such as including standards in specifications, and suitability and/or admissibility criteria, and criteria in technical ratings.

Supplier assessments

The monitoring of suppliers, which includes a CSR component, begins with an internal evaluation of the services they provide. Supplier monitoring is mainly carried out by the business line or Contract Management, which uses Performance Assessment Sheets and Supplier Assessment Sheets.

Document audits are completed by the supplier and are always (and independently) checked by the AFNOR teams. Questionnaires cover the entire scope of CSR; some are custom-designed to take issues specific to a given category into account. In 2021, it is mainly the suppliers in the risk categories (mobility and service providers working on nuclear sites) that have been questioned. It should be noted that suppliers were also interviewed at the request of Purchasing Category Managers (accommodations).

At the end of 2021, a special human rights questionnaire was developed with AFNOR and sent in 2022 to all suppliers with a contract in force, in the purchasing categories mentioned in international reports on the non-compliance with human rights or expressly mentioned by these reports, in the fields of textiles, computer equipment, control devices, and IT. In terms of solar panel purchases, EDF Renewables also sent out a questionnaire focusing on Human Rights to its suppliers in 2021: all surveyed suppliers provided a Human Rights policy and a purchasing code of conduct.

At the end of 2022, 3,200 suppliers were questioned using the ACESIA platform, and nearly a thousand of them have been controlled. The assessments were "satisfactory" for 34% of the audited questionnaires. The suppliers to be assessed are mainly selected based on the supplier risk mapping and the needs of buyers and business lines, on the contracts in progress.

This tool makes it possible for purchasers and suppliers to share an approach of continuous improvement in Corporate Social and Environmental Responsibility.

These on-site audits cover all CSR aspects: environmental, social and ethical (in particular human rights) policies, commitments and practices. On-site supplier audits are conducted by external, independent providers. CSR audits are conducted based on supplier risk mapping and feedback capitalised by Procurement Category Managers on how contracts are executed, with the help of the business line entities.

These audits are designed to test the CSR commitments adopted and are conducted on site (head office or production site of the supplier or place of work at an EDF site).

In 2022, 37 on-site CSR audits were conducted; 54% of which were outside France. 33.5% had a "satisfactory" result, 58.5% an "acceptable with comments" result and 8% an "insufficient" result: action plans were subsequently set up with suppliers and follow-up audits scheduled as necessary.

A large proportion of CSR audits were carried out as part of a call for tenders for the "workwear" category. Potential suppliers with audited production sites rated "Insufficient" or "Unsatisfactory" overall were ruled out of the supply chain selection process. In 2022, the declared secondary chain sub-contractors of suppliers selected in 2021 were audited. Only sub-contractors with a "Satisfactory" or "Acceptable" result can be included in secondary supply chain. The results of this campaign show that environmental and societal impacts were better taken into account, particularly compared to the similar initial campaign back in 2014. There was only one "Insufficient" result. Several businesses have demonstrated their determination to minimise their environmental impact: OEKO-TEX certification prioritised or obtained, reduced use of chemicals, energy management, etc.

Regarding audits conducted on other purchasing categories:

Upstream from an invitation to tender regarding manufacturing of GRP piping, potential tenderers were audited to confirm the compliance of their practices with minimum expected CSR prerequisites. In case of an unsatisfactory or insufficient result, an action plan must be set up: if necessary, an inspection audit is also required before the contract can be awarded. Across all purchasing categories, as in previous years, overall results for 2022 indicated appropriate management of safety and environment-related operational risks, due mainly to certification providing a framework and a robust safety culture. Environmental impact was also found to have also been better taken into account: carbon offsetting, use of the local economy, presence of CSR indicators/goals. However, several audited businesses did not have a code of ethics or anti-corruption policy. The other area for improvement was once more taking account of CSR criteria in successful bidders' own supply chains, even if some good practices were identified this year. EDF's requirements on these matters are still to be promoted in the audited companies.

In terms of organisation, 2022 was marked by audit postponements or cancellations due to geopolitical events (Russia-Ukraine crisis, instability in Burma, pandemic in China at the end of the year).

Awareness Raising and Training

The Purchasing Department and Impact Department organise awareness campaigns and training sessions for purchasers and prescribers focusing on responsible purchasing processes. In 2022, a training day was held along with 2 virtual classes aimed at people working in the CSR field at Group business lines and entities (section 3.3.3.6.6 "Skills development in the area of sustainable development").

In addition, in late 2022 an e-learning course was created and released Group-wide to raise awareness of the Responsible Purchasing process.

Each of these training courses and awareness campaigns makes clear and explains the connection with the duty of vigilance.

Coal and uranium procurement

In the coal supply chain, EDF no longer has direct contractual relations with mining companies or the market but remains an active supporter of *Bettercoal*⁽¹⁾ – the initiative for responsible coal purchases of which EDF is a founding member. The operational approach is based on a code that sets out ethical, corporate and environmental principles and provisions relevant to mining companies. It takes into account general performance requirements, including management systems, and also performance requirements concerning: ethics and transparency, human and labour rights (such as the prevention of forced and child labour, the right to a decent wage), social issues, including health and safety, and the environment. JERA Trading, its supplier, is now a member of *Bettercoal*, thus increasing the initiative's influence in Asia. In 2022, 24% of the EDF group coal supplies from JERAT were sourced from operators who had adopted the *Bettercoal* initiative, 28% from

(1) bettercoal.org/

North-American operators and 48% from other global producers. This reduction was particularly due to the suspension of imports from Russia and use of alternative suppliers from producing countries not signed up to the *Bettercoal* initiative. However, *Bettercoal* is currently in discussions with several of these producers to sign them up in 2023.

Concerning uranium supply chain, EDF obtains its uranium supplies over the long term under diversified contracts in terms of origin and suppliers, in most of the main producing countries (Australia, United States, Canada, Kazakhstan, etc.). The clauses authorising the completion of audits and setting out EDF's expectations in terms of enforcement of the fundamental rights and main international standards by suppliers and sub-contractors have progressively been added to contracts. The uranium mine audit system used by EDF since 2011 ensures that the ore is extracted and processed in good environmental, social and societal conditions (see section 3.4.2.3.4 "Responsibility in the fuel supply chain").

The method and the evaluation grid were developed with WNA (World Nuclear Association). This method is based on international standards, including The World Nuclear Association's Sustaining Global Best Practices in Uranium Mining and Processing: Principles for Managing Radiation, Health and Safety, and Waste and

the Environment, The Global reporting Initiative's (GRI), Sustainability reporting Guidelines & Mining and Metals Sector Supplement, and The International Council on Mining and Metals' (ICMM) Sustainable Development Framework. The issue of safety, which is particularly critical in mining (process safety), consists of a standardised framework recognised by all those involved in the sector. These standards take account of the issue of human rights and fundamental liberties (human rights, whistleblowing register, rights of native peoples, radiation protection), personal health & safety, and the environment, including in the broadest sense of the term (greenhouse gases, water, biodiversity, waste post-extraction site rehabilitation). Every year, EDF carries out mine audits through internal means (2 audits per year). The reports present the main strengths, recommendations and suggestions. The most ordinary ones relate to health and safety (wearing personal protective equipment such as gloves or goggles), the display of safety instructions, monitoring accidents, performing radiological controls, monitoring environmental footprint (specifically carbon emissions) and proposals relating to well-being in the workplace. Audit recommendations are included in the continuous improvement plans and action plans. There were two uranium mine audits in 2022.

3.9.7 Group whistleblowing system

Scope

The EDF group whistleblowing system consists of a single reporting system for all wrongdoing reported under the Sapin II Act and the "Duty of Vigilance" Act as well as wrongdoing reported by employees alleging harassment and discrimination. In late 2022, following the transposition into French law of the European directive on the protection of whistleblowers, in the form of the "Waserman Act", which came into force on 1 September 2022, EDF began working on a new whistleblowing procedure to take account of the broader definition of "whistleblower" status.

This Group system benefits all Group entities, except for Enedis and RTE ⁽¹⁾, which have their own whistleblowing system.

Whistleblowing system

Whistleblowers may choose to use the Group whistleblowing system or the other channels available to them (manager, human resources, staff representatives, local ethics and compliance officers, mediators etc.).

The Group whistleblowing system, managed from an independent platform, may be accessed at any time via the EDF group website (<https://www.bkms-system.com/bkwebanon/report/clientInfo?cin=5edf6&c=-1&language=eng>), in French, English, Italian, Portuguese, Dutch and Mandarin, in France or abroad. The whistleblower can report in the language of their choice.

3.9.8 Monitoring procedure

The Group's vigilance mission is committed to developing the Vigilance Plan's monitoring system as part of a continuous improvement process. This system is based on the operational action plan, which is monitored by the Steering Committee. This action plan is regularly presented to the CDRS (see section 3.9.2 "Governance, steering and stakeholder involvement").

The assessment of the system is included in the annual internal control plan, and a dedicated risk sheet on due diligence has been drawn up and implemented. It allows entities to self-assess whether or not they meet duty of vigilance

In order to comply with the requirements of the Sapin II and Duty of Vigilance laws, EDF has taken appropriate measures to guarantee the strict confidentiality of the personal data of whistleblowers, of those implicated or cited, and of the facts reported, in particular by setting up a whistleblowing system hosted on a dedicated, secure external platform.

The Group whistleblowing system allows Group employees and external staff (temporary workers, service provider employees, etc.) or occasional employees (fixed-term contracts, apprentices, trainees, etc.), as well as third parties, to report wrongdoing of which the EDF group or its staff are the culprits or victims.

See section 3.3.2.4 "The EDF group whistleblowing procedure" for more details on the functioning of the whistleblowing system.

Whistleblowing alerts in 2022

In 2022, within the Group (via the Group system or any other channel), 305 admissible alerts were recorded (including 63 in the Group alert system). 224 were about incidents occurring in France and 81 abroad. 133 related to EDF and 172 to Group subsidiaries. 52% cases reported relates to harassment/discrimination. In 2022, 68% the alerts handled were sufficiently detailed to result in corrective action or disciplinary sanctions (in particular, 9 dismissals following proven acts of harassment-discrimination). In 31% of the cases where the facts were not proven, action to improve the relevant processes was still taken.

requirements. Furthermore, internal control in this field was increased with two "essential progress actions" to be implemented at entities in 2022: one involved raising awareness among all relevant managers and project managers, via a dedicated e-learning course (see section 3.9.5. "Major improvements to the EDF group's Vigilance Plan in 2022"); and the other involved analysing salient risks at each entity (see section 3.9.5 "Major improvements to the EDF group's Vigilance Plan in 2022").

(1) Distribution network operator Enedis and transmission operator RTE are managed independently.



4



CORPORATE GOVERNANCE

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4.1 Corporate Governance Code

EDF adheres to the AFEP-MEDEF Code, which is the Corporate Governance Code to which the Company refers, in accordance with Article L. 22-10-10 of the French Commercial Code, subject to the specific laws and regulations applicable to EDF.

These specific laws and regulations, in accordance with EDF's status as a French State-owned company and in particular the application to the Company of Order no. 2014-948 of 20 August 2014 and its implementing texts, and Decree no. 53-707 of 9 August 1953, are detailed in this Universal Registration Document and relate specifically to:

- the composition of the Board of Directors (see section 4.2.1 "Members of the Board of Directors");

- the terms and conditions for the appointment of the Chairman & Chief Executive Officer of EDF and the method of exercising Executive Management (see section 4.2.2.2 "Appointment and powers of the Chairman & Chief Executive Officer" and section 4.2.2.4 "Balance of powers"); and
- the terms and conditions for setting the remuneration of the Chairman and Chief Executive Officer (see section 4.6.1.1 "Remuneration policy applicable to the Chairman and Chief Executive Officer").

In addition to the aforementioned specific laws and regulations, the table below sets out the AFEP-MEDEF Code recommendations that are not applied by the Company and the related explanations:

AFEP-MEDEF Code recommendation	Company's position	Explanation	Section of the Universal Registration Document
<p>The Board of Directors and Corporate Social Responsibility</p> <p>Recommendation no. 5.1:</p> <p><i>"On a proposal from Executive Management, the Board of Directors shall determine multi-year strategic policies with regard to social and environmental responsibility".</i></p> <p>Recommendation no. 5.2:</p> <p><i>"Executive Management shall present to the Board of Directors how this strategy is to be implemented with an action plan and the time horizons within which these actions are to be carried out. Executive Management shall notify the Board each year of the results that have been achieved."</i></p>	<p>As of the date of filing of this Universal Registration Document, the Board of Directors has not deliberated on the determination of the Company's multi-year strategic policies with regard to social and environmental responsibility.</p>	<p>Given the recent inclusion of these recommendations in the French AFEP-MEDEF Code, the Company was not in a position to implement them before filing the Universal Registration Document. These recommendations shall be implemented in the year 2023.</p>	<p>See section 4.2.2.9 ("Activity of the Board of Directors in 2022").</p>
<p>Holding of Company shares by Directors</p> <p>Recommendation no. 21:</p> <p><i>"[...] the Director should personally be a shareholder and, by virtue of the provisions in the by-laws or the internal regulations, hold a minimum number of shares that is significant in relation to the compensation awarded to them. If he or she does not hold these shares when assuming office, he or she should use his or her compensation to acquire them."</i></p>	<p>The Company's articles of association and the Board's internal Rules of Procedure do not require Directors to hold a minimum number of shares significant in relation to the remuneration they receive for their term of office.</p>	<p>In accordance with the law of 26 July 1983, the Directors representing the employees receive no remuneration for their term of office. Furthermore, the remuneration received for their term of office by Directors appointed on the recommendation of the French State, who are civil servants, is paid to the French State budget. Directors appointed on the recommendation of the French State who are not civil servants may only receive 85% of the remuneration due to them, the remainder being paid to the French State budget. Finally, the Chairman of the Board of Directors does not receive any remuneration for his or her term of office as Director. Given the wide range of situations, the Board has not established a rule on the holding of the Company's shares. Furthermore, each Director must act in the Company's corporate purpose, irrespective of the number of Company shares they hold in their personal capacity.</p>	<p>See sections 4.6.3 ("Total remuneration of Directors") and 4.5 ("Shareholding by corporate officers and trading in EDF securities by corporate officers and executives").</p>

AFEP-MEDEF Code recommendation	Company's position	Explanation	Section of the Universal Registration Document
<p>Requirement for corporate officers to hold shares</p> <p>Recommendation no. 24:</p> <p><i>"The Board of Directors defines a minimum number of registered shares that the Company officers must retain through to the end of their term of office. [...] Until this objective regarding the holding of shares has been achieved, the Company officers will devote a proportion of exercised options or awarded performance shares to this end as determined by the Board."</i></p>	<p>The Board of Directors has not prescribed regulations for the holding by the Chairman and Chief Executive Officer of a minimum number of the Company's shares.</p>	<p>The Chairman and Chief Executive Officer does not receive any remuneration for his or her term of office as Director. His or her remuneration is limited in accordance with Decree no. 53-707 of 9 August 1953 amended by Decree no. 2012-915 of 26 July 2012. Finally, the Company has not put in place a stock and/or performance stock option plan in favour of the Chairman and Chief Executive Officer. Accordingly, it was decided not to implement this recommendation. Furthermore, the executive corporate officer must act in the Company's best interests, irrespective of the number of Company shares he or she holds in his or her personal capacity.</p>	<p>See sections 4.6.2 ("Total remuneration of the Chairman and Chief Executive Officer"), and 4.6.4 ("Stock options – Bonus shares").</p>
<p>Rules for the distribution of remuneration paid to Directors for their term of office</p> <p>Recommendation no. 22.1:</p> <p><i>The method of distribution of this remuneration "should take account, in such ways as it shall determine, of the Directors' actual attendance at meetings of the Board and committees, and the amount shall therefore consist primarily of a variable portion".</i></p>	<p>A significant but not preponderant share of the remuneration paid to Directors for their term of office is dependent upon actual attendance by the Directors of the Board and Committee meetings.</p>	<p>Special distribution rules have been adopted, which take account in particular of the level of responsibilities and the time spent by the Directors on their duties. Although the variable share of remuneration paid for the term of office, which compensates the actual presence of Directors is not preponderant, the Company considers that it is nonetheless significant, insofar as it accounts for 50% of the total amount allocated and that, as is recommended by the AFEP-MEDEF Code, it is commensurate with the level of responsibilities assumed by the Directors and with the time, which they must devote to their duties.</p>	<p>See section 4.6.3 ("Total remuneration of Directors").</p>

4.2 Members and functioning of the Board of Directors

18 Directors*

58
Years old
MEAN AGE

41.7%
INDEPENDENT
DIRECTORS**

22
MEETINGS

95.4 %
ATTENDANCE RATE

6 Directors appointed by the shareholders Meeting



Luc REMONT
Chairman and chief Executive officer
P



Nathalie COLLIN
Deputy Managing/Director and Managing/Director of the consumer and Digital Division of La Poste Group
■ ▲



Bruno CREMEL
General Partner and Deputy Chief Executive Officer of Partech
■ ▲



Colette LEWINER
Professional Director
P ■ ▲



Claire PEDINI
Senior Vice-President, Human Resources and Corporate Social Responsibility for the Saint-Gobain Group - Member of the Executive Committee of Saint-Gobain
P ■ ▲



Philippe PETITCOLIN
Corporate Director
■ ■ ▲

5 Directors appointed by the shareholders Meeting on recommendation from the French State



Anne-Marie DESCOTES
Secretary General of the French Ministry for Europe & Foreign Affairs
■



Gilles DENOYEL
Chairman of the Board of Directors of Dexia and Dexia Crédit Local
P



Delphine GENY-STEPHANN
Consultant
■



Marie-Christine LEPETIT
Inspector General of Finance
P ■



Michèle ROUSSEAU
Chair of the Board of Directors of Bureau de recherches Géologiques et ministères
■ ■

6 Directors elected by the employees



Karine GRANGER
Employee Director sponsored by the CGT trade union
■ ■ ■



Fabrice GUYON
Employee Director sponsored by the CGT trade union
■



Sandrine LHENRY
Employee Director sponsored by the Force Ouvrière trade union
■ ■ ■



Jean-Paul RIGNAC
Employee Director sponsored by the CGT trade union
■



Vincent RODET
Employee Director sponsored by the CFDT trade union
■ ■ ■ ■



Christian TAXIL
Employee Director sponsored by the CFE-CGC trade union
■ ■

1

Director - Representative of the French State



Alexis ZAJDENWEBER
Commissioner of the French State Shareholdings Agency at the Ministry Economy and the Ministry for Public Action and Accounts
■ ■

- Member of the Committee
- P Chairman of the Committee
- Audit Committee
- Strategy Committee
- Appointments, Remuneration & Governance Committee
- Nuclear Commitments Monitoring Committee
- Corporate Responsibility Committee
- ▲ Independance within the meaning of AFEP-MEDEF Code criteria

4.2.1 Members of the Board of Directors

In accordance with Order no. 2014-948 of 20 August 2014 regarding governance and trading in French State-owned companies, EDF is administered by a Board of Directors consisting of three to eighteen members, including members appointed by the Shareholders' Meeting, others appointed upon recommendation of the French State in accordance with Article 6 of the Order, a French State Representative chosen by the Minister for the Economy from the Civil Service in accordance with Article 4 of the Order, and one third employee representatives elected in accordance with the provisions of the law of 26 July 1983 on the democratisation of the public sector⁽¹⁾.

On the date of filing of this Universal Registration Document, the Board of Directors comprises eighteen members:

- eleven Directors appointed by the Shareholders' Meeting, including five on recommendation of the French State;

- six Directors elected by the employees;
- one Representative of the French State.

The Government Commissioner⁽²⁾ and Head of the French State General Economic & Financial Supervisory Mission to the Company⁽³⁾ and the Secretary of EDF Central Social & Economic Committee attend the meetings of the Board of Directors, in an advisory capacity only.

Between 1 January 2022 and the date of filing of this Universal Registration Document, the following amendments have intervened in the membership of the Board of Directors (see the table below disclosing personal information concerning the Directors):

First name, surname	Director/Category	Event	Date of Event
Véronique Bédague-Hamilius	Director appointed by the Shareholders' Meeting on recommendation of the French State	Resignation	Effective following the General Meeting of 12/05/2022
Delphine Gény-Stephann	Director appointed by the Shareholders' Meeting on recommendation of the French State	Appointment to replace Véronique Bédague-Hamilius	Shareholders' Meeting of 12/05/2022
Martin Vial	Director – Representative of the French State	Termination of his duties as Commissioner of the French State Shareholdings Agency	31/05/2022
Céline Fornaro	Director – Representative of the French State	Appointment by Order of the French Minister for the Economy, Finance and Industrial and Digital Sovereignty to replace Martin Vial	28/06/2022
François Delattre	Director appointed by the Shareholders' Meeting on recommendation of the French State	Resignation	30/08/2022
Céline Fornaro	Director – Representative of the French State	Replaced by Alexis Zajdenweber pursuant to an Order of the French Minister for the Economy, Finance and Industrial Sovereignty	22/09/2022
Alexis Zajdenweber	Director – Representative of the French State	Appointment by Order of the French Minister for the Economy, Finance and Industrial and Digital Sovereignty to replace Martin Vial	23/09/2022
Luc Rémont	Director	Co-opted to replace François Delattre	18/11/2022
Alexis Zajdenweber	Director – Representative of the French State	Renewal of the term of office ⁽¹⁾	21/11/2022
Jean-Bernard Lévy	Director appointed by the Shareholders' Meeting and Chief Executive Officer	Resignation of his mandates as Director and Chairman and CEO	23/11/2022
Luc Rémont	Chairman and Chief Executive Officer	Appointment as Chairman and CEO by Decree of the President of the French Republic	23/11/2022
Anne-Marie Descôtes	Director appointed by the Shareholders' Meeting on recommendation of the French State	Co-opted to replace Jean-Bernard Lévy	28/11/2022
Claire Bordenave	Director elected by the employees (sponsored by the CGT trade union)	Resignation	16/02/2023
Fabrice Guyon	Director elected by the employees (sponsored by the CGT trade union)	Succeeding Claire Bordenave ⁽²⁾	16/02/2023

(1) In accordance with the provisions of Article 2 of Decree no. 2014-949 of 20 August 2014 implementing the Order of 20 August 2014, the Representative of the French State is appointed for a term equal to the term of office of the members of the Board of Directors, i.e. for a four-year term.

(2) Article 16 of Act no. 83-675 of 26 July 1983 on the democratisation of the public sector provides that the candidates coming on a list immediately after the last elected candidate are called upon to replace the representatives elected on this list whose seat would become vacant for any reason whatsoever.

In accordance with the rules in force concerning the staggering of directors' terms of office, the terms of office of five directors shall expire at the Annual General Meeting called to approve the financial statements for the fiscal year ending 31 December 2022:

- Claire Pedini, Bruno Crémel and Philippe Petitcolin, independent directors appointed by the General Meeting;

- Gilles Denoyel and Anne-Marie Descôtes, directors appointed by the Shareholder's Meeting on recommendation of the French State.

Concerning the resignation of Jean-Bernard Lévy from his terms of office as Director and Chairman and CEO of EDF and the appointment of Luc Rémont, see section 4.2.2.2 "Appointment and powers of the Chairman and Chief Executive Officer".

(1) The employee representatives mentioned in Paragraph I of Article 7 of the Order of 20 August 2014 are subject, for their election and their status, to the same provisions as those applicable to employee representatives of companies subject to the law of 26 July 1983 (chapters II and III of section II of the law).

(2) Article 15 of the Order of 20 August 2014.

(3) This remit exercises the French State's economic and financial supervision of EDF, in accordance with Article 8 of Decree no. 55-733 of 26 May 1955. It can exercise extensive supervisory procedures.

Diversity policy

Feminisation of the Board of Directors and governing bodies

In accordance with Articles L. 225-18-1 and L. 22-10-3 of the French Commercial Code and the Order of 20 August 2014, EDF is subject to the regulations relating to the balanced representation of women and men on Boards of Directors and Supervisory Boards and the Company must comply with a proportion of no less than 40% of Directors of each gender on the Board, excluding Directors representing employees. On the date of filing of this Universal Registration Document, EDF's Board of Directors includes nine women, including two of the Directors elected by employees. Women thus make up 58.33% of the Board members taken into consideration to calculate this percentage (i.e. excluding Directors representing employees), and half of the Board members as a whole.

Moreover, in accordance with the recommendations of the AFEP-MEDEF Code, during its meeting held on 16 December 2020, the Board of Directors defined a policy of gender balance for the management bodies applicable to the Company, hence enabling the goals of the Group's Diversity plan (*Plan Ambition Mixité*) adopted by the Executive Committee on 18 November 2019 and reinforced in 2021⁽¹⁾, and to be implemented within EDF and providing for several commitments aimed at removing the "glass ceiling" for women executives in terms of membership of Executive Committees and senior management positions. Within the Company, the objectives set by the Board are as follows:

- 30% of women on the Management Committees by 2023;
- 30% of women executives and future executives by 2025.

To meet these objectives, EDF's Executive Management shall adapt the objectives to the proportion of women executives in each of the Company's Department and Divisions and will pursue the action plans undertaken to:

- hire women executives at a higher rate than their proportion recorded in engineering schools;
- offer succession plans for each management position to include male and female candidates;
- carry out an annual "women's people review" for executives and future executives.

In addition, EDF shall promote the participation and visibility of women in public interventions in all areas of the Group's activities.

The Corporate Responsibility Committee and the Board of Directors review every year the performance of the Company's policy on gender diversity in the management bodies, in connection with the presentation of the report on the

gender equality policy (see section 4.2.3.4 "Corporate Responsibility Committee"). Accordingly, the Corporate Responsibility Committee and the Board of Directors reviewed, at their meetings of 20 September 2022 and 5 October 2022 respectively, the measures put in place by EDF and took note of the results obtained by the Company in implementing this gender diversity policy.

As at 31 December 2022, the proportion of women in the Company's Management Committees was 31.1%, i.e. +0.8 percentage points compared to 31 December 2021. The proportion of women among the Company's executives and future executives was 30.1%, compared to 29.3% on 31 December 2021.

Act No. 2021-1774 of 24 December 2021 (known as the "Rixain" Act), supplemented by Decree No. 2022-680 of 26 April 2022, requires all companies with more than 1,000 employees to achieve a 30% quota for women among executive managers and members of management bodies starting 1 March 2026, with this figure being raised to 40% as of 1 March 2029.

With regard to the results in terms of gender diversity in the 10% functions with highest responsibility (Article L. 22-10-10 of the French Commercial Code), women accounted for 30%⁽²⁾ of the Company's 10% most senior positions at 31 December 2021, compared with 29.5% at 31 December 2022 (see section 3.3.3.1 "Workplace equality").

Other diversity criteria

In accordance with the AFEP-MEDEF Code recommendations and Article L. 22-10-10 of the French Commercial Code, the Board of Directors periodically reviews the desirable balance in its membership and that of the Committees it creates, particularly in terms of the percentage of independent directors and diversity. It defines a diversity policy applied to members of the Board with respect to criteria such as age, gender or professional qualifications and experience.

Based on the opinion of the Committee in charge of governance issues, the Board of Directors meeting of 14 February 2019 defined a diversity policy and objectives that take into account the Group's strategy, so that the membership of the Board would promote implementation of the policy. In order to achieve a good balance in its membership, in connection with the Group's strategy and the remits entrusted to it, the Board considered that priority should be given to the search for skills and experience commensurate with the issues facing it and a complementarity of profiles.

This policy was reviewed and updated by the Board of Directors at its meeting held on 17 February 2021, in the context of the expiry of the terms of office of five Directors at the end of the Shareholders' Meeting of 6 May 2021 and taking into account the expectations expressed by the Directors during the 2020 independent review of the Board of Directors (see section 4.2.2.6 "Evaluation of the functioning of the Board of Directors and its Committees").

(1) This Gender Balance Ambition has been updated in July 2021 see section 3.3.3.1.1 "Strengthening the Group's commitment". EDF's Executive Committee has boosted the Group's objectives of achieving 30% women by 2026, and 36-40% by 2030, at all levels of the company (workforce, management and executive bodies).

(2) This percentage is calculated for functions with the highest responsibility from a sample of 6,031 people, representing 10% of the Company's workforce (statutory employees) at 31 December 2022, including executives and senior managers. Within the scope of EDF's senior management, the percentage of women at 31 December 2022 was 24.1%, compared to 23.95% at 31 December 2021 (see section 3.3.3.1.2 "Results in 2022").

The table below presents the criteria of the diversity policy defined by the Board of Directors:

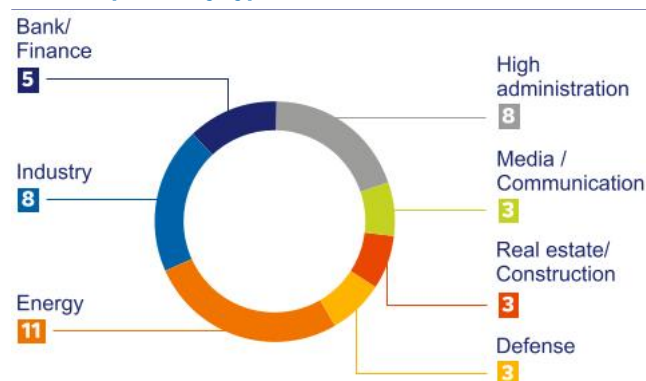
Criteria	Company's position	Objectives
Age of Directors	The Directors appointed by the Shareholders' Meeting are between 46 and 77 years old, with an average age of 61 years. The average age is 58 years for the Board as a whole.	The Board took the view that the age of the candidates is not a determining factor in the choice of candidates for the position of Director and that the Board members' average age is satisfactory, while remaining mindful of the threshold of one-third of Directors over the age of 70*.
Gender parity	The Board comprises 58.33% of women, excluding employee Directors, and 50% of women on the entire Board.	The Board deemed that the current rate of women on the Board is satisfactory, without excluding the possibility of changing this rate, upwards or downwards, in the event of changes in the composition of the Board, in compliance with the legal thresholds.
Professional experience and complementarity of profiles	The Board brings together a variety of profiles and skills (see below the tables presenting the skills of the members of the Board).	The Board has noted that the Directors have significant experience in areas of expertise related to EDF's activities and strategy, which is likely to favour their deployment, and that their profiles complement each other satisfactorily. The Board decided to examine the possibility of strengthening the Board's skills in the areas of General Management of large companies and the energy sector. The Board took this criterion into account when preparing its proposals for appointments to the General Meeting in July 2021 and May 2022.
Nationality	The Board of Directors does not include any Directors of foreign nationality, but has to date a significant proportion of members with international experience.	The Board reserves the right to further develop the Board's international expertise when appointing future directors.
Independence	The Board has 5 independent directors, i.e. 41.7% of the 12 Directors taken into account to establish this calculation (excluding Directors representing employees).	The Board considers that the proportion of independent directors on the Board, which is currently higher than the recommendations of the French AFEP-MEDEF Code, is satisfactory and aims to maintain this proportion, and at least meet the objective of having one third of its directors be independent, as recommended by the French AFEP-MEDEF Code for companies with a controlling shareholder.

* Article L. 225-19 of the French Commercial Code requires that in the absence of an express provision in the articles of association concerning an age limit applicable to Directors, the number of Directors over the age of 70 May not exceed one-third.

Business skills of the members of the Board of Directors

The tables below present the mapping of the business skills in specific sectors or functions of all members of the Board of Directors as at 31 December 2022:

Sector expertise by type of skill



Functional expertise by type of skill



Information regarding the Directors

The table below summarises the main information concerning the members of the Board of Directors as at the date of filing of this Universal Registration Document.

SUMMARY PRESENTATION OF THE BOARD OF DIRECTORS

	PERSONAL INFORMATION				EXPERIENCE	ROLE WITHIN THE BOARD				ATTENDANCE TO COMMITTEES					
	Age	Gender	Nationality	Number of shares	Number of mandates in listed companies (incl. EDF)	Independence	Date of first appointment	Term of office shall expire on	Seniority in the Board (in years)	Audit Committee	Strategy Committee	Appointments, Remuneration and Governance Committee	Nuclear Commitments Monitoring Committee	Corporate responsibility Committee	
Directors appointed by the Shareholders' Meeting															
Luc Rémont*															
Chairman & Chief Executive Officer	53	M	French	0	3		18/11/2022	SM 2025	<1		P				
Nathalie Collin	58	F	French	0	1	▲	22/07/2021	SM 2025	1.5	■					
Bruno Crémel	57	M	French	0	1	▲	16/05/2019	SM 2023 ⁽¹⁾	3.67	■					
Colette Lewiner	77	F	French	642	4	▲	11/04/2014	SM 2025 ⁽²⁾	8.76			P	■		
Claire Pedini	57	F	French	0	1	▲	12/05/2016	SM 2023 ⁽¹⁾	6.68			■		P	
Philippe Petitcolin	70	M	French	0	2	▲	16/05/2019	SM 2023	3.67	■	■				
Director appointed by the Shareholders' Meeting on recommendation of the French State															
Anne-Marie Descôtes	63	F	French	0	1		28/11/2022	SM 2023	<1		■				
Gilles Denoyel	68	M	French	0	2		16/05/2019	SM 2023	3.67					P	
Marie-Christine Lepetit	61	F	French	0	1		07/05/2012	SM 2025	10.69	P				■	
Michèle Rousseau	65	F	French	0	1		30/09/2016	SM 2025	6.29					■	■
Delphine Gény-Stephann	54	F	French	0	2		12/05/2022	SM 2025	<1						■
Director – Representative of the French State															
Alexis Zajdenweber	46	M	French	0	2		23/09/2022	20/11/2026	<1		■	■			
Directors elected by the employees															
Karine Granger	55	F	French	25	1		23/11/2019	22/11/2023	3.15		■	■	■		
Fabrice Guyon	49	M	French	466	1		16/02/2023	22/11/2023	<1						■
Sandrine Lhenry	48	F	French	34	1		28/07/2021	22/11/2023	1.5	■	■				■
Jean-Paul Rignac	60	M	French	0	1		01/11/2007	22/11/2023	15.21	■					
Vincent Rodet	57	M	French	401	1		23/11/2019	22/11/2023	3.15	■	■			■	■
Christian Taxil	47	M	French	2,186	1		23/11/2014	22/11/2023	8.15	■	■				

* Mr. Luc Rémont was appointed as the Company's Chairman and Chief Executive Officer by decree of the President of the French Republic of 23 November 2022.

(1) SM 2023: Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022.

(2) SM 2025: Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024.

■ Member of the Committee

P Chairman of the Committee

▲ Independence within the meaning of the AFEP-MEDEF Code criteria

Personal information on Directors, as well as information on their terms of office, are shown in the table below and are provided as at 18 January 2023, unless otherwise stated.

DIRECTORS APPOINTED BY THE SHAREHOLDERS' MEETING

Luc REMONT, 53 years old

Position held within the Company

Chairman and Chief Executive Officer since 23 November 2022 ⁽¹⁾

Date of appointment to the Board

18 November 2022

Expiry of current term of office

Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024 ⁽²⁾

Other position(s)

Chairman of the Strategy Committee

Shares held

0

Nationality

French

A graduate of the École Polytechnique and the École Nationale Supérieure des Techniques Avancées (ENSTA Paris), Luc Rémont began his career in 1993 as an engineer at the Direction Générale de l'Armement (Directorate General of Armaments). In 1996, he joined the French Ministry for the Economy, Finance and Industry where he held various positions. Firstly, at the French Treasury Department, he was tasked with relations with the European Bank for Reconstruction and Development (EBRD) and the World Bank, and then with the French State's holdings in companies in the transport sector. He then became a technical advisor in charge of the investments, and then Deputy Director in the cabinet of several French Ministers of Finance from 2002 to 2007. In 2007, he joined Merrill Lynch and in 2009, he became Managing Director of the Bank of America Merrill Lynch corporate and investment bank in France. He joined Schneider Electric in April 2014 and became President of Schneider Electric France, and was appointed Managing Director of Schneider Electric International Operations in charge of South America, Africa and the Middle East, India, East Asia and the Pacific in April 2017. In addition, between 2015 and 2018, Luc Rémont was President of GIMELEC, a group of 230 French companies designing and deploying electrical and digital technologies for the optimised and secure control of energy in buildings, industry and digital infrastructures. He was also a member of the Board of Directors of Naval Group, the European leader in naval defence from 2014 to 2020 and is a director of Worldline, the European leader in secure digital payments and transactions. Luc Rémont has been EDF's Chairman and Chief Executive Officer since 23 November 2022.

Other offices and positions held

Position held within the Company

- Chairman and Chief Executive Officer of EDF

Office/Position	Title	Country	
Chairman and Chief Executive Officer	EDF	France	L
Director	Edison	Italy	G/L
Director	EDF Energy Holdings	UK	G
Director	EDF Renewables	France	G
Chairman of the Board of Directors	EDF group Foundation	France	G
Director	Dalkia	France	G
Chairman of the Supervisory Board	Framatome	France	G
Director	Worldline	France	L

Expired offices held outside the Company over the past five years

In France

- Chairman of the Schneider Electric India Private Limited Board of Directors
- Director of Naval Group

(1) Luc Rémont was appointed as the Company's Chairman and Chief Executive Officer by decree of the President of the French Republic of 23 November 2022.

(2) Luc Rémont was co-opted by the Board of Directors as a director, replacing François Delattre, for the remainder of the latter's term of office, i.e. until the end of the ordinary general meeting called to approve the financial statements for the fiscal year ending 31 December 2024.

G: EDF group company – L: listed company

Nathalie COLLIN, 58 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting

Date of appointment to the Board

22 July 2021

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024

Other position(s)

Member of the Audit Committee

Shares held

0

Nationality

French

Holding a Master degree in Business and fiscal Law from the Pantheon-Assas University and graduated from the École Supérieure des Sciences Économiques et Commerciales (ESSEC), Nathalie Collin was a consultant at Arthur Andersen from 1987 to 1990, then from 1992 to 1993. Deputy Chief Financial Officer at the Cité Mondiale des Vins et Spiritueux from 1990 to 1992, she is nominated Chief Financial Officer for France at Interleaf in 1993, before becoming Chief Financial Officer for Europe and Executive Vice-President Finance in 1995. From 1997 to 2009, she holds several positions within EMI Music France, becoming Chairwoman of the Management Board in 2002. She is Co-Chairwoman of the Management Board of Libération from 2009 to 2011, and then Executive Vice-President of Le Nouvel Observateur press group from 2011 to 2014. In 2014, she joins La Poste group as Deputy Chief Executive Officer in charge of Digital Technology and Communications, before becoming Chief Executive Officer in charge of General public and Digital Technology in March 2021. Nathalie Collin was a member of the French Economic, Social and Environmental Council (Conseil économique social et environnement) and the French National Digital Council (Conseil national du numérique) up to 2021. She is a director of GeoPost as well as a member of the Steering Committee of Docapost and LP11.

Other offices and positions held**Principal position held outside the Company**

- Deputy CEO and CEO of the Consumer and Digital Division of La Poste Group

Office/Position	Title	Country
Deputy Chief Executive Officer	La Poste	France
Director	GeoPost	France
Member of the Steering Committee	Docaposte	France
Member of the Steering Committee	LP11	France

Expired offices held outside the Company over the past five years**In France**

- Chairman of LP11
- Director of La Banque Postale
- Director of the SNCF
- Member of the Mediapost Steering Committee

Bruno CREMEL, 57 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting

Date of appointment to the Board

16 May 2019

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022

Other position(s)

Member of the Audit Committee

Shares held

0

Nationality

French

A graduate from the École Centrale de Paris, the Paris Institute of Political Studies (IEP), and the National School of Administration (ENA), Bruno Crémel started his career as a Finance Inspector, before joining the French Ministry for the Economy, Finance, and Industry as head of the Public Banks and Insurance Office, State Participations Department, where in particular he coordinated the privatisation of several public banks and insurance companies. From 1998 to 2000, he was Strategic Planning Director at the Kering group as a member of the Executive Committee, then Chairman of the Management Board of PPR Interactive. From 2000 to 2002, he was Chief of Staff of Laurent Fabius, Minister for the Economy, Finance and Industry. From 2002 to 2006, he was Chairman and Chief Executive Officer of FNAC. From 2006 to 2012, he was General Partner and member of the Executive Committee of LBO France investment fund, where he oversaw in particular the acquisitions of Maisons du Monde and Promovacances. He was appointed Chairman and Chief Executive Officer of Darty France in 2012. He joined the Partech investment fund in May 2014 as a General Partner and has been Deputy Chief Executive Officer since May 2016.

Other offices and positions held**Principal position held outside the Company**

- General Partner and Deputy Chief Executive Officer of Partech Partners

Office/Position	Title	Country
Deputy Chief Executive Officer	Partech Partners	France
Chairman	Partech Growth GP	France
Chairman	Partech Growth II Holding	France
Chairman of the Board of Directors	Artaris	France
Director	Evaneos	France
Member of the Strategy Committee	Rouje	France
Director	Weglot	France
Director	Fonds de Dotation Française du Louvre	France
Director	M-Files	Finland
Member of the Supervisory Board	Exporo	Germany
Director	Studocu	The Netherlands
Director	Channable	The Netherlands

Expired offices held outside the Company over the past five years**In France**

- Director of EcoVadis
- Director of Sendinblue

Other countries

- Director of Made.com (UK)
- Director of NA-KD

Gilles DENOYEL, 68 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting on recommendation of the French State

Date of appointment to the Board

16 May 2019

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022

Other position(s)

Chairman of the Nuclear Commitments Monitoring Committee

Shares held

0

Nationality

French

A graduate as a General Engineer from Mines ParisTech Engineering School, former student at the Paris Institute of Political Studies (IEP) and the National School of Administration (ENA), Gilles Denoyel was appointed Inspector of Public Finances at the French Ministry for the Economy & Finance in 1981 before joining the Treasury Department in 1985, where he was successively in charge of the CIRI (Interministerial Committee for Industrial Restructuring), the Financial Markets Bureau, the Insurance Sub-Directorate and, ultimately, the privatisation programme. In 1996, he joined the CCF group as Chief Financial Officer, then General Secretary in charge of Strategy and Operations, then Senior Executive Vice-President in charge of Finance: in this capacity, he played a significant part in the integration of CCF into the HSBC group. In 2004, he was appointed Deputy Chief Executive Officer, successively in charge of central functions, asset management and insurance, and then of all risk and control functions and relations with regulatory authorities. From 2015 to 2017, he was HSBC's International Institutional Relations President for Europe. He was also Chairman of the group of banks under foreign control in France from 2006 to 2016 and Treasurer of the Association française des banques (i.e. French banking association) from 2004 to 2016. Gilles Denoyel has been Chairman of the Board of Directors of Dexia and Dexia Crédit Local since May 2018, and a member of the Supervisory Board of Memo Bank and of Rothschild & Cie since January 2018 and May 2020 respectively.

Other offices and positions held**Principal position held outside the Company**

- Chairman of the Board of Directors of Dexia and Dexia Crédit Local

Office/Position	Title	Country
Chairman of the Board of Directors	Dexia	Belgium
Chairman of the Board of Directors	Dexia Crédit Local	France
Member of the Supervisory Board	Memo Bank	France
Member of the Supervisory Board	Rothschild & Cie	France L

Expired offices held outside the Company over the past five years

- None

G: EDF group company – L: listed company.

Anne-Marie DESCÔTES, 63 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting on recommendation of the French State

Date of appointment to the Board

28 November 2022

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022

Other position(s)

Member of the Strategy Committee

Shares held

0

Nationality

French

Graduate of the École Normale Supérieure and the French National School of Public Administration (ENA), Anne-Marie Descôtes is also qualified as German teacher, holds a post-graduate diploma in Germanic studies and a bachelor's degree in history of art. After teaching German for two years, she worked for three years as a cultural attaché at the French Embassy in Bonn (1987-1990). After graduating from ENA, she was appointed to the European Cooperation Directorate at the French Ministry of foreign affairs where she worked on issues such as extra-community relations and then intra-community affairs, in particular the creation of the JHA pillar (1994-1997), before becoming a technical advisor in the office of Pierre Moscovici, Minister Delegate for European Affairs (1997-2001). From 2001 to 2005, she held the positions of special advisor for Central and South-Eastern European enlargement at France's Permanent Representation to the European Union in Brussels. She was then appointed special advisor for Europe and the ex-USSR in Washington from 2005 to 2008, Director of the Agency for French Education Abroad (AEFE) from 2008 to 2013 and Director-General for Global Affairs, Culture, Education and International Development from 2013 to 2017. After having been Ambassador Extraordinary and Plenipotentiary of France to Germany from 2017 to 2022, Anne-Marie Descôtes was appointed Secretary General of the French Ministry of Europe and Foreign Affairs on 30 August 2022. She was elevated to the dignity of Ambassador of France on 25 November 2020. Anne-Marie Descôtes has been a director of Orano since October 2022, a member of the European Council on Foreign Relations (ECFR) think tank, the German Marshall Fund and a member of the Strategic Orientation Council of the Villa Albertine.

Other offices and positions held**Principal positions held outside the Company**

- Secretary General of the French Ministry for Europe & Foreign Affairs

Office/Position	Title	Country
Director	Orano	France
Director	Agence nationale des titres sécurisés (i.e. French national agency of secure shares)	France
Director	Institut national du service public (INSP)	France
Director	Institut Français	France
Director	Sorbonne Abou Dhabi	France
Director	Institut des hautes études de défense nationale (i.e. French high national defence study institute)	France
Director	Institut du Monde arabe	France

Expired offices held outside the Company over the past five years**In France**

- Chairman of the Board of Directors of France Education International

Delphine GENY-STEPHANN, 54 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting on recommendation of the French State

Date of appointment to the Board

12 May 2022

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024

Other position(s)

Member of the Corporate Responsibility Committee

Shares held

0

Nationality

French

Engineer from l'École Polytechnique and l'École Nationale des Ponts et Chaussées and a graduate of the MBA of the Collège des ingénieurs, Delphine GENY-STEPHANN started her career in 1994 at the Treasury Department of the French Ministry for the Economy & Finance. In 1999, she joins the French State Shareholdings Agency and sits on the Board of Directors of several public companies. She joins in 2005 the High performance material Department of Saint Gobain where she holds consecutively the positions of Development Managing Director, Financial Director of the Ceramic activity. In 2013, she was made Mergers & Acquisitions manager and was appointed External Venturing Director of the group. In 2014, she becomes Managing Director of Planning and Strategy for Compagnie de Saint-Gobain, member of the General Management Committee of the Group, before becoming Chief Executive Officer of the Silicon Carbide and Quartz activity. In November 2017, she is appointed Secretary of State to the Minister of the Economy and Finance, position which she holds until October 2018. Delphine Gény-Stephann has been a consultant since 2019 and has been advising the Advisory Council set up by Morgan Stanley in its Paris office since the end of 2022. She is also member of the Boards of directors of Thales (France) and Eagle Genomics Ltd (UK), member of the Steering Committee of GENE0 Partenaires SAS and member of the Supervisory Committee of the Holding d'infrastructures des métiers de l'environnement SAS (controlling the Saur Group).

Other offices and positions held**Principal positions held outside the Company**

- Consultant

Office/Position	Title	Country
Director	Thales	France L
Director	Eagle Genomics	United Kingdom
Member of the Supervisory Board	Holding d'infrastructures des métiers de l'environnement SAS	France
Member of the Steering Committee and Stakeholder Committee	GENE0 Partenaires SAS	France

Expired offices held outside the Company over the past five years

None

G: EDF group company – L: listed company.

Marie-Christine LEPETIT, 61 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting on recommendation of the French State

Date of appointment to the Board

07 May 2012

Last re-elected

06 May 2021

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024

Other position(s)

Chair of the Audit Committee and member of the Nuclear Commitments Monitoring Committee

Shares held

0

Nationality

French

A former student of the École Polytechnique and the National School of Administration (ENA), Marie-Christine Lepetit joined the General Inspectorate of Finance in 1987, where she held auditing and advisory positions. After being appointed by Jean Lemierre in 1991, to introduce management control within the General Inspectorate of Finance, she became in charge in January 1995 of synthesis work at the Tax Legislation Department, before joining the office of the Prime Minister, Alain Juppé, as technical advisor, first in taxation and macroeconomic studies, then in taxation and SMEs from 1995 to 1997. She continued her career at the General Directorate for Tax, working to improve service quality (pre-filled tax returns, remote procedures, certification). She was appointed Director of Tax Law at the French Ministry for the Economy and Finance in 2004 and used this role to push through tax reforms from 2004 to 2012, co-chairing at the same time the working group on the reform of the financing of social welfare and co-signing the report by the conference of experts on the "energy-climate contribution" chaired by Michel Rocard. She also sat on the Local Authorities Reform Committee chaired by Édouard Balladur as Executive Director and was a member of the Public Life Renewal and Ethics Commission chaired by Lionel Jospin. Marie-Christine Lepetit was appointed Head of the General Inspectorate of Finance in March 2012, a position she will hold until 2022. She is a member of the Risk and Internal Control Committee of the Fondation des apprentis d'Auteuil.

Other offices and positions held**Principal position held outside the Company**

- Inspector General of Finance

Office/Position	Title	Country
Member of the Risks & Internal Control Committee	Fondation des apprentis d'Auteuil	France

Expired offices held outside the Company over the past five years**In France**

- Director of the Paris Institute of Political Studies (IEP)

Colette LEWINER, 77 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting

Date of appointment to the Board

11 April 2014

Last re-elected

06 May 2021

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024

Other position(s)

Chair of the Appointments, Remuneration & Governance Committee, Member of the Nuclear Commitments Monitoring Committee

Shares held

642 ⁽¹⁾

Nationality

French

A former student of the École Normale Supérieure and holder of an Agrégation degree in physics and Doctorate in science, Colette Lewiner joined Électricité de France in 1979. In 1989 she created the Development and Commercial Strategy Division, thus becoming the first woman appointed Executive Officer at EDF. From 1992 to 1998, she was Chair and Chief Executive Officer of SGN, a nuclear engineering company and subsidiary of AREVA. In 1998, she joined Capgemini to create and manage the Global Energy and Utilities division until June 2012. Since July 2012, she has been, as Manager of Cowin, a Consultant in the energy field. She was a director of the Bouygues group from 2010 to 2022 and non-executive Chair of TDF (SAS) from 2010 to 2015. She is a member of the Académie des Technologies (since 2002) and a director of Getlink, Colas and CGG.

Other offices and positions held**Principal position held outside the Company**

- Professional Director

Office/Position	Title	Country	
Director	COLAS (groupe Bouygues)	France	L
Director	Getlink	France	L
Director	CGG	France	L

Expired offices held outside the Company over the past five years**In France**

- Director of Bouygues
- Director of Ingenico
- Director of Nexans

(1) Shares held through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

G: EDF group company – L: listed company

Claire PEDINI, 57 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting

Date of appointment to the Board

12 May 2016

Date of re-election

07 May 2020

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022

Other position(s)

Chair of the Corporate Responsibility Committee and member of the Appointments, Remuneration & Governance Committee

Shares held

0

Nationality

French

Graduate from the École des Hautes Études Commerciales and holding a Master's degree in media management from the École Supérieure de Commerce de Paris, Claire Pedini joined Total in 1988 as Corporate Controller. She assumed responsibility for Total's admission to trading on the New York Stock Exchange in 1991, and became President of Investor Relations in 1992, Vice-President of Media Relations in 1994 and President of New Information Technologies in 1997. In 1998, she joined Alcatel as Chief of Financial Information and Shareholder Relations, becoming successively Vice-President, Investor Relations and Public Affairs in 2001, Deputy Chief Financial Officer in 2004, Senior Vice-President, Human Resources and Corporate Communications and member of the Executive Committee in 2006, Senior Vice-President, Human Resources, Corporate Communications and Real Estate in 2007, and Executive Vice-President, Human Resources and Transformation, of Alcatel-Lucent in 2009. Claire Pedini was a Director of Arkema from 2010 to 2016. Appointed Deputy Managing Director in charge of Human Resources for the Saint-Gobain Group in June 2019, she was then Senior Vice-President Human Resources and Digital Transformation until January 2019. She is currently Senior Vice-President, Human Resources and Corporate Social Responsibility.

Other offices and positions held**Principal position held outside the Company**

- Senior Vice-President, Human Resources and Corporate Social Responsibility for the Saint-Gobain Group – Member of the Executive Committee of Saint-Gobain.

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

Philippe PETITCOLIN, 70 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting

Date of appointment to the Board

16 May 2019

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2022

Other position(s)

Member of the Strategy Committee and Member of the Audit Committee

Shares held

0

Nationality

French

A graduate in Mathematics and graduate of the CPA Paris business school, Philippe Petitcolin began his career as Export Manager for Europrim, and then became Export Zone Manager for the Alcatel-Alstom subsidiary, Filotex. In 1982, he was appointed Aeronautical Sales Manager for Chester Cable in the United States. He returned to Filotex as Export Manager in 1984. In 1988, he joined Labinal as Deputy Sales Manager before being appointed Sales and Marketing Manager of the Aeronautical Systems Division, where he became General Manager in 1995. From 1999 to 2001, he was head of Labinal's Filtrauto division and Head of the Friction Materials business following the takeover of Filtrauto by Valeo. In May 2001, he took on the position of Chief Executive Officer of Labinal (now Safran Electrical & Power) and became Chairman and Chief Executive Officer in November 2004. In 2006, he was appointed Chairman and Chief Executive Officer of Snecma (now Safran Aircraft Engines). From 2011 to 2013, he was appointed Chairman and Chief Executive Officer of Safran's defence and security activities as well as Chairman & Chief Executive Officer of Safran Electronics & Defense. From July 2013 to July 2015, he was Chairman and Chief Executive Officer of Safran Identity & Security. He was appointed Director and Chief Executive Officer of Safran in April 2015, up until 31 December 2020. On the same date, he became a member of the Board of the Aerospace & Defence Industries Association of Europe (ASD). He is now Chairman of the Board of Directors of KNDS, Director of Pernod Ricard and Chairman of the Supervisory Board of Diot-Siaci.

Other offices and positions held**Principal position held outside the Company**

- Corporate Director

Office/Position	Title	Country
Chairman of the Board of Directors	KNDS	The Netherlands
Chairman of the Supervisory Board	Diot Siaci	France
Director	Pernod Ricard	France L

Expired offices held outside the Company over the past five years**In France**

- Director and Chief Executive Officer of Safran
- Director of Suez

Other countries

- Director of Belcan Corporation (United States)

G: EDF group company – L: listed company

Michèle ROUSSEAU, 65 years old**Position held within the Company**

Director appointed by the Shareholders' Meeting on recommendation of the French State

Date of appointment to the Board

30 September 2016

Last re-elected

06 May 2021

Expiry of current term of office

Ordinary Shareholders' Meeting called to approve the financial statements for the fiscal year closing 31 December 2024

Other position(s)

Member of the Nuclear Commitments Monitoring Committee and of the Corporate Responsibility Committee

Shares held

0

Nationality

French

Graduate of the École Nationale Supérieure des Mines de Paris and a General Engineer from Mines, Michèle Rousseau started her career at the Nord-Pas-de-Calais Regional Directory for Industry, Research and the Environment (DRIRE) as Head of the Environment Division. She joined the French Ministry of the Environment where she was responsible for waste issues, and later the French Ministry of Industry where she held the post of Deputy Director of the Nuclear Installation Safety Directorate with responsibility for oversight of EDF's nuclear fleet. She then moved to the French research and innovation agency, ANVAR, as Deputy Director General where she conducted policies supporting innovative SME projects, and later to the French Ministry for the Economy, Finance and Industry as Director with responsibility for energy demand and markets. Here, she was tasked in particular with developing a new legislative and regulatory framework in the wake of the opening up of European electricity and gas markets and the development of energy conservation and renewable energy. Secretary General of the French Ministry of Ecology and Sustainable Development, she became in 2008, Director, Deputy Commissioner General for Sustainable Development, with particular responsibility for implementing the Grenelle Environment initiative. In 2011, she was appointed Director General of the Seine-Normandie Water Agency before returning in 2016 to the General Council for Environment and Sustainable Development where she heads the Haut-de-France Regional Environmental Authority (MRAe). Head of the Geological and Mining Research Institute since 2017, and Director of the ANR (i.e. French national agency for Research).

Other offices and positions held**Principal positions held outside the Company**

- Chair of the Board of Directors of the Bureau de recherches géologiques et minières – BRGM

Office/Position	Title	Country
Chair of the Board of Directors	Bureau de recherches géologiques et minières – BRGM	France
Director	Agence nationale de la recherche (ANR)	France

Expired offices held outside the Company over the past five years**In France**

- Director of the Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture (IRSTEA)

DIRECTOR – REPRESENTATIVE OF THE FRENCH STATE

Alexis ZAJDENWEBER, 46 years old**Position held within the Company**

Director – Representative of the French State

Date of appointment to the Board

23 September 2022

Last re-elected

21 November 2022

Expiry of current term of office

20 November 2026

Other position(s)

Member of the Appointments, Remuneration & Governance Committee and the Strategy Committee

Shares held

0

Nationality

French

Graduate from the Institut d'études politiques (IEP) de Paris, and the École nationale d'administration, Alexis Zajdenweber began his career in 2003 as Deputy Head of the savings and financial markets office of the Treasury department at the French Ministry of the Economy, Finance and Industry. In 2006, he became Deputy Head of the financing and companies development office of the Treasury and economic policy department. In 2007, he was seconded as competition and state aid, company law and corporate governance Advisor to the economic, financial and monetary affairs Office at the permanent representation of France to the European Union in Brussels. He returned to the Directorate General of the Treasury department in 2009 as Head of banking services and payment means office and in 2011 as Head of the investments, fight against financial crime and sanctions office. In July 2012, he was appointed Advisor in charge of the financial sector at the office of the minister of Economy and Finance. In 2014, he joined the French Government Shareholding Agency (APE) as Deputy head of the office in charge of Energy shareholdings. In May 2017, he joined the Presidency of the French Republic as economic, finance and industry advisor. Alexis Zajdenweber has been appointed Commissioner for French Government Shareholding Agency and Head of the APE since September 2022. He is a director of BPI France, Renault and SNCF.

Other offices and positions held**Principal position held outside the Company**

- Commissioner of the French State Shareholdings Agency

Office/Position	Title	Country
Director	Renault	France L
Director	SNCF	France
Director	Bpifrance	France

Expired offices held outside the Company over the past five years

- None

G: EDF group company – L: listed company.

DIRECTORS ELECTED BY THE EMPLOYEES

Karine GRANGER, 55 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

23 November 2019

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Nuclear Commitments Monitoring Committee, Appointments, Remuneration & Governance Committee, and Strategy Committee

Shares held

25

Nationality

French

Graduate from the Institut Universitaire de Technologie du Creusot, Karine Granger began her career in 1987 at the Optronics and Avionics Laboratory of SAT SAGEM. After incorporating the GEC ALSTOM Group, she joined, in 1992, the Thermal Engineering Center of EDF. In 2004, she is temporarily assigned to EDISON by EDF in order to join the team in charge of constructing a gas-fired combined cycle power station in Calabria. As she returns to France, she is in charge of assessing the costs of investments at the Hydraulic Engineering Center of EDF which leads her to implement and coordinate a network of estimators coming from different backgrounds of activity within the Generation and Engineering Division. In 2014, in the context of a public-private partnership, she is appointed Executive Director of EDF Cameroon and conducts the development of a hydroelectricity facility project of 420MW. In 2016, she is appointed French Foreign Trade Advisor in Cameroon by the French Prime Minister. After returning to France, she becomes Energy Advisor in charge of the industrial issues at the Fédération CGT des Mines et de l'Énergie (FNME CGT) Union. In 2020, she obtained the Company Director Certificate jointly issued by the Institut d'études politiques de Paris (i.e. French Institute of Political Studies) and the Institut français des administrateurs (French Institute of Directors). She is also a member of the Conseil Supérieur de l'Énergie, and of the Conseil économique social et environnemental (French Economic, Social and Environmental Council; CESER) for the Auvergne-Rhône-Alpes Region. Karine Granger is sponsored by the CGT trade union.

Other offices and positions held**Position held within the Company**

- EDF Hydro Operational Management Control project manager

Office/Position	Title	Country
Member	Conseil supérieur de l'énergie	France
Council member	CESER Auvergne-Rhône-Alpes	France

Expired offices held outside the Company over the past five years

- None

Fabrice GUYON, 49 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

16 February 2023

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Corporate Responsibility Committee

Shares held466 ⁽¹⁾**Nationality**

French

Holder of an industrial control and automatic regulation HND (BTS CIRA), Fabrice Guyon started his career at EDF by joining the nuclear power plant of Chinon in 1992 as an apprentice in the plant operation division. From 1994 to 2012, he held various positions within the operation division of the Chinon power plant such as operator, nuclear unit steering operator, consignment officer, technical manager and chief deputy operating officer. Union representative since 2012, he was successively local Union representative, Vice Secretary of the European Works Council, coordinator for the French Committee Group and coordinator at the Nuclear and Thermal Generation Division of EDF between 2012 and 2023. He is a member of the EU Sectoral social dialogue of electricity. Fabrice Guyon is currently employed by the Chinon power plant operation division. Fabrice Guyon is sponsored by the CGT trade union.

Other offices and positions held**Position held within Group**

- Employee of the operating department of the Chinon nuclear power plant

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

(1) Shares held through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

Sandrine LHENRY, 48 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

28 July 2021

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Audit Committee, Strategy Committee, and Corporate Responsibility Committee

Shares held34 ⁽¹⁾**Nationality**

French

Graduate from the Conservatoire National des Arts et Métiers (CNAM) and holding a Master's degree in HR & CSR from the Institut d'administration des entreprises (IAE) of Paris Sorbonne, Sandrine Lhenry began her career in the Electricity and Gas Industries (IEG – Industries Électriques et Gazières) in 1999 at EDF Gaz de France Distribution in the customer services sector. In charge of the social dialogue of the IEG branche, within the managing team of the national FO Energies et mines federation between 2014 and 2017, she later became Deputy General Secretary of the FO federation from 2017 to 2020. Project manager in the Communication & CSR Department of Enedis until 2022 and is currently a project manager in the Nuclear and Thermal Fleet Department. Sandrine Lhenry is sponsored by the FO union.

Other offices and positions held**Position held within Group**

- Project manager in the Nuclear and Thermal Fleet Department (NTFD)

Office/Position	Title	Country
Full member	Conseil Supérieur de l'Énergie (French High Energy Council)	France

Expired offices held outside the Company over the past five years

- None

(1) Shares held directly and through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

Jean-Paul RIGNAC, 60 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

1 November 2007

Last re-elected

23 November 2019

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Audit Committee

Shares held

0

Nationality

French

Holder of a Doctorate in energy from the Institut National Polytechnique in Toulouse, Jean-Paul Rignac joined EDF in 1991. He served as Secretary of EDF Research & Development's joint generation Committee for five years. He is currently a research engineer at EDF's Research & Development Division (EDF Lab Les Renardières Centre 77) and works on energy efficiency in the heating/air-conditioning of industrial buildings and clean rooms. Jean-Paul Rignac is sponsored by the CGT trade union.

Other offices and positions held**Position held within the Company**

- Research Engineer at the EDF Research and Development Division

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years

- None

Vincent RODET, 57 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

23 November 2019

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Strategy Committee, Audit Committee, Nuclear Commitments Monitoring Committee, and Corporate Responsibility Committee

Shares held401 ⁽¹⁾**Nationality**

French

Holding a Master degree in organisational sociology from the Lyon II University, Vincent Rodet started his career in 1987 as a Computer Engineer studying energy movements at *Réseau de Transport d'Électricité* (RTE), and then joined the consultancy service in 1995, which then worked for both EDF and Gaz de France. From 2007 to 2014, he is appointed Central Union Representative for the CFDT union at EDF and CFDT Coordinator for the EDF group. In this capacity, he was a member of the France Group Committee and the European Committee. From 2014 to 2018, he steers the CFDT delegation in charge of the social dialogue at the branch level for the Electricity and Gas Industries (IEG – Industries Électriques et Gazières). Member of the Nuclear Sector Strategic Committee (CSFN) in 2018, he participates to the studies lead on the reconsolidation of the French nuclear sector and more generally follows the process of the Multi-year energy plan (*Programmation Pluriannuelle de l'Énergie* – PPE) for the CFDT Union. In 2020, he obtained the Company Director Certificate jointly issued by the Institut d'études politiques de Paris (i.e. French Institute of Political Studies) and the Institut français des administrateurs (French Institute of Directors). Director and member of the Audit Committee of the Board of Directors of the *Caisse Centrale d'Activité Sociales* (Central Social Activity Fund) for the Electricity and gas industries, Vincent Rodet was sponsored by the CFDT trade union.

Other offices and positions held**Position held within the Company**

- HR Operator Manager, Special duties at the Industrial Professionalisation & Performance Unit (UPI)

Office/Position	Title	Country
Member	French National Nuclear Industry Strategy Committee (CSFN – Comité stratégique de la filière nucléaire)	France
Director	Board of Directors of the <i>Caisse centrale d'activité sociales</i> (i.e. central social activity fund (CCAS)).	France

Expired offices held outside the Company over the past five years

- None

(1) Shares held through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

Christian TAXIL, 47 years old**Position held within the Company**

Director elected by the employees

Date of appointment to the Board

23 November 2014

Last re-elected

23 November 2019

Expiry of current term of office

22 November 2023

Other position(s)

Member of the Audit Committee and Strategy Committee

Shares held2,186 ⁽¹⁾**Nationality**

French

Graduate from the ESCP Europe School, holding an Executive MBA diploma, and from the École des Mines in Douai, Christian Taxil began his career in 1999 at EDF Gaz de France Distribution in customer, local authority and concession management positions. From 2004 to 2008, he was in charge of electricity and gas industry social dialogue on the Fédération CFE-CGC Énergies union's management team. In 2008, he joined the EDF group Audit division before being elected, from June 2009 to September 2014, General Secretary of the Fédération CFE-CGC Énergies union. Key Account Manager in Dalkia's Trading & Marketing Division until December 2022, he is currently in charge of innovation and territories in the Territories and Regional Action Division. In November 2018, he obtained the Company Director Certificate jointly issued by the Institut d'études politiques de Paris (i.e. French Institute of Political Studies) and the Institut français des administrateurs (French Institute of Directors). Christian Taxil is sponsored by the CFE-CGC trade union.

Other offices and positions held**Position held within Group**

- Chargé de mission of Innovation and Territories at EDF's Territories & Regional Action Division

Office/Position	Title	Country
None		

Expired offices held outside the Company over the past five years**In France**

- Elected representative of the Bureau du Syndicat mixte d'électricité, de gaz et de télécommunications du Val-d'Oise (SMDEGTVO)

(2) Shares held through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

4.2.2 Functioning of the Board of Directors

The internal rules of procedure ⁽¹⁾ of the Board of Directors determine the principles for its operation and the terms and conditions according to which the Board and its Committees fulfil their duties. It defines the role and powers of the Chairman and Chief Executive Officer. These internal Rules of Procedure are regularly updated, particularly to take into account the changes in legislation and regulations and changes to the AFEP-MEDEF Code (see section 4.1 "Corporate Governance Code").

4.2.2.1 Term of office of Directors – Staggered re-election of the Board

EDF's articles of association set the term of office of Directors to four years (see section 4.2.1 "Members of the Board of Directors").

In accordance with the provisions of Article 2 of Decree no. 2014-949 of 20 August 2014 implementing the Order of 20 August 2014, the Representative of the French State is appointed for a term equal to the term of office of the members of the Board of Directors, i.e. for a four-year term.

Pursuant to Article 13 of EDF's articles of association, the Board of Directors, excluding Directors elected by the employees and the Representative of the French State appointed by decree, shall be renewed by rotation periodically in such a way that half (rounded to the nearest whole number) of the Directors elected by the Shareholders' Meeting be renewed every two years and that the Board be completely renewed, with respect to the members concerned, at the end of each four-year period (see section 4.2.1 "Members of the Board of Directors").

The Directors are appointed and can be dismissed at any time by an Ordinary Shareholders' Meeting. In accordance with Articles 12 and 25 of the Law on the Democratisation of the Public Sector, the Directors elected by the employees can be individually dismissed for gross negligence in the exercise of their office by order of the President of the Tribunal de Grande Instance (High Court) delivered at summary proceedings upon application from the majority of the members of the Board. However, in the event that serious dissent disrupts the management of the Company, dismissal pronounced by the Shareholders' Meeting can be extended to the employee representatives. The Representative of the French State ceases his duties by resigning or if he loses the capacity by virtue of which he was appointed; he can be replaced at any time for the remainder of the term of office.

4.2.2.2 Appointment and powers of the Chairman and Chief Executive Officer

In accordance with the option provided for in Article 18 of the Order of 20 August 2014, EDF's articles of association state that the Chairman of the Board of Directors undertakes the Executive Management of the Company and holds the title of Chairman and Chief Executive Officer.

The Chairman and Chief Executive Officer of EDF is appointed by decree of the President of the French Republic, on the recommendation of the Board of Directors. He may be dismissed by decree in accordance with Article 20 of the Order of 20 August 2014. In accordance with the provisions of Article 13 of the French Constitution, the Chairman is appointed after opinion of the competent Committees of the French National Assembly and Senate.

As Jean-Bernard Lévy notified the Board of Directors of his intention to resign from his terms of office as Director and Chairman and Chief Executive Officer before their expiry in March 2023, the Board of Directors meeting of 18 November 2022 decided to co-opt Luc Rémont as a Director and, pursuant to Article 19 of Order No. 2014-948 of 20 August 2014 and Article 13 of the French Constitution, after duly noting the favourable opinion issued by the competent committees of the French National Assembly and Senate on 26 October 2022 with regard to this appointment, the Board decided to propose to the President of the French Republic that Luc Rémont be appointed as Chairman and CEO of EDF. Luc Rémont was appointed as the Company's Chairman and Chief Executive Officer by decree of the President of the French Republic of 23 November 2022.

In case of vacation of the office of Chairman and Chief Executive Officer, Article 21 of the Order of 20 August 2014 provides that the French State may appoint

someone to the role temporarily until the appointment of the new Chairman and CEO.

Subject to the specific legal provisions governing public sector companies and the powers specifically reserved by law or by the articles of association to the Board of Directors or to Shareholders' Meetings, and the limits on the powers of the Chairman and Chief Executive Officer provided for by the internal Rules of Procedure of the Board of Directors as internal rules (see section 4.2.2.3 "Powers and duties of the Board of Directors" below), the Chairman and Chief Executive Officer is vested with the most extensive powers to act on behalf of the Company under all circumstances, within the limits of the corporate purpose. The Chairman and Chief Executive Officer organises and supervises the work of the Board of Directors and reports to the Shareholders' Meeting. They oversee the proper running of the Company's bodies and, in particular, ensure that the Directors are capable of fulfilling their duties.

4.2.2.3 Powers and duties of the Board of Directors

The Board of Directors meets as often as required by the interest of the Company, in accordance with applicable statutory and regulatory provisions. Furthermore, in accordance with the Board's internal Rules of Procedure, the Directors meet once a year to discuss the strategy of the Company and of the Group as part of a strategic seminar held in the presence of EDF's Executive Committee. Moreover, the internal rules for the Board of Directors provide that a meeting is to be held each year without the attendance of the Chairman and Chief Executive Officer (executive session), and this meeting shall be chaired by the Chair of the Appointments, Remuneration & Governance Committee.

The Board of Directors determines the Company's business policies and ensures their implementation, in accordance with its corporate interest, also taking into consideration the corporate and environmental issues for its business and the Company's *raison d'être*, adopted in 2020 (see section 1.3 "Group strategy and objectives" and section 1.3.2 "Priorities of the CAP 2030 strategy"), whose roll-out throughout the Group will be closely monitored. It defines the major strategic, economic, financial and technological policies for the Company and the Group. Subject to powers expressly attributed to the Shareholders' Meetings and within the limit of the Company's corporate purpose, the Board may consider any question relating to the proper running of the Company and regulates, through its deliberations, on any such issue.

The Board deliberates, after examination by the competent Committee or Committees, as the case may be, on the annual budget, the medium-term plan, any significant operation falling outside the Company's announced strategy, the corporate strategic plan presenting the actions to be implemented by the Company or the Group in order to comply with the objectives of the multi-year energy programme (see section 7.1.6.2 "Public service in France"), the Group's strategy relating to nuclear fuel cycle, gas and renewable energies and the public service contract (see section 7.1.6.2 "Public service in France"). It regularly examines, in connection with the strategy defined by it, opportunities and risks such as financial, legal, operational, social and environmental risks, as well as the measures taken as a consequence. In this context it examines in particular the risks and opportunities relating to climate change and their impact on the Group's strategy and its activities and assets.

The Board of Directors ensures the implementation by the Company of a programme for the prevention and detection of corruption and influence-peddling and a non-discrimination and diversity policy, particularly in terms of balanced representation of women and men within the governing bodies of the Company (see section 4.2.1 "Members of the Board of Directors"). In accordance with the provisions of Article L. 225-37-1 of the French Commercial Code, the Board of Directors deliberates annually on the Company's policy in terms of equal access to employment and equal pay and defines the Company's strategic aims submitted to the EDF Central Social & Economic Council in accordance with Article L. 2312-17 and Article L. 2312-19 of the French Labour Code.

Under its internal Rules of Procedure, the Board of Directors is competent to authorise in accordance with the governance of the Group's listed companies, the following transactions prior to their implementation:

- external growth transactions (investments, mergers and acquisitions), divestments, organic growth transactions, as well as stock exchange transactions, carried out by the Company or by one of its subsidiaries, which represent overall financial exposure for the Company or the Group exceeding €350 million; this threshold falls to €150 million for transactions not in line with the Company's or the Group's strategic policies;

(1) <https://www.edf.fr/groupe-edf/edf-en-bref/gouvernance/conseil-dadministration>.

- coherent and inseparable industrial programmes of investments or works on existing assets, by the Company or one of its subsidiaries, exceeding €350 million per programme;
- real estate transactions, carried out by the Company or one of its subsidiaries, exceeding €200 million;
- certain financial transactions (long-term borrowings, debt management, securitisation or hedging transactions) whenever they exceed €5 billion or the equivalent in any other currency;
- contracts and agreements (supplies, work or services) entered into by the Company involving amounts, including any necessary subsequent amendments, exceeding €350 million, or between €200 million and €350 million if these contracts relate to a new strategic policy or a new business line for the Group;
- long-term contracts for the purchase or sale of energy, CO₂ emission credits and quotas, by the Company or by one of its subsidiaries, for annual volumes or amounts exceeding 10TWh for electricity, 20TWh for gas (detailed information must also be provided on long-term gas purchase or sale agreements greater than 5TWh and less than 20TWh after the meeting of the Board of Directors) and €250 million for coal, fuel oil, and CO₂ emission credits and quotas;
- strategic agreements to be entered into by the Company constituting firm and irrevocable commitments relating to cooperation or partnerships with one or more foreign partners, in the nuclear industry involving significant transfers of intellectual property or technologies on the Group's part and constituting major issues for the Group.

The Board of Directors determines the framework for the policy for the constitution, management and risk management of assets for hedging EDF's nuclear commitments (dedicated assets), specifically ruling on asset/liability management and dedicated asset allocation strategy. If the Nuclear Commitments Monitoring Committee issues a negative opinion on a project to invest in unlisted assets for dedicated assets, the Board has sole authority to authorise the aforementioned project (see section 4.2.3.2 "Nuclear Commitments Monitoring Committee").

In accordance with Article L. 311-5-7 of the French Energy Code, the Government Commissioner may oppose the investment decisions, the realisation of which would be inconsistent with the objectives of the strategic plan prepared by the Company or with those of the multi-year energy programme (see section 7.1.6.2 "Public service in France").

4.2.2.4 Balance of powers

EDF's articles of association state that the Chairman of the Board of Directors is the Executive Manager of the Company and holds the title of Chairman & Chief Executive Officer. The "non-separated" Executive Management structure is therefore set out in the Company's articles of association.

Each year, when evaluating the functioning of the Board of Directors and the Committees, the Board of Directors assesses the organisation and balance of powers as set out in the Board's Rules of Procedure, and in particular the limitations they place on the powers of the Chairman and Chief Executive Officer (see section 4.2.2.3 "Powers and duties of the Board of Directors" above). The Board has so far considered that the current arrangement ensures a satisfactory balance, in the interest of the Company, between the executive corporate officer and the Board of Directors, while preserving the necessary flexibility, efficiency and responsiveness with regard to the administration and management of the Company (see section 4.2.2.6 "Evaluation of the functioning of the Board of Directors and its Committees").

The issue of the balance in the distribution of powers between the Chairman and CEO and the Board of Directors is also regularly discussed at the executive sessions (see section 4.2.2.3 "Powers and duties of the Board of Directors").

Lastly, the Appointments, Remuneration and Governance Committee is responsible for reviewing and giving its opinion on potential situations of conflict of interest of which it is aware, or which might be reported to it, and for reporting on such conflicts to the Board of Directors (see section 4.2.3.5 "Appointments, Remuneration & Governance Committee").

4.2.2.5 Evaluation of Director independence

Total number of Directors	18
Number of independent directors	5
Percentage of independent directors*	41,7%

* Excluding Directors representing the employees.

The AFEP-MEDEF Corporate Governance Code recommends that, in companies with a controlling shareholder, the proportion of independent directors should be at least one third of the Board of Directors and specifies that Directors representing employees are not taken into account in making this calculation.

The table below reiterates the independence criteria stated by the AFEP-MEDEF Code:

Independence criteria
Criterion 1: Employee or corporate officer in the previous five years Must not be or have been within the previous five years an employee or executive officer of the Company, an employee, executive officer or Director of a company consolidated within the Company, an employee, executive officer or Director of the parent company of the Company or a company consolidated within this parent company.
Criterion 2: Cross Directorships Must not be an executive officer of a company in which the Company, directly or indirectly, holds a Directorship, or in which an employee appointed as such or an executive officer of the Company (currently in office or having held such office within the last five years) holds a Directorship.
Criterion 3: Significant business relationships Must not be a customer, supplier, commercial banker, investment banker or consultant of significance to the Company or its Group or for which the Company or its Group represents a significant portion of its activity. The evaluation of the significance or otherwise of the relationship with the Company or its Group must be discussed by the Board and the quantitative and qualitative criteria that led to this evaluation must be clarified in the annual report.
Criterion 4: Family ties Must not be related by close family ties to a corporate officer.
Criterion 5: Auditor Must not have been an Auditor of the Company within the previous 5 years.
Criterion 6: Period of office exceeding 12 years Must not have been a Director of the Company for more than 12 years. Loss of the status of independent Director occurs on the date of the 12th anniversary.
Criterion 7: Variable remuneration or performance-based remuneration Must not receive variable remuneration in cash or securities or any remuneration related to the performance of the Company or the Group.

Independence criteria

Criterion 8: Major shareholders

A Director representing a major shareholder of the Company or its parent company may be considered independent, provided this shareholder does not participate in the control of the Company. Nevertheless, beyond a 10% threshold in capital or voting rights, the Board of Directors shall systematically question the status of independent by taking into account the structure of the Company's capital and the existence of a potential conflict of interest.

Evaluation of Director independence

The Board of Directors annually reviews the individual situation of the Directors with regard to the independence criteria provided in the AFEP-MEDEF Code. It may also be called upon to make a decision during the year in the event of a change in the membership of the Board or the status of a Director justifying a review of his or her independence.

At the meeting on 8 February 2022, the Appointments, Remuneration & Governance Committee (see section 4.2.3 "Board of Directors' Committees") examined the individual situations of Directors, taking into account the independence criteria provided for by the AFEP-MEDEF Code. The Board of Directors, at its meeting of 17 February 2022, performed its annual evaluation of director independence and confirmed the classification of Ms. Nathalie Collin, Ms. Colette Lewiner, Ms. Claire Pedini, Mr. Bruno Crémel, and Mr. Philippe Petitcolin as independent directors.

At its meeting on 8 February 2023, the Appointments, Remuneration & Governance Committee examined the situation of Directors, taking into account the independence criteria provided for by the AFEP-MEDEF Code.

The Committee noted that Luc Rémont, due to his capacity as Chairman and Chief Executive Officer, and therefore Executive Officer, cannot be considered as an independent Director (criterion no. 1).

The Directors appointed on the recommendation of the French State in accordance with Article 6 of order no. 2014-948 of 20 August 2014 on the governance and equity transactions of companies with a public shareholding "represent", by virtue of this text, "the interests of the French State as shareholder". In view of the criteria set by the AFEP-MEDEF Code, these Directors cannot be considered as independent (criterion no. 8). The same holds true for the Representative of the French State appointed pursuant to the provisions of Article 2 of the Order of 20 August 2014, in his capacity as representative of EDF's majority shareholder (criterion no. 8).

Finally, directors representing employees are not subject to an assessment, in accordance with the recommendations of the AFEP-MEDEF Code.

With respect to business relationships, the Appointments, Remuneration & Governance Committee examined the situation of Ms. Nathalie Collin, Ms. Colette Lewiner, Ms. Claire Pedini, Mr. Bruno Crémel and Mr. Philippe Petitcolin with regard to criterion no. 3 provided for by the AFEP-MEDEF Code. In particular, the Committee examined any business ties that might exist between the Company and companies in which these Directors hold offices or senior management positions, as well as groups to which they belong, on a quantitative level (importance of any business relations existing between the Company and these companies, their groups, and sales between them recorded in the course of the 2022 fiscal year), and on a qualitative level (Director's position in the companies in question, nature of business relations, any economic dependence, exclusivity, etc.). Based on their findings, none of the companies in which Ms. Collin, Lewiner and Pedini and Mr. Crémel and Petitcolin hold offices or senior management positions, nor any of the groups to which these companies belong, could be classified as a significant client, supplier, business banker, financing banker or important consultant of the EDF group, nor could EDF be considered a significant client or supplier of these companies or their groups. Following these analyses, the Committee therefore concluded that there were no significant business ties involving these Directors.

After consulting the Committee, the Board of Directors assessed the individual situation of Ms. Nathalie Collin, Ms. Colette Lewiner, Ms. Claire Pedini, and Mr. Bruno Crémel and Philippe Petitcolin at its meeting on 16 February 2023, and confirmed their independence in accordance with the independence criteria set out in the AFEP-MEDEF Code. The Board deemed that none of these Directors had any relations with the Company, its Group or its management that might compromise the exercise of their freedom of judgement.

On the date of filing this Universal Registration Document, the Company's Board of Directors therefore features 5 independent directors out of the twelve taken into account to make the calculation in accordance with the AFEP-MEDEF Code, i.e. a proportion of 41.7%, higher than one third of the Directors as recommended by the AFEP-MEDEF Code.

The table below presents the situation of the Directors classified as independent taking into account the criteria provided for by the AFEP-MEDEF Code:

	Criterion no. 1	Criterion no. 2	Criterion no. 3	Criterion no. 4	Criterion no. 5	Criterion no. 6	Criterion no. 7	Criterion no. 8	Final classification
Nathalie Collin	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Bruno Crémel	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Colette Lewiner	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Claire Pedini	✓	✓	✓	✓	✓	✓	✓	✓	Independent
Philippe Petitcolin	✓	✓	✓	✓	✓	✓	✓	✓	Independent

✓: means that the criterion is satisfied.

4.2.2.6 Evaluation of the functioning of the Board of Directors and its Committees

In accordance with the provisions of the AFEP-MEDEF Code, the Board's internal Rules of Procedure provide that the Appointments, Remuneration & Governance Committee shall supervise annually an evaluation of the functioning of the Board of Directors and propose areas for improvement. Once a year, therefore, the Board shall dedicate one item on its agenda to this evaluation and shall hold a discussion on its functioning and that of its Committees in order to improve its efficiency and ensure in particular that important issues are appropriately prepared and discussed.

Every three years, this evaluation is conducted by an independent external consultant under the supervision of the Appointments, Remuneration & Governance Committee.

Annual evaluation 2021

The 2021 annual evaluation was conducted internally using an anonymous questionnaire completed by the Directors, including both closed questions, enabling statistical monitoring of the answers, and open questions, enabling Directors to give detailed answers, provide qualitative observations, propose changes, and share their expectations for the 2022 fiscal year. The conclusions of this evaluation were examined at a meeting of the Appointments, Remuneration and Governance Committee on 25 November 2021, and then submitted to the Board on 15 December 2021.

In particular, the following emerged from the results of the 2021 evaluation:

- the general operation of the Board (number of meetings, availability and quality of issues treated, work programme, general level of information) was deemed to be satisfactory, as was the quality of the discussions and the dynamics of the exchanges within the Board, which some felt were improving;
- the Directors felt that the quality of the work carried out by the Board Committees and the reports made on it contribute effectively to the Board's decision-making;
- the 2021 strategy seminar and the associated programme were unanimously appreciated;
- the Directors consider the balance of powers between the Chairman & CEO and the Board, as set out in the rules of procedure, to be balanced and appropriate to the functioning of the Company's governance;
- the increased expertise of the Board of Directors in 2021, particularly in the areas of general management of large companies, was welcomed; and the Directors considered that the appointments made in recent years had enriched the exchanges and increased the dynamics of the Board of Directors.

The areas for improvement identified include strengthening the monitoring of decisions taken by the Board of Directors and of major operational risks. In addition to these two issues, the Directors placed strategy, monitoring of performance and value creation, and monitoring of the financial situation and trajectory among the top priorities for 2022. Finally, some Directors reiterated their wish to see foreign Directors appointed to the Board.

In view of the particular context of 2022 and in particular the announcement in July 2022 of the forthcoming change of Chairman and Chief Executive Officer, as well as the many changes in the composition of the Board of Directors during the fiscal year, it was decided to postpone the 2022 annual evaluation of the Board's operation until 2023. Pursuant to the recommendation of the AFEP-MEDEF Code, this evaluation is conducted by an independent external consultant under the supervision of the Appointments, Remuneration & Governance Committee.

4.2.2.7 Information and training of Directors

Information and training

The Chairman and Chief Executive Officer ensures that the Directors have the necessary information for them to carry out their remit. This information is provided to them as soon as possible to enable them to carry out their remit in the best conditions.

Under the Board's internal Rules of Procedure, it periodically receives information on the financial, cash management and off-balance sheet commitments position of the Company and the Group, and on the performance of the Company's principal subsidiaries at the time of presentation of the annual and half yearly financial statements, in addition to the purchasing and human resources policy. The Board of Directors is also regularly informed of changes to the Company's markets, competitive environment and the main challenges facing the Company, including in the field of corporate social, societal and environmental responsibility.

A document reviewing the Group's current major business sectors, market trends, and the economic, financial and institutional context is regularly submitted to the Board of Directors. The Company also provides them with quarterly monitoring of key indicators concerning EDF and the Group, a quarterly reporting on the major industrial projects of the Group and more generally with any useful information between Board meetings, if the importance or the urgency of the matter so requires.

The Directors may supplement this information by means of meetings with the principal executives of the Company or Group, including without the Chairman being present, to discuss issues on the Board's agenda.

Each Director may receive additional training in the specific characteristics of the Company and the Group, their business activities and their field of activity, as well as specific themes falling within the remit of the Committees of which they are

members, such as the challenges related to the climate or social and environmental responsibility. Information meetings are also organised on complex matters or issues of major strategic importance, together with any training requested by the Directors.

The Board of Directors uses a digital platform that enables smooth, rapid and secure access to Board and Committee files as well as other information that may be useful for the performance of its duties. The Board also uses a secure videoconferencing tool for its meetings when they are held remotely.

Training of directors on climate and social and environmental responsibility (SER)

The Board of Directors' Climate point person, whose mission is to ensure, in conjunction with the Chairman and Chief Executive Officer (see section 3.1.3 "EDF's climate governance"), that the Board identifies all the impacts of climate change for the Group and that the work of the Board and the strategy it develops integrate climate change issues, draws up each year along with the company's management before the start of the fiscal year, an annual work programme for the Board and the Corporate Responsibility Committee on climate and CSR issues.

In this respect, a dedicated climate workshop was held at the end of 2021, during which the Directors carried out the Climate Fresk (see section 3.1.3.5.2 "Innovation and collective intelligence focused on climate action"), making the EDF Board the first Board of a French company to have undergone the exercise. Directors also discussed with two climate negotiation experts the outcome of COP 26 in Glasgow and the progress that has been made in focusing the multilateral process and the commitments of the countries towards a limiting global warming to 1.5°C by mid-century.

In 2023, a new Board workshop will be organised around the outcome of the COP 27 and COP 15 biodiversity conferences, as well as to hear from climate experts. In addition, Directors will be asked to carry out the Biodiversity Fresk Studies are underway to enrich the specific training courses that will be offered to directors on climate and CSR.

This approach is part of EDF's governance of climate-related issues, which aims to raise climate issues to the highest level of the Company and to strengthen the Board's involvement in and commitment to all climate-related issues, in line with EDF's *raison d'être* and on social and environmental responsibility issues.

4.2.2.8 Obligations and duties of Directors

The internal Rules of Procedure of the Board of Directors state that its members are subject to obligations such as: acting in all circumstances in the corporate interest of the Company, informing the Board of situations of conflict of interest (see also section 4.4.1 "Conflicts of interest"), and refraining from contributing to the discussions and voting on any decision in which there might be a conflict of interest, fulfilling the obligation of confidentiality, carrying out their term of office with diligence and commitment, and complying with the EDF Stock Exchange code of ethics.

The Directors and the Chairman and Chief Executive Officer are required to inform the Board immediately of any agreement entered into by the Company in which they hold a direct or indirect interest, or which might be entered into through an intermediary.

In addition to the right to obtain disclosure of the documents and information necessary to perform their work, the Directors also have a duty to request the information they deem essential to the proper exercise of their duties.

Under the internal Rules of Procedure, each Director undertakes to ensure that his or her status complies with the French Commercial Code and the AFEP-MEDEF Code recommendations on plurality of offices and to keep the Board informed of offices they hold in other companies. The Chairman and Chief Executive Officer is also required to inform the Board of Directors before accepting an appointment in a listed company.

4.2.2.9 Activity of the Board of Directors in 2022

	2022	2021
Number of meetings	22	14*
Average attendance rate	95.4%	95.2%
Average duration of the meetings	2 hours and 24 minutes	2 hours and 56 minutes

* In addition to this number of meetings, a one-day strategy seminar was held, as well as two workshops, one dedicated to the climate and the other to the challenges and prospects of the capacity obligation mechanism.

The table below presents individual attendance rates during the 2022 fiscal year by members of the Committee whose terms of office are ongoing on 31 December 2022:

Individual attendance rate of Directors in 2022	Board of Directors	Audit Committee	Nuclear Commitments Monitoring Committee	Strategy Committee	Corporate Responsibility Committee	Appointments, Remuneration & Governance Committee
Luc Rémont ⁽¹⁾	100%					
Claire Bordenave	95%				100%	
Nathalie Collin	100%	100%				
Bruno Crémel	95%	83%				
Gilles Denoyel	95%		100%			
Anne-Marie Descôtes ⁽²⁾	100%					
Delphine Gény-Stephann ⁽³⁾	100%				100%	
Karine Granger	100%		100%	100%		80%
Marie-Christine Lepetit	95%	100%	100%			
Colette Lewiner	86%		67%			100%
Sandrine Lhenry	91%	100%		100%	100%	
Claire Pedini	86%				100%	100%
Philippe Petitcolin	100%	100%		100%		
Jean-Paul Rignac	100%	100%				
Vincent Rodet	100%	100%	100%	50%	80%	
Michèle Rousseau	95%		100%		100%	
Christian Taxil	91%	100%		50%		
Alexis Zajdenweber ⁽⁴⁾	100%					50%

(1) Director whose term of office expired on 18 November 2022.

(2) Director whose term of office expired on 28 November 2022.

(3) Director whose term of office expired on 12 May 2022.

(4) Director whose term of office expired on 23 September 2022.

Activity in 2022

The Board held a total of 22 meetings, including 14 extraordinary meetings during fiscal year 2022.

In addition to numerous matters related to the Company's ordinary business, the Board of Directors reviewed and/or authorised the following:

- the progress of the Hinkley Point C and Flamanville 3 projects, the excell plan, the Nuward project and the Sizewell C project, for which the Board authorised the submission of binding bids to the UK Government and the signing of the agreements related to the *Government investment decision*;
- EDF's project to acquire General Electric's "nuclear steam power" business ⁽¹⁾;
- the progress of the investment programme for the existing nuclear fleet in France and the EPR2 construction programme in France (see section 1.4.1.1.2.3 "The issues relating to the nuclear activity");
- the Group's financial situation, trajectory and prospects;
- EDF Energy's performance and prospects;
- the sale by EDF Trading Holdings of EDF Energy Services;
- the Company's capital increase maintaining the preferential subscription right and the capital increase reserved for members of the EDF group savings plan and international group savings plan;

- the situation of the Cordemais power plant and the Group's strategy in terms of decarbonised thermal power;
- EDF's contribution to the French Energy and Climate Strategy;
- the Group's response to the Elektrarna Dukovany II tender in the Czech Republic (see section 1.4.1.1.3.2 "Other "New Nuclear" projects");
- the approval of the report on internal control included in the three-year report on securing the financing of nuclear expenses, the updating of the reference memorandum on the policy for setting up, managing and controlling the financial risks of EDF's dedicated assets (see section 4.2.3.2 "Nuclear Commitments Monitoring Committee") and the renewal of the terms of office of the members of the Nuclear Commitments Financial Expertise Committee (CEFEN);
- EDF's policy on professional and salary equality;
- the 2023-2028 terms of appointment of EDF's Statutory Auditors, upon the recommendation made by the Audit Committee in view of the General Meeting called to approve the financial statements for the fiscal year ending 31 December 2022;
- the contract for the supply of liquid biomass to be entered into by EDF PEI as part of the project to convert the Port Est power plant in Reunion Island;
- the French State's planned simplified takeover bid for all of the Company's shares (see below);

(1) See press release of 4 November 2022 "GE and EDF sign a binding agreement related to EDF's acquisition of GE Steam Power's nuclear activities".

- the determination of the 2022 remuneration of the Chairman and CEO and the Directors and the remuneration policy to be submitted to the General Meeting of 12 May 2022;
- the yearly evaluation of director independence and;
- the proposal to the President of the French Republic for the appointment of the Chairman and CEO of EDF.

The Board was regularly briefed on the issue of stress corrosion and the situation of the French nuclear fleet, as well as on the Company's preparations for the winter of 2022-2023. The Board also authorised the industrial stress corrosion repair programme.

At its meeting on 11 April 2022, the Board of Directors decided, in the interest of shareholder dialogue, to submit EDF's climate transition plan, which aims to contribute to achieving carbon neutrality by 2050, to the General Meeting of Shareholders to be held on 12 May 2022, for an advisory opinion. The corresponding resolution (thirteenth resolution) was approved by 99.87% of the shareholders at the General Meeting of 12 May 2022. The climate transition plan, as well as the draft resolution to be submitted to the General Meeting, had been the subject of a prior review and discussion by the Corporate Responsibility Committee on 8 April 2022 (see section 3.1.3.1.1 "Recently strengthened governance").

During the past fiscal year, the Board also took note of all the topics reviewed by the Board's Committees, on the basis of the Committee files provided to it, and discussed them in the context of the reports given by the Committee Chairmen at the subsequent Board meeting.

In view of the changes in the Company's governance that were being prepared for the second half of 2022, the annual strategy seminar as well as the meeting of the Directors which the Chairman and CEO would not attend (executive session) were postponed to 2023.

Planned acquisition by EDF of General Electric's nuclear steam power business

In the context of the discussions initiated in 2021 between EDF and General Electric (GE) on the planned acquisition by EDF of GE's nuclear steam power business, the Board of Directors decided on 11 October 2021, pursuant to Article 14 of the Board's internal Rules of Procedure, to set up a Working Group comprising two independent directors within the meaning of the criteria of the French AFEP-MEDEF Code and two Directors representing the employees. Chaired by Philippe Petitcolin, the Working Group also included Claire Bordenave, Colette Lewiner and Christian Taxil.

This Working Group, in conjunction with EDF's management, was tasked with reviewing the project resulting from the discussions between EDF and GE and its characteristics with regard to the Company's corporate purpose and its strategic, industrial, financial and social challenges, and to issue any and all opinions and recommendations to the Board on the project. Accordingly, the working group received from the Company the information for it to fulfil its duties and received assistance from an advisory bank, particularly to examine the valuation items.

The Working Group held 8 meetings between October 2021 and November 2022. The Board of Directors, having considered the findings of the Working Group, approved the planned acquisition on 3 November 2022.

Simplified takeover bid by the French State

Following the announcement by the French State on 19 July 2022 of its intention to submit a simplified takeover bid for all of the Company's shares, as well as all of the bonds convertible into and/or exchangeable for new and/or existing shares maturing on 14 September 2024 (the "OCEANES"), and in accordance with Article 261-1 of the AMF general regulations and AMF recommendation No. 2006-15, the Board of Directors decided on 19 July 2022 to set up an *ad hoc* Committee made up of a majority of independent directors. This Committee, which includes Colette Lewiner, Bruno Crémel, Philippe Petitcolin, independent directors, and Christian Taxil, director elected by the employees, is chaired by Bruno Crémel.

The Committee was tasked with (i) proposing to the members of the Board of Directors the appointment of the independent expert entrusted with drawing up a report on the financial terms of the bid, (ii) monitoring the work of this independent expert by ensuring that the expert's assignment and the due diligence that the latter was to carry out were carried out properly, in particular by ensuring access to the information needed and (iii) issuing a recommendation to the Board of Directors on the interest of the bid for the Company, the shareholders, the holders of OCEANES and the employees. The *ad hoc* Committee was set up to carry out its duties until the date on which the AMF publishes the notice of the outcome of the bid launched by the French State or until any other date decided by the Board.

After the Board's appointment, upon the proposal made by the *ad hoc* Committee, of the firm Finexsi as independent expert on 27 July 2022, the Committee monitored, in accordance with the role assigned to it, the work of the independent expert and drew up a draft reasoned opinion on the bid, which was submitted to the Board of Directors. The Committee was assisted in its duties by financial and legal counsel. Between its creation and November 2022, the Committee met fourteen times for regular progress reviews, with its counsel and with the independent expert, and it was able to hear any person whose views it deemed to be relevant. In particular, it ensured that the independent expert had access to all the information it needed to carry out its duties and reviewed the criticisms and observations received from minority shareholders and ensured that the independent expert responded to them.

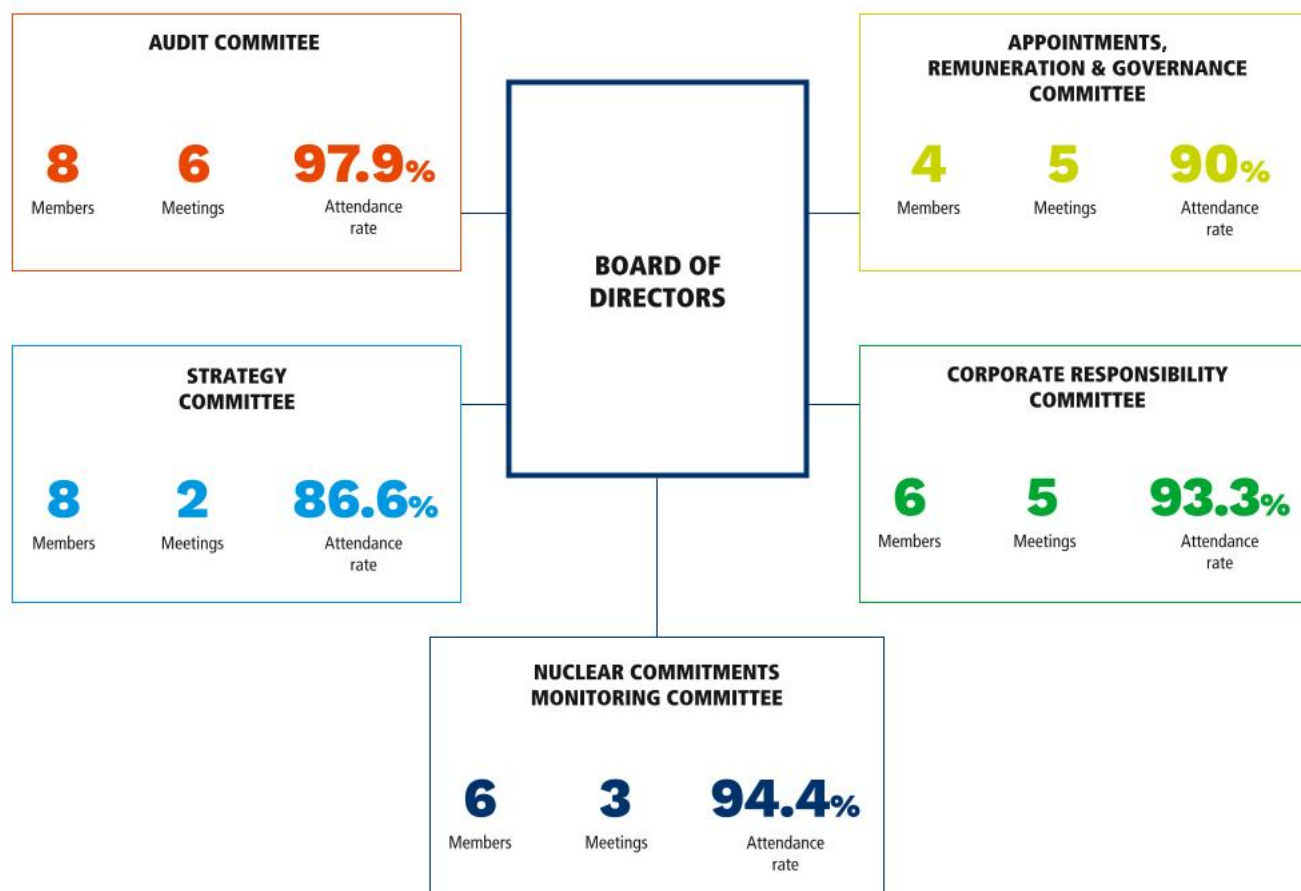
The Board of Directors, after duly noting the findings of the independent expert on the fairness of the terms of the French State's bid, issued a reasoned opinion on the interest of the bid for the Company, its shareholders, the OCEANES holders and its employees on 27 October 2022, which was confirmed on 20 November 2022 after reviewing the addendum to the independent expert's report of 26 October 2022, and recommended to the EDF shareholders and the OCEANES holders to contribute their securities to the bid.

Multi-year strategic policies on social and environmental responsibility

In accordance with the new recommendation inserted into the French AFEP-MEDEF Code in December 2022, the Board of Directors shall determine during 2023, upon the proposal made by the Company's Executive Management and after review by the Corporate Responsibility Committee, the Group's multi-year strategic policies in terms of CSR and shall monitor their implementation.

4.2.3 Board of Directors' Committees

Presentation of the Committees ⁽¹⁾



To perform its duties, the Board of Directors has created five Committees to examine and prepare certain projects before they are presented to the Board. These specialised Committees are: the Audit Committee, the Nuclear Commitments Monitoring Committee, the Strategy Committee, the Corporate Responsibility Committee, and the Appointments, Remuneration & Governance Committee.

The membership, operation and duties of the Committees are governed by the internal Rules of Procedure of the Board of Directors.

The Committees comprise at least three Directors chosen by the Board, which appoints the Chair of each Committee. The Company's articles of association provide that each Committee should include at least one Director representing the employees.

As at the date of this document, the Chairs of the Board Committees are as follows:

- Mr. Luc Rémont for the Strategy Committee;
- Ms. Marie-Christine Lepetit for the Audit Committee;
- Mr. Gilles Denoyel for the Nuclear Commitments Monitoring Committee;
- Ms. Claire Pedini for the Corporate Responsibility Committee;
- Ms. Colette Lewiner for the Appointments, Remuneration & Governance Committee.

The Government Commissioner and the Head of the French State General Economic and Financial Supervisory Mission to the Company may attend the meetings in these Committees. The Government Commissioner may be represented to these Committees.

The work of the Committees is organised within a programme prepared for the year. Meetings are recorded in the form of written minutes, and the Committee Chair gives an oral report at the following meeting of the Board of Directors.

The Board's internal Rules of Procedure provide that the Committees shall meet in sufficient time before the Board meeting, the agenda of which includes consideration of matters falling within their remit.

The Committees may invite Company executives, including the Chairman and Chief Executive Officer, to attend their meetings. They may also invite other parties to attend, whether employed by the Company or not, having informed the Chairman and Chief Executive Officer in advance and on the condition that they report such attendance to the Board. The Committees may also, having informed the Chairman and Chief Executive Officer, have recourse to technical studies and external on issues falling within their remit, at the Company's expense, provided that they report this to the Board.

In 2022, the Committees held a total of 21 meetings. The average overall attendance rate of the Committees was 92.5%. The average attendance rates per Committee are specified in sections 4.2.3.1 "Audit Committee" to 4.2.3.5 "Nomination, Remuneration & Governance Committee".

For the individual attendance rates for the Directors to the Committees meetings, see section 4.2.2.9 ("Activity of the Board of Directors in 2022").

⁽¹⁾ Data relating to the 2022 fiscal year, except for data relating to the composition of the Committees, which is given as at the date of filing of this Universal Registration Document.

4.2.3.1 Audit Committee

Membership

In accordance with the provisions of Article L. 823-19 of the French Commercial Code and the recommendations of the AFEP-MEDEF Code, the Audit Committee does not include any Chairman and Chief Executive Officer and includes more than two-thirds of independent members.

The table below outlines the membership of the Committee on the date of filing of this Universal Registration Document.

Members of the Audit Committee

Marie-Christine Lepetit	Chair	Director appointed by the Shareholders' Meeting on recommendation of the French State
Bruno Crémel	Member	Independent Director appointed by the Shareholders' Meeting
Nathalie Collin	Member	Independent Director appointed by the Shareholders' Meeting
Sandrine Lhenry	Member	Director elected by the employees
Philippe Petitcolin	Member	Independent Director appointed by the Shareholders' Meeting
Jean-Paul Rignac	Member	Director elected by the employees
Vincent Rodet	Member	Director elected by the employees
Christian Taxil	Member	Director elected by the employees

Number of members	8
Number of independent directors	3
Percentage of independent directors*	75%

* Excluding Directors representing the employees.

Article L. 823-19 of the French Commercial Code provides that at least one member of the Committee must have specific skills in financial or accounting matters and must be independent in accordance with the criteria defined and made public by the Board of Directors. Furthermore, Article 17.1 of the AFEP-MEDEF Code recommends that all members of the Audit Committee have financial or accounting skills, that the re-election of the Chair of the Committee be specifically examined by the Board and finally, that the proportion of independent directors on the Board be at least two-thirds, excluding Directors representing employees.

The Board of Directors' meeting following the Shareholders' Meeting of 16 May 2019, had re-examined the membership of the Committee, taking account of changes to the membership of the Board. Regarding the Audit Committee, the Board had noted in particular that Ms. Lepetit, whose re-election as Chair of the Audit Committee was proposed, and Mr. Crémel, have specific financial and accounting skills in accordance with the criteria recommended by the Autorité des marchés financiers (AMF, French Financial Markets Authority) in its report on the Audit Committee of 22 July 2010. Mr. Crémel meets both the criteria regarding skills and independence set out in Article L. 823-19 of the French Commercial Code (see section 4.2.2.5 "Evaluation of Director independence").

After receiving the opinion of the Appointments, Remuneration and Governance Committee, at its meeting of 17 February 2021, the Board of Directors appointed Mr. Petitcolin as a member of the Audit Committee and noted that he has expertise in financial and accounting matters. Mr. Petitcolin also meets both the criteria regarding skills and independence set out in Article L. 823-19 of the French Commercial Code (see section 4.2.2.5 "Evaluation of Director independence").

Lastly, after receiving the opinion of the Appointments, Remuneration and Governance Committee, at its meeting of 15 June 2021, the Board of Directors decided to appoint Ms. Collin as a member of the Audit Committee and noted that she has expertise in financial and accounting matters. Ms. Collin also meets both the criteria regarding skills and independence set out in Article L. 823-19 of the French Commercial Code (see section 4.2.2.5 "Evaluation of Director independence").

Duties

Under the supervision of the Board of Directors, the Audit Committee carries out the duties entrusted to it in accordance with Article L. 823-19 of the French Commercial Code. In accordance with this article, the Audit Committee is tasked with the following duties in particular:

- monitoring the process of preparing financial information and making any recommendations to guarantee its integrity;

- monitoring the effectiveness of the internal control, risk management and internal audit systems, regarding procedures relating to the preparation and processing of accounting and financial information;
- monitoring the performance of the duties of the Statutory Auditors, ensuring their independence, and approving the provision of the services referred to Article L. 822-11-2 of the French Commercial Code.

In fulfilling its duties, it examines and gives its opinion to the Board of Directors, in particular on:

- the Company's financial position, the medium-term plan and the budget;
- the preliminary and consolidated annual and half-yearly financial statements and related financial reports;
- the monitoring of risks and internal control (mapping of Group risks and methods of detection, anticipation and management of risks in all areas, including social, environmental and climate change risks, organisation and evaluation of internal control processes); in this context, it ensures, in conjunction with the Corporate Responsibility Committee, the existence of programmes for the internal control and management of the main risks in terms of ethics, compliance, and corporate responsibility;
- the audit (annual audit programme, main findings and corrective actions, action plans, monitoring of their implementation);
- the monitoring of the Statutory Auditors (coordination of the auditor selection procedure, monitoring of the fulfilment of their duties, taking account, where applicable, of the findings and conclusions of the Haut Conseil du Commissariat aux comptes (i.e. French High Council of Auditors), verification of compliance by the Statutory Auditors with the conditions of independence provided for in the applicable laws, opinion on the amount of fees, approval of the provision by the Statutory Auditors of services other than the certification of accounts in accordance with a procedure approved by the Board of Directors on 3 November 2016);
- the financial aspects of external growth or divestment activities, which are particularly significant (see section 4.2.2.3 "Powers and duties of the Board of Directors");
- the policies in terms of insurance, energy market risks and risk of bankruptcy of the Group's counterparties.

The Committee's review of the financial statements is accompanied by a presentation by the Executive Management of the Group's environmental, social and governance objectives and main achievements (monitoring of key indicators and ESG milestones), a presentation on significant off-balance sheet commitments, as well as a presentation by the Statutory Auditors highlighting the basis for the preparation of the financial statements, the applicable accounting framework, the audit approach used and the conclusions of their audit or limited review work.

In addition to the meetings of the Audit Committee devoted to examining the annual and half-yearly financial statements, the Statutory Auditors also attend all meetings devoted to risk monitoring, internal control and auditing.

For the purposes of its work, the Committee regularly meets the Statutory Auditors, Executive Management, Corporate Finance, Group Risk Management and Internal Auditing.

Activity in 2022

The table below presents the statistical data relating to the 2021 and 2022 fiscal years:

	2022	2021
Number of meetings	6	6
Average attendance rate	97.9%	97.9%
Average duration of the meetings	3 hours and 9 minutes	2 hours and 39 minutes

In 2022, the Audit Committee reviewed, *inter alia*:

- the half-yearly and annual financial statements and related financial reports;
- the presentation by the Statutory Auditors of their 2022 audit plan and the key points of their audit findings, off-balance sheet commitments;
- the 2022 budget and the 2022-2024 medium-term plan;
- the updating of the Group's risk mapping, risk monitoring and control methods and identified progress actions;
- the audit programme and its implementation, the summary of internal audits and the follow-up of implemented action plans;
- the annual summary of the Group's energy market risks and counterparty risks;
- the annual financial management and financial risk management remit;
- the findings of an external review of EDF Trading;
- the Group's insurance policy and the insurability of risks;
- the update of the 2022 outlook, the 2023 and 2024 scenarios and the Group's trajectory shared with the independent expert in the context of the simplified takeover bid launched by the French State;

- the management of the Russian-Ukrainian crisis; and
- the Group's preparation for the winter of 2022-2023.

The Committee was involved in the tendering process conducted by the Company for the terms of appointment of the Statutory Auditors for the period 2023-2028. It critically reviewed its findings, including the criteria and ratings obtained by the tenderers, as well as the Company's analysis of the technical and commercial offers it had received. The Committee requested a third round of negotiations on commercial offers, which resulted in further savings, before making two recommendations to the Board.

In 2022, in accordance with the procedure approved by the Board of Directors of EDF on 3 November 2016, the Committee authorised the Statutory Auditors and the members of their network to provide services other than the certification of the financial statements and it was informed on a half-yearly basis of the services provided as part of the pre-approval process under the terms of this procedure.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2022 fiscal year.

4.2.3.2 Nuclear Commitments Monitoring Committee

Membership

The table below outlines the membership of the Nuclear Commitments Monitoring Committee on the date of filing of this Universal Registration Document:

Membership of the Nuclear Commitments Monitoring Committee

Gilles Denoyel	Chairman	Director appointed by the Shareholders' Meeting on recommendation of the French State
Karine Granger	Member	Director elected by the employees
Marie-Christine Lepetit	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State
Colette Lewiner	Member	Independent Director appointed by the Shareholders' Meeting
Vincent Rodet	Member	Director elected by the employees
Michèle Rousseau	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State

Number of members	6
Number of independent directors	1
Percentage of independent directors*	25%

* Excluding Directors representing the employees.

Duties

The Nuclear Commitments Monitoring Committee (NCMC) was created by Article 9 of Decree no. 2007-243 of 23 February 2007 on the securing of the financing of long-term nuclear cost. Its mission is to:

- monitor the valuation of nuclear liabilities and changes in the corresponding provisions;
- give its opinion on governance issues for dedicated assets and on the rules of asset-liability matching and strategic allocation;
- review the results of the management of the assets set up by the Company and verify that this management complies with the rules for setting up, managing and controlling the financial risks of dedicated assets;

- provides the Board with an opinion on the internal control procedure for the financing of the cost of decommissioning nuclear facilities, spent fuel management and disposal of radioactive waste, as set out in Article L. 594-1 of the French Environmental Code.

Decree No. 2020-830 of 1 July 2020, which amended Decree No. 2007-243 of 23 February 2007, requires the establishment of an independent control function for the assessment of nuclear liabilities, responsible in particular for issuing an opinion on the assessment of nuclear liabilities and their provisional timetable, the consistency of the methods and data concerning the assessment of nuclear liabilities and the policy on securing the financing of these liabilities. This Nuclear Liabilities Assessment Control Function (FCECN) has been created within the Company and is assigned to the General Secretary (see section 2.2.5 "Specific risks related to nuclear activities", risk 5B – "Control of radioactive waste treatment", of

the decommissioning of nuclear facilities, and ability to meet related commitments"). The opinions issued by the Nuclear Liabilities Assessment Control Function are forwarded to its parent authority, to the departments with operational responsibility for the assessment of nuclear liabilities, to the NCMC and the Board of Directors.

Furthermore, the Committee relies on the works of the Nuclear Commitments Financial Expertise Committee (NCFEC) which comprises independent experts appointed by the Board of Directors ⁽¹⁾, whose duty is to assist the Company and its

corporate bodies with matters relating to asset-liability matching and the management of dedicated assets.

Finally, the Committee issues an opinion prior to any investment in unlisted dedicated assets for any project exceeding a unit amount of €400 million as well as for any project (excluding real estate) exceeding a unit amount of €200 million resulting in full consolidation of the target investment by the Company. In the event that the Committee issues a negative opinion on an investment plan, the Board of Directors has sole authority to authorise the aforementioned plan.

Activity in 2022

	2022	2021
Number of meetings	3	3
Average attendance rate	94.4%	100%
Average duration of the meetings	3 hours and 23 minutes	2 hours and 53 minutes

In 2022, the Committee reviewed in particular:

- the hedging status and discount rate of nuclear provisions;
- the performance of dedicated listed and unlisted asset portfolios;
- the implementation of the strategic allocation included in the reference memorandum on the policy for setting up, managing and controlling the financial risks of dedicated assets and the proposal to update the reference memorandum, before its submission to the Board of Directors for approval;
- the findings of the 2022 ALM (Asset and Liability Management) study modelling the risk-return profile of dedicated assets, the discount rate of provisions and their hedging rate by dedicated assets over timeframes ranging from 3 years to 40 years, supplemented by a study on the impact of climate risk on dedicated assets and the risk-return profile of dedicated assets over timeframes ranging from 10 years to 40 years;
- the deployment of the Responsible Investor Charter for dedicated assets and, in this context, additional information and materials on climate and the consideration of climate issues in the management of the portfolio of dedicated assets and the action plan proposed in line with the Group's *raison d'être*;

- the three-yearly report on securing the financing of nuclear liabilities and the report on internal control included in that report;
- the monitoring of risks related to dedicated assets;
- the opinion of the Nuclear Liabilities Assessment Control Function;
- the state of progress of the decommissioning programme for first generation nuclear power plants and the projects for the Industrial Geological Storage Centre (CIGEO) and the Facility for the Conditioning and Storage of Activated Waste (ICEDA) (see section 1.4.1.1.2.3 "Issues relating to the nuclear activity");
- the renewal of the terms of office of the members of the CEFEN and the Advisory Committee on Dedicated Assets; and
- the follow-up of internal and external recommendations from the supervisory authorities (French Directorate-General for Energy and Climate), the French Court of Auditors or the French Nuclear Safety Authority.

The Statutory Auditors attend all the meetings of the CSEN.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2022 fiscal year.

4.2.3.3 Strategy Committee

Membership

The table below outlines the membership of the Committee on the date of filing of this Universal Registration Document. The Directors who are not members of the Strategy Committee attend all of its meetings.

Membership of the Strategy Committee

Luc Rémont	Chairman	Chairman and Chief Executive Officer
Anne-Marie Descôtes ⁽¹⁾	Member	Director appointed on recommendation of the French State
Karine Granger	Member	Director elected by the employees
Sandrine Lhenry	Member	Director elected by the employees
Philippe Petitcolin	Member	Independent Director appointed by the Shareholders' Meeting
Vincent Rodet	Member	Director elected by the employees
Christian Taxil	Member	Director elected by the employees
Alexis Zajdenweber ⁽²⁾	Member	Director – Representative of the French State

(1) Anne-Marie Descôtes is a member of the Strategy Committee since 31 January 2023.

(2) Alexis Zajdenweber is a member of the Strategy Committee since 05 October 2022.

Duties

The Strategy Committee reviews and/or advises the Board of Directors on the Company's major strategic policies, and in particular on:

- the strategic business plan setting out the actions to be implemented to achieve the objectives of the Multi-Year Energy Programme (see section 7.1.6.2 "Public service in France");

- the Company's strategic policies for consultation with the EDF Central Social and Economic Committee;
- the public service contract (see section 7.1.6.2 "Public service in France");
- strategic agreements, alliances and partnerships; and
- research and development policy.

(1) The current members of the NCFEC were re-elected or appointed on 16 December 2022 for three years by the Board of Directors after consultation with the NCMC.

Activity in 2022

	2022	2021
Number of meetings	2	3
Average attendance rate*	86.6%	100%
Average duration of the meetings	2 hours and 45 minutes	3 hours and 30 minutes

* Rate calculated on the basis of Committee members only (all directors attending Committee meetings).

In 2022, the Committee reviewed in particular:

- the EDF group's hydrogen strategy;
- the Group's R&D policy;
- the risk policy for the energy markets;

- the management of the French positions (electricity purchases and sales) for 2022 and the outlook for 2023 and 2024; and
- a presentation of EDF Trading's strategy, results and prospects.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2022 fiscal year.

4.2.3.4 Corporate Responsibility Committee

Membership

The table below outlines the membership of the Corporate Responsibility Committee on the date of filing of this Universal Registration Document:

Members of the Corporate Responsibility Committee

Claire Pedini	Chair	Independent Director appointed by the Shareholders' Meeting
Delphine Gény-Stephann ⁽¹⁾	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State
Fabrice Guyon ⁽²⁾	Member	Director elected by the employees
Sandrine Lhenry	Member	Director elected by the employees
Vincent Rodet	Member	Director elected by the employees
Michèle Rousseau	Member	Director appointed by the Shareholders' Meeting on recommendation of the French State

(1) Delphine Gény-Stephann has been a member of the Corporate Responsibility Committee since 12 May 2022.

(2) Mr. Fabrice Guyon has been a member of the Corporate Responsibility Committee since 16 February 2023.

Number of members	6
Number of independent directors	1
Percentage of independent directors*	33.33%

* Excluding Directors representing the employees.

Duties

In connection with the Group's strategy, the Corporate Responsibility Committee examines the Group's commitments and policies, as well as their implementation, in terms of ethics, compliance, and corporate responsibility. It examines the way in which the Company takes account of issues relating to climate change. In conjunction with the Audit Committee, it ensures the existence of programmes to identify and manage the main risks in these fields and to comply with legal and regulatory provisions.

As part of its duties, it examines particularly the factors constituting the declaration of non-financial performance included in the management report in accordance with the French Commercial Code, in conjunction with the Audit Committee, the annual ethics and compliance report, the EDF mediator's annual report, as well as the annual reports from the French Inspector General for Nuclear Safety and Radiation Protection and the Inspector for Hydropower Safety.

The Committee submits an opinion to the Board on EDF's policy on gender, professional and salary equality between women and men and on the way in which the Company implements a non-discrimination and diversity policy, particularly in terms of balanced representation of women and men in governing bodies.

In accordance with the new recommendation introduced in the French AFEF-MEDEF Code in December 2022, the Committee shall review in the course of 2023 the Group's multi-year strategic policies in terms of social and environmental responsibility which will be submitted to the Board of Directors by the Company's Executive Management and shall monitor their subsequent implementation.

Board of Directors Climate Point person

The Company stepped up its climate governance in 2020 by appointing a Climate Point person to the EDF Board of Directors. In addition to the missions already entrusted to the Board, the Corporate Responsibility Committee and the Audit Committee in terms of monitoring the risks and opportunities related to climate change, the Chair of the Corporate Responsibility Committee has been designated as Climate point person to the EDF's Board of Directors. As Climate point person, in line with EDF's *raison d'être*, the Chair of the Committee is responsible for:

- ensuring, in conjunction with the Chairman and Chief Executive Officer and the Executive Committee's Climate point person (section 3.1.3 "EDF climate governance"), that the Board of Directors identifies all the impacts of climate change for the Group and that the Board's work and the strategy it defines incorporate such climate change issues;
- regularly informing the Board of the Company's climate strategy, after presentation to the Corporate Responsibility Committee by the Climate point person of the Executive Committee;
- ensuring, in conjunction with the Chairman and Chief Executive Officer, that the Corporate Responsibility Committee and the Board regularly review the implementation of the Group's carbon neutrality trajectory adopted by the Executive Committee;
- reviewing, in the context of the performance of the Corporate Responsibility Committee's assignments, how the Group applies the recommendations of the Taskforce on Climate related Financial Disclosures (TCFD) ⁽¹⁾ and reports on climate-related risks.

The Committee may submit any opinions, proposals and recommendations to the Board of Directors in fields falling within its remit.

(1) See sections 3.1.3.2 "Implementation of Task Force on Climate-related Financial Disclosures (TCFD) recommendations" et 3.1.3 "EDF Climate governance"

Activity in 2022

	2022	2021
Number of meetings	5	4
Average attendance rate	93.3%	77.5%
Average duration of the meetings	2 hours and 1 minute	1 hours and 40 minutes

In 2022, the Committee reviewed in particular:

- the 2021 non-financial performance statement included in the 2021 management report;
- a strategic review of non-financial rating agencies to prioritise requests in order to respond to the agencies with the greatest impact on investors;
- an update on the controversies and the means implemented by EDF to address them;
- the Group's 2021 vigilance plan and its deployment (see section 3.9 "Vigilance Plan");
- the latest news on the Gunaa Sicaru wind farm dispute;
- the draft consultative opinion of the shareholders on EDF's climate transition plan for the General Meeting of 12 May 2022;
- the results of the "My EDF group" 2021 survey;
- the 2021 report of the EDF group Ombudsman;
- the progress of the Group's carbon neutrality strategy;

- the European taxonomy and the publications made under it for fiscal year 2021;
- the presentation of the Group's E&S segment;
- the overview and results of the Group's gender equality in terms of work and pay and the Group's health and safety policy;
- the environmental footprint of power generation including a focus on water, soil and raw material consumption;
- the directions and developments in view of the preparation of the 2022 non-financial performance statement and the expected developments of the CSRD (Corporate Sustainability Reporting Directive) in the field of non-financial reporting; and
- the presentation of the activity report of the Group Ethics and Compliance Department.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2022 fiscal year.

4.2.3.5 Appointments, Remuneration & Governance Committee

Membership

The table below outlines the membership of the Appointments, Remuneration & Governance Committee on the date of filing of this Universal Registration Document.

Members of the Appointments, Remuneration & Governance Committee

Colette Lewiner	Chair	Independent Director appointed by the Shareholders' Meeting
Karine Granger	Member	Director elected by the employees
Claire Pedini	Member	Independent Director appointed by the Shareholders' Meeting
Alexis Zajdenweber*	Member	Director – Representative of the French State

* Alexis Zajdenweber has been a Member of the Appointments, Remuneration & Governance Committee since 5 October 2022.

Number of members	4
Number of independent directors	2
Percentage of independent directors*	66.67%

* Excluding Directors representing the employees.

Duties

In terms of appointments, the Committee submits its recommendations or proposals to the Board of Directors regarding the appointment of Directors by the Shareholders' Meeting. It oversees the selection process for potential candidates, may conduct its own research into candidates and may engage specialist consultants to assist in identifying potential candidates. It gives its opinion to the Board on proposed appointments to the Board Committees. It proposes to the Board the definition and updating of a diversity policy applied to Directors. It monitors the implementation of the policy and the results achieved. The Committee ensures the existence of succession plans in order to anticipate the succession, whether unforeseen or at the end of their term, of executive corporate officers and members of the Group's Executive Committee. The Chairman and Chief Executive Officer is involved in the Committee's work in the performance of this task, except with respect to work regarding his or her own succession.

With regard to remuneration, the Committee examines and gives an opinion on the corporate officer remuneration policy referred to in Article L. 22-10-8 of the French Commercial Code and on the principles and criteria used to determine and distribute all the factors comprising the Chairman and Chief Executive Officer's remuneration and benefits of all kinds. It submits this opinion to the Board for discussion. The Chairman of the Committee also submits this opinion for approval to the French Minister for the Economy. The Committee prepares its proposals within the limits specified by Decree no. 2012-915 of 26 July 2012, which amended the Decree of 9 August 1953, relating to French State control of the remuneration of the executives of public companies, in accordance with which the Chairman and Chief Executive's annual remuneration must not exceed the gross ceiling of €450,000. The Committee submits to the Board its opinion on the remuneration policy of the Group's Executive Committee and the main executives, as well as on the amount and terms and conditions for the distribution of the sum set by the Shareholders' Meeting to be allocated to the Directors in return for their duties.

In terms of governance, the Committee oversees issues relating to corporate governance and ensures the implementation, within the Company's corporate bodies, of the principles and rules in the AFEP-MEDEF Code in particular. It may make proposals concerning changes in the operation or powers of the Board or its internal Rules of Procedure. Every year, it conducts a review of the operation of the Board and its Committees and every three years supervises the formal audit conducted by an independent external consultant. Each year, the Committee

examines the individual situations of the Directors in accordance with the independence criteria defined by the AFEP-MEDEF Code and reports its findings to the Board. In the event of appointment of new members of the Audit Committee, it examines these members' expertise in the field of finance, accounting and statutory audit. It examines and gives its opinion on situations of conflicts of interest of which it has become aware or which are reported to it and reports such situations to the Director Board.

Activity in 2022

	2022	2021
Number of meetings	5	5
Average attendance rate	90%	95%
Average duration of the meetings	42 minutes	44 minutes

In 2022, the Committee reviewed:

- the proposals concerning the determination of the remuneration of the Chairman and CEO and the Directors and the remuneration policy to be submitted to the General Meeting of 12 May 2022;
- the individual situation of the Directors with regard to the independence criteria provided in the AFEP-MEDEF Code;
- the draft corporate governance report included in the 2021 Universal Registration Document;
- EDF's executive remuneration policy (overview of allocations for fiscal year 2021 and developments for fiscal year 2022), as well as the structure of the 2022-2024 long-term incentive plan (LTI) for certain executives;

- proposals for the appointment of directors by the General Meeting or co-opting members by the Board of Directors;
- the remuneration and benefits of the new Chairman and CEO (see Section 4.6.2.1 "Remuneration of the Chairman and CEO"); and
- conflicts of interest vis-a-vis Jean-Bernard Lévy and Luc Rémont alleged by minority shareholders in the context of the simplified takeover bid launched by the French State.

The Committee did not need to seek any external technical advice or order any studies on issues falling within its remit during the 2022 fiscal year.

4.3 Executive Management

The Chairman and Chief Executive Officer is assisted by an Executive Committee which includes representatives of all the Group's lines of business.

This Committee is a decision-making body, a forum for discussion and a consultative body on the operational and strategic issues for the Group. It examines all the substantive and current files of significance to the Group, tracks the operating objectives and results and contributes to the management and forecasting of the major challenges for the EDF group. It reviews and authorises significant projects, specifically the Group's investment or divestment projects for amounts which exceed certain thresholds, in accordance, where appropriate, with the governance of the Group's listed subsidiaries. The Executive Committee meets each week.

In order to reinforce the examination and follow-up of projects, an Executive Committee Commitments Committee examines in-depth the most significant

projects in terms of level of commitments or risks incurred before the Executive Committee makes its decision. No investment project may be submitted for review by the Board of Directors without having first been approved by this Committee.

On the date of filing of this Universal Registration Document, the Executive Committee comprises thirteen members and a Secretary. The list of members and their personal information appear below.

4.3.1 Members of the Executive Committee

On the filing date of this Universal Registration Document, the members of the Executive Committee were as follows:

Names	Duties
Luc Rémont	Chairman and Chief Executive Officer
Marc Benayoun	Group Senior Executive Vice-President, Customers, Services and Regions. He oversees Edison and gas activities
Bruno Bensasson	Group Senior Executive Vice-President, Renewable Energies, Chairman and Chief Executive Officer of EDF Renewables
Béatrice Buffon	Group Senior Executive Vice-President, International Division
Christophe Carval	Group Senior Executive Vice-President, Group Human Resources
Xavier Girre	Group Senior Executive Vice-President, Group Finance
Véronique Lacour	Group Senior Executive Vice-President, Transformation and Operational Effectiveness
Cédric Lewandowski	Group Senior Executive Vice-President, Nuclear and Thermal
Alexandre Perra	Group Senior Executive Vice-President, Innovation, Corporate Responsibility and Strategy
Simone Rossi	Group Senior Executive Vice-President, Chief Executive Officer of EDF Energy
Alain Tranzer	General Representative for Industrial Quality and Nuclear Skills
Pierre Todorov	Group Senior Executive Vice-President, Group General Secretary
Xavier Ursat	Group Senior Executive Vice-President, New Nuclear Projects and Engineering

Paul-Marie Dubée is the Group Senior Vice-President Secretary of the Executive Committee. He is Executive Coordinator, Government Relations. Brice Bohuon will succeed Pierre Todorov and will join EDF on 10 April 2023 as Group Senior Executive Vice-President in charge of the General Secretary (see the EDF press release of 14 March 2023 "Appointment of Brice Bohuon to the EDF Group Executive Committee").

4.3.2 Personal information on members of the Executive Committee

Marc Benayoun, 56 years old, a graduate of the École supérieure des sciences économiques et commerciales (ESSEC), began his career at Paribas Group in 1989, before joining the Boston Consulting Group in 1993. He became Associate Director at the Paris office in 2001 then at the Moscow office in 2008. During this period, he held a range of responsibilities, including the development of skills and business in the Company in the natural gas sector. In 2009, he joined the EDF group as Economics, Tariffs and Prices Director, in the Commerce Division. He was notably in charge of discussions related to changes in the French regulated electricity tariffs. In 2012, he became Director, Business Customers Market. In this role, he managed the project to end regulated electricity tariffs for companies and local communities, which resulted in EDF regaining its leadership position in a competitive environment. In 2016, Marc BENAYOUN was appointed Member of the Executive Committee of the EDF group, Gas and Italy. As such, he served as Chief Executive Officer of Edison, the third-largest Italian energy company. He also oversaw gas procurement activities for the EDF group, and managed its portfolio of long-term contracts for the transport of natural gas by pipeline and by sea (liquefied gas), as well as the assets needed to transport the gas to the delivery points. Since July 2019, Marc Benayoun has been Group Senior Executive Vice-President, Customers, Services and Regions. In this capacity, he heads the Commerce Division and supervises energy services related entities, including Dalkia. He is also a member of the EDF Trading Board of Directors, Chairman of the Edison Board of Directors and supervises the EDF group gas procurement platform based in Italy.

Bruno Bensasson, 50 years old, is a graduate of the École Polytechnique and École des Mines of Paris. He began his career in 1998 at the Autorité de sûreté nucléaire (French Nuclear Security Authority) as head of a Regional Division (Lower and Upper Normandy) then as the Chief of Staff of the CEO. From 2004 to 2006, he was the technical adviser responsible for the environment, new energies and nuclear energy at the office of the French Minister for Industry, then technical adviser at the General Secretariat of the office of the President of the French Republic with responsibility for industry, the environment and transport. He joined SUEZ in 2007 as Director of Economic Studies in the Department of Development and Strategy. In 2011, he became a member of the Executive Committee of GDF SUEZ as Director for Strategy and Sustainable Development. He was appointed CEO of GDF SUEZ Énergie France in early 2013 and, in July 2014, became Vice-President of GDF SUEZ Énergie Europe responsible for development and renewable energy generation. Since 2016, he has been the CEO of Engie Africa. Since May 2018, Bruno Bensasson has been the EDF group Senior Executive Vice-President responsible for Renewable Energies and the Chairman and Chief Executive Officer of EDF Renewables. He is a Director of Luminus and EDF Trading.

Béatrice Buffon, 48 years old, is a graduate from both the École Polytechnique and the École nationale des ponts et chaussées. She began her career as Finance Manager at COGETHERM, an EDF subsidiary specialising in the development of Combined Heat and Power (CHP) projects. In 2001, she joined SIIF Energies, which later became EDF Renewables, where she would take up office as Project Manager in 2003. From 2007 to 2009, she undertook the functions of Deputy Executive Director of POWEO Energies Renewables. She returned to EDF Renewables in 2010 as Director of Development for large-scale, ground-mounted solar power projects; then in 2011, she became Director of Development for Offshore Wind Power France. In 2014, Béatrice Buffon became Executive Vice President of EDF Renewables, responsible for renewable marine energies and a member of the EDF Renewables Executive Committee. She is a *Chevalier de l'Ordre national du mérite*. Since February 2020, she has been Group Executive Director responsible for EDF's International Division.

Christophe Carval, 62 years old, holds a degree in electrical engineering from HEI Lille engineering school, and joined the EDF group in 1982. He has held several management positions in Departmental, Regional and Inter-regional Units in the electricity and gas distribution sector. In 2007, he was appointed to head up the project to create and manage the new Shared Services Division of the EDF group, aiming at rationalising and professionalising this Division. He was the Director of Human Resources, Health & Safety and the Enedis Transformation project from 2014, where he notably led projects to simplify the Company's structure into 25 Regional Divisions and to overhaul its governance system. Since July 2017, he has held the position of Group Senior Executive Vice-President, Human Resources Division. He is also Chairman of the Supervisory Board of Enedis and a member of the Supervisory Boards of RTE, CTE, Framatome and EDF Energy.

Xavier Girre, 54 years old, is a graduate of the HEC business school, is the holder of a Master's degree in business law, a graduate of IEP (i.e. Paris Institute of Political Studies) and is an alumnus of ENA (French National School of Administration). Xavier Girre began his career at the French Court of Auditors in 1995, before joining the Veolia Group in 1999 where he spent twelve years and notably held the positions of Group Risk and Auditing Director of Veolia Group, Deputy Chief Executive Officer in charge of Finance of Veolia Transportation and then of Veolia Environmental Services. From 2011 to 2015, he was Deputy CEO, Chief Financial Officer of La Poste Group and then Chairman of the XAnge Private Equity Supervisory Board. Xavier Girre joined EDF in 2015 as Chief Financial Officer for France, before being appointed to the EDF Executive Committee. He is also a Director of EDF Energy, EDF Renewables, Dalkia, Edison, Chairman of the Board of Directors of EDF Trading, a member of the Supervisory Board of Enedis, Chairman and Chief Executive Officer of CTE, and Chairman of the Supervisory Board of RTE. Xavier Girre is also Director and Chairman of the Audit Committee of La Française des Jeux. He is also an independent Director of CNIM. Since March 2016, he has been Group Senior Executive Vice-President, Finance.

Véronique Lacour, 58 years old, holds a postgraduate diploma in Information Systems from the University of Paris I Panthéon Sorbonne. She started her career at Thales in 1987, where she gained solid experience in information systems, before taking up the position of Chief Information Officer for a new Division of Thales in 2004. Between 2007 and 2009, she managed its HR Information Systems Shared Services. She moved to Safran in 2009 where she held the position, first, of Chief Information Officer for Safran Aircraft Engines (formerly Snecma), and later, in 2013, Vice-President Improvement Initiatives, where she managed continuous improvement and transformation initiatives. She went on to become Vice-President Programs for Safran Analytics, and was involved in the creation of this new Big Data-focused entity as part of the Group's digital transformation strategy. Véronique Lacour joined EDF's Executive Committee on 1 December 2016, tasked with directing the Group's activities in the areas of information systems, purchasing, real property, consultancy, shared tertiary services and IT. Since 2016, she has been Group Senior Executive Vice-President, Transformation and Operational Effectiveness.

Cédric Lewandowski, 53 years old, is a graduate of the Paris Institute of Political Studies (IEP) and holds a postgraduate degree (DEA) in Geopolitics (Paris-VIII). Cédric Lewandowski began his career at EDF in 1998 as the Chief of Staff for the Chairman of EDF from 1998 to 2004, he then served as Director of the Electric Transport and Vehicles Division of Électricité de France from 2005 to 2008. He subsequently became Director of EDF Collectivités within EDF's Commerce Division from 2008 to 2012, Chairman of the Board of Directors of H4 from 2009 to 2012, Director of Safidi from 2009 to 2012 and Chairman of the Board of Directors of the Tiru company from 2009 to 2012. He was then appointed Director of the Civil and Military Cabinet of the French Minister of Defence from May 2012 until July 2017. He held the position of EDF group Senior Executive Vice-President, Innovation, Corporate Responsibility and Strategy from 2017 to 2019. He is Chairman of the Board of Directors of Électricité de Strasbourg and Governor of WANO's Main Governing Board. He has been Group Senior Executive Vice-President, Nuclear and Thermal since July 2019.

Alexandre Perra, 42 years old, is a graduate of the Institut d'études politiques de Paris in 2005 and holds a Master's degree in Modern Literature. Before working for EDF, he joined Thales in 2007, firstly working at the Strategy Department, before becoming Head of Group International Communications, then Head of Media Relations and finally being appointed Deputy Director of Group Communications in 2012. He joined EDF in November 2014 as Executive Director attached to the Chairman and CEO of EDF, in charge of executive coordination and governmental relations. He took part in the definition of the CAP 2030 company strategy, first implemented in 2015 and was involved in the strategic issues of the Company. In 2017, Alexandre Perra prepared EDF's strategy in the field of electricity storage. In 2018, he led the Storage Plan. In 2017, he launched Project Y, which is still ongoing and mobilises young employees under the age of 35 to accelerate EDF's digital transformation. He is also a sponsor of Let's Talk Energy, the Group's collective intelligence programme promoting dialogue between employees to develop the strategy of the Company, its entities and subsidiaries. Alexandre Perra is a trustee of the EDF Foundation and a member of Franco-British Young Leaders, which he joined in 2017. He has held the position of Group Senior Executive Vice-President, Innovation, Corporate Responsibility and Strategy since July 2019.

Simone Rossi, 54 years old, a graduate of the University of Bocconi (Milan) in Business Administration. Simone Rossi began his career as a consultant, firstly at KPMG Consulting in corporate finance, and then from 1996 at McKinsey & Company, where he mainly specialised in the sectors of energy, financial institutions, and information and communication technologies. In 2004, he joined Edison SpA in Milan as Head of Strategy, before being promoted to become Director of Financial Control and Information Systems in 2007. At the end of 2009, he was appointed Chief Financial Officer of Constellation Energy Nuclear Group (CENG), a company based in Baltimore in the United States. He then became Chief Financial Officer of EDF Energy in April 2011. In March 2015, Simone Rossi was appointed EDF group Senior Executive Vice-President, International Division. Since 1 November 2017, he has been the Chief Executive Officer of EDF Energy and Group Senior Executive Vice-President of EDF.

Pierre Todorov, 64 years old, is a graduate of the École normale supérieure (Ulm) and the École nationale d'administration (ENA) and holder of an advanced teaching degree in philosophy. Pierre Todorov was an auditor then Counsel at the French Council of State from 1986 to 1990. He then joined Lagardère Group, where he held a range of responsibilities in the media branch, particularly serving as International Deputy Chief Executive Officer of Hachette Filipacchi. In 1997, he was appointed General Secretary of Accor Group, a position he held until 2008. Between 2008 and 2011, he was a partner in the law firm of Hogan Lovells LLP, and then joined PSA Peugeot Citroën in 2011, as General Secretary, a member of the Executive Management Committee. Pierre Todorov has been EDF group General Secretary and a member of the Executive Committee since February 2015.

Alain Tranzer, 56 years old, is a graduate engineer of the École Polytechnique and École des Mines of Paris. He began his career in 1991 with the PSA Group. After a period in ground liaison engineering, he successively held the positions of Sub-system Manager, Plant Quality Director, and Chief Engineer for the Peugeot 407,

then Director of the Peugeot 208-2008 programme. He has thus acquired solid experience in the management of industrial projects, from design to industrialisation, and was awarded the Eurostar 2013 Project Leader of the Year prize by Automotive News Europe. In 2013, Alain Tranzer became responsible for the PSA Group's preliminary projects, the modular policy and complex projects involving autonomous, connected, electric and hybrid electric vehicles. From 2018 to 2020, he was Senior Vice-President of the PSA Group, responsible for the CO₂ programme and associated platforms and technological modules. In March 2020, he joined the EDF group to steer the implementation of the "Excell" plan, which aims to strengthen industrial quality, skills and governance of major nuclear projects, and was appointed General Representative for Industrial Quality and Nuclear Skills. He is a member of EDF Executive Committee.

Xavier Ursat, 56 years old, a graduate of the École Polytechnique and Télécom Paris. He joined EDF in 1991, first holding various positions in the hydraulic engineering department until 2002. He oversaw the construction of EDF's hydraulic engineering centres and contributed to international projects, especially in South America. From 2002 to 2005, he was a special advisor to EDF's Senior Executive Vice-President, Generation and Engineering. From 2005 to 2007, he was Assistant Director of the Alps Generation Unit in Grenoble and from 2007 to 2010, Director of the Southwest Generation Unit in Toulouse. From 2010 to 2015, he was successively Deputy Manager and Manager of the Hydraulic Generation & Engineering Division. He is Chairman of the French National Nuclear Industry Strategy Committee (CSFN – *Comité stratégique de la filière nucléaire*) and of GIFEN (*Groupe des industriels français de l'énergie nucléaire*, i.e. the French Nuclear Energy Industry Group), as well as Chairman of the Supervisory & Steering Committee of Edvance, and a member of the Supervisory Board of Framatome. He is also Honorary Governor of the World Water Council. Since March 2015, Xavier Ursat has been Group Senior Executive Vice-President, New Nuclear Projects and Engineering.

4.4 Conflicts of interest and interests of corporate officers and executives

4.4.1 Conflicts of interest

To the Company's knowledge, on the date of filing of this Universal Registration Document, there were no potential conflicts of interest involving EDF between the duties of the members of the Company's Board of Directors and Executive Management and their private interests or other duties (regarding the rules applicable to the members of the Board of Directors in terms of conflicts of interest, see section 4.2.2.8 "Obligations and duties of Directors").

Subject to the specific legal and regulatory provisions applicable to the membership of the Company's Board of Directors (see section 4.2.1 "Members of the Board of Directors"), to the Company's knowledge, no arrangements or agreements have been entered into with shareholders, clients, suppliers or others under which a member of the Board of Directors or Executive Management has been appointed in this capacity.

To the Company's knowledge, no member of the Board of Directors has agreed to restrict for a fixed period of time his or her ability to sell his or her holdings in the Company's capital, except for the restrictions resulting from the EDF Stock Exchange code of ethics (see section 4.5.2 "Trading in Company securities"). In addition, corporate officers holding shares in mutual funds through the EDF group Corporate Savings Plan invested in EDF shares, or who have acquired shares from the French State within the legal framework of the privatisation, can be subject to the lock-in and non-transferability rules resulting from the provisions applicable to these transactions.

To EDF's knowledge, there are, moreover, no family ties between members of the administrative bodies or Executive Management.

4.4.2 Absence of convictions

To EDF's knowledge, no member of the EDF Board of Directors or Executive Management has been subject to a criminal investigation, or to a conviction for fraud, corruption, receivership or bankruptcy proceedings during the past five years.

Michèle Rousseau was fined by the Court of Budgetary and Financial Discipline on 4 September 2018 for having, in her capacity as Chief Executive Officer of the Seine-Normandie Water Agency, granted aid, which was deemed to be irregular, to a water treatment plant. To the best of EDF's knowledge, no other Director has been subject to any official public accusation or sanction issued by statutory or regulatory authorities during the last five years.

Moreover, to EDF's knowledge, no member of the EDF Board of Directors or Executive Management has been prevented by a court from serving as a member of an administrative, management or supervisory body of an issuer or from participating in the management or direction of an issuer's affairs during the past five years.

4.4.3 Service contracts

EDF's corporate officers did not enter into any service contract with the Company or any of its subsidiaries pursuant to which they would be entitled to any kind of benefits.

4.5 Shareholding by corporate officers and trading in EDF securities by corporate officers and executives

4.5.1 Shareholding in EDF by Directors

As at 31 December 2022, the members of the Board of Directors of the Company, whose terms of office are ongoing as at 31 December 2022, held a total of 3,288 EDF shares. The table, below, details the number of EDF shares held individually by these Directors as at 31 December 2021 and 31 December 2022:

	Number of EDF shares held as at 31/12/2022	Number of EDF shares held as at 31/12/2021
Karine Granger	25	25
Colette Lewiner ⁽¹⁾	642	2,038
Sandrine Lhenry ⁽²⁾	34	34
Philippe Petitcolin	0	10
Vincent Rodet ⁽¹⁾	401	289
Christian Taxil ⁽¹⁾	2,186	1,437
TOTAL	3,288	3,833

(1) Shares held through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

(2) Shares held directly and through the corporate mutual profit-sharing scheme (FCPE) (amount rounded down to the nearest unit).

Directors whose terms of office are ongoing as at 31 December 2022 and which are not included in the above table, hold no EDF shares.

Fabrice Guyon, a director elected by employees whose term of office took effect on 16 February 2023, held a total of 466 EDF shares at that date through a corporate mutual profit-sharing scheme (FCPE).

4.5.2 Trading in Company securities

Since 2006, the EDF group has adopted a set of principles and rules applicable to trading in shares in EDF or listed EDF group subsidiaries. These rules were compiled into a regularly updated code of ethics.

At the same time as this Code was distributed, awareness campaigns on stock exchange rules were launched for Group employees, specifically regarding precautions and obligations relating to the holding of inside information and the black-out periods during which permanent or temporary insiders, including third parties acting in the name or on behalf of the Group, and, more specifically regarding black-out periods, all persons performing executive duties within the Group, are required to refrain from trading Company securities or other related financial instruments.

The code of ethics also notes the obligations imposed on executives, high-level managers as well as persons closely linked to them to declare to the AMF and to the

Company trades in EDF securities or other related financial instruments that they make on their own behalf. Indeed, under the terms of Article 19 of MAR regulation, specified in Article 223-22 A of the AMF general regulations, the executives of companies with shares listed for trading on a regulated market must declare trades in Company securities to the AMF and to the Company within three working days of their completion, when the combined amount of these trades exceeds the sum of €20,000 for the current calendar year.

Pursuant to the AMF general regulations⁽¹⁾, the EDF Board of Directors must mention in its annual report to the Shareholders' Meeting trades that have been declared by executives and similar persons⁽²⁾ over the past fiscal year.

Transactions carried out in the context of the simplified takeover bid initiated by the French State

In EDF's reply note filed by the Company with the French Markets Authority (AMF) on 22 November 2022 in the context of the simplified takeover bid initiated by the French State, the members of the Company's Board of Directors declared their intentions regarding the contribution of their shares to the bid. Colette Lewiner and Philippe Petitcolin have announced their intention to contribute all their EDF shares to the bid. These contributions were made on 29 and 30 November 2022 for Ms. Lewiner and on 5 December 2022 for Mr. Petitcolin and were declared to the French Financial Markets Authority (AMF) in accordance with the specific declaration regime applicable to directors during a public tender period.

(1) Article 223-26 of the AMF general regulations.

(2) At EDF, staff "similar to executives" are the members of the Company's Executive Committee.

4.6 Remuneration and benefits of corporate officers – Remuneration policy

As indicated in section 4.1 (“Corporate Governance Code”), the Company adheres to the AFEF-MEDEF Code subject to the specific legislative and regulatory requirements applicable to it.

This section provides details of the total remuneration and benefits of any kind paid during the fiscal years 2021 and 2022 or granted in respect of the same fiscal years to the corporate officers by the Company and the companies included in the Company’s consolidation scope within the meaning of Article L. 233-16 of the French Commercial Code (see section 4.6.2 “Total remuneration of the Chairman and Chief Executive Officer” for the Chairman and Chief Executive Officer and section 4.6.3 “Total remuneration of Directors” for the Directors). The tables in sections 4.6.2 “Total remuneration of the Chairman and Chief Executive Officer” and 4.6.3 “Total remuneration of Directors” below were drawn up in accordance with the format recommended by the AFEF-MEDEF Code of Corporate Governance and the AMF’s position-recommendation no. 2021-02.

Pursuant to Article L. 22-10-8 of the French Commercial Code, this section also presents the policy for the remuneration of corporate officers established by the Board of Directors (see section 4.6.1 “Remuneration policy” below), which will be submitted to the Shareholder’s Meeting called to approve the financial statements for the fiscal year closing 31 December 2022.

Chief Executive Officer are set by the Company’s Board of Directors on the recommendation from the Appointments, Remuneration & Governance Committee and submitted for approval by the French Minister for the Economy after consultation with the relevant Ministers (see section 4.2.3.5 “Appointments, Remuneration & Governance Committee”). The remuneration of the Chairman and Chief Executive Officer must comply with the limits provided for by Decree no. 2012-915 of 26 July 2012 on State control over the remuneration of executives of public companies, which amended the Decree of 9 August 1953 and sets a ceiling on his gross yearly remuneration of €450,000.

The Appointments, Remuneration and Governance Committee also issued its opinion to the Board regarding the rules and procedures for allocating the sum set by the Shareholder’s Meeting pursuant to Article L. 225-45 of the French Commercial Code, to be allocated to Directors as a remuneration for their work.

At the Shareholders’ Meeting of 12 May 2022, the five resolutions on the remuneration and the remuneration policy for EDF’s Directors and Officers (from Resolution 7 to 11) were adopted by a very large majority, with 98.75% to 99.97% of votes in favour.

4.6.1.1 Remuneration policy applicable to the Chairman and Chief Executive Officer

After consulting the Appointments, Remuneration and Governance Committee which met on 8 February 2023, the Board of Directors approved at its meeting on 16 February 2023 the remuneration policy described below for the Chairman and Chief Executive Officer:

4.6.1 Remuneration policy

Pursuant to Article L. 22-10-8 of the French Commercial Code, the Board of Directors establishes the remuneration policy for corporate officers.

In accordance with Article 22-10-16 and Article 22-10-17 of the French Commercial Code, the items comprising the remuneration of the Chairman and

Components of the remuneration	Amounts paid during the 2022 fiscal year	Amounts allocated for the 2022 fiscal year	Policy for the fiscal year 2023
Fixed remuneration	€451,704 ⁽¹⁾	€450,000	On recommendation of the Appointments, Remuneration and Governance Committee, the Board of Directors, which met on 16 February 2023, decided to maintain the annual fixed gross remuneration of the Chairman and Chief Executive Officer at €450,000 for fiscal year 2023.
Variable remuneration	none	none	none
Multi-year variable remuneration	none	none	none
Possibility of deferring or repaying the variable remuneration	n/a	n/a	n/a
Exceptional remuneration	none	none	none
Stock options, performance shares or other long-term benefits	none	none	none
Remuneration for serving as a Director	n/a	n/a	The Chairman and Chief Executive Officer does not receive any remuneration for his or her term of office as Director.
All types of benefits	€3,355 ⁽²⁾	€3,660	Benefit corresponding to the provision of a company car that the Board has decided to maintain for the 2023 fiscal year.
Signing allowance	none	none	none
Severance pay or end-of-service allowance	none	none	none
Non-competition clause	none	none	none
Supplementary pension scheme	none	none	none
Remuneration paid or granted by a company included in the scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code	none	none	none

n/a: not applicable.

(1) This amount represents the total gross remuneration paid to Jean-Bernard Lévy and Luc Rémont during the 2022 fiscal year (see details in section 4.6.2 “Total remuneration of the Chairman and Chief Executive Officer”).

(2) Amount of benefits in kind paid to Jean-Bernard Lévy calculated on a prorated basis up until his resignation date.

Since 2012, the remuneration of the Chairman and Chief Executive Officer of EDF has been set at the amount of the cap inserted into Decree no. 53–707 of 9 August 1953 by Decree No. 2012-915 of 26 July 2012 relating to State control over the remuneration of executives of publicly-held companies. This regulatory cap has not been revised since 2012.

As the remuneration of the Chairman and Chief Executive Officer is set at the ceiling set by the Decree of 9 August 1953 and does not include a variable portion, its determination is not based on criteria related to the Company's performance.

The Chairman and Chief Executive Officer is also covered by the social protection schemes set up by EDF for the benefit of the Company's executives and senior managers who are not covered under the articles of association (health cover and provident cover).

In view of the resignation of Jean-Bernard Lévy from his terms of office as Director and Chairman and Chief Executive Officer of EDF, and at the same time as the proposal made by the Board of Directors to the President of the French Republic to appoint Luc Rémont as Chairman and Chief Executive Officer of the Company (see section 4.2.2.2 "Appointment and powers of the Chairman and Chief Executive Officer"), the Board of Directors decided, on 18 November 2022, upon the proposal made by the Appointments, Remuneration and Governance Committee, to set the

annual fixed gross remuneration of the new Chairman and Chief Executive Officer for the 2022 fiscal year at €450,000, in accordance with the 2022 remuneration policy approved by the General Meeting on 12 May 2022, and decided that this remuneration would be calculated on a prorated basis starting from the appointment of Luc Rémont as Chairman and CEO of EDF by decree of the President of the French Republic.

Ratio of equity ⁽¹⁾ and changes in remuneration 2018-2022

In accordance with Article L. 22-10-9 of the French Commercial Code, the table below shows the change over the past five years in the ratio between the level of remuneration of the Chairman and Chief Executive Officer and the average remuneration on a full-time equivalent basis of EDF employees (other than corporate officers and the Chairman and Chief Executive Officer), and the ratio between the level of total remuneration of the Chairman and Chief Executive Officer and the median remuneration on a full-time equivalent basis of EDF employees (other than corporate officers and the Chairman and Chief Executive Officer), as well as the organic changes in Group EBITDA over the same period.

	2022	2021	2020	2019	2018
Remuneration of the Chairman and CEO ⁽¹⁾	455,059	453,660	453,660	453,660	452,868
Changes in the remuneration of the Chairman and Chief Executive Officer ⁽²⁾	0.0%	0.0%	0.0%	0.2%	0.0%
Equity ratio/Average remuneration ⁽³⁾	6.3	6.6	6.6	6.8	7.1
Equity ratio/Median remuneration ⁽³⁾	6.8	7.2	7.2	7.4	7.7
Changes in average salary ⁽²⁾⁽⁴⁾	+5.8%	-0.2%	+2.87%	+3.66%	+0.98%
Changes in median salary ⁽²⁾⁽⁴⁾	+6.2%	-0.1%	+3.54%	+4.16%	+1.81%
Organic changes in the Group EBITDA ⁽²⁾	128,2%	+11.3%	-2.70%	+8.40%	+11.30%

(1) The sum of €455,059 corresponds to the total of the compensation paid to Jean-Bernard Lévy in his capacity as Chairman and Chief Executive Officer until the date of his resignation and to Luc Rémont as of his appointment as Chairman and Chief Executive Officer. See the breakdown in the tables in section 4.6.2.1 "Remuneration of the Chairman and Chief Executive Officer".

(2) Change observed in year N compared to year N-1.

(3) EDF employees' salaries taken into account include the fixed salary, the variable portion and all bonuses, including those related to the status of the IEGs, as well as any benefits in kind.

(4) The change in average and median salary observed between the 2021 and 2022 fiscal years is due to the 2022 salary measures, including the payment of a value-sharing bonus (VSP), as well as an increase in the variable components paid in 2022 in respect of 2021, compared to the amounts paid in 2021 in respect of the year 2020, a year adversely affected by the Covid crisis.

The employees taken into account for the calculation of the above ratios are all the full-time equivalent employees of EDF in France, continuously present over the year 2022, i.e. approximately 60,000 employees, which represents all of EDF's employees in France and nearly 50% of the Group's employees in France.

4.6.1.2 Remuneration policy applicable to Directors

After receiving the opinion of the Appointments, Remuneration and Governance Committee at its meeting held on 8 February 2023, the Board of Directors, at its meeting held on 16 February 2023, approved the remuneration policy described below concerning the amount and distribution among the Directors of the sums paid to them in respect of their office pursuant to Article L. 225-45 and Article L. 22-10-14 of the French Commercial Code.

Budget and breakdown of remuneration paid to Directors in respect of their office

The Directors representing the employees hold office without remuneration in accordance with Law no. 83–675 of 26 July 1983 concerning the democratisation of the public sector, and the Chairman and Chief Executive Officer receives no remuneration for his or her term of office as a Director.

Pursuant to Order no. 2014-948 of 20 August 2014, the remuneration granted, in respect of their office, to Directors appointed by the General Meeting on a proposal from the French State in accordance with Article 6 of the Order, and who are civil servants of the State, shall be paid in full to the State budget.

As regards other Directors appointed by the Shareholders' Meeting on recommendation of the French State and who are not civil servants, an Order of the French Minister for the Economy and Finance dated 5 January 2018 ⁽²⁾ states that the Company pays into the French State budget 15% of the remuneration allocated to them for their term of office, with the remaining 85% paid to the Director.

Regarding the Representative of the French State appointed in accordance with Article 4 of the Order of 20 August 2014, any remuneration that he/she is entitled to receive for the performance of his/her duties is paid to the State budget.

After receiving the opinion of the Appointments, Remuneration and Governance Committee, the Board of Directors submits to the General Meeting of Shareholders for approval a fixed annual sum to be allocated to the Directors in accordance with the allocation rules defined by the Board and presented in this remuneration policy.

The Board of Directors meeting on 16 February 2023 decided to submit to the General Meeting called to approve the financial statements for fiscal year 2022 an annual remuneration package for directors of €530,000 for fiscal year 2023.

(1) Ratios were established in accordance with guidelines published by the AFEP.

(2) The provisions of the Order of 5 January 2018, amending the Order of 18 December 2014 in accordance with Article 6-V of the Order dated 20 August 2014, have been applicable since 1 February 2018.

The methods for allocating the annual package, applicable since fiscal year 2011, are reviewed each year by the Board of Directors when the remuneration policy for corporate officers is approved. They were confirmed by the Board at its meeting on 16 February 2023. Excluding any additional remuneration (see below), the amount of the package is divided into a fixed and a variable component, each representing half of the package, broken down as follows:

- the fixed portion is shared equally among the Directors in question; 50% of the fixed annual portion is paid during the fiscal year, in which it is allocated and the remaining 50% at the beginning of the following fiscal year;
- the distribution of the variable portion among the Directors is established through the application of a variable coefficient depending on the type of meeting (Board or Committee) and depending on the particular positions held by each Director (Committee member or Chairman): a coefficient of 2 for the attendance of a Director at a meeting of the Board of Directors, a coefficient of 1 for the attendance of a Director as a member at a Committee meeting and a coefficient of 2 for Chairmanship of a Committee. The variable portion is divided by the total of the coefficients for the fiscal year in order to determine the unit value of the coefficient; the variable portion for a fiscal year is fully paid at the start of the following fiscal year.

The amount of the remuneration package for 2023 of €530,000 takes into account additional remuneration in the amount of €90,000 that the Board of Directors has decided to allocate to the independent directors who participated in the Working Group set up by the Board pursuant to Article 14 of its internal Rules of Procedure in connection with the planned acquisition by EDF of General Electric's nuclear steam power business and to the independent directors who participated in the *ad hoc* Committee set up by the Board of Directors in accordance with Article 261-1 of the AMF's general regulations and AMF recommendation No. 2006-15 in the context of the simplified takeover bid launched by the French State (see section 4.2.2.9 "Activity of the Board of Directors in 2022"). The Board decided to allocate from the total amount the sum of 30,000 euros to the chairmen of the Working Group and the *ad hoc* Committee and the sum of 10,000 euros to the independent directors who are members of the Working Group and the *ad hoc* Committee, with the rules described above regarding the distribution of remuneration paid to directors in respect of their terms of office remaining otherwise unchanged.

It is not planned to pay any exceptional remuneration or other remuneration to the Directors during fiscal year 2023 by the Company or by a company included in the Company's scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code.

4.6.2 Total remuneration of the Chairman and Chief Executive Officer

The tables below present a breakdown of the remuneration of Jean-Bernard Lévy, Chairman and Chief Executive Officer of the Company until the appointment of Luc Rémont as Chairman and Chief Executive Officer of EDF on 23 November 2022, as well as breakdown of Luc Rémont's remuneration as from that date.

4.6.2.1 Remuneration of the Chairman and Chief Executive Officer

SUMMARY TABLE OF REMUNERATION AND OPTIONS AND SHARES ALLOCATED TO THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER ⁽¹⁾

(in euros)	2022 fiscal year	2021 fiscal year
Jean-Bernard Lévy, Chairman and Chief Executive Officer		
Remuneration allocated for the fiscal year (see details in table no. 2)	453,660 ⁽²⁾	453,660
Valuation of multi-year variable remuneration allocated during the fiscal year	none	none
Valuation of options allocated during the fiscal year ⁽³⁾	none	none
Valuation of bonus shares allocated during the fiscal year ⁽³⁾	none	none
TOTAL	453,660	453,660

(1) Table 1 of AMF position-recommendation no. 2021-02.

(2) Amount that would have been due for a full year, if the term of office had been held from 1 January 2022 to 31 December 2022.

(3) As shown in section 4.6.4 "Stock options – Bonus shares", the Company has not implemented any stock options plans and the corporate officer receives no allocation of bonus shares.

SUMMARY TABLE OF REMUNERATION AND OPTIONS AND SHARES ALLOCATED TO THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER ⁽¹⁾

(in euros)	2022 fiscal year	2021 fiscal year
Luc Rémont, Chairman and Chief Executive Officer		
Remuneration allocated for the fiscal year (see details in table no. 2)	48,006 ⁽²⁾	n/a
Valuation of multi-year variable remuneration allocated during the fiscal year	none	n/a
Valuation of options allocated during the fiscal year ⁽³⁾	none	n/a
Valuation of bonus shares allocated during the fiscal year ⁽³⁾	none	n/a
TOTAL	48,006	n/a

n/a: not applicable

(1) Table 1 of AMF position-recommendation no. 2021-02.

(2) Amount due on a prorated basis starting from the appointment of Mr. Rémont as Chairman and CEO.

(3) As shown in section 4.6.4, the Company has not implemented any stock options plans and the corporate officer receives no allocation of bonus shares.

The table below details the remuneration of all kinds paid to Jean-Bernard Lévy and to Luc Rémont, during the 2021 and 2022 fiscal years or owed for the 2021 and 2022 fiscal years.

SUMMARY TABLE OF THE REMUNERATION OF THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER ⁽¹⁾

(in euros)	2022 fiscal year		2021 fiscal year	
	Amounts due for the fiscal year	Amounts paid during the fiscal year	Amounts due for the fiscal year	Amounts paid during the fiscal year
Jean-Bernard Lévy, Chairman and Chief Executive Officer				
Fixed remuneration	450,000 ⁽²⁾	403,977 ⁽³⁾	450,000	450,000
Variable remuneration	none	none	none	none
Multi-year variable remuneration	none	none	none	none
Exceptional remuneration	none	none	none	none
Remuneration of the office of Director	none	none	none	none
Benefits in kind ⁽⁴⁾	3,660 ⁽²⁾	3,355 ⁽³⁾	3,660	3,660
TOTAL	453,660	407,332	453,660	453,660

(1) Table 2 of AMF position-recommendation no. 2021-02.

(2) Amount that would have been due for a full year, if the term of office had been held from 1 January 2022 to 31 December 2022.

(3) Amount paid calculated on a prorated basis up to the date of resignation of Jean-Bernard Lévy.

(4) This benefit corresponds to the provision of a company car.

SUMMARY TABLE OF THE REMUNERATION OF THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER ⁽¹⁾

(in euros)	2022 fiscal year		2021 fiscal year	
	Amounts due for the fiscal year	Amounts paid during the fiscal year	Amounts due for the fiscal year	Amounts paid during the fiscal year
Luc Rémont, Chairman and Chief Executive Officer				
Fixed remuneration	47,727 ⁽²⁾	47,727 ⁽³⁾	n/a	n/a
Variable remuneration	none	none	n/a	n/a
Multi-year variable remuneration	none	none	n/a	n/a
Exceptional remuneration	none	none	n/a	n/a
Remuneration of the office of Director	none	none	n/a	n/a
Benefits in kind ⁽⁴⁾	279 ⁽²⁾	0 ⁽⁵⁾	n/a	n/a
TOTAL	48,006	47,727	n/a	n/a

n/a: not applicable

(1) Table 2 of AMF position-recommendation no. 2021-02.

(2) Amount due on a prorated basis starting from the appointment of Mr. Rémont as Chairman and CEO.

(3) Amount paid calculated on a prorated basis starting from the appointment of Mr. Rémont as Chairman and CEO.

(4) This benefit corresponds to the provision of a company car.

(5) The amount of these benefits in kind shall be recognised in early 2023.

4.6.2.2 Setting of the remuneration of the Chairman and Chief Executive Officer

Remuneration for the 2022 fiscal year

The Appointments, Remuneration & Governance Committee at its meeting of 8 February 2022 reviewed the policy regarding remuneration of Jean-Bernard Lévy, in his capacity as Chairman and Chief Executive Officer and decided to recommend to the Board of Directors that the principles and criteria for the determination of items comprising his remuneration be maintained for the 2022 fiscal year. On recommendation from the Committee, the Board which met on 17 February 2022 decided to maintain the fixed annual gross remuneration of Jean-Bernard Lévy for the 2022 fiscal year at €450,000. The remuneration of the Chairman and Chief Executive Officer also includes benefits in kind corresponding to the provision of a company car.

Given the resignation of Jean-Bernard Lévy from his terms of office as Director and Chairman and Chief Executive Officer of EDF, the Appointments, Remuneration & Governance Committee, meeting on 17 November 2022, reviewed the proposed remuneration of the new Chairman and Chief Executive Officer for the 2022 fiscal year and decided to recommend to the Board of Directors that the principles and criteria for determining the components of the remuneration of the Chairman and Chief Executive Officer be maintained in favour of Luc Rémont. Concurrently with

the proposal made by the Board of Directors to the President of the French Republic to appoint Luc Rémont as Chairman and Chief Executive Officer of the Company (see section 4.2.2.2 "Appointment and powers of the Chairman and Chief Executive Officer"), the Board of Directors, upon the proposal made by the Committee, decided at its meeting of 18 November 2022 to set the annual fixed gross remuneration of the new Chairman and Chief Executive Officer for the fiscal year 2022 at 450,000 euros, in accordance with the 2022 remuneration policy approved by the General Meeting on 12 May 2022, and furthermore decided that this remuneration would be calculated on a prorated basis starting from the appointment of Luc Rémont as Chairman and CEO of EDF by Decree of the President of the French Republic.

Remuneration for the 2023 fiscal year

The Appointments, Remuneration & Governance Committee at its meeting of 8 February 2023 reviewed the policy regarding remuneration of the Chairman and Chief Executive Officer and decided to recommend to the Board of Directors that the principles and criteria for the determination of items comprising his remuneration be maintained for the 2023 fiscal year. On recommendation from the Committee, the Board which met on 16 February 2023 decided to maintain the fixed annual gross remuneration of the Chairman and Chief Executive Officer for the 2023 fiscal year at €450,000 while noting that the ceiling introduced in 2012 in Decree no. 53-707 of 9 August 1953 by Decree no. 2012-915 of 26 July 2012 had not been raised since that date. The remuneration of Luc Rémont also includes benefits in kind corresponding to the provision of a company car.

4.6.2.3 Other items of remuneration

In 2022, Jean-Bernard Lévy and Luc Rémont did not receive any remuneration for their duties as Director and Chairman of the Board of Directors of EDF. He also did not receive any remuneration for the positions held in companies controlled by EDF, or any remuneration of any kind whatsoever from the companies it controls.

The Company allocated no stock options to Jean-Bernard Lévy or Luc Rémont in 2022 and no options were exercised during the fiscal year. Similarly, no bonus shares were allocated free of charge to Jean-Bernard Lévy or Luc Rémont during the past fiscal year, and none became available.

Jean-Bernard Lévy did not receive any benefits or compensation in connection with the termination of his term of office as Chairman and CEO in 2022. He also did not receive any compensation from the Company relating to a non-compete clause, an employment contract or a supplementary pension scheme.

Luc Rémont did not receive any hiring bonus from EDF. He does not benefit from any indemnities or benefits due or liable to be due for termination or modification of duties, nor from non-competition clause compensation, and has no employment contract or supplementary pension plan.

4.6.3 Total remuneration of Directors

Remuneration allocated and paid to Directors in 2022

The Shareholders' Meeting convened on 12 May 2022 approved, on the proposal of the Board of Directors, a fixed annual sum to be allocated to the Directors as remuneration for their term of office of €440,000 for the fiscal year 2022.

The terms and conditions for allocating this amount, which are reviewed annually by the Board of Directors when the remuneration policy for corporate officers is approved, have remained unchanged since fiscal year 2011 (see details in section 4.6.1.2 "Remuneration policy applicable to Directors").

The Board of Directors meeting on 16 February 2023 (see section 4.6.1.2 "Remuneration policy applicable to directors") decided to allocate additional remuneration to the independent directors who participated in the Working Group set up by the Board pursuant to Article 14 of its internal regulations in connection with the proposed acquisition by EDF of General Electric's nuclear steam power business and to the independent directors who participated in the *ad hoc* Committee set up by the Board pursuant to Article 261-1 of the AMF's General Regulations and AMF recommendation no. 2006-15 in connection with the simplified takeover bid launched by the French State (see section 4.2.2.9 "Activity

of the Board of Directors in 2022"). This additional remuneration amounts to a total of €90,000 for all directors concerned. The amount of €530,000 allocated for the remuneration of the Directors for the fiscal year 2023, which will be submitted to the General Meeting called to approve the financial statements for the year 2022, takes this additional remuneration into account.

Directors elected by employees, who do not receive remuneration for their duties as Directors, receive fixed and/or variable remuneration under their employment contracts with the Company.

No exceptional remuneration or other remuneration was paid to the Directors during fiscal year 2021 and 2022 or allocated for these fiscal years by the Company or by a company included in the Company's scope of consolidation within the meaning of Article L. 233-16 of the French Commercial Code.

The tables below shows the gross amounts of remuneration allocated for the 2021 and 2022 fiscal years and paid during the 2021 and 2022 fiscal years to the members of the Board of Directors for their terms of office, in accordance with Article L. 225-45 and Article L. 22-10-14 of the French Commercial Code.

	2022 fiscal year		2021 fiscal year	
	Remuneration granted for the fiscal year 2022 ⁽¹⁾	Remuneration paid during the fiscal year 2022 ⁽²⁾	Remuneration granted for the fiscal year 2021 ⁽¹⁾	Remuneration paid during the fiscal year 2021 ⁽²⁾
Directors whose terms of office are ongoing as at 31 December 2022				
Nathalie Collin	41,107	29,205	19,205	0
Bruno Crémel	39,889	40,149	40,149	40,000
Gilles Denoyel	40,295	41,238	41,238	40,714
Anne-Marie Descôtes ⁽³⁾	3,471	n/a	n/a	n/a
Delphine Gény-Stephann ⁽³⁾	25,724	2,735	n/a	n/a
Marie-Christine Lepetit	43,948	46,139	46,139	44,286
Colette Lewiner	40,701	46,139	46,139	47,143
Claire Pedini	41,919	43,960	43,960	45,000
Philippe Petitcolin	41,107	39,059	39,059	33,571
Luc Rémont ⁽³⁾	n/a	n/a	n/a	n/a
Michèle Rousseau	41,107	39,604	39,604	38,571
Alexis Zajdenweber ⁽³⁾	12,335	n/a	n/a	n/a
TOTAL (in euros)	371,603	328,228	315,493	289,285

n/a: not applicable

(1) The remuneration allocated for a fiscal year includes the entirety of the fixed portion and the variable portion due for the fiscal year.

(2) The payments made during a fiscal year include 50% of the fixed portion and the entirety of the variable portion for the preceding fiscal year and 50% of the fixed portion for the current fiscal year.

(3) Director whose term of office began during the fiscal year 2022.

Director whose term of office ended during the fiscal year 2022	2022 fiscal year		2021 fiscal year	
	Remuneration granted for the fiscal year 2022 ⁽¹⁾	Remuneration paid during the fiscal year 2022 ⁽²⁾	Remuneration granted for the fiscal year 2021 ⁽³⁾	Remuneration paid during the fiscal year 2021 ⁽⁴⁾
Véronique Bédague-Hamilius	12,136	28,701	31,436	37,857
François Delattre	23,869	35,792	35,792	35,000
Céline Fornaro	9,196	166	n/a	n/a
Jean-Bernard Lévy	n/a	n/a	n/a	n/a
Martin Vial	16,867	38,491	40,149	39,286
TOTAL (in euros)	62,068	103,150	107,377	112,143

n/a: not applicable.

(4) Payments made in 2022 include the fixed portion for the 2022 fiscal year, determined pro rata to the term of office in the fiscal year, as well as the variable portion for the 2022 fiscal year.

(5) Payments made in 2022 include 50% of the fixed portion and the entirety of the variable portion for the 2021 fiscal year, as well as the fixed portion due in respect of 2022 determined pro rata to the term of office in the fiscal year.

(6) The remuneration allocated for a fiscal year includes the entirety of the fixed portion and the variable portion due for the fiscal year.

(7) The payments made during a fiscal year include 50% of the fixed portion and the entirety of the variable portion for the preceding fiscal year and 50% of the fixed portion for the current fiscal year.

Director whose term of office ended during the fiscal year 2021	2022 fiscal year		2021 fiscal year	
	Remuneration granted for the fiscal year 2022	Remuneration paid during the fiscal year 2022 ⁽¹⁾	Remuneration granted for the fiscal year 2021 ⁽²⁾	Remuneration paid during the fiscal year 2021 ⁽³⁾
Laurence Parisot	n/a	5,990	12,924	35,505
TOTAL (in euros)	n/a	5,990	12,924	35,505

n/a: not applicable.

(1) The payments made during the fiscal year 2022 include the entirety of the variable portion for the fiscal year 2021 paid in early 2022.

(2) The remuneration allocated for a fiscal year includes the entirety of the fixed portion and the variable portion due for the fiscal year.

(3) The payments made during a fiscal year include 50% of the fixed portion and the entirety of the variable portion for the preceding fiscal year and 50% of the fixed portion for the current fiscal year.

4.6.4 Stock options – Bonus shares

The Company has not implemented any stock options plans and the corporate officers receive no allocation of bonus shares ⁽¹⁾.

(1) With the exception of any directors elected by the employees who may benefit from the systems implemented by the Company for the benefit of all its employees.



5



THE GROUP FINANCIAL PERFORMANCE AND OUTLOOK

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5.1 Review of the financial situation and results 2022

5.1.1 Key figures

The financial information presented in this document is prepared from the EDF group's consolidated financial statements at 31 December 2022.

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)	Organic variation (%)
Sales	143,476	84,461	59,015	69.9	69.4
EBITDA	(4,986)	18,005	(22,991)	n.a	n.a
Operating profit (EBIT)	(19,363)	5,225	(24,588)	n.a	n.a
Income before taxes of consolidated companies	(22,916)	5,585	(28,501)	n.a	n.a
EDF net income	(17,940)	5,113	(23,053)	n.a	n.a
Net income excluding non-recurring items ⁽¹⁾	(12,662)	4,717	(17,379)	n.a	n.a
Net income excluding non-recurring items, adjusted for the remuneration of hybrid bonds	(13,268)	4,170	(17,438)	n.a	n.a
Group cash flow ⁽²⁾	(24,603)	(1,525)	(23,078)	n.a	n.a
Net indebtedness ⁽³⁾	64,500	42,988	21,512	50.0	n.a

n.a: not applicable.

(1) Net income excluding non-recurring items is not defined by IFRS and is not directly visible in the Group's consolidated income statement. It corresponds to EDF net income excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax (see section 5.1.3.6 "Net income excluding non-recurring items").

(2) Group cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not comparable with indicators of the same name reported by other companies. It is equivalent to the operating cash flow less asset disposals, income taxes paid, net financial expenses disbursed, net allocations to dedicated assets, dividends paid in cash, and investments in the Hinkley Point C and Linky projects (see section 5.1.4).

(3) Net indebtedness is not defined in the accounting standards and is not directly visible in the Group's consolidated balance sheet (see section 5.1.4).

5.1.2 Economic environment

5.1.2.1 Market prices for electricity and the principal energy sources

In 2022, average spot prices for electricity were significantly higher than in 2021 all over Europe.

5.1.2.1.1 Spot electricity prices in Europe ⁽¹⁾

	France	United Kingdom	Italy	Belgium
Average baseload price for 2022 (€/MWh)	275.8	240.1	307.3	244.5
Variation in average baseload prices, 2022/2021	+152.7%	+74.5%	+144.5%	+134.9%
Average peakload price for 2022 (€/MWh)	317.1	274.2	342.6	272.4
Variation in average peakload prices, 2022/2021	+148.9%	+69.5%	+142.0%	+126.1%

In an interconnected European market, analysis of French market prices must be related to analysis of market prices in the neighbouring countries.

The comments below concern baseload prices.

In **France**, spot electricity prices stood at an average €275.8/MWh (baseload) and €317.1/MWh (peakload) in 2022, an increase of €166.7/MWh and €189.7/MWh respectively compared to 2021.

This significant increase resulted from a combination of two factors:

- a serious increase in commodity prices, particularly for gas, which caused a substantial rise in the cost of fossil-fired electricity generation;
- a decline in energy output, down by 80.4TWh from 2021, driven by a decrease in generation of nuclear power (-81.7TWh) and hydropower (-13.7TWh) to 279.0TWh and 41.9TWh respectively in 2022. These downturns were partly offset by a +9.5TWh (+29.5%) increase in output by gas-fired plants, and higher photovoltaic and wind power output, which rose by 4.3TWh and 1.7TWh respectively.

Despite a decline in demand to 444.7TWh for 2022 (-20.9TWh below 2021), France was a net importer of 16.8TWh, whereas it is historically a net exporter (to

the extent of 44.3TWh in 2021). In 2022, France was in a significant net import position with respect to the CWE zone, the United Kingdom and Spain (27.4TWh, 9.9TWh and 9.7TWh respectively) but remained a net exporter to Italy and Switzerland (18.0TWh and 12.2TWh respectively).

In the **United Kingdom**, spot electricity prices were €102.6/MWh higher than in 2021, at an average €240.1/MWh for 2022. This increase resulted directly from the pressures on commodities caused by the war in Ukraine. The lower demand and higher solar and wind power generation, combined with large-scale imports of LNG, limited price rises in the second half of the year.

In **Italy**, spot prices rose by €181.6/MWh compared to 2021, to reach an average €307.3/MWh for 2022. They rose significantly from the start of the year, together with gas and CO₂ price increases, due to the war in Ukraine and rising demand in the first half-year. A fall in commodity prices from September, and declining demand, kept price rises in check at the end of the year.

In **Belgium**, spot prices were up by €140.4/MWh from 2021 to an average €244.5/MWh for 2022. This increase is explained by significant price upsurges for gas and CO₂, despite a pronounced downturn in demand, particularly during the fourth quarter of the year.

⁽¹⁾ **France**: average previous day EPEXSPOT price for same-day delivery; **Belgium**: average previous day Belpex price for same-day delivery; **United Kingdom**: average previous day EDF Trading OTC price for same-day delivery; **Italy**: average previous day GME price for same-day delivery.

5.1.2.1.2 Forward electricity prices in Europe ⁽¹⁾

	France	United Kingdom	Italy	Belgium
Average forward baseload price under the 2023 annual contract in 2022 (€/MWh)	368.5	289.8	269.7	253.2
Variation in average forward baseload price under the annual contracts, 2022/2021	+285.9%	+201.8%	+178.4%	+194.2%
Forward baseload price under the 2023 annual contract at 31 December 2022 (€/MWh)	271.7	243.2	223.0	206.0
Average forward peakload price under the 2023 annual contract in 2022 (€/MWh)	600.7	350.1	308.1	315.4
Variation in average forward peakload price under the annual contracts, 2022/2021	+390.4%	+216.4%	+189.7%	+206.8%
Forward peakload price under the 2023 annual contract at 31 December 2022 (€/MWh)	367.9	321.7	268.3	253.2

All over Europe, forward prices for baseload and peakload electricity under annual contracts were substantially higher than in 2021, principally due to increases in commodity prices (gas, coal and CO₂).

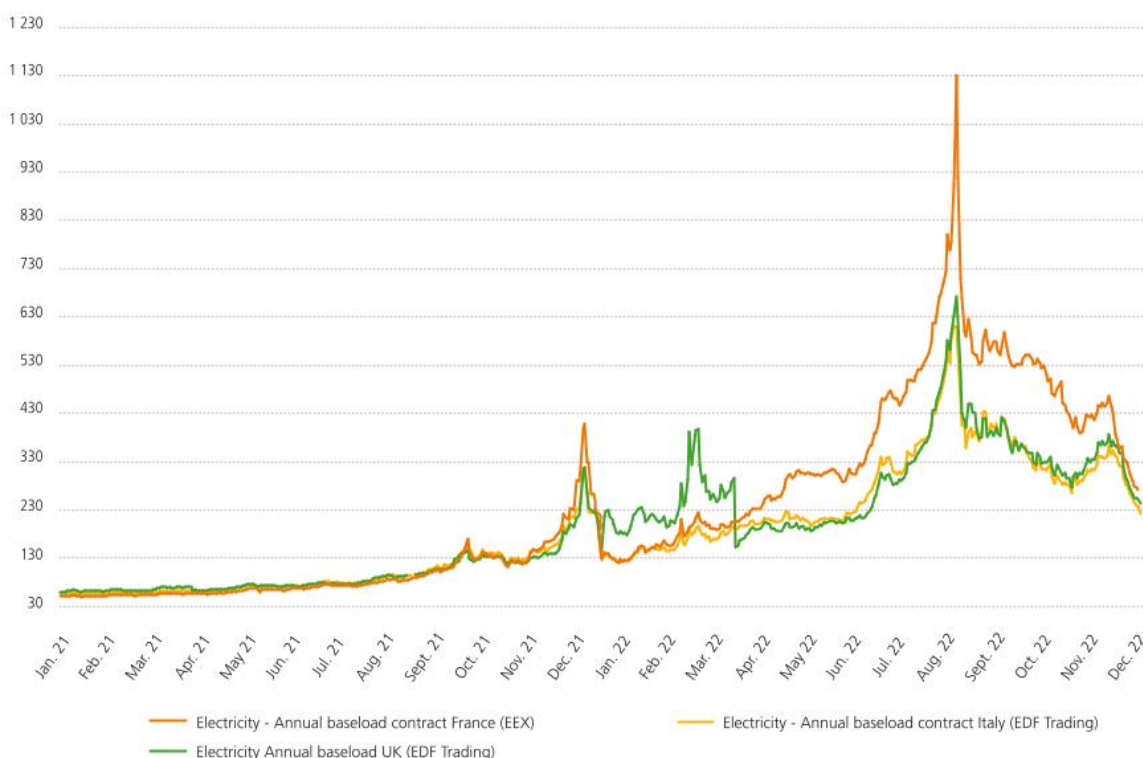
In **France**, the average annual contract baseload price for next-year delivery was €368.5/MWh in 2022, up by 285.9% from 2021. This increase reflects the rise in commodity prices and market expectations of a particularly tense domestic supply/demand balance due to forecasts of low nuclear availability. The forward price for next-year delivery rose throughout the first half-year, reaching €1,130/MWh on 26 August 2022. It then fell back sharply during the second half-year, to end the year at €271.7/MWh, since the markets were reassured by high gas stocks, LNG imports and milder temperatures.

In the **United Kingdom**, the April Ahead contract baseload price increased by 201.8% compared to 2021, following the same pattern as commodity prices, standing at an average €289.8/MWh for 2022.

In **Italy**, the annual contract baseload price for next-year delivery was an average €269.7/MWh for 2022, up by +178.4% from 2021. This increase was driven by the rise in commodity prices from the start of the year. CO₂ prices remained volatile throughout the year, pushing up electricity prices, which rose over the year because gas accounts for a large portion of the Italian electricity mix.

In **Belgium**, the annual contract baseload price for next-year delivery was 194.2% higher than in 2021, reaching an average €253.2/MWh for 2022 as a result of rising commodity prices.

Principal forward electricity prices in Europe (baseload year ahead), in €/MWh



(1) **France** and **Germany**: average year-ahead EEX price; **Belgium** and **Italy**: average year-ahead EDF Trading price; **United Kingdom**: average ICE annual contract prices, April 2021 then April 2022 (in the UK, annual contract deliveries take place from 1 April to 31 March).

5.1.2.1.3 CO₂ emission quota prices

The **price of CO₂ emission quotas** for delivery in December Y+1 stood at an average €82.8/t for 2022, a very substantial increase over 2021 (+53.4% or +€28.8/t).

Early in the year, the war in Ukraine caused high volatility in prices. As gas supplies from Russia diminished, many European States considered making greater use of coal, and therefore purchased emission quotas. Prices were also influenced by the positions taken by purely financial actors, and this contributed to the volatility of quota prices from the very beginning of the year.

The European agreement signed at the end of the year to reform the CO₂ market aims to reduce emission allowances by 62% (compared to 2005) by 2030, as opposed to the 43% reduction in current law. This will lead to a €2 billion decrease in quotas. An agreement was also reached for the gradual phasing out of free emission quota allocations, which will be replaced by the CBAM (Carbon Border Adjustment Mechanism, which aims to address the carbon footprint of imported products).

CO₂ emission quota prices in €/t for next-year deliveries in December (ICE) ⁽¹⁾



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5.1.2.1.4 Fossil fuel prices ⁽²⁾

	Coal (US\$/t)	Oil (US\$/bbl)	Natural gas (€/MWhg)
Average price for 2022	221.7	99.1	82.8
Average price variation, 2022/2021	+133.8%	+39.7%	+178.5%
Highest price in 2022	342.4	128.0	231.5
Lowest price in 2022	90.8	76.1	29.4
Price at 31 December 2022	184.5	85.9	69.6
Price at 31 December 2021	99.3	77.8	50.0

Coal prices for next-year delivery in Europe stood at an average \$221.7/t in 2022 (+133.8% or +\$126.8/t compared to 2021).

This significant increase and the volatility of coal prices are explained by several factors:

- the energy crisis since October 2021, especially in the gas market, which led to greater use of coal-fired facilities and lower stocks in Europe;
- unfavourable weather-related incidents (in Indonesia and Australia) and rail transport difficulties that limited exports (in Australia and South Africa);

- lower demand in China due to successive lockdowns, offset by energy requirements in India which were driven by national growth and local heatwaves;

- the European Union embargo on Russian coal from 15 August 2022, decided in early April;

- the drop in gas supplies from Russia, which led several European countries to take measures to restart coal-fired electricity generation.

However, coal prices declined at the end of the year as coal stocks in European ports reached near-record levels.

⁽¹⁾ Average ICE prices for the annual contract, Phase III (2013-2020) and Phase IV (2021-2030).

⁽²⁾ **Coal**: average ICE prices for delivery in Europe (CIF ARA) for the next calendar year (US\$/t); **Oil**: ICE price for Brent crude oil barrel (front month) (US\$/barrel); **Natural gas**: average ICE OTC prices, for delivery starting from October of the following year in France (PEG Nord – €/MWhg).

Oil prices stood at an average \$99.1/bbl for 2022 (+39.7% or +\$28.2/bbl compared to 2021). The market was under strain, and prices were sustained by shrinking supply and geopolitical tensions.

The embargos applied by the European Union, the United Kingdom and the United States because of the war in Ukraine kept prices high. All year long, oil prices fluctuated in response to geopolitical issues caused by the war, but also the risk of a worldwide recession and successive lockdowns in China to cope with the Covid-19 pandemic sweeping the country.

The **annual gas contract price** for next-year delivery at the French PEG hub reached an average of €82.8/MWh for 2022 (+178.5% or +€53.1/MWh compared to 2021). The energy crisis, already firmly established since October 2021, was accentuated in 2022 by the war in Ukraine. Successive reductions in gas supplies from Russia pushed prices up to record highs, culminating at €231.5/MWh on 26 August 2022.

However, tensions abated after the European Union's announcement of coordinated action on the gas and electricity markets in early September. With high European gas stocks over the whole of the final quarter, and a huge influx of LNG supplies to Europe, prices subsequently relaxed.

Natural gas and oil prices



5.1.2.2 Consumption of electricity and natural gas

5.1.2.2.1 Consumption of electricity and gas in France

Electricity consumption in France was down by 21TWh (-4.5%) from 2021. Milder temperatures during the winter of 2021-2022 resulted in a 8TWh decrease in consumption for heating, but in the summer, high temperatures drove consumption up by more than 3TWh, mainly for air conditioning use. Greater customer awareness of energy sufficiency, and significant price rises, led some businesses to scale back their activity, and this also contributed to the general downturn in consumption. Reductions in consumption hit more than 10% in December.

Gas consumption in 2022 in France was 9.8% lower than in 2021 due to the milder weather and higher prices, which limited demand.

5.1.2.2.2 Consumption of electricity and gas in the United Kingdom

Electricity and gas consumption in the United Kingdom decreased by 6% and 15% respectively compared to 2021, mainly as a result of higher prices and milder weather.

5.1.2.2.3 Consumption of electricity and gas in Italy

Electricity consumption in Italy ⁽¹⁾ in 2022 totalled 315.6TWh, a decrease of 0.8% compared to 2021. In the first half of the year, consumption rose due to the post-Covid business recovery and higher temperatures in May and June 2022, which pushed up demand for air conditioning. However, consumption then dropped back slightly in the second half of the year because of milder weather.

Demand for natural gas in Italy totalled 69bcm, down by 9.6% compared to 2021. Industrial consumption fell by 15.0% as a result of substantial price rises for raw materials and commodities, and residential consumption decreased by 11.4% due to milder weather and high prices.

(1) Source of data for Italy: unadjusted data and data provided by Terna, the Italian national grid operator, and adjusted by Edison.

5.1.2.3 Sales tariffs for electricity and natural gas

In **France**, the regulated sales tariffs for electricity were raised on 1 February 2022 by an average +4% including taxes for all consumers in both the residential and business segments. This increase resulted from the French government's introduction of a tariff cap (*bouclier tarifaire*) to protect consumers against the exceptional rises in energy prices. Regulated electricity sales tariffs were frozen until the end of 2022 under this measure, and this meant that the tariff increase from 1 August 2022 proposed by the French energy regulator Commission de Régulation de l'Énergie (4.10% excluding taxes for residential customers, and 3.73% excluding taxes for business customers) was not applied.

In the **United Kingdom**, a cap on the variable electricity and gas tariffs for residential consumers (Standard Variable Tariff – SVT) was first introduced on 1 January 2019. This cap was revised every six months, mainly to take account of market price movements in the previous six months. Due to this approach, the significant increase in supply costs caused by the rise in energy prices since September 2021 was only partially reflected in the SVT, with two successive raises to the price cap (by 54% in April 2022 and 80% in October 2022).

The British energy regulator Ofgem consequently held consultations on the price cap methodology, to ensure that it adequately reflects the costs, risks and uncertainties faced by suppliers. This led to the adoption of stabilisation measures to be applied in the event of excessive price fluctuations, and quarterly revisions of the SVT cap from October 2022.

In view of the extensive increases to the SVT, the UK government also announced consumer support measures including a £400 discount on every household's energy bill, a maximum annual electricity and gas bill of £2,500, then £3,000 for a standard household (the surplus to be funded by the government), and other aids for the most vulnerable households. A similar mechanism capping wholesale prices for business customers was also introduced for the period October 2022 to March 2023.

In **Italy**, the average PUN TWA (Time Weighted Average Single National Price) electricity tariff for 2022 was €304/MWh, up by 142.3% from 2021 (€125.5/MWh). This increase is explained by the energy crisis and the geopolitical instability triggered by the war in Ukraine. Over the first nine months of the year, the PUN was noticeably higher than in 2021, before returning to a near-2021 level.

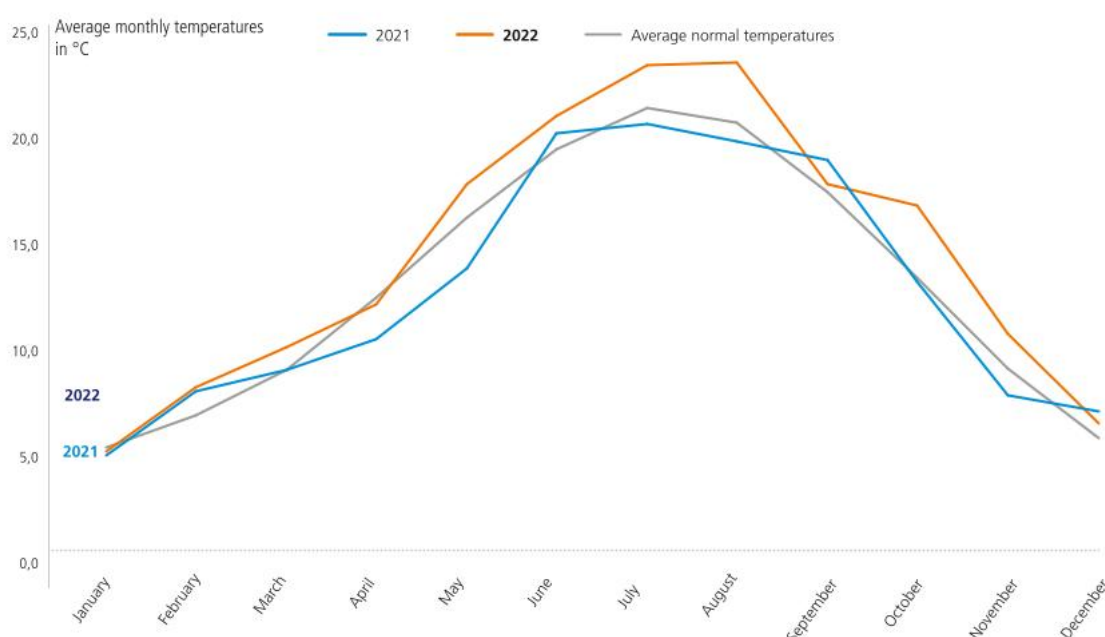
The spot price for gas rose by 165.9% compared to 2021, reaching c€129/smc as a result of geopolitical tensions, growing uncertainty regarding pipeline gas supplies from Russia, and the precarious supply-demand balance.

5.1.2.4 Weather conditions: temperatures and rainfall

5.1.2.4.1 Temperatures in France

With an average temperature of 14°C, 2022 was France's warmest year since 1980 ⁽¹⁾. May and October were particularly warm months (the warmest since 1980). 253 days of the year recorded above-normal temperatures. 2022 thus contributed to warming in France, contributing the linear trend of approximately +0.4°C per decade.

Average monthly temperatures ^{(1) (2)} in France



(1) Average temperatures recorded in 32 cities, weighted by electricity consumption.

(2) Source: Météo France.

(1) The year France began to keep temperature records. Based on 32 cities for the DOAAT and other electricity sector operators.

5.1.2.4.2 Rainfall in France

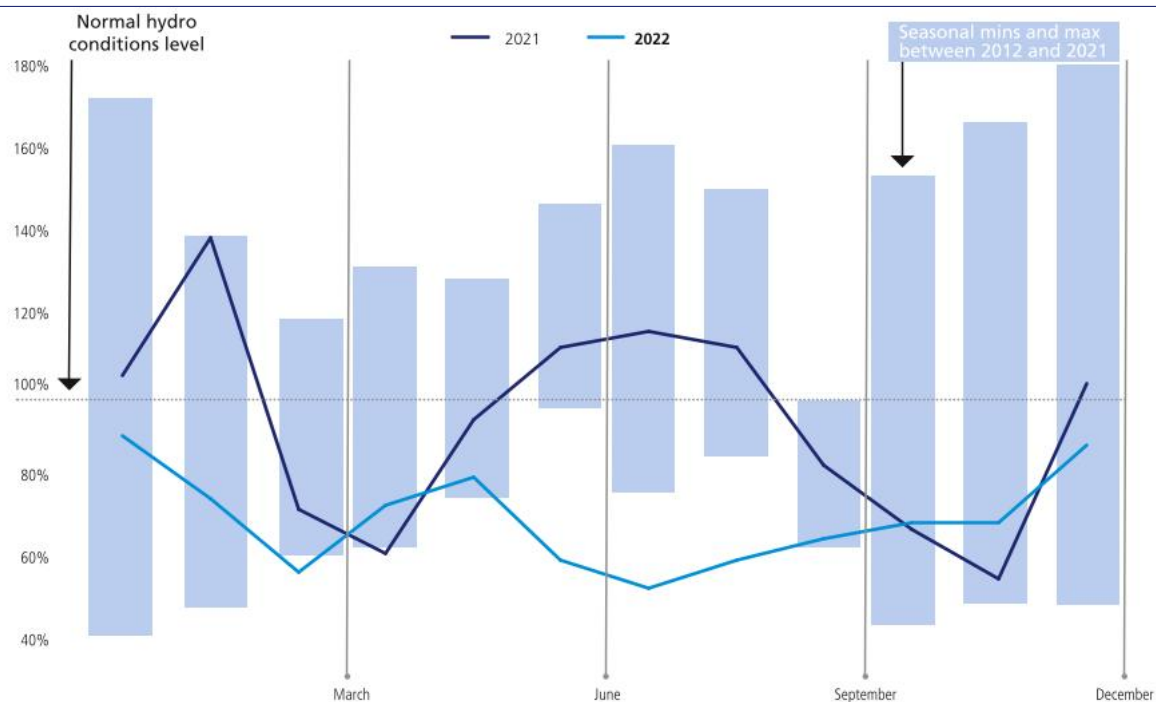
2022 was marked by record low hydro condition levels.

Reservoir levels were particularly low at the start of the summer, being in a pre-drought situation after markedly low cumulative snowfall during the winter of 2021/2022 and a rapid thaw concentrated in the month of May. The significant

shortage of precipitation continued during the summer, and there were also three intense heatwaves that brought river flow rates particularly low.

Rainfall in the second half of the year resulted in a gradual recovery in water levels, which remained below normal: the annual index was the lowest for 60 years, at 0.71, compared to 0.94 in 2021.

Hydrological conditions in France*



*Weekly monitoring of French reservoir levels by the EDF group's statistical observatory (Miréor project) as far as the coast.

5.1.3 Analysis of the business and the consolidated income statement for 2022 and 2021

Presentation and analysis of the consolidated income statement for 2022 and 2021 is broken down by business segment for sales and EBITDA (France – Generation and supply, France – Regulated activities, EDF Renewables, Dalkia, Framatome, United Kingdom, Italy, Other international and other activities). EBIT (operating profit) and net income are analysed without any breakdown.

<i>(in millions of euros)</i>	2022	2021
Sales	143,476	84,461
Fuel and energy purchases	(121,010)	(44,299)
Other external purchases*	(9,420)	(8,595)
Personnel expenses	(15,236)	(14,494)
Taxes other than income taxes	(3,163)	(3,330)
Other operating income and expenses	367	4,262
Operating profit before depreciation and amortisation (EBITDA)	(4,986)	18,005
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	(849)	(215)
Net depreciation and amortisation	(11,079)	(10,789)
(Impairment)/reversals	(1,762)	(653)
Other income and expenses	(687)	(1,123)
Operating profit (EBIT)	(19,363)	5,225
Cost of gross financial indebtedness	(1,730)	(1,459)
Discount effect	174	(2,670)
Other financial income and expenses	(1,997)	4,489
Financial result	(3,553)	360
Income before taxes of consolidated companies	(22,916)	5,585
Income taxes	3,926	(1,400)
Share in net income of associates and joint ventures	759	644
Net income of discontinued operations	6	(1)
CONSOLIDATED NET INCOME	(18,225)	4,828
EDF net income	(17,940)	5,113
EDF net income – continuing operations	(17,946)	5,114
EDF net income – discontinued operations	6	(1)
Net income attributable to non-controlling interests	(285)	(285)
Net income attributable to non-controlling interests – continuing operations	(285)	(285)
Net income attributable to non-controlling interests – discontinued operations	-	-

* Other external expenses are reported net of capitalised production.

5.1.3.1 Sales

Sales amounted to €143,476 million in 2022, up by €59,015 million (+69.9%) from 2021. Excluding the effect of movements in exchange rates (+€501 million) and changes in the scope of consolidation (-€131 million), sales registered organic growth of +69.4%.

5.1.3.1.1 Change in Group sales and breakdown by segment

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)	Organic variation (%)
Sales	143,476	84,461	59,015	69.9	69.4

The following table shows sales by segment, excluding inter-segment eliminations:

(in millions of euros)	2022	2021	Variation	Variation (%)	Organic Variation (%)
France – Generation and supply ⁽¹⁾	48,686	33,182	15,504	46.7	46.7
France – Regulated activities ⁽²⁾	18,082	17,564	518	2.9	2.9
EDF Renewables	2,158	1,767	391	22.1	17.5
Dalkia	6,663	5,196	1,467	28.2	28.2
Framatome	4,122	3,362	760	22.6	16.8
United Kingdom	16,098	10,114	5,984	59.2	61.3
Italy	29,302	11,212	18,090	161.3	160.1
Other international	5,659	3,353	2,306	68.8	57.7
Other activities	19,724	3,905	15,819	n.a	n.a
Inter-segment eliminations	(7,018)	(5,194)	(1,824)	n.a	n.a
GROUP SALES	143,476	84,461	59,015	69.9	69.4

n.a: not applicable.

(1) Generation, supply and optimisation in mainland France, and sales of engineering and consulting services.

(2) Regulated activities comprise distribution in mainland France, which is carried out by Enedis, EDF's island activities and the activities of Électricité de Strasbourg. In mainland France, distribution network activities are regulated via the network access tariff TURPE (Tarifs d'Utilisation des Réseaux Publics d'Électricité). Enedis is an independent EDF subsidiary as defined in the French Energy Code.

5.1.3.1.1.1 France – Generation and supply

Sales by the **France – Generation and supply** segment amounted to €48,686 million in 2022, up by €15,504 million (+46.7% in organic growth) from 2021.

A significant rise in downstream market prices led to higher downstream income (+€7,232 million). This increase includes the impact of the measures to limit the rise in regulated electricity sales to 4% (principally raising the ARENH ceiling and a tariff cap), with an effect of -€1,410 million (no impact in EBITDA).

The milder weather in 2022 had a negative impact of €478 million.

Sales under the ARENH scheme to alternative suppliers were up by €895 million as a result of the additional volumes made available in application of a decree issued in March (this had a negative effect in EBITDA).

Resales of electricity subject to purchase obligations were up by €4,956 million, mainly due to a rise in spot and forward market prices since the third quarter of 2021 (the effect on EBITDA was neutral because expenses relating to purchase obligations are covered by the CSPE compensation mechanism).

Capacity auction sales also had a positive impact of €570 million.

Finally, the results of sales activities subsidiaries and aggregators, and gas sales, contributed +€2,404 million of the increase in sales (with no significant effect in EBITDA).

Electricity generation

Nuclear power output in France totalled 279TWh in 2022, down by 81.7TWh from 2021. This decrease is principally explained by reactor outages for inspections to detect and repair stress corrosion. Gross hydropower output stood at 32.4TWh ⁽¹⁾, down by 9.4TWh, mainly due to very poor hydrological conditions in 2022 (see section 5.1.2.4 "Weather conditions: temperatures and rainfall").

Fossil-fired generation plants were therefore used to produce 11.2TWh, +0.7TWh more than in 2021, in a context of favourable price conditions, and despite the shutdown of the coal-fired facility at Le Havre in late March 2021.

Sales volumes to final customers (a market segment that includes the local distribution companies and excludes foreign operators) decreased by -12.8TWh, including 5.9TWh attributable to climate effects. The decline in consumption

(principally late in the year, thanks to more restrained energy use) is estimated at -5.4TWh.

EDF was a net buyer on the wholesale markets to the extent of 13.8TWh, due to the substantially lower nuclear and hydropower output, whereas in 2021 it was a net seller to the extent of 69.5TWh.

5.1.3.1.1.2 France – Regulated activities

Sales by the **France – Regulated activities** segment amounted to €18,082 million in 2022, an increase of €518 million (+2.9%) compared to 2021.

Sales by **Électricité de Strasbourg** and **IES-PEI** were up by +€653 million, reflecting the increase in prices on the gas market, and the pre-tax rise in regulated sales tariffs.

The €130 million decrease in sales by **Enedis** ⁽²⁾ principally relates to a volume effect (-€345 million) and an unfavourable climate effect (-€365 million). These effects were partly counterbalanced by a favourable price effect (+€526 million), mainly attributable to the indexed adjustment of the TURPE 6 distribution tariff and higher connection income (+€66 million).

5.1.3.1.1.3 EDF Renewables

EDF Renewables sales totalled €2,158 million, an organic increase of €310 million (+17.5%) compared to 2021, as a result of improved output by plants in operation. The volume of energy produced totalled 20.6TWh at 31 December 2022, corresponding to organic growth of 21%, particularly thanks to new capacities commissioned during the second half of 2021 and in 2022, and better wind conditions, principally in North America, the United Kingdom and Brazil. Positive price effects in the United Kingdom also contributed to this growth.

5.1.3.1.1.4 Dalkia

Sales by **Dalkia** amounted to €6,663 million in 2022, an organic increase of €1,466 million (+28.2%) from 2021.

This growth was principally driven by the significant increase in gas prices, which more than doubled compared to 2021. Sales also benefited from dynamic business activity in the United Kingdom and France.

(1) Hydropower output excluding the island activities, before deduction of pumped-storage volumes. Total cumulative hydropower production after deduction of pumped-storage hydropower was 25TWh in 2022 (35.9TWh in 2021).

(2) Enedis is an independent EDF subsidiary as defined in the French Energy Code.

5.1.3.1.1.5 Framatome

Framatome's sales amounted to €4,122 million in 2022, an organic increase of 16.8% compared to 2021.

A significant portion of sales are made with the Group, and this rise in sales is explained by higher levels of business with the Group.

5.1.3.1.1.6 United Kingdom

Sales by the **United Kingdom** segment in 2022 totalled €16,098 million, an organic increase of €6,203 million (+61.3%) compared to 2021.

This increase is mainly attributable to the impact of rising energy prices, and higher nuclear output, which rose by 1.9TWh to 43.6TWh due to good fleet availability and a lighter maintenance schedule, despite the closure of Hunterston B in January and Hinkley Point B in August 2022.

5.1.3.1.1.7 Italy

The **Italy** segment's sales totalled €29,302 million in 2022, with organic growth of €17,952 million (+160.1%) compared to 2021.

In the gas activities, sales were up significantly as a result of rising prices on all markets (although the effect on the margin was limited), and higher sales volumes.

In the electricity activities, sales growth was also attributable to the very significant increase in market prices, with a limited impact in EBITDA.

5.1.3.1.1.8 Other international

The **Other international** segment principally covers operations in Belgium, the United States, Brazil and Asia (China, Vietnam and Laos). Sales by this segment in 2022 amounted to €5,659 million, an organic increase of €1,936 million (+57.7%) compared to 2021.

In **Belgium**⁽¹⁾, sales registered organic growth of €1,918 million (+76.6%) from 2021, resulting from higher electricity and gas prices and an increase in volumes sold to customers. The customer portfolio grew slightly despite intense competition on the market. Greater use was made of the thermal generation fleet, leading to an increase in electricity system services. The wind power fleet is expanding, and net

installed capacity totalled 620MWh at 31 December 2022. However, hydropower performance was affected by drought conditions.

In **Brazil**, there was an organic decrease of €43 million (-6.9%) in sales, principally due to lower export sales. The foreign exchange effect was favourable in 2022 (the Brazilian real rose against the euro).

In **Vietnam**, sales showed an organic increase of €67 million (+34.0%), in keeping with the rise in gas prices (on a pass-through basis, so there is no impact on EBITDA).

5.1.3.1.1.9 Other activities

Other activities comprise, among other entities, EDF Trading and the gas activities.

Sales by this segment amounted to €19,724 million in 2022, an organic increase of €16,033 million compared to 2021.

- sales by the **gas activities** amounted to €12,410 million, an organic increase of €10,550 million from 2021, essentially explained by the favourable effect of wholesale market prices for gas (+€6,945 million) and the higher volumes sold (+€5,464 million);
- **EDF Trading's** sales totalled €7,038 million, an organic increase of €5,457 million explained by the business performance in Europe and the United States in a context of high market volatility on all the commodity markets.

5.1.3.2 EBITDA

The Group's consolidated EBITDA for 2022 amounted to -€4,986 million, an organic decrease of 128.2% from 2021. Despite a significant increase in sales supported by electricity and gas prices, EBITDA was down significantly in 2022. In France, this decrease is essentially explained by the decline in nuclear output linked to the phenomenon of stress corrosion, by the impact of the exceptional regulatory measures to limit price increases for consumers in 2022, and to a lesser extent, by the drop in hydropower output. These developments obliged the Group to purchase electricity at a time when market prices were very high. However, EBITDA benefited from an exceptional performance of EDF Trading in a highly volatile market environment, and better nuclear output in the United Kingdom.

(in millions of euros)	2022	2021	Variation	Variation (%)	Organic variation (%)
Sales	143,476	84,461	59,015	69.9	69.4
Fuel and energy purchases	(121,010)	(44,299)	(76,711)	173.2	173.0
Other external expenses	(9,420)	(8,595)	(825)	9.6	8.4
Personnel expenses	(15,236)	(14,494)	(742)	5.1	4.2
Taxes other than income taxes	(3,163)	(3,330)	167	-5.0	-6.2
Other operating income and expenses	367	4,262	(3,895)	-91.4	-93.1
EBITDA	(4,986)	18,005	(22,991)	N.A	N.A

5.1.3.2.1 Change in Group EBITDA and analysis

- The Group's **fuel and energy purchases** amounted to €121,010 million in 2022, an organic increase of €76,627 million (+173%) compared to 2021.
 - > in the **France – Generation and supply** segment, fuel and energy purchases registered an organic increase of €42.2 billion due to large-scale energy purchases made at high prices to compensate for the lower levels of nuclear and hydropower output, and purchases to provide alternative suppliers with additional ARENH volumes;
 - > in the **United Kingdom**, the organic increase of €5,029 million (+63.4%) in fuel and energy purchases principally reflects the impact of rising market prices on energy purchases;
 - > in **Italy**, the organic increase of €17,675 million (+191%) in fuel and energy purchases essentially reflects higher wholesale prices and volumes for gas.

- The Group's **other external expenses** amounted to €9,420 million for 2022, an organic increase of €722 million (+8.4%) from 2021.
 - > in the **France – Generation and supply** segment, other external expenses registered an organic increase of €216 million (+8.6%). This increase mainly reflects purchases associated with the growth in service activities for final customers, development of engineering projects, and the general increase in prices;
 - > in the **France – Regulated activities** segment, the organic growth of €57 million (+3.8%) reflects the higher level of capitalised production, in line with grid connection activities;
 - > in the **United Kingdom**, there was an organic decrease of €99 million (-14.8%) in other external expenses, mainly explained by the transfer to the Nuclear Liability Fund of expenses for permanently shutdown power plants (Dungeness B and Hunterston B);
 - > **EDF Renewables** registered a €115 million (+16.7%) organic increase in other external expenses, principally due to growth in the project portfolio;

(1) Belgium comprises Luminus and EDF Belgium.

- **Dalkia's** other external expenses showed an organic increase of €174 million (+9.4%), reflecting sustained business growth, particularly for site work in the United Kingdom and France.
- The Group's **personnel expenses** for 2022 totalled €15,236 million, an organic increase of €615 million (+4.2%) from 2021.
 - in the **France – Generation and supply** segment, personnel expenses registered an organic increase of €158 million (+2.6%) principally resulting from wage negotiations, partly counterbalanced by the positive effect of the higher discount rate applied to pensions for employee benefits;
 - in the **France – Regulated activities** segment, personnel expenses were up slightly by +€18 million (organic increase of 0.6%), due to the volume effect of workforce numbers, limited by the discount rate effect;
 - **EDF Renewables** registered a €90 million (+20.5%) organic increase in personnel expenses that is explained by a rise in workforce numbers, notably associated with growth in the development and construction businesses, and also by wage inflation, observed principally in the United States and Brazil;
 - **Dalkia** saw an organic increase of €94 million (+8.1%) in its personnel expenses, resulting from a workforce increase linked to growth in the services and site work businesses, and a wage inflation environment;
 - in the **United Kingdom**, there was an organic decrease of €114 million (-9.7%) in personnel expenses, explained by the transitional payment for the employee pensions reform in 2021 which had no equivalent in 2022, and the decrease in the workforce in 2022.
- **Taxes other than income taxes** amounted to €3,163 million for 2022, corresponding to an organic decrease of €205 million (-6.2%) compared to 2021.
 - in the **France – Generation and supply** segment, the €263 million (-13.4%) organic decrease is mainly attributable to lower value added taxes given the segment's results.
- **Other operating income and expenses** generated a net expense of €367 million in 2022, an organic decrease of €3,968 million (-93.1%) compared to 2021.
 - in the **France – Generation and supply** segment, the -€3,429 million organic decrease in other operating income and expenses is primarily attributable to lower CSPE compensation (neutral impact in EBITDA), associated with the rise in spot market prices;
 - in the **France – Regulated activities** segment, the +€63 million (+3.9%) organic increase in other operating income and expenses mainly resulted from an increase in CSPE compensation for the island energy systems under the mechanism to compensate for additional costs in the French islands;
 - **EDF Renewables** registered an organic decrease of €129 million (-35.8%) in other operating income and expenses, mainly reflecting the lower impact of disposal operations.

5.1.3.2.2 Change in consolidated EBITDA and analysis by segment

(in millions of euros)	2022	2021	Variation	Variation (%)	Organic Variation (%)
France – Generation and supply	(23,144)	7,394	-30,538	n.a	n.a
France – Regulated activities	6,723	5,992	731	12.2	12.2
EDF Renewables	909	815	94	11.5	5.8
Dalkia	333	378	-45	-11.9	-14.3
Framatome	328	310	18	5.8	0.3
United Kingdom	1,325	(21)	1,346	n.a	n.a
Italy	1,115	1,046	69	6.6	4.3
Other international	336	267	69	25.8	14.6
Other activities	7,089	1,824	5,265	n.a	n.a
GROUP EBITDA	(4,986)	18,005	(22,991)	N.A	N.A

n.a: not applicable.

5.1.3.2.2.1 France – Generation and supply

The drop in nuclear power output, which essentially related to inspections and repairs for stress corrosion, had an estimated impact of -€29,137 million in EBITDA ⁽¹⁾, as it made it necessary to purchase energy at a time of very high market prices.

Also, the French government's exceptional regulatory measures to limit the increase in sales prices to consumers in 2022 had an adverse estimated effect of -€8,212 million in EBITDA ⁽²⁾. Before these measures, EBITDA benefited from market price rises passed on to customers for an estimated amount of €8,679 million ⁽³⁾.

Hydropower output was lower due to very low water levels, bringing EBITDA down by around €2,536 million.

Finally, the impact in EBITDA of customers returning to EDF for regulated-tariff contracts was negative because the corresponding volumes had to be purchased on the market at high prices.

5.1.3.2.2.2 France – Regulated activities

The increase in EBITDA for this segment is mainly explained by retrocession of interconnection fees granted by RTE, amounting to an estimated €1.7 billion ⁽⁴⁾. Changes in the TURPE tariffs also had a favourable effect, estimated at €0.5 billion ⁽⁵⁾.

Nonetheless, the rise in EBITDA was limited by an unfavourable price effect on purchases to cover network losses (an estimated €1 billion) and a 19.1TWh decrease in power volumes distributed (estimated at €0.4 billion).

5.1.3.2.2.3 EDF Renewables

EBITDA growth at EDF Renewables was mainly driven by the 21% rise in renewable energy output. In 2021 there was an extreme cold snap in Texas, with an estimated impact in EBITDA of -€95 million, which had no equivalent in 2022.

EBITDA was penalised by the rise in development expenses associated with growth in the project portfolio, and due to inflation.

(1) Compared to -€32 billion published in the press release of 27 October 2022 based on forward prices at 7 October 2022 which have fallen substantially since then.

(2) Compared to -€10 billion published in the press release of 27 July 2022: the difference is explained notably by the recognition in CSPE in 2022 of the compensation due under France's tariff cap measures.

(3) Compared to €8 billion published in the press release of 27 July 2022: the difference is due to a climate effect, and a price effect on open positions.

(4) In application of decision 2022-296 of 17 November 2022 published by the French energy regulator Commission de Régulation de l'Énergie (CRE). The substantial increase in wholesale prices caused an increase in interconnection income for RTE, and the CRE decided that the "windfall" had to be shared with the users of the electricity transmission users earlier than under normal procedures.

(5) Indexed adjustments to the TURPE 6 distribution tariff: +0.91% at 1 August 2021 and +2.26% at 1 August 2022.

5.1.3.2.2.4 Dalkia

The decrease in Dalkia's EBITDA is principally explained by gas price caps for cogeneration plants subject to purchase obligations, and early discontinuation of these technologies due to a timing change in the winter tariff.

5.1.3.2.2.5 Framatome

Framatome's "Installed Base" business unit saw sustained growth in North America, but fuel sales were down in the United States fell.

Order intake amounted to approximately €3.7 billion at 31 December 2022, a slight improvement from 2021 driven particularly by the Fuel and Installed Base business units in North America.

5.1.3.2.2.6 United Kingdom

EBITDA for the United Kingdom segment was up thanks to higher nuclear power output, leading to additional volume sales in a high-price environment, whereas 2021 generation levels had made purchases necessary at high prices.

Supply activities were affected by energy price rises being partially passed on to residential customers, despite substantial raises of the tariff cap. The commercial and industrial customer segment essentially benefited from portfolio growth.

Operating expenses were down in 2022, notably due to the changes in the employee pension scheme decided in 2021.

5.1.3.2.2.7 Italy

In Italy, EBITDA in the electricity generation activities were up, boosted by the good availability of CCGT (combined cycle gas turbines) and high market prices, and the

introduction of Italy's capacity market. However, renewables output was down, essentially due to low water levels.

The gas business benefited from higher sales volumes, especially on the wholesale markets. A gain on the disposal of *Infrastrutture Distribuzione Gas* was booked in 2021, with no equivalent in 2022.

Supply activities were affected by electricity and gas price rises that were not fully passed on to residential customers.

5.1.3.2.2.8 Other international

EBITDA was down in **Belgium**⁽¹⁾, essentially as a result of lower nuclear power output, purchases at very high prices, and the three-yearly review of nuclear provisions. Service activities are growing, and supply activities are stable.

EBITDA was up in **Brazil**, thanks to the 16% raise in November 2021 and the 5% raise in November 2022 to the price of the Power Purchase Agreement (PPA) attached to EDF's Norte Fluminense plant, plus a favourable foreign exchange effect between the Brazilian real and the euro.

5.1.3.2.2.9 Other activities

EBITDA for the **gas activities** benefited from reviews of long-term contracts (with no cash effect) given the increase in medium and long-term US-Europe spreads. Sales volumes also rose significantly, as more use was made of the Dunkirk methane terminal in a context of very high wholesale prices.

EDF Trading's EBITDA was improved by benefited from a good business performance in a period of very high volatility across all commodity markets.

5.1.3.3 EBIT

The Group's consolidated **EBIT** for 2022 amounted to -€19,363 million, down by €24,588 million or an organic decrease of €24,632 million.

(in millions of euros)	2022	2021	Variation	Variation (%)
EBITDA	(4,986)	18,005	(22,991)	-127.7
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	(849)	(215)	(634)	n.a
Net depreciation and amortisation*	(11,079)	(10,789)	(290)	2.7
(Impairment)/reversals	(1,762)	(653)	(1,109)	169.8
Other income and expenses	(687)	(1,123)	436	-38.8
EBIT	(19,363)	5,225	(24,588)	N.A

* Including net increases to provisions for replacement of concession assets.

5.1.3.3.1 Net changes in fair value on Energy and Commodity derivatives, excluding trading activities

The net changes during 2022 in fair value on Energy and Commodity derivatives, excluding trading activities, increased significantly by €634 million between 2021 and 2022, in a context of high volatility on the commodity markets.

5.1.3.3.2 Net depreciation and amortisation

Net depreciation and amortisation was €290 million higher than in 2021. In the **France – Generation and supply** segment, the increase (+€103 million) essentially concerned the nuclear activities.

At **Enedis**, the €191 million rise in depreciation and impairment essentially relates to the "FACE" decree on lower recoveries of amortisation of grantor financing for

concession assets located in towns that were transferred from the urban to the rural regime.

5.1.3.3.3 (Impairment)/reversals

Impairment recognised in 2022 amounted to -€1,762 million, an increase of 169.8% from 2021, including -€1,447 million in the **United Kingdom**, principally goodwill impairment of -€1,176 million.

5.1.3.3.4 Other income and expenses

Other income and expenses amounted to -€687 million for 2022, including -€676 million in the **France – Generation and supply** segment, principally due to additional costs incurred for repair work on penetration welds at the Flamanville 3 EPR (€638 million).

(1) Luminus and EDF Belgium.

5.1.3.4 Financial result

(in millions of euros)	2022	2021	Variation	Variation (%)
Cost of gross financial indebtedness	(1,730)	(1,459)	(271)	18.6
Discount effect	174	(2,670)	2,844	n.a
Other financial income and expenses	(1,997)	4,489	(6,486)	n.a
FINANCIAL RESULT	(3,553)	360	(3,913)	N.A

n.a: not applicable.

The financial result for 2022 was an expense of €3,553 million, a decrease of €3,913 million from 2021 with several contributing factors:

- a €6,486 million decline in other financial income and expenses, principally due to the lower performance of the dedicated asset portfolio (-€5,835 million), reflecting developments on the financial markets in 2022 and 2021 (see section 5.1.6.1.6);
- a €2,844 million decrease in discount expenses, principally owing to the 50bp rise in the real discount rate applied for nuclear provisions in France in 2022, after a 10bp rate reduction in 2021;
- a €271 million increase in the cost of gross financial debt, in an environment of increasing interest rates and a rising financial debt.

5.1.3.5 Income taxes

The income tax receivable amounts to €3,926 million at 31 December 2022, corresponding to an effective tax rate of 17.13% (compared to an expense of -€1,400 million at 31 December 2021, corresponding to an effective tax rate of 25.09%).

The €5,326 million change between the tax expense for 2021 and tax receivable in 2022 essentially reflects the €28,501 million decrease in the Group's pre-tax income, generating additional tax income of €7,359 million.

The tax receivable also reflects the unfavourable effect in 2022 of certain rulings given in tax litigations, the windfall taxes introduced for electricity-producing companies, impairment booked during the year, and the absence of any favourable effect equivalent to the impact of asset revaluations for tax purposes in Italy in 2021.

It also includes the unfavourable effect of non-recognition of deferred tax assets in France, which is partly offset by the favourable effect of deferred tax assets recognised in the United States.

In contrast to 2021, the Group was not subject to any rise in the normative tax rate in the countries where it does business.

After elimination of non-recurring items (principally impairment, variations in unrealised gains and losses on the financial asset portfolio and commodities, and tax litigation), the effective tax rate is 18.0% at 31 December 2022, compared to 21.3% at 31 December 2021.

5.1.3.6 Net income excluding non-recurring items

The Group's net income excluding non-recurring items ⁽¹⁾ stood at -€12,662 million in 2022, down by €17,379 million compared to 2021. This change principally reflects the decline in EBITDA, which was partly limited by the higher financial result (excluding non-recurring items) and an income tax receivable (see note 19.1 to the 2022 consolidated financial statements, "Net income excluding non-recurring items").

5.1.3.7 EDF net income

EDF net income for 2022 totalled -€17,940 million, down by €23,053 million. In addition to the significant decrease in the net income excluding non-recurring items, this change includes the following principal items after tax:

- -€4,351 million of changes in the fair value of financial instruments;
- -€687 million of impairment.

(1) EDF net income excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax.

5.1.4 Net indebtedness, cash flows and investments

(in millions of euros)	2022	2021	Variation	Variation (%)
EBITDA	(4,986)	18,005	(22,991)	-127.7
Cancellation of non-monetary items included in EBITDA	(7,825)	(869)	(6,956)	n.a
Cash EBITDA	(12,811)	17,136	(29,947)	n.a
Change in working capital	8,301	(1,526)	9,827	n.a
Net investments ⁽¹⁾ (excluding Group disposals 2020-2022)	(16,395)	(15,725)	(670)	4.3
Other items including dividends received from associates and joint ventures	(630)	(98)	(532)	n.a
Operating cash flow ⁽²⁾	(21,535)	(213)	(21,322)	n.a
Asset disposals	535	2,847	(2,312)	n.a
Income taxes paid	(1,282)	(2,276)	994	-43.7
Net financial expenses disbursed	(1,003)	(588)	(415)	70.6
Dedicated assets	(233)	(501)	268	-53.5
Dividends paid in cash	(1,085)	(794)	(291)	36.6
Group cash flow ⁽³⁾	(24,603)	(1,525)	(23,078)	n.a
Issues of hybrid notes	994	1,235	(241)	-19.5
Redemption of hybrid notes	(1,966)	(267)	(1,699)	n.a
Other monetary changes	3,470	(776)	4,246	n.a
(Increase)/decrease in net indebtedness, excluding the impact of changes in exchange rate	(22,105)	(1,333)	(20,772)	n.a
Effect of change in exchange rates	85	(515)	600	n.a
Effect of other non-monetary changes	508	1,150	(642)	-55.8
(Increase)/decrease in net indebtedness of continuing operations	(21,512)	(698)	(20,814)	n.a
Net indebtedness at beginning of year	42,988	42,290	698	1.7
NET INDEBTEDNESS AT END OF YEAR	64,500	42,988	21,512	50.0

n.a: not applicable.

(1) Net investments are operating investments and financial investments for growth, net of disposals. They also include net debts acquired or transferred in acquisitions or disposals of securities, investment subsidies received, and non-Group partner investments. They do not include the Group disposals for 2020-2022.

(2) Operating cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not directly comparable with indicators of the same name reported by other companies. This indicator, also known as Funds From Operations ("FFO"), is equivalent to net cash flow from operating activities, changes in working capital after adjustment where relevant for the impact of non-recurring effects, net investments (excluding Group disposals 2020-2022 and including HPC and Linky), and other items, including dividends received from associates and joint ventures.

(3) Group cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not directly comparable with indicators of the same name reported by other companies. It is equal to the operating cash flow defined in note (3) less asset disposals, income taxes paid, net financial expenses disbursed, net allocations to dedicated assets, and dividends paid in cash.

5.1.4.1 Net Financial Debt

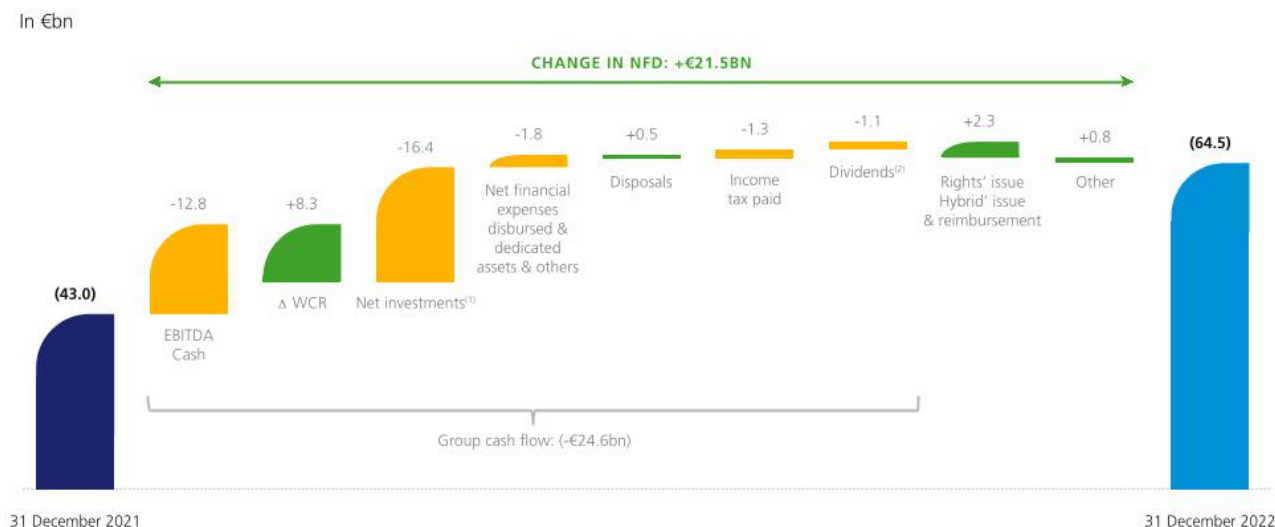
Net financial debt comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or securities with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented policy.

(in millions of euros)	31/12/2022	31/12/2021	Variation	Variation (%)
Loans and other financial liabilities	96,053	69,406	26,647	38.4
Derivatives used to hedge liabilities	(2,024)	(3,762)	1,738	-46.2
Cash and cash equivalents	(10,948)	(9,919)	(1,029)	10.4
Debt and equity securities – liquid assets	(18,507)	(12,737)	(5,770)	45.3
Net indebtedness of assets held for sale	(74)	0	(74)	n.a
NET FINANCIAL DEBT*	64,500	42,988	21,512	50.0

* Net financial debt is not defined in the accounting standards and is not directly visible in the Group's consolidated balance sheet

The Group's net financial debt reached €64,500 million at 31 December 2022. The €21,512 million increase from 2021 is mainly explained by the cash flow from operations, the issue and the redemption of hybrid bonds with a total impact of -€1 billion, and the capital increase of €3.15 billion.

Change in net financial debt between 31 December 2021 and 31 December 2022



NB: figures rounded to the nearest whole number.
(1) Net investments excluding Group disposals.

(2) Dividends paid including hybrid bond remuneration.

5.1.4.2 Operating cash flow

The operating cash flow ⁽¹⁾ was -€21,535 million in 2022, down by €21,322 million compared to 2021.

5.1.4.2.1 Cash EBITDA

EBITDA after adjustment for non-cash items amounted to -€12,811 million, down by €29,947 million from 2021, principally due to:

- the lower nuclear and hydropower output and the impacts of regulatory measures;
- a decrease in EDF Trading's cash EBITDA given the high price volatility in 2021 and 2022. The change in working capital partly compensated for this.

5.1.4.2.2 Change in working capital

Working capital improved by €8.3 billion in 2022. This favourable change in working capital is mainly explained by the optimisation/trading activity and the CSPE mechanism.

5.1.4.2.3 Net investments

Net investments (excluding disposals and including HPC and Linky) amounted to €16,395 million in 2022, up by €670 million from 2021.

(in millions of euros)	2022	2021	Variation	Variation (%)
France – Generation and supply	5,688	5,338	350	7
France – Regulated activities	4,564	4,617	-53	-1
EDF Renewables	1,619	853	766	90
Dalkia	324	284	40	14
Framatome	294	381	-87	-23
United Kingdom	2,978	3,054	-76	-2
Italy	701	909	-209	-23
Other international	167	289	-122	-42
Other activities	61	0	61	n.a
NET INVESTMENTS	16,395	15,725	670	4

Net investments by the **France – Generation and supply** segment were up by €350 million, due notably to costs for addressing stress corrosion.

Net investments by the **France – Regulated activities** segment (including Linky) were down by €53 million, mainly reflecting the smaller volume of work as the Linky programme drew to a close, despite an increase in connection work.

At **EDF Renewables**, the €766 million increase reflects large-scale investments in the United States, and lower subsidies and disposals than in 2021.

(1) Operating cash flow is not an aggregate defined by IFRS as a measure of financial performance and is not directly comparable with indicators of the same name reported by other companies. This indicator, also known as Funds From Operations ("FFO"), is equivalent to net cash flow from operating activities, changes in working capital after adjustment where relevant for the impact of non-recurring effects, net investments (excluding disposals in 2021-2022), and other items, including dividends received from associates and joint ventures.

In **Italy**, net investments were down by €209 million, notably due to acquisitions in the renewable energies sector in 2021 that had no equivalent in 2022.

The decrease in net investments by the **Other International** segment is principally attributable to the acquisition of Essent by Luminus in 2021.

5.1.4.3 Group cash flow

Group cash flow for 2022 amounted to -€24,603 million, significantly lower than the -€1,525 million recorded in 2021. It is essentially explained by cash EBITDA of -€12,811 million, principally affected by the drop in French nuclear power output, and the change in working capital (+€8.3 billion from 2021).

5.1.4.3.1 Asset disposals

Asset disposals totalled €535 million in 2022. They essentially concerned the sale of the EDF Energy Services business in the United States.

5.1.4.3.2 Dedicated assets

In compliance with French Law no. 2006-739 of 28 June 2006 on the sustainable management of radioactive materials and waste, EDF has built up a portfolio of dedicated assets to secure financing of its long-term nuclear obligations (see section 5.1.6.1.6).

In general, the changes concerning dedicated assets comprise:

- allocations to reach full coverage of obligations;
- reinvestment of financial income (dividends and interest) generated by these assets;
- withdrawals of assets corresponding to the costs incurred over the period to meet long-term nuclear obligations falling within the scope of the Law of 28 June 2006;

5.1.5 Financial outlook

2023 objectives ⁽³⁾ released on 17 February 2023 ⁽⁴⁾ are as follows:

- Net financial debt / EBITDA: $\leq 3x$
- Adjusted economic net debt / Adjusted EBITDA ⁽⁵⁾: $\leq 4.5x$

5.1.6 Management and control of market risks

See section 2.2.2. "Management of financial and market risks" of the 2022 Universal Registered Document.

5.1.6.1 Management and control of financial risks

This section sets forth the policies and principles for management of the Group's financial risks defined in the strategic financial management framework (liquidity, interest rate, foreign exchange rate and equity risks), and the Group counterparty risk management policy set up by EDF. These principles apply only to EDF and operationally controlled subsidiaries or subsidiaries that do not benefit by law from specific guarantees of independent management such as Enedis. In compliance with IFRS 7, the following paragraphs describe the nature of risks resulting from financial instruments, based on analyses of sensitivities and credit (counterparty) risks.

An independent unit in the Group's Risk Division, the Financial Risks Control Department (*Département Contrôle des Risques Financiers et Investissements* – CRFI), is in charge of financial risk control at Group level, mainly by ensuring correct application of the principles of the strategic financial management framework (July 2015). It also has the task of carrying out a second-level check of the risk of

- exceptional withdrawals proposed to the governance bodies in charge of managing dedicated assets when the value of the portfolio exceeds the amount of the obligations to be financed; such withdrawals must be validated by these bodies.

The net change of -€233 million in dedicated assets in 2022 corresponds to the second and third of these categories.

5.1.4.3.3 Dividends paid in cash

In 2022 EDF paid out €1,085 million comprising:

- the 2021 dividend (€72 million) paid by EDF ⁽¹⁾;
- payments made in 2022 to holders of perpetual subordinated bonds for the "hybrid note" issues (€606 million);
- dividends paid by Group subsidiaries to their minority shareholders (€407 million).

5.1.4.4 Effect of change in exchange rates

The foreign exchange effect had a favourable impact of €85 million on the Group's net indebtedness, mainly due to the rise of US dollar against the euro reduced by the decline of the pound sterling against the euro ⁽²⁾.

5.1.4.5 Other non-monetary changes

Other non-monetary changes totalled €508 million at 31 December 2022, compared to €1,150 million at 31 December 2021. They mainly consist of changes in the fair value of debt instruments and new leases (IFRS 16).

counterparty default (methodology and organisation) for EDF entities and operationally controlled Group subsidiaries (excluding Enedis), and a first-level check of financing activities by EDF's trading room. The CRFI Department also carries out a second-level check of management activities concerning the dedicated asset portfolio.

The CRFI Department issues daily and weekly monitoring reports of risk indicators relevant to activities in EDF's trading room.

Regular internal audits are carried out to ensure controls are actually applied and are effective.

5.1.6.1.1 Liquidity position and management of liquidity risk

5.1.6.1.1.1 Liquidity position

The Group's liquidities at 31 December 2022, consisting of liquid assets, cash and cash equivalents, totalled €29,455 million and available credit lines amounted to €14,051 million.

(1) The French State opted for a scrip dividend for 2021 and 2022.

(2) The pound sterling declined by 5.3% against the Euro, from €1.190/£1 at 31 December 2021 to €1.127/£1 at 31 December 2022; the US dollar rose by 6.1% against the Euro, from €0.883/\$1 at 31 December 2021 to €0.937/\$1 at 31 December 2022.

(3) Based on scope and exchange rates at 1 January 2023, a constant regulatory and fiscal environment and considering the financing of the 15% tariff cap by the CSPE, assuming French nuclear output of 300-330TWh and the generation schedule.

(4) See EDF's press release on 2022 annual results.

(5) Based on constant S&P methodology.

At 31 December 2022, the Group's loans and other financial liabilities maturing within one year totalled €28,712 million and included €2,737 million relating to bonds, including accrued interest not yet due. This amount also comprises the negative cash position (including €1,734 million for margin calls on derivatives) and the liability relating to lease obligations (see note 18.3.3 to the 2022 consolidated financial statements). The associated requirements may when necessary be funded by the Group's liquidities and available credit lines mentioned above, and other short-term resources mentioned below.

No Group company was in default on any borrowing at 31 December 2022.

5.1.6.1.1.2 Management of liquidity risk

The EDF group was able to meet its financing needs by conservative liquidity management and has obtained financing on satisfactory terms. On 16 March 2022, EDF set up bilateral 3-year credit lines for the total amount of €10.25 billion with 9 banks. Two further 3-year bilateral credit lines totalling \$2.2 billion were then concluded on 25 March and 29 April. On 5 April 2022 EDF carried out a capital increase of €3.1 billion. On 5 October 2022 EDF issued a senior bond in 3 tranches for a nominal amount of €3 billion (including €1.25 billion of Green Bonds). On 18 November 2022 a €1 billion 3-year bilateral green loan was arranged, specifically to fund maintenance of existing French power plants, and this was followed on 28 November by the signature of 6 further 3-year bilateral loans for a total of €2.1 billion. Finally, on 30 November 2022 EDF launched a €1 billion hybrid bond issue.

A range of specific levers are used to manage the Group's liquidity risk:

- the Group's cash pooling system, which centralises cash management for controlled subsidiaries. The subsidiaries' cash balances are made available to EDF in return for interest, so as to optimise the Group's cash management and provide subsidiaries with a system that guarantees them market-equivalent financial terms;
- centralisation of financing for controlled subsidiaries: changes in subsidiaries' working capital are financed by the Group's cash management department through stand-by credit lines provided for subsidiaries, which can thus have revolving credit from the Group;
- active management and diversification of financing sources used by the Group: the Group has access to short-term resources on various markets through programmes for French commercial paper (*billets de trésorerie*), Negotiable European Commercial Paper (NEU CP), and US commercial paper (US CP). For EDF, the ceilings are €6 billion for the NEU CP programme and \$10 billion for US commercial paper;

- transfer of bond liabilities to banking counterparties under cash repurchase agreements.

At 31 December 2022, the amount of the Group's commercial paper outstanding was €9,798 million for NEU CP, and US\$1,160 million for US CP.

EDF has access to the world's main bond markets:

- the Euromarkets through its EMTN programme, which currently has a ceiling of €50 billion, particularly for euro and sterling issues.
- and the domestic markets used for stand-alone issues in US dollars (144A bonds), yen (Samurai bonds) and Swiss francs.

The average maturity of the Group's gross debt was 9.4 years at 31 December 2022, compared to 13.7 years at 31 December 2021.

At 31 December 2022, EDF had a total amount of €13,594 million in available credit facilities (syndicated credit and bilateral lines):

- a syndicated credit line of €4 billion that expires in December 2025. No drawings had been made on this syndicated credit line at 31 December 2022;
- a syndicated social credit facility of €1.5 billion that expires in December 2025. No drawings had been made on this facility at 31 December 2022;
- bilateral credit lines representing an available amount of €8,094 million, with expiry dates extending to December 2026. The level of this available financing is very frequently reviewed to ensure the Group has sufficient backup credit facilities.

The 7 credit lines with the European Investment Bank were all fully drawn by EDF at 31 December 2022, for a total amount of €2,675 million.

Among other facilities, Edison has a credit line with the European Investment Bank (available amount of €300 million at 31 December 2022).

5.1.6.1.2 Credit rating

At 31 December 2022, the three financial ratings agencies Standard & Poor's, Moody's and Fitch Ratings attributed the following long-term and short-term ratings to EDF group entities. EDF was taken off Creditwatch and its outlook was revised on 14 December by Standard & Poor's, acknowledging the State support for operational issues and restrictions on regulated electricity sales tariffs. Fitch also revised the Company's outlook to stable on 6 September.

The Group's rating may be affected by the risks described in chapter 2 of the 2022 Universal Registration Document, particularly risk 1A: "Changes in public policies and the regulatory framework in France and Europe, particularly ARENH" and risk 2D: "Risk of access to liquidity".

Company	Agency	Long-term rating	Short-term rating
EDF	Standard & Poor's	BBB/ stable outlook	A-2
	Moody's	Baa1/ negative outlook	P-2
	Fitch Ratings	BBB+/ stable outlook	F3
EDF Trading	Moody's	Baa3/ negative outlook	n. a.
EDF Energy	Standard & Poor's	BB-/ stable outlook	B
	Moody's	Baa3/ negative outlook	n. a.
	Fitch Ratings	BBB-/ stable outlook	n. a.
Edison	Standard & Poor's	BBB/stable outlook	A-2
	Moody's	Baa3/ stable outlook	n. a.

n.a = not applicable.

5.1.6.1.3 Management of foreign exchange risk

Due to the diversification of its activities and geographical locations, the Group is exposed to the risk of exchange rate fluctuations, which may have an impact on the translation differences affecting balance sheet items, Group financial expenses, equity, net income and the IRR of projects.

To limit exposure to foreign exchange risks, the Group has introduced the following management principles:

- local currency financing: to the extent possible given the local financial markets' capacities, each entity finances its activities in its own functional currency. When financing is contracted in other currencies, derivatives may be used to limit foreign exchange risk;
- matching of assets and liabilities: the net assets of subsidiaries located outside the Euro zone expose the Group to a foreign exchange risk. The foreign exchange risk in the consolidated balance sheet is managed by market hedging

through debt issued or contracted in foreign currencies, or use of financial derivatives. Hedging of net assets in foreign currencies complies with risk/return targets, and the hedging ratio varies depending on the currency. If no hedging instruments are available, or if hedging costs are prohibitive, the foreign exchange positions remain open and the risk on such positions is monitored by sensitivity calculations;

- hedging of operating cash flows in foreign currencies: in general, the operating cash flows of EDF and its subsidiaries are in their local currencies, with the exception of flows related to fuel purchases which are primarily in US dollars, and certain flows related to purchases of equipment, which concern lower amounts. Under the principles laid down in the strategic financial management framework, EDF and the main subsidiaries concerned by foreign exchange risks (EDF Energy, EDF Trading, Edison, EDF Renewables) are required to hedge firm or highly probable commitments related to these future operating cash flows;

As a result of the financing and foreign exchange risk hedging policy, the Group's gross debt at 31 December 2022 breaks down as follows by currency after hedging:

GROSS DEBT STRUCTURE AT 31 DECEMBER 2022, BY CURRENCY BEFORE AND AFTER HEDGING

31 December 2022 (in millions of euros)	Initial debt structure	Impact of hedging instruments*	Debt structure after hedges	% of debt
Borrowings in euros (EUR)	62,269	13,789	76,058	79%
Borrowings in US dollars (USD)	21,465	(15,813)	5,652	6%
Borrowings in pounds sterling (GBP)	8,149	3,284	11,433	12%
Borrowings in other currencies	4,170	(1,260)	2,910	3%
TOTAL DEBT	96,053	0	96,053	100%

* Hedges of liabilities and net foreign investments.

The table below presents the impact on equity of a variation in exchange rates on the Group's gross debt at 31 December 2022:

EXCHANGE RATE SENSITIVITY OF THE GROUP'S GROSS DEBT

31 December 2022 (in millions of euros)	Debt after hedging instruments converted into Euros	Impact of a 10% unfavourable variation in exchange rates	Debt after a 10% unfavourable variation in exchange rates
Borrowings in euros (EUR)	76,058	-	76,058
Borrowings in US dollars (USD)	5,652	565	6,217
Borrowings in pounds sterling (GBP)	11,433	1,143	12,576
Borrowings in other currencies	2,910	291	3,201
TOTAL DEBT	96,053	1,999	98,052

Due to the Group's hedging policy for foreign exchange risk on the Group's gross debt, the income statement of companies controlled by the Group is marginally exposed to foreign exchange rate risk.

The table below sets forth the foreign exchange position relating to net assets in foreign currencies of the Group's subsidiaries.

NET ASSET POSITION

31 December 2022* (in millions of currency units)	Net assets	Bonds	Derivatives	Net assets after management
USD	5,451	1,450	838	3,163
CHF (Switzerland)	20	-	18	2
PLN (Poland)	281	-	153	128
GBP (United Kingdom)	21,069	5,035	5,294	10,740
BRL (Brazil)	1,697	-	-	1,697
CNY (China)	9,651	-	6,472	3,179

* Net assets as at 31 December 2022; bonds and derivatives as at 31 December 2022. The net positions shown exclude certain non-significant exposures.

The above table shows the assets of the Group's foreign subsidiaries in foreign currencies, adjusted for changes in the fair value of cash flow hedges and debt and equity instruments recorded in equity, and changes in the fair value of financial instruments recorded in income.

The following table sets forth the risk for equity of foreign exchange losses on net assets in foreign currencies of the Group's principal subsidiaries at 31 December 2022, assuming unfavourable, uniform exchange rate variations of 10% against the Euro. Net assets are converted at the closing rate and impacts are reported in absolute value.

EXCHANGE RATE SENSITIVITY OF NET ASSETS

	At 31 December 2022			At 31 December 2021		
	Net assets after management into currency	Net assets after management converted into Euros	Impact on equity of a 10% variation in exchange rates	Net assets after management into currency	Net assets after management converted into Euros	Impact on equity of a 10% variation in exchange rates
<i>(in millions of currency units)</i>						
USD	3,163	2,965	297	628	554	55
CHF (Switzerland)	2	2	-	-	-	-
PLN (Poland)	128	27	3	128	28	3
GBP (United Kingdom)	10,740	12,109	1,211	10,789	12,840	1,284
BRL (Brazil)	1,697	301	30	1,471	233	23
CNY (China)	3,179	432	43	4,005	557	56

The foreign exchange risk on debt and equity securities is mostly concentrated in EDF's dedicated asset portfolio, which is detailed in the section entitled "Management of financial risk on EDF's dedicated assets".

The foreign exchange risk associated with short-term investments and operating liabilities in foreign currencies remains under control for the Group at 31 December 2022.

5.1.6.1.4 Management of interest rate risk

The exposure of the Group's net indebtedness to interest rate fluctuations covers two types of risk: a risk of change in the net financial expenses on floating-rate financial assets and liabilities, and a risk of change in the value of financial assets invested at fixed rates. These risks are managed by monitoring the floating-rate portion of net indebtedness, defined by reference to the risk/return for net financial expenses, taking into consideration expected movements in interest rates.

Under this policy, some of the debt is variabilised and the Group may use interest rate derivatives for hedging purposes.

The Group's debt after hedging instruments at 31 December 2022 comprised 58% at fixed rates and 42% at floating rates. The increase since 31 December 2021 in the floating-rate portion of the debt essentially results from the bilateral fixed-term loans arranged, amounting to €13.1 billion, USD 2.2 billion and 38 billion yen, which bear interest at floating rates.

A 1% uniform annual rise in interest rates would generate an approximate €401 million increase in financial expenses at 31 December 2022 based on gross floating-rate debt after hedging.

The average cost of Group debt (weighted interest rate on outstanding amounts) was 2.63% at end-December 2022.

STRUCTURE AND INTEREST RATE SENSITIVITY OF GROUP DEBT

31 December 2022				Impact on income of a 1% variation in interest rates
<i>(in millions of euros)</i>	Initial debt structure	Impact of hedging instruments	Debt structure after hedging	
Fixed rate	69,748	(13,784)	55,964	-
Floating rate	26,305	13,784	40,089	401
TOTAL	96,053	0	96,053	401

Concerning financial assets, the table below presents the interest rate risk on the floating-rate notes (FRN) held by EDF, and their sensitivity to interest rate risks (impact in net income).

INTEREST RATE SENSITIVITY OF FLOATING-RATE INSTRUMENTS

31 December 2022			Impact on income of a 1% variation of interest rates	Value after a 1% variation in interest rates
<i>(in millions of euros)</i>	Value			
FLOATING-RATE INSTRUMENTS	37	-		37

The Group's interest rate risk notably relates to the value of the Group's long-term nuclear obligations (see note 15 to the 2022 consolidated financial statements) and its pension and other specific employee benefit obligations (see note 15 to the 2022 consolidated financial statements), which are adjusted to present value using

discount rates that depend on interest rates for various time horizons, and debt securities held for management of the dedicated assets set aside to cover these obligations (see section 5.1.6.1.6).

5.1.6.1.5 Management of equity risk

Coverage of EDF's nuclear obligations

Analysis of the equity risk is presented in the section entitled "Management of financial risk on EDF's dedicated assets".

Coverage of employee benefit obligations for EDF and EDF Energy

Assets covering EDF's employee benefit liabilities are partly invested on the international and European equities markets. Market trends therefore affect the value of these assets, and a downturn in equity prices would lead to a rise in balance sheet provisions.

33% of the assets covering EDF's employee benefit obligations were invested in equities at 31 December 2022, representing an amount of €3.1 billion of equities.

At 31 December 2022, the British Energy pension fund (British Energy Generation Group), now renamed EDF group (EDFG), reduced its allocation to equities and equity funds (excluding diversified growth funds) to bring its year-end exposure to less than 1%, i.e. an investment of £36 million in equities.

5.1.6.1.6 Management of financial risk on EDF's dedicated asset portfolio

Dedicated assets have been built up progressively by EDF since 1999 to ensure secure financing of its long-term nuclear obligations. The Law of 28 June 2006, codified in France's Environment Code (Articles L. 5 94-1 to 14) and its implementing regulations, defined the provisions that are not related to the operating cycle, and must therefore be covered by dedicated assets. They are listed in note 15.1.2 to the 2022 consolidated financial statements, "Coverage of EDF's long-term nuclear obligations".

The dedicated asset portfolio is managed under the supervision of the Board of Directors and its advisory committees (Nuclear Commitments Monitoring Committee (CSEN), Audit Committee).

A Nuclear Commitments Financial Expertise Committee (CEFEN) exists to assist the Company and its governance bodies on questions of matching assets and liabilities and asset management. The members of this Committee are independent of EDF.

Governance and management principles

The governance principles setting forth the structure of dedicated assets, and the relevant decision-making and control processes for their management, are validated by EDF's Board of Directors under a policy for ensuring secure financing of nuclear expenses, in compliance with the regulations. These principles also lay down rules for the asset portfolio's structure, selection of financial managers, and the legal, accounting and tax structure of the funds.

Strategic asset allocation is based on asset/liability reviews carried out to define the most appropriate target portfolio for financing long-term nuclear obligations. Strategic allocation is validated by EDF's Board of Directors and reviewed every three years unless circumstances require otherwise. A new strategic allocation was validated in 2021 to increase diversification in fixed-income markets. The target allocation consists of a yield portfolio, a growth portfolio and a fixed-income portfolio, respectively accounting for 30%, 40% and 30% of the total portfolio. The yield portfolio consists of real estate assets and infrastructure assets; the growth portfolio consists of equities and equity funds (both listed and unlisted); the fixed-income portfolio consists of bonds, debt funds (both listed and unlisted), and cash. These portfolios are managed by EDF Gestion (formerly the Listed Asset Management Division) and by EDF Invest.

The allocation policy between growth assets and fixed-income assets was developed by the Operational Management Committee ⁽¹⁾ on the basis of the economic and financial outlook for each market and geographical area, a review of market appreciation in different markets and market segments, and risk analyses produced by the Financial Risks Control department.

At 31 December 2022, the total value of the portfolio was €33,904 million compared to €37,454 million in 2021. Changes in dedicated assets in 2022 and details of their realisable value and book value are described in note 15.1.2 to the 2022 consolidated financial statements.

CONTENT AND PERFORMANCE OF EDF'S DEDICATED ASSET PORTFOLIO

(in millions of euros)	31/12/2022			31/12/2021		
	Share of portfolio	Stock market or realisable value	Performance for 2022	Share of portfolio	Stock market or realisable value	Performance for 2021
Yield assets	25.9%	8,772	11.2%	21.1%	7,908	17.1%
Growth assets	36.1%	12,251	-15.8%	40.9%	15,320	22.6%
Fixed-income assets	38.0%	12,881	-12.1%	38.0%	14,226	-0.7%
TOTAL DEDICATED ASSETS	100%	33,904	-8.5%	100%	37,454	11.9%

Dedicated assets' exposure to risks

EDF is exposed to equity risks, interest rate risks and foreign exchange risks through its dedicated asset portfolio.

The market value of the listed equities in EDF's dedicated asset portfolio was €11,698 million at 31 December 2022. The volatility of the listed equities at the same date was 17.04% based on 52 weekly performances, compared to 10.93% at 31 December 2021. Applying this volatility to the value of listed equity assets at 31 December 2022, the Group estimates the annual volatility of the equities portion of dedicated assets at €1,993 million.

At 31 December 2022, the sensitivity of the listed bonds (€11,089 million) was 4.9, i.e. a uniform 100 base point rise in interest rates would result in a €538 million decline in market value. This sensitivity was 5.3 at 31 December 2021.

Assessment of the expected rate of return on dedicated assets

In compliance with the applicable regulations, based on the target allocation for dedicated assets stated above, studies to simulate the expected rate of return for the next few years, particularly the next twenty years (a horizon close to the duration of nuclear provisions), show with high probability that the average projected rate of return is higher than the estimated 4.8% the discount rate used to calculate nuclear provisions at 31 December 2022 (see note 15.1.1 to the 2022 consolidated financial statements).

The average annualised performance of dedicated assets since 2004, the year when their value first exceeded €1 billion, was 5.6% at 31 December 2022.

(1) An internal committee and permanent body for evaluation, consultation and operational decision-making for dedicated asset management.

Currently valid dispensations and prescriptions granted by the administrative authority, in application of Articles D. 594-6 and D.594-7 of the Environment Code

EDF received ministerial authorisation on 31 May 2018 to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions (this does not apply to the shares of CTE or real estate assets).

In addition, the EDF subsidiary Cyclife was instructed by the administrative authority to reach a coverage ratio above 100% by 31 December 2022. At that date, the coverage rate was 123% due to the decrease in provisions, resulting particularly from the higher discount rate.

5.1.6.1.7 Management of counterparty/ credit risk

Counterparty risk represents the potential loss the EDF group would sustain in the event of future default by its counterparty. The Group has a counterparty risk management policy which applies to EDF and all operationally controlled subsidiaries. This policy sets out the governance associated with monitoring for this type of risk, and organisation of the counterparty risk management and monitoring. The policy also involves quarterly consolidation of the Group's exposures. The Financial Risks Control (CRFI) department closely monitors Group counterparties (daily review of alerts, special cautionary measures for certain counterparties).

The table below gives details, by rating category, of the EDF group's consolidated exposure to counterparty risk. At 30 September 2022, 88% of the Group's exposure concerned "investment grade" counterparties, mainly due to the predominance of exposures generated by the cash and asset management activity, as most short-term investments concern low-risk assets.

	Good credit rating	Poor credit rating	No internal rating	Total
At 30/06/2022	88%	11%	1%	100%
At 30/09/2022	88%	11%	1%	100%

The exposure to counterparty risk by nature of activity is distributed as follows:

	Purchases	Insurance	Distribution and sales	Cash and asset management	Fuel purchases and energy trading	Total
At 30/06/2022	7.0%	0.2%	13.5%	51.4%	27.9%	100%
At 30/09/2022	5.6%	0.2%	13.7%	43%	37.5%	100%

Exposure in the energy trading activities is concentrated in EDF Trading. The significant increase since December 2021 is due to soaring commodity prices over the period. Each counterparty of this subsidiary is assigned a limit that depends on its financial robustness. A range of methods are used to reduce counterparty risk at EDF Trading, primarily position netting agreements, cash-collateral agreements and arrangement of guarantees with banks or affiliates.

For counterparties dealing with EDF's trading room, the CRFI department has drawn up a framework specifying counterparty authorisation procedures and the methodology for calculation of allocated limits. The level of exposure can be consulted in real time and is systematically monitored on a daily basis. The suitability of limits is reviewed without delay in the event of an alert or unfavourable development affecting a counterparty. Only banking, sovereign and corporate counterparties with good credit ratings are authorised, for limited amounts and maturities.

5.1.6.2 Management and control of energy market risks

5.1.6.2.1 Energy market risk policy

Through its generation and supply activities, the EDF group has operations on deregulated energy markets, principally in Europe, which expose it to price variations on the energy market that can significantly affect its financial statements.

Consequently, the Group has an energy market risk policy for all energy commodities, applicable to EDF and entities over which it has operational control.

The purpose of this policy is to:

- define the general framework for management of risks on the energy markets where the Group entities carry out their asset portfolio management activities (energy generation, optimisation and sale), and trading activities in the case of EDF Trading;
- define the responsibilities of asset managers and traders, and the various levels of control of activities;
- implement a coordinated Group-wide hedging policy that is coherent with the Group's financial commitments;

- consolidate the exposure of the various entities operationally controlled by EDF on the structured energy-related markets.

The Group Risk Division presents an annual report on the implementation of this policy to the Board of Directors' Audit Committee.

At entities not operationally controlled by EDF, the risk management framework is reviewed by the governance bodies.

5.1.6.2.2 Organisation of risk control and general risk hedging principle

The process for controlling energy market risks for entities operationally controlled by the Group is based on:

- a governance and market risk exposure measurement system, clearly separating management and risk control responsibilities;
- an express delegation to each entity, defining hedging strategies and establishing the associated risk limits. This enables the Executive Committee to set out and monitor an annual Group risk profile consistent with the financial objectives, and thus direct operational management of energy market risks over market horizons (generally three years).

The basic principle for hedging is:

- netting of upstream/downstream positions; wherever possible, sales to final customers are hedged by Internal sales;
- gradual closing of most positions before the end of the budget year, based on a predefined hedging trajectory ⁽¹⁾ that captures an average price, potentially with overweighting of year N-1 in view of liquidity constraints on the forward markets.

The energy risk control process involves Group management and is based on a risk indicator and measurement system incorporating escalation procedures in the event risk limits are exceeded.

The Group's exposure to energy market risks through operationally controlled entities is reported quarterly to the Executive Committee. The control processes are regularly evaluated and audited.

5.1.6.2.3 Principles for operational management and control of energy market risks

The principles for operational management and control of energy market risks for the Group's operationally controlled entities are based on strict segregation of responsibilities for managing those risks, distinguishing between management of assets (generation and supply) and trading.

The operators of generation and supply assets are responsible for implementing a risk management strategy that smooths the impact of energy market risks on the variability of their financial statements (the accounting classifications of the hedges used are described in note 18.7 to the 2022 consolidated financial statements, "Derivatives and Hedge accounting"). However, they are still exposed to structural price trends to the extent of volumes that are not yet hedged, and uncertainties over volumes (relating to the ARENH system, generation plant availability, and customer consumption). In view of the inspections of the nuclear fleet announced on 13 January 2022, and announcements of additional ARENH volumes, the volume risk in France was particularly high in 2022.

For operationally controlled entities in the Group, positions on the energy markets are taken predominantly by EDF Trading, which as the Group's trading entity executes most of the Group's purchase/sale orders on the wholesale markets. Consequently, EDF Trading is subject to a strict governance and control framework, particularly the European regulations on trading companies.

EDF Trading trades on organised or OTC markets in derivatives such as futures, forwards, swaps and options (regardless of the accounting classification applied at Group level). Its exposure on the energy markets is strictly controlled through daily limit monitoring overseen by the subsidiary's management and by the division in charge of energy market risk control at Group level. Automatic escalation procedures also exist to inform members of EDF Trading's Board of Directors of any breach of limits for risks (value at risk limit) or losses (stop-loss limits). Value at Risk (VaR) is a statistical measure of the potential maximum loss in market value on a portfolio in the event of unfavourable market movements, over a given time horizon and with a given confidence interval ⁽²⁾. Specific Capital at Risk (CaR) limits are also used in certain areas (operations on illiquid markets, long-term contracts and structured contracts) where VaR is difficult to apply. The stop-loss limit stipulates the acceptable risk for the trading business, setting a maximum level of loss in relation to the trading margin over a rolling three-month period. If these limits are exceeded, EDF Trading's Board of Directors takes appropriate action, which may include closing certain positions.

In 2022, EDF Trading's commitment on the markets was subject to a VaR limit of €70 million from 1 January, successively reduced to €51 million on 9 February and €42 million on 15 March before being raised to €57 million on 24 May, a CaR limit for long-term contracts and a CaR limit for operations on illiquid markets of €250 million each, and a stop-loss limit of €210 million from 1 January to 8 February, then €180 million from 9 February.

In an extremely volatile market environment, the VaR limit was occasionally exceeded during the first half of 2022, and between 26 and 30 August, triggering the procedures defined for such situations. The VaR indicator has remained below the limit since 30 August 2022.

For an analysis of fair value hedges of the Group's commodities, see note 6 to the 2022 consolidated financial statements. For details of commodity derivatives, see note 18.7.4 to the 2022 consolidated financial statements.

5.2 Subsequent events until closing of accounts

The developments occurred since the year-end and until closing of accounts are described in Note 23 to the consolidated financial statements closed on 31 december 2022.

5.3 Subsequent events to closing of accounts

On 28 February 2023, EDF announced⁽³⁾ that the French State had requested the conversion of 87,831,655 EDF OCEANES into shares. This conversion results in the issuance of 113,215,003 new shares. It results in a capital increase for a total nominal amount of 56,607,501.50 euros and a premium for the conversion of EDF OCEANES into shares for an amount of 903,392,484.15 euros. EDF's share capital is thus increased to 2,000,466,841 euros, consisting of 4,000,933,682 shares with a nominal value of 0.50 euro each.

On 16 March 2023, EDF issued a press release regarding a clarification on the stress corrosion phenomenon detected on parts of the auxiliary circuits of the main primary circuit of several nuclear reactors.

(1) The risk management frameworks, which are approved annually by the Group for each entity with exposure to energy market risks, may include acceleration or deceleration plans allowing departures from these trajectories if predefined price thresholds are exceeded. Since these plans do not comply with the general principle of gradual hedging, they can only be applied under strict conditions.

(2) EDF Trading estimates the VaR by a "Monte Carlo" method, which is based on volatilities and historical correlations measured using observed market prices over the 40 most recent business days. The VaR limit applies to the total EDF Trading portfolio.

(3) See EDF's press release of 28 February 2023 "Conversion of 40% of EDF OCEANE bonds due 2024".

5.4 Changes in market prices at end February 2023

Spot (current for next day) electricity prices in France in January/February 2023 averaged at €139.5/MWh base load and €163.9/MWh peak load, decreasing compared to January/February 2022 prices, which were €199.3/MWh base load and €230.6/MWh peak load. This decrease is explained in particular by the mild weather in January, which pulled down the average spot price in a context of higher solar and wind production. In addition, these prices are in line with gas and coal prices despite a slight increase in the average price of CO₂.

At the end of February 2023, the prices of French yearly contracts for base load and peak load delivery in 2024 were €117.5/MWh and €241.3/MWh respectively. A year earlier, forward electricity prices for delivery in France in 2023 closed at a base load price of €176.9/MWh and a peak load delivery of €294.8/MWh. This decrease in prices is mainly due to the rise in gas, coal and CO₂ prices.

In January-February 2023, spot gas prices on the French market averaged €54.6/MWh, down by €25.9/MWh compared to the same period in 2022. This decrease is explained in particular by a less tense supply-demand balance in Europe during the winter. Indeed, Asian demand linked to the economic recovery has remained subdued compared to the same period last year and Europe continues to attract more LNG cargoes to its shores. European stocks, well above average levels at the beginning of January, remain above the maximum levels observed over the period 2011-2022, allowing the markets to be reassured as the winter period is already well underway.

At the end of February 2023, the price of Brent was \$89.9/bbl, down by \$11.1/bbl compared with the end of February 2022. In a market context that has remained relatively tense, prices have fallen compared to the previous year, which may be associated with a contraction in demand. Indeed, despite the G7 embargo on

Russian crude oil and refined products, which came into effect at the end of 2022, galloping inflation and the rise in central bank interest rates during 2022 still raise fears of a global recession, even if China is recovering from the impact of the Covid-19 epidemic on its territory after relaxing sanitary constraints. On the demand side, OPEC's monthly report forecasts a marginal increase in oil demand to 803 million barrels (+2.1%) between 2022 and 2023, stable compared to the previous month's estimates and confirming the global uncertainty on the outlook.

The price of coal for delivery in Europe in 2024 ended February 2023 at \$154.2/t, down by \$61.7/t compared to the 2023 contract closed at the end of February 2022. After a surge in the price of coal in 2022, mainly due to the war in Ukraine and the energy crisis, the price has been on a downward trend. The European embargo on Russian coal required the diversification of supply sources, which led to an upward trend in the price in 2022. However, Europe has managed to replenish its stocks to record levels, which has helped to ease the price. At the beginning of 2023, the winter period was much milder than expected, limiting consumption, and with supply remaining robust, prices continued their decline that began after the summer of 2022.

The price of the CO₂ emission certificate for delivery in December 2023 closed the month of February 2023 at €99.8/t, up by €17.6/t compared to the closing price in February 2022 for delivery in December 2022. The price of the CO₂ emission is close to its historical high reached in August 2022. The price is supported by the prospects for the use of fossil-fired power plants, the positioning of speculative players and the approval by the European Parliament of the raising of €20 billion through the sale of CO₂ allowances as part of the Repower EU plan to break away from energy dependence on Russia.

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Changes in market prices at end February 2023



6



FINANCIAL STATEMENTS

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6.1 Consolidated financial statements at 31 December 2022

The Group's consolidated financial statements for the year ended 31 December 2022, prepared under IAS-IFRS, are presented below. They will be submitted for approval at the General Shareholders' Meeting to be held on 14 June 2023.

Consolidated income statement

<i>(in millions of euros)</i>	<i>Notes</i>	2022	2021
Sales	5.1	143,476	84,461
Fuel and energy purchases	5.2	(121,010)	(44,299)
Other external expenses ⁽¹⁾		(9,420)	(8,595)
Personnel expenses	5.3	(15,236)	(14,494)
Taxes other than income taxes	5.4	(3,163)	(3,330)
Other operating income and expenses	5.5	367	4,262
Operating profit before depreciation and amortisation	5	(4,986)	18,005
Net changes in fair value on energy and commodity derivatives, excluding trading activities	6	(849)	(215)
Net depreciation and amortisation		(11,079)	(10,789)
(Impairment)/reversals	10.8	(1,762)	(653)
Other income and expenses	7	(687)	(1,123)
Operating profit		(19,363)	5,225
Cost of gross financial indebtedness	8.1	(1,730)	(1,459)
Discount effect	8.2	174	(2,670)
Other financial income and expenses	8.3	(1,997)	4,489
Financial result	8	(3,553)	360
Income before taxes of consolidated companies		(22,916)	5,585
Income taxes	9	3,926	(1,400)
Share in net income of associates and joint ventures	12	759	644
Net income of discontinued operations		6	(1)
CONSOLIDATED NET INCOME		(18,225)	4,828
EDF net income		(17,940)	5,113
EDF net income - continuing operations		(17,946)	5,114
EDF net income - discontinued operations		6	(1)
Net income attributable to non-controlling interests		(285)	(285)
Net income attributable to non-controlling interests - continuing operations		(285)	(285)
Net income attributable to non-controlling interests - discontinued operations		-	-
Earnings per share (EDF share) in euros:	14.7		
Basic earnings per share		(5.03)	1.46
Diluted earnings per share		(5.03)	1.36
Basic earnings per share of continuing operations		(5.03)	1.46
Diluted earnings per share of continuing operations		(5.03)	1.36

(1) Other external expenses are reported net of capitalised production costs.

Consolidated statement of comprehensive income

(in millions of euros)	Notes	2022			2021		
		EDF net income	Net income attributable to non-controlling interests	Total	EDF net income	Net income attributable to non-controlling interests	Total
Consolidated net income		(17,940)	(285)	(18,225)	5,113	(285)	4,828
Fair value of cash flow hedges							
Fair value of cash flow hedges - gross change	18.7.5	(3,579)	57	(3,522)	(3,292)	(33)	(3,325)
Fair value of cash flow hedges - tax effects		936	(14)	922	779	8	787
Fair value of net investment hedges							
Fair value of net investment hedges - gross change	18.7.5	308	-	308	(673)	-	(673)
Fair value of net investment hedges - tax effects		65	-	65	(83)	-	(83)
Change in fair value of debt instruments							
Gross change in fair value of debt instruments	18.1.2	(1,660)	-	(1,660)	(346)	-	(346)
Related tax effect		428	-	428	101	-	101
Fair value of hedging costs (foreign currency basis spread)							
Fair value of hedging costs (foreign currency basis spread) - gross change ⁽¹⁾	18.7.5	155	-	155	-	-	-
Fair value of hedging costs (foreign currency basis spread) - tax effects		(40)	-	(40)	-	-	-
Translation adjustments - controlled entities		(1,114)	(546)	(1,660)	1,935	606	2,541
Share in net income of associates and joint ventures - items that can be recycled to profit and loss		521	-	521	(80)	-	(80)
Gains and losses recorded in equity with recycling		(3,980)	(503)	(4,483)	(1,659)	581	(1,078)
Change in fair value of equity instruments							
Gross change in fair value of equity instruments	18.1.2	(16)	-	(16)	15	1	16
Related tax effect		-	-	-	-	-	-
Change in actuarial gains and losses on post-employment benefits							
Gross change in actuarial gains and losses on post-employment benefits ⁽²⁾	16.1.3	3,899	(405)	3,494	1,144	263	1,407
Related tax effect ⁽²⁾		458	103	561	(421)	(89)	(510)
Share in net income of associates and joint ventures - items that cannot be recycled to profit and loss		216	-	216	(83)	-	(83)
Gains and losses recorded in equity with no recycling		4,557	(302)	4,255	655	175	830
Total gains and losses recorded in equity		577	(805)	(228)	(1,004)	756	(248)
CONSOLIDATED COMPREHENSIVE INCOME		(17,363)	(1,090)	(18,453)	4,109	471	4,580
Comprehensive income of continuing operations		(17,369)	(1,090)	(18,459)	4,110	471	4,581
Comprehensive income of discontinued operations		6	-	6	(1)	-	(1)

(1) The change in hedging costs includes the €125 million effect of restatements of prior-year figures.

(2) Actuarial gains included in equity principally concern France (see note 16.1). They have a limited tax effect due to the policy for recognition of deferred tax assets: deferred tax assets are recognised in full for temporary differences that are expected to reverse within 10 years, and recognised to the extent of concurrent deferred tax liabilities for temporary differences that are expected to reverse after that horizon. Most of the actuarial gains originating in 2022 concern the portion of the provision for employee benefits on which the reversal will occur after more than 10 years, and for which no corresponding deferred tax asset was recognised at 31 December 2021.

Consolidated balance sheet

ASSETS

<i>(in millions of euros)</i>	<i>Notes</i>	31/12/2022	31/12/2021
Goodwill	10.1	9,513	10,945
Other intangible assets	10.2	10,619	10,221
Property, plant and equipment used in generation and other tangible assets owned by the Group, including right-of-use assets	10.3	101,126	98,237
Property, plant and equipment operated under French public electricity distribution concessions	11.1	63,966	62,132
Property, plant and equipment operated under concessions other than French public electricity distribution concessions	10.5	6,816	6,881
Investments in associates and joint ventures	12	9,421	8,084
Non-current financial assets	18.1	48,512	55,609
Other non-current receivables	13.3.4	2,165	2,092
Deferred tax assets	9.3	8,696	1,667
Non-current assets		260,834	255,868
Inventories	13.2	17,661	16,197
Trade receivables	13.3	24,844	22,235
Current financial assets	18.1	58,033	39,937
Current tax assets		497	544
Other current receivables	13.3.4	15,165	16,197
Cash and cash equivalents	18.2	10,948	9,919
Current assets		127,148	105,029
Assets classified as held for sale	3.2	150	69
TOTAL ASSETS		388,132	360,966

EQUITY AND LIABILITIES

<i>(in millions of euros)</i>	<i>Notes</i>	31/12/2022	31/12/2021
Capital	14	1,944	1,619
EDF net income and consolidated reserves		32,396	48,592
Equity (EDF share)		34,340	50,211
Equity (non-controlling interests)	14.6	12,272	11,778
Total equity	14	46,612	61,989
Provisions related to nuclear generation - back-end of the nuclear cycle, plant decommissioning and last cores	15	56,021	62,067
Provisions for employee benefits	16	16,231	21,716
Other provisions	17	4,671	5,442
Non-current provisions		76,923	89,225
Special French public electricity distribution concession liabilities	11.2	49,459	48,853
Non-current financial liabilities	18.3	71,058	56,543
Other non-current liabilities	13.5	4,968	4,816
Deferred tax liabilities	9.3	1,533	2,401
Non-current liabilities		203,941	201,838
Current provisions	15, 16.1 and 17	7,943	6,836
Trade payables	13.4	23,284	19,565
Current financial liabilities	18.3	71,844	45,014
Current tax liabilities		967	446
Other current liabilities	13.5	33,504	25,248
Current liabilities		137,542	97,109
Liabilities classified as held for sale	3.2	37	30
TOTAL EQUITY AND LIABILITIES		388,132	360,966

Consolidated cash flow statement

(in millions of euros)	Notes	2022	2021
Operating activities:			
Consolidated net income		(18,225)	4,828
Net income of discontinued operations		6	(1)
Net income of continuing operations		(18,231)	4,829
Impairment/(reversals)		1,762	653
Accumulated depreciation and amortisation, provisions and changes in fair value		6,820	10,488
Financial income and expenses		446	(89)
Dividends received from associates and joint ventures		590	467
Capital gains/losses		(143)	(67)
Income taxes		(3,926)	1,401
Share in net income of associates and joint ventures		(759)	(644)
Change in working capital	13.1.3	8,301	(1,526)
Net cash flow from operations		(5,140)	15,512
Net financial expenses disbursed		(1,003)	(588)
Income taxes paid		(1,282)	(2,276)
Net cash flow from continuing operating activities		(7,425)	12,648
Net cash flow from operating activities relating to discontinued operations		-	-
Net cash flow from operating activities		(7,425)	12,648
Investing activities:			
Acquisitions of equity investments, net of cash acquired		(198)	(165)
Disposals of equity investments, net of cash transferred		694	1,154
Investments in intangible assets and property, plant and equipment	10.7	(18,324)	(17,606)
Net proceeds from sale of intangible assets and property, plant and equipment		87	264
Changes in financial assets		(7,344)	1,776
Net cash flow from continuing investing activities		(25,085)	(14,577)
Net cash flow from investing activities relating to discontinued operations		-	-
Net cash flow from investing activities		(25,085)	(14,577)
Financing activities:			
EDF capital increase	14.1	3,252	-
Transactions with non-controlling interests ⁽¹⁾		1,795	2,076
Dividends paid by parent company	14.3	(72)	(84)
Dividends paid to non-controlling interests		(407)	(163)
Purchases/sales of treasury shares		4	(3)
Cash flows with shareholders		4,572	1,826
Issuance of borrowings	18.3.2.1	34,165	6,943
Repayment of borrowings	18.3.2.1	(5,876)	(5,161)
Issuance of perpetual subordinated bonds	14.4	994	1,235
Payments to bearers of perpetual subordinated bonds	14.4	(606)	(547)
Funding contributions received for assets operated under concessions and investment subsidies		694	677
Other cash flows from financing activities		29,371	3,147
Net cash flow from continuing financing activities		33,943	4,973
Net cash flow from financing activities relating to discontinued operations		-	-
Net cash flow from financing activities		33,943	4,973
Net cash flow from continuing operations		1,433	3,044
Net cash flow from discontinued operations		-	-
Net increase/(decrease) in cash and cash equivalents		1,433	3,044
CASH AND CASH EQUIVALENTS - OPENING BALANCE		9,919	6,270
Net increase/(decrease) in cash and cash equivalents		1,433	3,044
Currency fluctuations		(397)	180
Financial income on cash and cash equivalents		100	38
Other non-monetary changes		(107)	387
CASH AND CASH EQUIVALENTS - CLOSING BALANCE	18.2	10,948	9,919

(1) Capital increases/reductions and acquisitions/disposals of minority interests in controlled companies. In 2022, this item mainly includes €1,351 million relating to CGN's payments for the capital increases at NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project), €176 million of partner contributions for the Seraing CCGT project in Belgium, and a €54 million price supplement received following the sale in 2021 of 49% of Italian renewable energy assets without loss of control. In 2021, this item included an amount of €1,304 million relating to CGN's payment for the capital increases by NNB Holding Company (HPC) Ltd (for the Hinkley Point C project) and NNB Holding Company (SZC) Ltd. (for the Sizewell C project), an amount of €865 million relating to the sale of 49% of Edison Renewables and an amount of €(276) million relating to the acquisition of 70% of E2i Energie Speciali.

Change in consolidated equity

Details of the change in equity between 1 January and 31 December 2022 are as follows:

(in millions of euros)	Capital	Treasury shares	Translation adjustments ⁽¹⁾	Fair value adjustment of financial instruments (OCI with recycling) ⁽²⁾	Other consolidated reserves and net income ⁽³⁾	Equity (EDF share)	Equity (non-controlling interests)	Total equity
EQUITY AS PUBLISHED AT 31/12/2020	1,550	(10)	(871)	(1,116)	46,080	45,633	9,593	55,226
Gains and losses recorded in equity	-	-	1,699	(3,358)	655	(1,004)	756	(248)
Net income	-	-	-	-	5,113	5,113	(285)	4,828
Consolidated comprehensive income	-	-	1,699	(3,358)	5,768	4,109	471	4,580
Payments on perpetual subordinated bonds	-	-	-	-	(547)	(547)	-	(547)
Issuance/Redemption of perpetual subordinated bonds (see note 14.4)	-	-	-	-	972	972	-	972
Dividends paid	-	-	-	-	(1,599)	(1,599)	(163)	(1,762)
Purchases/sales of treasury shares	-	(4)	-	-	-	(4)	-	(4)
Capital increase by EDF (see note 14.1)	69	-	-	-	1,446	1,515	-	1,515
Other changes ⁽⁴⁾	-	-	-	-	132	132	1,877	2,009
EQUITY AT 31/12/2021	1,619	(14)	828	(4,474)	52,252	50,211	11,778	61,989
Gains and losses recorded in equity	-	-	(1,003)	(2,977)	4,557	577	(805)	(228)
Net income	-	-	-	-	(17,940)	(17,940)	(285)	(18,225)
Consolidated comprehensive income	-	-	(1,003)	(2,977)	(13,383)	(17,363)	(1,090)	(18,453)
Payments on perpetual subordinated bonds	-	-	-	-	(606)	(606)	-	(606)
Issuance/Redemption of perpetual subordinated bonds (see notes 14.4)	-	-	-	-	(1,025)	(1,025)	-	(1,025)
Dividends paid	-	-	-	-	(1,050)	(1,050)	(407)	(1,457)
Purchases/sales of treasury shares	-	7	-	-	-	7	-	7
Capital increase by EDF (see note 14.1)	325	-	-	-	3,915	4,240	-	4,240
Other changes ⁽⁵⁾	-	-	-	-	(74)	(74)	1,991	1,917
EQUITY AT 31/12/2022	1,944	(7)	(175)	(7,451)	40,029	34,340	12,272	46,612

(1) Changes in translation adjustments amount to €(1,003) million at 31 December 2022. This variation is mainly due to the depreciation of the pound sterling against the euro (£1 = €1.190 at 31 December 2021 and £1 = €1.127 at 31 December 2022).

(2) Changes in reserves recorded in OCI (Other Comprehensive Income) with recycling are shown in the Statement of Comprehensive Income. They correspond to the effects of fair value adjustments of debt securities and financial instruments hedging cash flows and net foreign investments, and amounts recycled to profit and loss in respect of terminated contracts and debt instruments transferred. They also include changes in the value of hedging costs resulting from the foreign currency basis spread on cross-currency swaps.

(3) Fair value changes recorded in OCI with no recycling are presented in this column.

(4) In 2021, "Other changes" in equity (non-controlling interests) include the effect of capital increases funded by CGN for NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project) and NNB Holding Company (SZC) Ltd. (for the Sizewell C project) amounting to €1,304 million. In 2021, "Other changes" in equity (EDF share) also include:

- adjustment of prior year provisions for post-employment employee benefits, amounting to €49 million net of tax, resulting from application of the IFRIC decision on attribution of benefits;
- reclassification of net book values for previously capitalised configuration and customisation costs on SaaS (software as a service), amounting to €(64) million net of tax, following the IASB's confirmation of the IFRIC decision on recognition of these costs. "Other changes" in equity (EDF share and non-controlling interests) also include the effect on equity of transactions with minority shareholders in the form of acquisitions and disposals not entailing a change of consolidation method (sale of 49% of Edison Renewables, acquisition of 70% of E2i and the IPO by PodPoint, see note 3.1.2).

(5) In 2022, "Other changes" in equity (non-controlling interests) include capital increases funded by CGN at NNB Holding Company (HPC) Ltd. (for the Hinkley Point C project) amounting to €1,351 million. They also include:

- the effect of the UK Government's (HMG) investment in and CNG's withdrawal from NNB Holding Company (SZC) Ltd. on 30 November 2022, with an effect of €(170) million on equity (EDF share) and €361 million on equity (non-controlling interests) (see note 14.6);
- the effect of disposals not entailing a loss of control and partner contributions concerning projects owned in Belgium (the Seraing CCGT project) and by EDF Renewables (a project in Israel), with an effect of €56 million on equity (EDF share) and €281 million on equity (non-controlling interests);
- the adjustment for the expense resulting from the Employee Reserved Offer (ERO), with an effect of €44 million on equity (EDF share) (see note 7).

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Notes to the consolidated financial statements

Électricité de France (EDF or the "Company") is a French *société anonyme* governed by French law, and registered in France (22-30, Avenue de Wagram, 75008 Paris).

The consolidated financial statements reflect the accounting position of the Company and its subsidiaries (which together form the "Group") and the Group's interests in associates, joint arrangements classified as joint operations, and joint ventures, for the year ended 31 December 2022.

The Group is an integrated energy operator engaged in all aspects of the energy business: power generation (nuclear power, hydropower, wind and solar power, thermal energy, etc.), transmission, distribution, supply, trading, energy services, production of equipment and fuel assemblies, and reactor services.

The Group's consolidated financial statements at 31 December 2022 were prepared under the responsibility of the Board of Directors and approved by the Directors at the Board meeting held on 16 February 2023. They will become final after approval at the General Shareholders' Meeting to be held on 14 June 2023.

Note 1 Group accounting policies

1.1 Declaration of conformity and group accounting policies

Pursuant to European regulation 1606/2002 of 19 July 2002 on the adoption of international accounting standards, the EDF group's consolidated financial statements at 31 December 2022 are prepared under the presentation, recognition and measurement rules set out in the international accounting standards published by the IASB and approved by the European Union for application at 31 December 2022. These international standards are IAS (International Accounting Standards), IFRS (International Financial Reporting Standards), and SIC and IFRIC interpretations.

The Group has not opted for early application of standards and interpretations that were not yet mandatory in 2022.

1.2 Changes in accounting standards

The parent company's functional currency is the Euro. The Group's financial statements are presented in millions of euros.

The accounting and valuation methods applied by the Group in the consolidated financial statements at 31 December 2022 are identical to those used in the consolidated financial statements at 31 December 2021, with the exception of the changes presented below in notes 1.2.1 to 1.2.4. Information is also given on the standards, amendments and interpretations adopted by the European Union that are applicable from 1 January 2023 (note 1.2.5).

For purposes of clarity, the accounting principles and methods used are now described in individual notes to the financial statements.

1.2.1 Amendments to IAS 16 "Property, plant and equipment - Proceeds before intended use"

From 1 January 2022, the proceeds from sales of items produced by an asset that has not yet been commissioned (for example sales of electricity during a testing phase) are no longer deducted from the cost of the asset. These proceeds and the related costs are included in profit and loss as and when they are received or incurred.

Application of these amendments has no material impact on the Group's financial statements at 31 December 2022. For the Group, they will mostly concern the trial and testing phases of the Flamanville 3 EPR.

1.2.2 Amendments to IAS 37 "Onerous contracts - cost of fulfilling a contract"

These amendments require the provision for onerous contracts to be based on unavoidable costs, corresponding to all the costs necessary to fulfil the contract, not only incremental costs.

This broadens the scope of costs to be taken into consideration, which comprise both incremental costs to fulfil contractual obligations (e.g. labour and materials costs), and a portion of other costs directly related to the contract (e.g. a portion of depreciation of the equipment used, or insurance costs).

Application of these amendments has no material impact on the Group's financial statements.

1.2.3 Interest Rate Benchmark Reform - Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16

These amendments have been applicable since 1 January 2021 to financial assets and liabilities for which contractual modifications result directly from the interest rate reform.

This reform is applied prospectively, with no impact on profit and loss, keeping the hedging relationships for the instruments concerned. Its effects are mainly operational (renegotiation of contracts, fallback provisions, information system upgrades). The interest rate replacements already applied are described in note 1.2.1 to the consolidated financial statements at 31 December 2021.

When the Group adhered to the ISDA Fallback protocol in November 2021, the Libor GBP was replaced by the Sonia for all the derivatives concerned from 1 January 2022.

The replacement operations for the USD Libor will take place in line with the end date for its publication, i.e. by 30 June 2023.

1.2.4 Other amendments applicable from 1 January 2022

The Group does not anticipate any material impact in connection with the following amendments:

- "Annual improvements – 2018-2020 cycle";
- Amendments to IFRS 3 "Business combinations – Reference to the conceptual framework".

1.2.5 Standards adopted by the European Union and applicable for financial years beginning on or after 1 January 2023

1.2.5.1 Amendments to IAS 12 "Income taxes" - Deferred tax related to assets and liabilities arising from a single transaction

From 1 January 2023, entities will be required to recognise deferred taxes on transactions that give rise upon initial recognition to equal amounts of taxable and deductible temporary differences. The amendments to IAS 12 aim to clarify the treatment of deferred taxes associated with lease agreements and decommissioning costs.

The Group does not anticipate that their application will have a material impact.

1.2.5.2 IFRS 17 "Insurance contracts"

IFRS 17 defines the recognition, measurement, presentation and disclosure principles for insurance contracts that fall within the standard's scope of application.

The Group does not anticipate that its application will have a material impact.

1.2.5.3 Other amendments

The Group does not anticipate any material impact in connection with the following amendments:

- IAS 1 "Presentation of financial statements" - Classification of liabilities as current or non-current;
- IAS 8 "Accounting policies, changes in accounting estimates and errors" - Definition of accounting estimates.

1.3 Basis for preparation of the financial statements

1.3.1 Valuation

The consolidated financial statements are prepared on a historical cost basis, with the exception of assets acquired and liabilities assumed through business combinations, and of certain financial instruments, which are stated at fair value.

1.3.2 Translation methods

1.3.2.1 Functional currency

An entity's functional currency is the currency of the economic environment in which it primarily operates. In most cases, the local currency is the functional currency. But for some entities, a functional currency other than the local currency may be used when it reflects the currency used in the principal transactions.

1.3.2.2 Translation of the financial statements of foreign companies whose functional currency is not the Euro

The financial statements of foreign companies whose functional currency is not the Euro are translated as follows:

- balance sheets are translated into Euros at the closing rate;
- income statements and cash flows are translated at the average rate for the period;
- resulting differences are recognised in equity under the heading "Translation adjustments".

Translation adjustments affecting a monetary item that is an integral part of the Group's net investment in a consolidated foreign company are included in consolidated equity until the disposal or liquidation of the net investment, at which date they are recognised as income or expenses in the income statement, in the same way as other exchange differences concerning the Company.

1.3.2.3 Translation of transactions in foreign currencies

In application of IAS 21, transactions expressed in foreign currencies are initially translated and recorded in the functional currency of the entity concerned, using the rate in force at the transaction date.

At each reporting date, monetary assets and liabilities expressed in foreign currencies are translated at the closing rate. The resulting foreign exchange differences are taken to the income statement.

However, any payment or receipt of a non-monetary advance in a foreign currency is translated at the exchange rate of the transaction date, with no subsequent adjustment.

1.3.3 Financial statement presentation rules

Assets and liabilities contributing to working capital used in the entity's normal operating cycle are classified as current in the consolidated balance sheet. Other assets and liabilities are classified as current if they mature within one year of the closing date, and non-current if they mature more than one year after the closing date.

The income statement presents items by nature. The heading "Other income and expenses" presented below the operating profit before depreciation and amortisation comprises items of an unusual nature or amount.

1.3.4 Management judgements and estimates

The preparation of the financial statements requires the use of judgments, best estimates and assumptions in determining the value of assets and liabilities, income and expenses recorded for the period, considering positive and negative contingencies existing at year-end. The figures in the Group's future financial

statements could differ significantly from current estimates due to changes in these assumptions or economic conditions.

In a context characterised by volatility on the financial and energy markets, the parameters used to prepare estimates are based on macro-economic assumptions appropriate to the very long-term cycle of Group assets.

The principal operations for which the Group uses estimates and judgments are the following:

1.3.4.1 Depreciation period of nuclear power plants in France

In the specific case of the depreciation period of its French nuclear power plants, the EDF group's industrial strategy is to continue operation beyond 40 years, in optimum conditions as regards safety and efficiency.

The Group has therefore been making preparations for several years to extend the operation period, and making the necessary investments under its *Grand Carénage* industrial refurbishment programme which was approved in principle by the Board of Directors in January 2015.

The depreciation period of 900MW-series power plants was extended from 40 years to 50 years in 2016 (except for Fessenheim where both reactors were permanently shut down in the first half of 2020) since all the technical, economic and governance conditions were fulfilled.

On 23 February 2021, the Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN) issued a resolution on the conditions for continued operation of EDF's 900MW reactors beyond their fourth 10-year inspection. The ASN considered that "the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth 10-year inspection". This resolution ends the "generic" phase of the review, which concerns the studies and modifications of facilities ordinary to all the 900MW reactors, which all have a similar design model.

After the pilot reactor Tricastin 1 in December 2019, and Bugey 2, Bugey 4 and Tricastin 2 in 2021, six more reactors reached the milestone of 40 years of operation in 2022, and were restarted after a successful fourth 10-year inspection: Dampierre 1, Gravelines 1, Bugey 5, Tricastin 3, Gravelines 3 and Dampierre 2. The fourth 10-year inspection of Blayais 1 began in August 2022 and was in progress at 31 December 2022.

In 2021, the technical, economic and governance conditions for extending the depreciation period of 1300MW-series plants were fulfilled, and their depreciation period was extended from 40 to 50 years.

The depreciation period of the 1450MW-series units (the four reactors at Chooz and Civaux), which are much more recent, currently remains at 40 years as the conditions for extension are not yet fulfilled.

These depreciation periods take into account the date of recoupling with the network after the most recent 10-year inspection.

1.3.4.2 Nuclear provisions

The measurement of provisions for the back-end of the nuclear cycle, decommissioning and last cores is sensitive to assumptions concerning technical processes, costs, inflation rates, long-term discount rates, the depreciation period of plants currently in operation and disbursement schedules.

These parameters are therefore re-estimated at each closing date to ensure that the amounts accrued correspond to the best estimate of the costs eventually to be borne by the Group.

The Group considers that the assumptions used at 31 December 2022 are appropriate and justified. However, any future change in assumptions could have a significant impact on the Group's financial statements (see note 15).

For France, the main assumptions and sensitivity analyses relating to EDF's nuclear provisions are presented in note 15.1.1.5.

The calculation of provisions incorporates a level of risks and unknowns as appropriate to the operations concerned, together with uncertainty factors such as:

- changes in the regulations, particularly on safety, security and environmental protection, and financing of long-term nuclear expenses;

- changes in the regulatory decommissioning process and the time necessary for issuance of administrative authorisation;
- future methods for storing long-lived radioactive waste and provision of storage facilities by the French agency for radioactive waste management ANDRA (Agence nationale pour la gestion des déchets radioactifs);
- changes in the contractual terms for spent fuel management and more generally the outlook for Orano's long-term industrial strategy in line with French energy policy, the operating performance of its installations, and the level of associated costs and investments;
- changes in certain financial parameters such as discount rates and/or inflation rates;
- the useful life of nuclear facilities (calculation of decommissioning provisions for nuclear plants in operation is based on the depreciation period of the assets concerned, i.e. 50 years for 900MW-series and 1300MW-series power plants and 40 years for 1450MW-series power plants).

1.3.4.3 Pensions and other long-term and post-employment benefit obligations

The value of pensions and other long-term and post-employment benefit obligations is based on actuarial valuations that are sensitive to all the actuarial assumptions used, particularly concerning discount rates, inflation rates and wage increase rates.

The principal actuarial assumptions used to calculate these post-employment and long-term benefits at 31 December 2022 are presented in note 16. These assumptions are updated annually. The Group considers the actuarial assumptions used at 31 December 2022 appropriate and well-founded, but future changes in these assumptions could have a significant effect on the amount of the obligations and the Group's equity and net income. Sensitivity analyses are therefore presented in note 16.

1.3.4.4 Impairment of goodwill and long-term assets

Impairment tests on goodwill and long-term assets are sensitive to the macro-economic and segment assumptions used – particularly concerning changes in energy prices – and medium-term financial forecasts. The Group therefore revises the underlying estimates and assumptions based on regularly updated information.

These assumptions, which are specific to Group companies, are presented in note 10.8.

1.3.4.5 Financial instruments

In measuring the fair value of unlisted financial instruments (essentially energy contracts), the Group uses valuation models based on a certain number of assumptions subject to unforeseeable developments.

1.3.4.6 Energy supplied but not yet measured and billed

As explained in note 5.1, the quantities of energy supplied but not yet measured and billed are calculated at the reporting date based on consumption statistic models and selling price estimates. Determination of the unbilled portion of sales revenues at the year-end is sensitive to the assumptions used to prepare these statistics and estimates.

1.3.4.7 Obligations concerning French public distribution concession assets to be replaced

In view of the specific nature of French public electricity distribution concessions, the Group has opted to present its obligations to replace concession assets in the balance sheet at a value based on the amount of contractual commitments as calculated and disclosed to the concession-granting authorities in the annual business reports (see note 11). Measurement of the concession liabilities concerning assets to be replaced is notably subject to unforeseeable developments in terms of costs, the useful life of assets and disbursement dates.

1.3.4.8 Deferred tax assets

The use of estimates and assumptions over recovery horizons is particularly important in the recognition of deferred tax assets.

1.3.4.9 Other judgements and estimates

When there is no standard or interpretation applicable to a specific transaction, the Group exercises judgment to define and apply accounting methods that supply relevant and reliable information for preparation of its financial statements.

For the application of IFRS 10 and IFRS 11, the Group uses judgment to assess control or classify the type of partnership arrangement represented by a jointly-controlled entity. For example EDF has set up "reserved" investment funds (FCPRs) for some of its funds set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste (see note 15.1.2.2). In view of the funds' characteristics, the prerogatives exercised by their managers and the procedures for defining the management strategies applicable to them, the Group considers that it does not have control, as defined by IFRS 10, over these funds. They are consequently treated as debt securities, in application of IFRS 9.

Through its subsidiary Luminus, the Group has a 49% stake in Luminus Seraing 2.0 SA. The governance and contractual agreements give Luminus exclusive control over this entity, which is fully consolidated in application of IFRS 10.

1.3.5 Nature and extent of restrictions on the Group's ability to access and use assets or settle liabilities

The main restrictions that may limit the Group's ability to access or use its assets or settle its liabilities concern the following items:

- assets held to fund employee benefits (principally in France and the United Kingdom – see note 16) and expenses related to nuclear liabilities (principally in France – see note 15.1.2 – and the United Kingdom – see note 15.2);
- tangible and intangible assets and the related liabilities associated with concession agreements, whether or not they are subject to regulatory mechanisms (obligations to supply energy or energy-related services, rules governing investments, an obligation to return concession facilities at the end of the contract, amounts payable at the end of the contract, tariff constraints, etc.). These restrictions mainly apply to assets of this type in France (EDF, Enedis, Électricité de Strasbourg and Dalkia), and to a lesser extent in Italy (see note 10.5);
- the disposal of Group investments in certain subsidiaries may require authorisations from State bodies, particularly when they exercise a regulated activity or operate nuclear power plants (this is the case for EDF Nuclear Generation Ltd. in the United Kingdom and Taishan (TNPJVC) in China);
- prudential reserves established and measures taken as regards distribution capacity, so that the insurance subsidiaries will meet their prudential ratio requirements;
- the cash of certain entities that use financing arrangements stipulating that dividend distribution is subject to conditions concerning repayment of bank debt (or qualification for loans) and shareholders, or are subject to regulatory limitations in certain countries.

Certain shareholder agreements concerning companies controlled by the Group include clauses to protect minority shareholders, requiring approval from minority shareholders for certain particularly important decisions.

Finally, certain financing loans granted to Group entities contain early repayment clauses (see note 18.3.4), and certain items of cash and cash equivalents are subject to restrictions (see note 18.2).

1.4 Comparability

1.4.1 Effects of market price levels on comparability

The level and volatility of market prices affect the financial statements, and for certain aggregated items this effect is more pronounced than at 31 December 2021.

The balance sheet total has increased from €361 billion to €388 billion, particularly as a result of the higher fair value of derivatives (see notes 18.1.1 and 18.3.1) (trading derivatives: +€10.5 billion in the assets and +€6.9 billion in the liabilities; hedging derivatives: +€2.3 billion in the assets and +€7.8 billion in the liabilities). The balance sheet total had already increased from €306 billion to €361 billion between 31 December 2020 and 31 December 2021, similarly due to a rise in the fair value of derivatives and also in the working capital relating to trade receivables and payables, and margin calls on assets and liabilities in the trading activities (see note 13 to the consolidated financial statements at 31 December 2021). In "Other current receivables", the normal debit position of the CSPE for EDF (a receivable of some €2 billion at 31 December 2020) is in a credit position in "Other current liabilities" at the value of €0.3 billion at 31 December 2021 and €6.1 billion at 31 December 2022 (see note 13.5.4).

In the income statement, the main points of note are as follows:

- sales excluding the trading activity increased from €82.9 billion to €136.4 billion (+64%), reflecting the effect of market price rises for electricity and gas. In France, the rise in electricity sales revenues was restricted by government measures to limit the amounts billed to final customers (the *bouclier tarifaire* tariff cap). Some other countries, for example the United Kingdom, particularly from September 2022, provided support measures in the form of direct aid to final customers, which consequently had no effect on the sales revenues recognised under IFRS 15. Other countries preferred to introduce tax measures, imposing additional income taxes as in Italy;
- fuel and energy purchases increased from €44.3 billion to €121 billion (+173%): this includes the very significant price effect of electricity purchases made necessary by the lower nuclear power output due to the stress corrosion phenomenon (see note 5.2);
- the trading margin reached €7 billion compared to €1.5 billion for 2021. This margin includes an increase in the provisions for counterparty risks in the specific context of the European market;
- the volatility of commodities (IFRS 9) in the income statement was €(0.8) billion, compared to €(0.2) billion for the year 2021.

1.4.2 Effect of inflation and interest rates on comparability

The financial statements are also affected by current inflationary pressure, which led to a substantial rise in interest rates in 2022 through the action taken by the central banks to control inflation expectations, with the following main consequences:

- an increase in the real discount rates used for provisions related to nuclear generation, resulting in a €(4.6) billion decrease in provisions in France in 2022 (see note 15.1.1), in contrast to the +€1.1 billion increase in provisions in 2021 after a reduction in the real discount rate in France; the higher discount rates also resulted in a €(2.9) billion decrease in nuclear provisions in the United Kingdom (see note 15.2), and a concurrent decrease in the receivable on the NLF and the British government, which is discounted at the same rate as the provisions it funds;
- an increase in the real discount rates used for the actuarial assumptions concerning employee benefit obligations, which principally explains the €(12.8) billion decrease in obligations in 2022 (see notes 16.1.1 and 16.1.2). In 2021, the actuarial gains and losses associated with these assumptions varied by €(0.2) billion;
- an increase in the WACC used for impairment testing of goodwill, intangible assets and property, plant and equipment: the average increase was 100-130 base points, leading to partial impairment of EDF Energy goodwill, in the amount of €1.2 billion (see note 10.8).

Meanwhile, the context of inflation and rising interest rates was the primary explanation for developments on the financial markets during the year, and thus for the difference in the balance sheet value of EDF's dedicated assets between 31 December 2021 and 31 December 2022 (a decrease of €(3.6) billion – see note 15.1.2.4) and the assets funding employee benefit obligations (a decrease of €(10) billion – see note 16.1.1). Between 31 December 2020 and 31 December 2021, the balance sheet value of dedicated assets and assets funding employee benefit obligations varied by +€3.1 billion and +€1.7 billion respectively.

1.4.3 Impacts of the war in Ukraine

The Group has very limited direct exposure in Russia and Ukraine. Its dependency on Russian uranium imports is low in view of its existing stocks and diversified, long-term supply contracts. For gas, the Group has only one contract (through Edison) with a European subsidiary of a Russian company, which represents 4% of the Group's gas supplies and terminates at the end of 2022. The Group has no exposure with respect to businesses or banks that are currently affected by international sanctions. The Moscow office has been closed down, and the subsidiary Dalkia Russia was sold during the first half of 2022 (see the Dalkia press release of 23 May 2022, and note 7).

Note 2 Summary of significant events

The main significant events and transactions for the Group in 2022 and up to the date of approval of the consolidated financial statements were the following:

• Nuclear developments:

- Zero-carbon electricity generation ended and defueling began at Hunterston B (see the EDF Energy press releases of 7 January 2022 and 17 May 2022, and note 15);
- An update was released on the Flamanville EPR (see the Group press release of 12 January 2022, and note 10.6);
- On 13 January 2022 EDF updated its estimated nuclear output in France for 2022 (see the Group press release of 13 January 2022, and note 5);
- On 7 February 2022 EDF adjusted its estimated nuclear output in France for 2022 (see the Group press release of 7 February 2022, and note 5);
- On 11 February 2022 EDF adjusted its estimated nuclear output in France for 2023 (see the Group press release of 11 February 2022);
- Hinkley Point C update: the project schedule and costs were reviewed (see the Group press release of 19 May 2022, and notes 10.6 and 10.8);
- An update was released on the stress corrosion phenomenon and the 2022 French nuclear output estimate was adjusted (see the Group press release of 19 May 2022, and notes 5 and 10.6);

- A major milestone was reached as the UK Government granted the Development Consent Order to Sizewell C (see the EDF Energy press release of 20 July 2022, and note 10.6);
- On 15 September 2022, EDF adjusted the estimated impact of the decline in nuclear power output for 2022 following the French government's announcement that price increases would be capped in 2023 (see the Group press release of 15 September 2022, and note 5);
- On 3 November 2022, EDF updated its estimated nuclear output in France for 2022 (see the Group press release of 3 November 2022, and note 5);
- EDF signed an exclusive agreement to acquire part of GE Steam Power's Nuclear Activities (see the Group press release of 10 February 2022 and 4 November 2022, and note 3.1);
- EDF welcomed the UK government's decision to cofinance development of the Sizewell C project (see the Group press release of 29 November 2022, and note 10.6);
- An update was released on the Flamanville EPR (see the Group press release of 16 December 2022, and note 10.6).

● Disposals:

- Edison signed an agreement to sell its stake in North Reggane to Repsol and Wintershall Dea (see the Edison press releases of 5 May 2022 and 29 June 2022, and note 3.1);
- EDF completed the sale of its interest in the Sloe CCGT plant (870MW) in the Netherlands (see the Group press releases of 27 September 2022 and 25 January 2023, and note 3.1);
- EDF Trading sold its north American retail business to bp (see the EDF Trading press release of 12 September and 30 November 2022, and note 3.1);
- Imtech, a Dalkia group company in the United Kingdom, signed an agreement with Duke Street for the sale of its subsidiary Suir Engineering (see the Dalkia press releases of 14 November 2022 and 1 February 2023, and note 3.1).

● Financing operations:

- EDF signed agreements for €10.25 billion of banking facilities (see the Group press release of 16 March 2022, and note 18.3.2.1);
- EDF announced a successful capital increase of over €3.150 billion, maintaining preferential subscription rights (see the Group press release of 5 April 2022, and note 14.1);
- EDF group launched a capital increase reserved for members of the EDF group Savings Plan and the EDF International Group Savings Plan (see the Group press release of 12 May 2022, and notes 7 and 14.1);
- EDF and the European Investment Bank (EIB) announced the signing of an €800 million loan contract to finance the energy transition of the power distribution network managed by Enedis (see the Group press release of 19 May 2022, and note 18.3.2.1);
- EDF announced the issue of a senior multi-tranche bond, including a green tranche, for a nominal amount of €3 billion euros on 5 October 2022 (see the Group press release of 5 October 2022, and note 18.3.2.1);
- EDF and Crédit Agricole CIB signed a €1 billion financing agreement specifically for the maintenance of French power plants (see the Group press release of 18 November 2022, and note 18.3.2.1);
- EDF signed agreements for €2.1 billion of additional banking facilities (see the Group press release of 29 November 2022, and note 18.3.2.1);
- EDF announced an issue of hybrid notes for a nominal amount of €1 billion and its intention to exercise its option to redeem outstanding USD hybrid notes with a January 2023 redemption option (see the Group press releases of 30 November 2022 and 21 December 2022, and notes 14.4 and 18.3.2.1);
- EDF announced an issue of senior multi-tranche bond issue for a nominal amount of €2 billion and £950 million (see the Group press release of 19 January 2023).

● Renewable energies:

- EDF won a maritime zone in New York bight to develop offshore wind energy (see the Group and EDF Renewables press releases of 1 March 2022, and note 12.3);
- EDF Renewables commissioned four solar power plants, including two floating plants, in Israel (see the EDF Renewables press release of 8 June 2022, and note 12.3);
- A consortium consisting of EDF, KEPCO and Kyushu Electric Power Co. finalised the financing of a strategic power transmission project with ADNOC and TAQA in the United Arab Emirates (see Group press release of 26 September 2022, and note 12.3);
- France's first offshore wind farm at Saint-Nazaire is now fully operational (see the EDF Renewables press releases of 13 April, 22 September and 23 November 2022, and note 12.3).

● Planned operation on the Group's capital:

- Trading of the Group's equity securities was suspended (see the Group press release of 13 July 2022);
- An *ad hoc* committee was set up (see the Group press release of 19 July 2022);
- An independent expert was designated (see the Group press release of 27 July 2022);
- EDF's Board of Directors issued a positive reasoned opinion on the draft simplified public tender offer filed by the French State (see the Group press release of 27 October 2022);
- The simplified public tender offer for the equity securities of EDF opened (see the Group press release of 23 November 2022);
- The Paris Commercial Court issued its decision (see the Group press releases of 10 November 2022 and 19 December 2022);
- The timetable of the simplified tender offer for the equity securities of EDF was updated (see the Group press release of 26 January 2023);
- The result of the simplified public tender offer for the equity securities of EDF was published (see the Group press release of 8 February 2023 and notes 14.1 et 22.2.1);
- EDF OCEANes due 2024: a new conversion/exchange ratio was set following the result of the French State's simplified public tender (see the Group press release of 8 February 2023 and notes 14.5 and 18.3.2.2).

● Other significant events:

- Exceptional measures were announced by the French Government (see the Group press release of 13 January 2022, and note 5);
- EDF issued a statement concerning the decision made by the French Competition Authority (see the Group press release of 22 February 2022, and note 17);
- Following publication of the decree and orders relating to the additional allocation of 20TWh of ARENH volumes for 2022, an update of the impact on the 2022 EBITDA outlook was released (see the Group press release of 14 March 2022, and notes 5 and 17.2);
- An appeal was filed concerning the allocation of additional ARENH electricity volumes for 2022 (see the Group press release of 9 August 2022 and 27 October 2022, and note 5.1.1);
- The Council of State issued its decision on the application for cancellation of the additional allocation of 20TWh of electricity for the ARENH system in 2022 (see the Group press release of 5 February 2023, and note 5.1.1).

The main significant events and transactions for the Group in 2021 were the following:

● Nuclear developments:

- EDF decided to move Dungeness B into the defueling phase (see the EDF Energy press release of 7 June 2021, and note 7);
- Reactors of the Civaux and Chooz nuclear power plants: replacements and preventive checks on parts of the piping of a safety system (see the Group press release of 15 December 2021, and note 23 to the consolidated financial statements at 31 December 2021);
- AGR (Advanced Gas-cooled Reactor) lifetime reviews were carried out (see the EDF Energy press release of 15 December 2021, and note 10.8 to the consolidated financial statements at 31 December 2021).

● Disposals:

- Edison completed the sale of Edison Norge to Sval Energi for a value of \$374 million (see the Edison press release of 25 March 2021, and note 3.1.2);
- Edison completed the sale of Infrastrutture Distribuzione Gas (IDG) to 2I ReteGas for a value of €150 million (see the Edison press release of 30 April 2021, and note 3.1.2);
- Dalkia completed the sale of its subsidiary Dalkia Wastenergy to Paprec (see the Dalkia press release of 28 July 2021, and note 3.1.2);
- EDF completed the sale of its interest in CENG (see the Group press release of 9 August 2021, and note 3.1.2);
- EDF completed the sale of the West Burton B CCGT gas power station to EIG (see the EDF Energy press release of 31 August 2021, and note 3.1.2);

- > Edison and Credit Agricole Assurances completed the transaction to accelerate the development of renewables in Italy together (see the Edison press releases of 3 and 14 December 2021, and note 3.1.2);
- > EDF transferred a property portfolio in the Île-de-France region to a joint venture with POWERHOUSE HABITAT (see the Group press release of 16 December 2021, and note 5.4 to the consolidated financial statements at 31 December 2021).
- **Renewable energies:**
 - > Edison completed the acquisition of E2i (see the Edison press release of 16 February 2021, and note 3.1.2).
 - EDF and AREVA reached a settlement agreement (see the Group press release of 30 June 2021, and note 7);
 - EDF put an end to Ecocombust, a project to develop a new class B wood-based fuel (see the Group press release of 8 July 2021, and note 10.3 to the consolidated financial statements at 31 December 2021).

Note 3 Scope of consolidation

Accounting principles and methods

Controlled entities

Subsidiaries are companies in which the Group exercises exclusive control and are fully consolidated. The Group controls an entity when the three following conditions are fulfilled:

- it holds power over the entity;
- it is exposed, or has rights, to variable returns from its involvement with the entity;
- it has the ability to use its power to affect the amount of the investor's returns.

The Group considers all facts and circumstances when assessing control. All substantive potential voting rights exercisable, including by another party, are also taken into consideration.

Investments in associates and joint ventures

An associate is an entity in which the Group exercises significant influence on financial and operational policies without having exclusive or joint control. Significant influence is presumed to exist when the Group's investment is at least 20%.

A joint venture is a partnership in which the parties (joint venturers) that exercise joint control over the entity have rights to the entity's net assets. Joint control is the contractually agreed sharing of control of an entity operated jointly by a limited number of partners or shareholders, such that the financial and operational policies result from unanimous consent of the parties.

Investments in associates and joint ventures are accounted for by the equity method. They are carried in the balance sheet at historical cost, adjusted for the share in net assets generated after the acquisition, less any impairment. The share in the net income for the period is reported in "Share in net income of associates and joint ventures" in the income statement (see note 12).

Investments in joint operations

A joint operation is a joint arrangement in which the parties (joint operators) that exercise joint control over the entity have direct rights to its assets, and obligations for its liabilities. The Group, as an operator in a joint operation, reports the assets and liabilities and income and expenses related to its investment line by line.

The Group's principal joint operations are the LNG optimisation activities of JERA Global Markets, co-owned by EDF Trading, and the gas storage operator activity carried out by Friedeburger Speicherbetriebsgesellschaft mbH (FSG).

Business combinations

In application of IFRS 3 business combinations arising since 1 January 2010 are measured and recognised under the following principles:

- at the date of acquisition, the identifiable assets acquired and liabilities assumed, measured at fair value, and any non-controlling interests in the Company acquired (minority interests) are recorded separately from goodwill;
- non-controlling interests may be valued either at fair value (full goodwill method) or their share in the fair value of the net assets of the acquired company (partial goodwill method). The decision is made individually for each transaction;
- any acquisition or disposal of an investment in a subsidiary that does not affect control is considered as a transaction between shareholders and must be recorded directly in equity;
- if additional interests are acquired in a joint venture, joint operation or associate without resulting in acquisition of control, the value of the previously-acquired assets and liabilities remains unchanged in the consolidated financial statements;
- if control is acquired in stages, the cost of the business combination includes the fair value, at the date control is acquired, of the purchaser's previously-held interest in the acquired company;
- related costs directly attributable to an acquisition leading to control are treated as expenses for the periods in which they were incurred, except for issuance costs for debt securities or equity instruments, which must be recorded in compliance with IAS 32 and IFRS 9;
- IFRS 3 does not apply to ordinary control business combinations, which are examined on a case-by-case basis to determine the appropriate accounting treatment;
- commitments given by the Group to purchase minority interests in Group-controlled companies are included in liabilities. For commitments of this kind given since 1 January 2010, the date of the Group's first application of IAS 27 (amended) and IFRS 3 (revised), the differential between the value of the non-controlling interests and the liability corresponding to the commitment is recorded in equity.

3.1 Changes in the scope of consolidation

3.1.1 Changes in the scope of consolidation in 2022

The following changes in the Group's scope of consolidation took place during 2022:

- acquisition by Imtech (a Dalkia subsidiary) of SPIE UK on 19 December 2022. This acquisition has no significant impact on the Group's financial statements;
- disposal of EDF Trading North America's retail business to bp: on 12 September 2022, EDF Trading Limited entered into a binding share purchase agreement with bp to sell 100% of EDF Energy Services LLC (EDFES). EDF Trading's business in Europe and Asia and its wholesale trading business in North America are unaffected by the agreement. Following the satisfaction of all necessary conditions precedent, EDF Trading Limited announced the completion of the sale of its North American retail business, EDF Energy Services, to bp on 30 November 2022. This transaction reduced the Group's net indebtedness by €0.5 billion.

The Group also signed other binding agreements for operations that were not finalised by the end of 2022 and will affect the scope of consolidation in 2023:

- sale by Edison of its stake in the North Reggane licence in Algeria;
- acquisition by EDF of GE Steam Power's nuclear activities;
- sale of Suir Engineering by Imtech on 1 February 2023;
- sale of the investment in the Sloe CCGT plant (870MW) in the Netherlands on 25 January 2023.

Sale of Edison's stake in North Reggane

On 4 May 2022, Edison announced that it had signed an agreement to sell its stake in the North Reggane licence in Algeria, completing the divestment of all Exploration and Production (E&P) operations following the company's strategic realignment towards its energy transition businesses. Under this agreement, Edison was to sell its 11.25% stake in the North Reggane onshore gas field to Wintershall Dea Algeria GmbH.

On 29 June 2022 Edison announced the signature of an amendment to this agreement, after Repsol exercised its pre-emption right in accordance with the corresponding Joint Operating Agreement. The contract signed on 4 May was consequently modified to reflect the fact that Edison's stake in the North Reggane licence would be sold to Repsol (6.75%) and Wintershall Dea (4.50%).

The agreement is based on a value of approximately \$100 million for Edison's participating interest in North Reggane.

Completion of the sale is considered highly probable even though it still requires certain authorisations, and consequently the corresponding assets and liabilities were classified as assets held for sale and related liabilities at 31 December 2022 (see note 3.2).

Acquisition of GE Steam Power's Nuclear Activities

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities. These activities include the manufacturing of conventional island equipment for new nuclear power plants, including the Arabelle steam turbine as well as maintenance and upgrade activities for existing nuclear power plants in all regions other than the Americas. The transaction also includes steam turbine technology for first and second-generation European pressurized reactors (EPR and EPR2) and small modular reactors (SMR).

This agreement is the next milestone in the process that began with the exclusive agreement signed on 10 February 2022⁽¹⁾.

This acquisition will enable EDF group to strengthen the conventional island technologies and skills, which are essential for the durability of the existing nuclear fleet and future projects.

The transaction is expected to close in the second half of 2023 and is subject to customary closing conditions including regulatory approvals.

Sale of Suir Engineering by Imtech

The Imtech group, jointly owned by Dalkia and EDF Energy, announced that it had signed a binding agreement on 14 November 2022 with the British private equity fund Duke Street for the sale of 100% of its Irish subsidiary Suir Engineering Ltd.

Following the required clearances by the regulatory authorities, on 1 February 2023 Imtech announced that the sale of Suir Engineering Ltd. to Duke Street had been finalised.

This transaction will have an impact of €0.1 billion on the Group's net indebtedness in 2023.

Sale of the investment in the Sloe CCGT plant (870MW) in the Netherlands

On 27 September 2022, EDF announced that it had reached an agreement to sell its interest in the 870MW Sloe CCGT plant in the Netherlands. EDF is a 50% owner and operator of this plant, jointly with its partner Pzem. On 27 September 2022 EDF signed an agreement with EPH, the Czech electricity producer and grid operator, for the sale of Sloe.

Following the required clearances by the regulatory authorities, the Group announced on 25 January 2023 that it had closed the sale of its investment in the Sloe plant to EPH.

This transaction has an impact of €0.2 billion on the Group's income statement in 2022 (principally due to reversal of a provision for onerous contracts that is no longer relevant) and will have a non-significant impact on the Group's net indebtedness in 2023.

3.1.2 Changes in the scope of consolidation in 2021

The following changes in the Group's scope of consolidation took place during 2021 (see note 3.1.1 to the consolidated financial statements at 31 December 2021):

- acquisition of 70% of E2i on 16 February 2021;
- disposal of Edison Norge on 25 March 2021;
- disposal of Infrastrutture Distribuzione Gas (IDG) on 30 April 2021;
- disposal of Dalkia Wastenergy on 28 July 2021;
- disposal of interests in CENG on 9 August 2021;
- disposal of West Burton B on 31 August 2021;
- initial public offering of Pod Point on 4 November 2021;
- acquisition of Rolls Royce Civil Nuclear I&C on 8 November 2021;
- disposal of 49% of Edison Renewables on 3 December 2021;
- consolidation of IZI Solutions Renov and Dynamics.

(1) See the Group press release of 10 February 2022 "EDF Signs an Exclusive Agreement to Acquire Part of GE Steam Power's Nuclear Activities".

3.2 Assets held for sale and related liabilities

Accounting principles and methods

Assets that qualify as held for sale and related liabilities are disclosed separately from other assets and liabilities in the balance sheet.

When assets or groups of assets are classified as discontinued operations, income and expenses relating to these discontinued operations are disclosed in a single net amount after taxes in the income statement and net changes in cash and cash equivalents of discontinued operations are also reported separately in the cash flow statement.

Impairment is booked when the realisable value is lower than the net book value.

In accordance with IFRS 5:

- for assets or groups of assets that are identified and classified as held for sale during the year, there is no change of presentation or retrospective restatement in prior year balance sheets;
- assets or groups of assets that qualify as discontinued operations are restated in the income statement and the cash flow statement for the prior periods presented in the financial statements.

(in millions of euros)	31/12/2022	31/12/2021
ASSETS HELD FOR SALE	150	69
LIABILITIES RELATED TO ASSETS HELD FOR SALE	37	30

In application of IFRS 5, assets held for sale and related liabilities are shown below:

(in millions of euros)	31/12/2022	31/12/2021
Non-current non-financial assets ⁽¹⁾	62	-
Non-current financial assets	-	-
Current non-financial assets ⁽²⁾	88	69
Current financial assets	-	-
TOTAL ASSETS HELD FOR SALE	150	69

(1) Non-current non-financial assets comprise tangible assets and property, plant and equipment.

(2) Current non-financial assets comprise components of working capital.

(in millions of euros)	31/12/2022	31/12/2021
Non-current non-financial liabilities ⁽¹⁾	-	-
Non-current financial liabilities	-	-
Current non-financial liabilities	37	30
Current financial liabilities	-	-
TOTAL LIABILITIES RELATED TO ASSETS HELD FOR SALE	37	30

(1) Non-financial liabilities comprise provisions.

At 31 December 2022, assets held for sale and related liabilities concern the following balance sheet items:

- assets:
 - > the price supplement on the Dvalin gas project (E&P in Norway) and Cassiopea (E&P in Italy);
 - > the sale in progress of Edison's Algerian E&P assets;
- liabilities: the sale in progress of Edison's Algerian E&P liabilities.

3.3 Scope of consolidation at 31 December 2022

The Group's business sectors are defined as follows:

- **"Generation/Supply"** (G): generation of nuclear energy, thermal energy, and renewable energies (wind, photovoltaic and hydro) and energy sales to industry, local authorities, small businesses and private customers. This segment also includes trading activities;
- **"Distribution"** (D): management of the low and medium-voltage public electricity distribution networks;
- **"Transmission"** (T): operation, maintenance and development of the high-voltage and very-high-voltage electricity transmission networks;

- **"Reactors and Services (Framatome)"** (R): services and production of equipment and fuel for nuclear reactors;
- **"Services and other activities"** (O): energy services (district heating, thermal energy services, etc.) for industry and local authorities. This activity also includes EDF Invest's holding companies and entities that are classified as dedicated assets.

The companies and subgroups included in the EDF group consolidation are listed below.

3.3.1 Fully consolidated companies

		Percentage ownership at 31/12/2022	Percentage ownership at 31/12/2021	Business sector
France – Generation and Supply				
Électricité de France – Parent Company		100.00	100.00	G, D, O
Group Support Services (G2S)		100.00	100.00	O
Edvance		95.10	95.10	O
Cyclife		100.00	100.00	O
IZI Confort (formerly CHAM SAS)		100.00	100.00	O
Sowee		100.00	100.00	O
IZI Solutions		100.00	100.00	O
IZI Solutions Renov		100.00	100.00	O
IZIVIA		100.00	100.00	O
EDF Pulse Holding		100.00	100.00	O
Hynamics		100.00	100.00	G
Agregio		100.00	100.00	O
Energy2Market (E2M)		100.00	100.00	O
EDF ENR (formerly ENRS)		100.00	100.00	O
Immo C47		51.00	51.00	O
Other holding companies (EDF Invest)		100.00	100.00	O
France – Regulated activities				
Enedis		100.00	100.00	D
Électricité de Strasbourg		88.64	88.64	G, D
EDF Production Électrique Insulaire (EDF PEI)		100.00	100.00	G
Framatome				
Framatome	France	75.50	75.50	R
United Kingdom				
EDF Energy Holdings Limited (EDF Energy)		100.00	100.00	G, O
EDF Energy UK Ltd.		100.00	100.00	O
Italy				
Edison SpA (Edison)		97.17	97.17	G, O
Transalpina di Energia SpA (TdE SpA)		100.00	100.00	O
Other international				
EDF International SAS	France	100.00	100.00	O
EDF Belgium SA	Belgium	100.00	100.00	G
Luminus SA	Belgium	68.63	68.63	G, O
EDF Norte Fluminense SA	Brazil	100.00	100.00	G
EDF (China) Holding Ltd.	China	100.00	100.00	O
EDF Inc.	USA	100.00	100.00	O
Mekong Energy Company Ltd. (MECO)	Vietnam	56.25	56.25	G
Lingbao ⁽¹⁾	Chine	65.00	n.c.	G
EDF Andes Spa	Chili	100.00	100.00	G

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

n.c. = not consolidated.

(1) Lingbao is fully consolidated from 2022.

		Percentage ownership at 31/12/2022	Percentage ownership at 31/12/2021	Business sector
EDF Renewables				
EDF Renewables	France	100.00	100.00	G, O
Dalkia				
Dalkia	France	99.94	99.94	O
Other activities				
EDF Développement Environnement SA	France	100.00	100.00	O
EDF IMMO and real estate subsidiaries	France	100.00	100.00	O
Société C3	France	100.00	100.00	O
EDF Holding SAS	France	100.00	100.00	O
Citelum ⁽¹⁾	France	n.c	100.00	O
Citégestion ⁽¹⁾	France	100.00	100.00	O
EDF Trading Ltd.	United Kingdom	100.00	100.00	G
Wagram Insurance Company DAC	Ireland	100.00	100.00	O
EDF Investissements Groupe SA	Belgium	92.46	92.46	O
Océane Re	Luxembourg	99.98	99.98	O
EDF Gas Deutschland GmbH	Germany	100.00	100.00	O

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

n.c. = not consolidated.

(1) Following the sale of its subsidiaries to other Group entities (Dalkia, Edison, Luminus) and non-group entities (for non-material amounts), the holding company Citelum is no longer consolidated. Citégestion is the only entity remaining fully consolidated.

3.3.2 Joint operations

		Percentage ownership at 31/12/2022	Percentage ownership at 31/12/2021	Business sector
Other activities				
Friedeburger Speicherbetriebsgesellschaft GmbH (Crystal)	Germany	50.00	50.00	O

Business sectors: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

3.3.3 Companies accounted for by the equity method

France – Generation and Supply		Percentage ownership at 31/12/2022	Percentage ownership at 31/12/2021	Business sector
Domofinance	France	45.00	45.00	O
CTE (EDF Invest) ⁽¹⁾	France	50.10	50.10	O
Elisandra IV (Madrileña Red de Gas Holding) (EDF Invest)	Spain	20.00	20.00	O
Géosel Manosque (EDF Invest)	France	-	38.35	O
Transport Stockage Hydrocarbures (EDF Invest)	France	-	50.00	O
Central Sicaf (EDF Invest)	Italy	24.50	24.50	O
Thyssengas (EDF Invest)	Germany	-	50.00	O
Aéroports Côte d'Azur (EDF Invest)	France	19.40	19.40	O
Ecowest (EDF Invest)	France	50.00	50.00	O
Fallago Rig (EDF Invest)	United Kingdom	20.00	20.00	G
Fenland Wind Farm (EDF Invest)	United Kingdom	20.00	20.00	G
Catalinar Solar (EDF Invest)	USA	50.00	50.00	G
Switch (EDF Invest)	USA	50.00	50.00	G
MiRose (EDF Invest)	USA	-	50.00	G
Red Pine (EDF Invest)	USA	50.00	50.00	G
Energy Assets Group (EDF Invest)	United Kingdom	40.00	40.00	O
Valentine Solar (EDF Invest)	USA	50.00	50.00	G
Glacier's Edge (EDF Invest)	USA	50.00	50.00	G
Nicolas Riou (EDF Invest)	Canada	50.00	50.00	G
Korian & Partenaires Immobilier 1 & 2 (EDF Invest)	France	24.50	24.50	O
Issy Shift (EDF Invest)	France	33.33	33.33	O
Orange Concessions (EDF Invest)	France	16.67	16.67	O
92 France (EDF Invest)	France	50.00	50.00	O
Other international				
Compagnie Énergétique de Sinop (CES)	Brazil	51.00	51.00	G
SLOE Centrale Holding BV	Netherlands	50.00	50.00	G
Shandong Zhonghua Power Company, Ltd.	China	19.60	19.60	G
Datang Sanmenxia Power Generation Co., Ltd.	China	35.00	35.00	G
Taishan Nuclear Power Joint Venture Company Ltd. (TNPJVC)	China	30.00	30.00	G
Jiangxi Datang International Fuzhou Power Generation Company Ltd.	China	49.00	49.00	G
Nam Theun 2 Power Company (NTPC) (EDF Invest)	Laos	40.00	40.00	G
Generadora Metropolitana (GM)	Chile	50.00	50.00	G
Nachtigal Hydro Power Company	Cameroon	40.00	40.00	G

Business segments: G = Generation, D = Distribution, T = Transmission, R = Reactors, O = Other.

(1) Coentreprise de Transport d'Électricité or CTE, the company holding 100% of RTE.

3.3.4 Companies in which the EDF group's voting rights differ from its percentage ownership

The percentage of voting rights, which is decisive for assessing control, differs from the Group's percentage ownership for the following entities:

	Percentage ownership at 31/12/2022	Percentage of voting rights held at 31/12/2022
Edison SpA	97.17	99.48
EDF Investissements Groupe SA	92.46	50.00

Note 4 Segment reporting

4.1 Reporting by operating segment

Accounting principles and methods

Segment reporting presentation complies with IFRS 8, "Operating segments".

Segment reporting is presented before inter-segment eliminations. Inter-segment transactions take place at market prices.

In accordance with IFRS 8, the breakdown used by the EDF group corresponds to the operating segments as regularly reviewed by the Management Committee (the Group's chief operating decision-maker).

The Group's segments are:

- **"France – Generation and Supply"**: EDF SA's energy production and sales activities. This segment also includes entities operating on the downstream sectors (B2B and B2C, aggregation) and all EDF Invest's shareholdings;
- **"France – Regulated activities"**: Enedis and Électricité de Strasbourg's distribution activities, and EDF's island activities;
- **"Framatome"**: the entities of the Framatome subgroup;
- **"United Kingdom"**: the entities of the EDF Energy subgroup;
- **"Italy"**: Edison entities and TdE SpA;
- **"Other international"**: EDF International and the entities located in continental Europe, the US, Latin America and Asia;
- **"EDF Renewables"**: the entities of the EDF Renewables subgroup;
- **"Dalkia"**: the entities of the Dalkia subgroup;
- **"Other activities"**: comprising in particular EDF Trading and EDF Investissements Groupe.

No segments have been merged.

4.1.1 At 31 December 2022

(in millions of euros)	France – Generation and Supply	France – Regulated activities	Framatome	United Kingdom	Italy	Other international	EDF Renewables	Dalkia	Other activities (5)	Inter- segment eliminations	Total
Income statement:											
External sales	46,787	17,888	2,099	16,085	29,278	5,369	1,404	5,825	18,741	-	143,476
Inter-segment sales	1,899	194	2,023	13	24	290	754	838	983	(7,018)	-
TOTAL SALES	48,686	18,082	4,122	16,098	29,302	5,659	2,158	6,663	19,724	(7,018)	143,476
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION	(23,144)	6,723	589	1,325	1,115	336	909	333	7,089	(261)	(4,986)
OPERATING PROFIT	(28,739)	3,142	271	(1,166)	481	(40)	179	120	6,650	(261)	(19,363)
Balance sheet:											
Goodwill	132	223	1,448	6,541	148	49	187	643	142	-	9,513
Intangible assets and property, plant and equipment	61,310	69,070	2,894	26,676	5,876	2,276	11,595	2,347	483	-	182,527
Investments in associates and joint ventures ⁽¹⁾	3,421	-	84	180	234	1,965	2,519	63	955	-	9,421
Financial assets and cash ⁽²⁾	57,926	450	402	15,202	1,209	879	2,583	293	38,549	-	117,493
Other segment assets ⁽³⁾	32,997	5,402	2,156	6,072	5,501	1,415	1,127	3,311	11,047	-	69,028
Assets classified as held for sale	-	-	-	-	150	-	-	-	-	-	150
TOTAL ASSETS	155,787	75,145	6,984	54,671	13,118	6,584	18,011	6,657	51,176	-	388,132
Other information:											
Net depreciation and amortisation ⁽⁴⁾	(4,552)	(3,560)	(310)	(915)	(480)	(314)	(601)	(294)	(53)	-	(11,079)
Impairment	(4)	(54)	(1)	(1,447)	(68)	(57)	(129)	-	(2)	-	(1,762)
Equity (non-controlling interests)	117	48	63	9,347	479	558	916	225	519	-	12,272
Investments in intangible assets and property, plant and equipment	5,745	4,739	283	4,541	560	306	1,806	319	25	-	18,324
Loans and other financial liabilities	103,476	5,270	326	7,945	1,733	16,442	9,694	2,467	5,251	(56,551)	96,053
external liabilities	89,547	797	267	309	902	157	3,593	347	134	-	96,053
intersegment liabilities ⁽⁶⁾	13,929	4,473	59	7,636	831	16,285	6,101	2,120	5,117	(56,551)	-

(1) At 31 December 2022, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

(2) Financial assets and cash mainly comprise dedicated assets amounting to €27,369 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €14,000 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €29,861 million (in "Other activities").

(3) Other segment assets include inventories, trade receivables, other receivables and tax assets.

(4) Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

(5) Sales by the "Other activities" segment include the €7,038 million trading margin realised by EDF Trading.

(6) The amount of intersegment liabilities corresponds to the Group's centralised cash management (cash pooling by EDF, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other international segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

4.1.2 At 31 December 2021

(in millions of euros)	France – Generation and Supply	France – Regulated activities	Framatome	United Kingdom	Italy	Other international	EDF Renewables	Dalkia	Other activities (5)	Inter- segment eliminations	Total
Income statement:											
External sales	31,532	17,483	1,862	10,103	11,166	3,148	1,203	4,503	3,461	-	84,461
Inter-segment sales	1,650	81	1,500	11	46	205	564	693	444	(5,194)	-
TOTAL SALES	33,182	17,564	3,362	10,114	11,212	3,353	1,767	5,196	3,905	(5,194)	84,461
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION	7,394	5,992	584	(21)	1,046	267	815	378	1,824	(274)	18,005
OPERATING PROFIT	2,394	2,610	265	(2,016)	608	(475)	241	217	1,655	(274)	5,225
Balance sheet:											
Goodwill	126	223	1,428	8,095	108	46	185	592	142	-	10,945
Intangible assets and property, plant and equipment	61,468	67,273	2,826	24,408	5,744	2,084	10,842	2,248	578	-	177,471
Investments in associates and joint ventures (1)	3,474	-	70	187	178	2,071	1,453	64	587	-	8,084
Financial assets and cash (2)	55,415	420	323	18,949	1,512	697	1,788	262	26,099	-	105,465
Other segment assets (3)	22,024	4,204	1,997	5,240	5,913	1,265	1,166	2,708	14,415	-	58,932
Assets classified as held for sale	-	-	-	-	69	-	-	-	-	-	69
TOTAL ASSETS	142,507	72,120	6,644	56,879	13,524	6,163	15,434	5,874	41,821	-	360,966
Other information:											
Net depreciation and amortisation (4)	(4,449)	(3,381)	(291)	(1,071)	(422)	(305)	(520)	(281)	(69)	-	(10,789)
Impairment	(24)	-	(5)	(713)	149	-	(54)	(5)	(1)	-	(653)
Equity (non-controlling interests)	115	43	86	8,899	552	407	897	258	521	-	11,778
Investments in intangible assets and property, plant and equipment	5,327	4,784	280	4,325	592	129	1,849	295	25	-	17,606
Loans and other financial liabilities	71,214	3,386	304	5,417	1,902	13,761	7,513	2,143	3,267	(39,501)	69,406
external liabilities	63,378	820	237	201	988	112	3,165	303	202	-	69,406
intersegment liabilities (6)	7,836	2,566	67	5,216	914	13,649	4,348	1,840	3,065	(39,501)	-

(1) At 31 December 2021, investments in associates and joint ventures include 50.1% of CTE (the joint venture holding RTE's shares) which is part of the France – Generation and Supply segment.

(2) Financial assets and cash mainly comprise dedicated assets amounting to €31,013 million in the France – Generation and Supply segment (see note 18.1.2), the NLF receivable (see note 18.1.3) amounting to €15,986 million in the United Kingdom segment and the positive fair value of EDF Trading's derivatives, amounting to €19,605 million (in "Other activities").

(3) Other segment assets include inventories, trade receivables, other receivables and tax assets.

(4) Including net increases in provisions for renewal of property, plant and equipment operated under concessions.

(5) Sales by the "Other activities" segment include the €1,518 million trading margin realised by EDF Trading.

(6) The amount of intersegment liabilities corresponds to the Group's centralised cash management (cash pooling by EDF, included in the France – Generation and Supply segment) and financing of controlled subsidiaries, particularly EDF International (Other international segment), EDF Energy (United Kingdom segment) and EDF Trading (in the "Other activities" segment).

4.2 Sales to external customers, by product and service group

The Group's sales are broken down by product and service group as follows:

- **"Generation/Supply"**: energy generation and energy sales to industry, local authorities, small businesses and residential consumers. This segment also includes EDF Trading;

- **"Distribution"**: management of the low and medium-voltage public electricity distribution networks;

- **"Other"**: services and production of equipment and fuel for reactors, energy services (district heating, thermal energy services, etc.) for industry and local authorities, and electricity generation through cogeneration and renewable energy sources (e.g. wind turbines, photovoltaic panels, etc.).

<i>(in millions of euros)</i>	Generation - Supply	Distribution	Other ⁽¹⁾	Total
2022				
External sales:				
- France ⁽²⁾	47,087	17,077	511	64,675
- International and Other activities	69,086	-	9,715	78,801
SALES	116,173	17,077	10,226	143,476

<i>(in millions of euros)</i>	Generation - Supply	Distribution	Other ⁽¹⁾	Total
2021				
External sales:				
- France ⁽²⁾	31,678	16,960	377	49,015
- International and Other activities	27,292	-	8,154	35,446
SALES	58,970	16,960	8,531	84,461

(1) "Other" groups of services include Framatome and Dalkia.

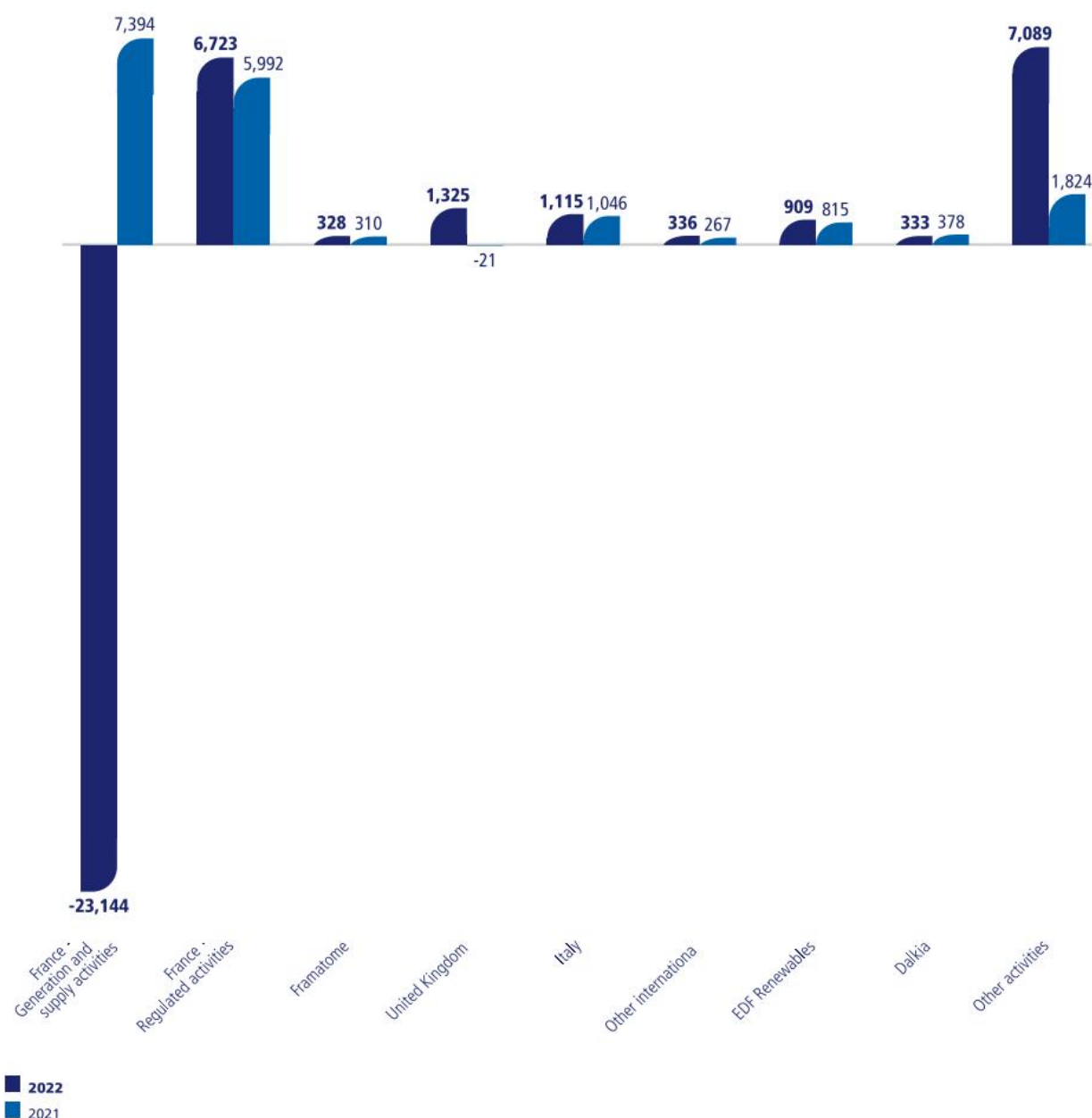
(2) France comprises the two operating segments France – Generation and Supply and France – Regulated activities (see note 4.1).

Note 5 Operating profit before depreciation and amortisation

<i>(in millions of euros)</i>	Notes	2022	2021
Sales	5.1	143,476	84,461
Fuel and energy purchases	5.2	(121,010)	(44,299)
External services		(15,353)	(14,145)
Other purchases (excluding external services, fuel and energy)		(4,284)	(3,698)
Change in inventories and capitalised production		9,949	8,987
(Increase)/decrease in provisions on other external expenses		268	261
Other external expenses ⁽¹⁾		(9,420)	(8,595)
Personnel expenses	5.3	(15,236)	(14,494)
Taxes other than income taxes	5.4	(3,163)	(3,330)
Other operating income and expenses	5.5	367	4,262
OPERATING PROFIT BEFORE DEPRECIATION AND AMORTISATION		(4,986)	18,005

(1) Other external expenses increased by 9.6% compared to 2021. After elimination of foreign exchange effects and changes in the scope of consolidation, the increase was 8.4%.

The breakdown of the Group's Operating profit before depreciation and amortisation by operating segment in 2022 and 2021 is as follows, in millions of euros (see note 4.1):



After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's operating profit before depreciation and amortisation saw a substantial organic decline of -128% or €(23,082) million. This is principally explained by the contributions of the France – Generation and Supply segment (€(30,534) million), Other activities (+€5,215 million), the United Kingdom (+€1,428 million) and the France – Regulated activities segment (+€731 million).

The negative operating profit before depreciation and amortisation of €(23,144) million for the **France – Generation and supply** segment (down by €30,534 million) is explained by the electricity purchases at high prices made necessary by the decline in nuclear power output (-81,7TWh), essentially due to the stress corrosion phenomenon, with an estimated impact of €(29) billion. Operating profit before depreciation and amortisation was also affected by the decline in hydropower output of around €(2.5) billion. Finally, only a limited portion of the rise in market prices could be passed on to customers, because of the exceptional measures introduced by the French government to limit the increase in sales prices to customers (the *bouclier tarifaire* tariff cap and ARENH system adaptations – see note 5.1).

In the **Other activities** segment, the +€5,215 million increase in operating profit before depreciation and amortisation is mainly explained by the significant rise in

this item at EDF Trading, where it was up by €5,168 million, driven by the high business performance in an environment of high volatility across all the commodity markets and different geographical areas.

In the **United Kingdom** segment, the €1,428 million improvement in operating profit before depreciation and amortisation is principally attributable to the increase in nuclear power output (+5%). The sales and supply activity was negatively affected by price rises being only partly passed on to residential customers, despite significant raises of the tariff cap. Finally, operating expenses were lower, largely as a result of the shutdowns of the Dungeness B, Hinkley Point B and Hunterston B plants.

In the **France – Regulated activities** segment, the operating profit before depreciation and amortisation was up by €731 million, mainly due to transfers of interconnection income amounting to an estimated €1,723 million from RTE (following the CRE's decision 2022-296 of 17 November 2022, confirmed by decision 2023-50 of 31 January 2023) and an unfavourable price effect of an estimated €1 billion on purchases to compensate for network losses, reflecting changes in market prices.

5.1 Sales

Accounting principles and methods

Sales essentially comprise income from energy sales (to final customers and as part of trading activities), delivery services related to use of the transmission and distribution network, and connection services. They also comprise income from other services and deliveries of goods, mainly engineering, operating and maintenance services, services related to energy sales, design, delivery and commissioning services for power plants or their major components.

Income on energy sales is recognised as deliveries are made to customers.

The quantities of energy supplied but not yet measured and billed are calculated using consumption statistics and selling price estimates, and are recognised in sales on that basis.

Some Group entities conduct optimisation operations on the wholesale gas and electricity markets, to balance supply and demand in compliance with the Group's risk management policy. The sales concerned are recorded net of purchases. When an entity has a net short position in euros, it is included in "energy sales". A net long position in euros is included in "fuel and energy purchases".

In accordance of IFRS 15 on the principal/agent distinction, energy delivery services are recognised in sales upon delivery to the customer in the following two cases:

- when these services are not distinct from the energy supply service;
- when they are distinct from the energy supply service and the entity concerned is acting as a principal, notably because it bears the risk of execution of the service or is able to set the tariff for delivery to the final customer.

Income from connections to the French electricity network is recognised in sales at the date when the connection becomes operational.

The sales revenue from other services or deliveries of goods is recognised over time in the three following cases, based on a contractual analysis:

- when the customer simultaneously receives and consumes all the benefits generated as the service is performed by the Group (this is notably the case of operations and maintenance services);
- when the good or service to be supplied cannot be reallocated to another customer, and the Group is entitled to payment for the work done so far (this is notably the case of certain design, delivery and commissioning activities for power plants or major components designed specifically for a customer);
- when the service creates or enhances an asset (good or service) for which the customer acquires control as performance of the service progresses.

Trading activities

Sales revenues include the margin realised, essentially by EDF Trading, on energy market trading operations that fall within the scope of IFRS 9, which are recognised at fair value.

EDF Trading is the Group's trading entity. It operates on the markets on behalf of other Group entities and through trading activity for its own purposes or for non-Group entities, backed by the Group's industrial assets and within its assigned risk mandate.

EDF Trading trades on organised or OTC markets in derivatives such as futures, forwards, swaps and options.

EDF Trading undertakes purchase and sale operations on the wholesale markets in Europe and North America for:

- electricity and fuel (principally gas);
- CO₂ emission permits, weather derivatives and other environmental instruments;
- capacity guarantees for electricity production.

EDF Trading also operates in the unregulated North American markets as part of its energy supply activities.

For LNG, optimisation activities (recognised as a joint operation) and trading activities (recognised as a joint venture) are carried out through JERA Global Markets, which is jointly owned with JERA.

Capacity mechanism

Capacity mechanisms have been set up in France, the UK and Italy to ensure secure power supplies during peak periods.

French system: French law 2010-1488 of 7 December 2010 on the new organisation of the electricity market introduced an obligation in France to contribute to guaranteeing a secure power supply from January 2017.

Operators of electricity generation plants and load-shedding operators must have their capacities certified by RTE, and commit to a forecast level of availability for a given year of delivery. In return, they are awarded capacity certificates.

Meanwhile, electricity suppliers and purchasers of power to compensate for network losses (obligated actors) must have capacity certificates equivalent to consumption by their customers in peak periods. Suppliers pass on the cost of the capacity mechanism to final customers through their sale prices.

The system is completed by registers for capacity trading between actors. Capacity auctions are held several times a year.

The Group is concerned by both aspects of this system, as an operator of electricity plants (EDF SA, Dalkia, EDF Renewables), as an electricity supplier (EDF SA, Électricité de Strasbourg) and as a purchaser of power to compensate for network losses (Enedis and Électricité de Strasbourg).

As a result of the capacity mechanism review clause, in 2021 RTE published a report on the mechanism's first few years of operation and performance. On the basis of this report, on 29 November 2021 RTE submitted rule change proposals to the CRE for its opinion. In decision 2021-370 of 16 December 2021, the CRE issued a favourable opinion of these proposals and of changes to certain parameters for delivery years 2023 and 2024 (the contribution by interconnections, the extreme temperature vector and the safety coefficient). The CRE considered that the proposed changes will simplify the capacity mechanism for all actors, and improve visibility for capacity market participants. The new rules were approved by decision of the Ministry for the Ecological Transition on 21 December 2021. They set the opening date for trading of capacity guarantees for delivery years 2023 and 2024 at 1 March 2022.

Another consultation phase concerning structural changes to the French capacity mechanism has been in progress since April 2022. The future mechanism could be introduced from delivery year 2026, subject to approval by the European Commission after the necessary examination period.

For the delivery years shown below the mean market prices resulting from capacity auctions ahead of the delivery year were as follows:

Delivery year	2017	2018	2019	2020	2021	2022
Price (€/kW)	10.0	9.3	17.4	19.5	31.2	26.2

The delivery year 2023 was opened to auction in 2022, and six auctions have been held since then. These capacity auctions resulted in the following prices: €42.4/kW in March; €42.5/kW in April; €41.9/kW in June; €41.9/kW in September and €45.0/kW in October and €60.0/kW in December.

Four auctions were also held in 2022 for the delivery year 2024, with the following results: €20/kW in April and June, €34.1/kW in October, and €23.1/kW in December.

The operations are recorded as follows:

- sales of certificates are recognised in income when the auctions or over-the-counter sales take place;
- the cost of the capacity mechanism passed on to final customers through regulated sales tariffs and market-price offers is recognised in sales revenues as and when the electricity is delivered. In addition, the ARENH price is considered to have included a capacity value since January 2017 when the capacity mechanism took effect, as the terms of transfer for the capacity guarantees associated with the ARENH scheme were defined by the CRE;
- stocks of certificates are stated either at their certification value (i.e. cost of certification by RTE) or at their purchase value on the markets;
- decreases in the stock of certificates are valued at the weighted average unit cost. The timing of recognition depends on the actor:
 - > operators of installations: when the auction sales take place,
 - > obligated actors: over the 5-month peak period;
- for operators of installations, if the effective capacity is lower than the certified capacity, a liability (accrued expenses or provision) is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation (rebalancing or settlement mechanism);
- for obligated actors, if there is a shortfall in the stocks of capacity certificates, a provision is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation;
- at the closing date, if the realisable value of the stock of capacity certificates is lower than its net book value, impairment is recognised.

British system: The British capacity mechanism was introduced in 2014 to ensure security of electricity supply by providing a payment for reliable sources of capacity, alongside their electricity revenues, to ensure they deliver energy when needed. It is based on a system of auctions for operators, organised by the electricity system operator "National Grid" to procure capacity 4 years ahead of delivery with "top-up" actions one year ahead of delivery. Delivery years run from 1 October to 30 September. Capacity providers, which have been successful at the auctions are remunerated in the year of delivery out of a fund consisting of contributions from electricity suppliers but may be liable for penalties for failure to meet their obligations.

The electricity suppliers' contribution to this mechanism is proportional to their sales to customers in the peak period and the cost of capacity is passed on to final customers through their sale price.

EDF Energy is concerned by both aspects of this system, as an operator of electricity plants and a supplier.

For accounting purposes, the remuneration received in its capacity as an operator is recognised in sales revenues in the year of delivery, and the contribution paid to the mechanism in its capacity as an electricity supplier is recognised in energy purchases over the peak period. The cost of the capacity mechanism passed on to final customers is recognised in sales revenues as and when the electricity is delivered.

The government has implemented several changes to the detailed operation of the Capacity Market with the objective of ensuring that it continues to meet its objective in an efficient way. However, the main principles of the mechanism have remained unchanged.

The government is currently exploring options for reform of the Capacity Market to improve delivery assurance and to support alignment with net zero and its commitment to deliver a decarbonised electricity system by 2035, subject to security of supply. It may also consider further changes as part of the Review of Electricity Market Arrangements (REMA). The key measures currently under consideration include: strengthening security of supply through changes to the requirements for demonstrating satisfactory performance and increasing penalties for non-delivery at times of system stress; and aligning the Capacity Market with net zero by introducing much tighter emission limits from October 2034 for new plants.

As with previous changes to the Capacity Market, changes to the rules should apply to any new capacity agreements awarded but would not materially change the rights and obligations of capacity providers in respect of existing capacity agreements.

Italian system: A capacity mechanism was set up in 2019 using rules approved in a decree of 28 June 2019 issued by the Economic Development Ministry.

This mechanism is based on an auction process organised by Terna, the Italian transmission grid operator, for each delivery year. Operators of existing and future production or storage units can participate in the auctions. The operators of the capacities selected are paid through a fixed premium during one year for existing capacities and 15 years for future capacities. The fixed premium is paid during the delivery year.

The selected operator must offer its capacity on the day-ahead market (Mercato del Giorno Prima) and the balancing market (Mercato per il Servizio di Dispacciamento). If the selling price on these markets reaches a level exceeding a strike price defined by the Italian Regulatory Authority for Energy, Networks and Environment (ARERA), the operator must repay the surplus to Terna.

Two auctions were held during 2019 for delivery dates set in 2022 and 2023, and Edison won 3.8GW for 2022 and 3.3GW for 2023 for an annual price of €75,000/MW for new capacities and €33,000/MW for existing capacities. In February 2022 a new auction for 2024 was held: the capacity offered by Edison was entirely assigned for an annual price of 33k€/MW for existing plants, for a total capacity of 2.3GW.

The fixed premium is recorded in income during the corresponding delivery year, and reduced if appropriate by any repayments made to Terna, or if the power plant is unavailable.

5.1.1 Regulatory changes in France

Regulated electricity sales tariffs in France – “Blue” tariffs

In accordance with article L. 337-4 of the French Energy Code, regulated electricity sales tariffs are set by the Ministers for Energy and the Economy following proposals by the French Energy Regulatory Commission (Commission de régulation de l'énergie or CRE).

France's Council of State ruled in decisions of 18 May and 3 October 2018 that the principle of regulated electricity sales tariffs is compatible with European Union law when such tariffs serve the general economic interest objective of guaranteeing consumers an electricity price that is more stable than market prices.

In accordance with European Directive 2019/944 of 5 June 2019 on ordinary rules for the internal market for electricity, the French Energy and Climate law of 8 November 2019 authorises continuation of regulated sales tariffs, but they are reserved for residential or business consumers with a subscribed power level of up to 36kVA, provided they have fewer than 10 employees and their annual sales, income or balance sheet total is below €2 million.

Tariff changes

In accordance with Article L. 337-4 of the French Energy Code, the French Energy Regulatory Commission “CRE” (Commission de régulation de l'énergie) is responsible for sending the Ministers for the Economy and Energy its reasoned proposals for regulated sales tariffs for electricity. If no objections are made within three months, the proposals are deemed to have been approved.

In a decision of 8 July 2021, in view of changes in the TURPE tariff from 1 August 2021 and in application of the Energy Code, the CRE proposed an increase of 0.48% including taxes (1.08% excluding taxes) in the “blue” tariffs for residential customers and 0.38% including taxes (0.84% excluding taxes) in the “blue” tariffs for non-residential customers. The CRE has proposed that this change should apply from 1 August 2021.

In 2022, in view of the high increases in electricity market prices, France introduced a “tariff cap” limiting the raise in regulated sales tariffs to a maximum 4% (including taxes) at 1 February 2022 for residential customers compared to the tariffs in force at 1 August 2021. This tariff cap is founded on 2 articles of the Finance Law for 2022 adopted on 30 December 2021:

- under article 29, a reduction in the TICFE tax (or CSPE) has applied since 1 February 2022 for all customers (residential and business customers, on regulated-tariff or market-price contracts), although a legal minimum level must be maintained (€1/MWh for residential and small business customers). This reduction applies to quantities of energy delivered until 31 January 2023. The new TICFE tariffs have been set by decree;
- under article 181, if the CRE, despite the reduction in the TICFE, proposes an increase in regulated sales tariffs for residential customers that exceeds 4% (including taxes) compared to the tariffs in force at 31 December 2021, as a dispensation from the Energy Code the French government may object to the proposal and through a joint decision by the Ministers for the Economy and Energy set the regulated sales tariffs, and tariffs for sales to the local distribution companies, at a lower level. If this happens, the law provides for a subsequent catch-up adjustment of regulated sales tariffs in 2023, to be smoothed over twelve months, to cover the loss of income for EDF in 2022. The same article also introduces a mechanism to compensate for losses borne by local electricity distribution companies on regulated-tariff offers and electricity suppliers on market-price offers.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. The principal measures were extension of the regulated tariff increase cap of 4% (including taxes) to non-residential customers who are still eligible for the regulated tariff in mainland France and non-interconnected zones.

In a decision of 18 January 2022, the CRE proposed an increase of 35.4% including taxes (44.5% excluding taxes) in the “blue” tariffs for residential customers and 35.9% including taxes (44.7% excluding taxes) in the “blue” tariffs for non-residential customers from 1 February 2022. This proposal, which did not take account of the decree of 11 March 2022 defining the terms for EDF making 20TWh of electricity available to ARENH-eligible suppliers between 1 April 2022 and 31 December 2022 (as detailed below), was driven primarily by the significant rise in prices on the energy market. If it had taken account of the maximum decrease in the TICFE confirmed by decree 2022-84 of 28 January 2022, this proposal would have been for a 20% increase (including taxes) in the “blue” tariffs for residential customers and a 20.9% increase (including taxes) in the “blue” tariffs for non-residential customers. In accordance with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the “blue” tariffs for residential customers at 4% including taxes (24.3% excluding taxes) and the increase in the “blue” tariffs for non-residential customers at 4% including taxes (23.6% excluding taxes) through tariff orders of 28 January 2022, published in the *Journal officiel* of 30 January 2022 and implemented from 1 February 2022.

In a decision of 7 July 2022, the CRE proposed an increase of 3.92% including taxes (4.10% excluding taxes) in the “blue” tariffs for residential customers and 3.56% including taxes (3.73% excluding taxes) in the “blue” tariffs for non-residential customers, to apply from 1 August 2022, principally reflecting the increase in the TURPE distribution tariff from 1 August 2022. In application of article 181 of the Finance Law for 2022 and France's tariff cap, the Ministers' decision of 28 July 2022, published in the *Journal officiel* of 31 July 2022, rejected the changes proposed by the CRE, and the regulated tariffs consequently remained unchanged at 1 August 2022.

The Finance Law for 2023, adopted on 30 December 2022, modified the Finance Law for 2022 to extend the tariff cap to all customers eligible for regulated sales tariffs in 2022, and to compensate local distribution companies for their regulated-tariff offerings and suppliers for their market-rate offerings for residential and non-residential customers eligible for regulated tariffs, via the compensation for public service charges (CSPE).

The comparability of sales between periods is thus affected by the tariff changes introduced since 1 January 2021, presented in the table below:

Date of the CRE proposal	Increase in “blue” residential customer tariffs (incl. taxes/excl. taxes)	Increase in “blue” non-residential customer tariffs (incl. taxes/excl. taxes)	Date of the tariff decision	Date of application
14/01/2021	1.61%/1.93%	2.61%/3.23%	28/01/2021	01/02/2021
08/07/2021	0.48%/1.08%	0.38%/0.84%	29/07/2021	01/08/2021
18/01/2022	4.00%/24.3%	4.00%/23.6%	28/01/2022	01/02/2022
07/07/2022	No change	No change	28/07/2022	01/08/2022
19/01/2023	15.00%/20.00%	15.00%/19.9%	31/01/2023	01/02/2023

For 2023, the French government decided to prolong the tariff cap, limiting the increase in regulated electricity sales tariffs to 15% (including taxes) above prices at 31 December 2022, for all categories of eligible consumers.

Article 181 of the Finance Law for 2023, adopted on 30 December 2022, thus stipulates that if the reasoned proposals for regulated sales tariffs presented by the CRE lead to tariffs defined under article R. 337-18 of the same code that are more than 15% higher than the tariffs applicable at 31 December 2022, the Ministers for the

Economy, Energy and the Budget may object to the CRE's proposals and by joint decision set a lower level accounting for 95% of the tariff applied for customers' consumption, in order to serve the objective of price stability.

In such an event, the law defines a mechanism to compensate EDF and the local distribution companies for the loss of income on their regulated-tariff offerings, and to compensate all suppliers for the loss of income on market-price offerings for residential and non-residential customers eligible for regulated sales tariffs, via the compensation for public service charges (CSPE). EDF therefore recognised a receivable of €1,571 million in 2022 (see notes 5.5.1 and 13.5.4).

In a decision of 19 January 2023, the CRE proposed an increase of 99.36% including taxes (108.91% excluding taxes) in the "blue" tariffs for residential customers and 97.94% including taxes (106.88% excluding taxes) in the "blue" tariffs for non-residential customers from 1 February 2023. This proposed increase was primarily justified by:

- the exceptionally high prices on the wholesale markets for delivery in 2023, which have been at record levels for more than a year;
- the outstanding consequences of the tariff cap applied in 2022, to reflect the ultimate reality of the costs involved in the "cost stacking" including the effects of the additional 20TWh of ARENH supplies.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the "blue" tariffs for residential and non-residential customers at 15% including taxes (20% and 19.9% respectively excluding taxes) through tariff orders of 30 January 2023, published in the *Journal officiel* of 31 January 2023 and implemented from 1 February 2023.

"TURPE" Network access tariffs

The costs borne by the network operators Enedis and RTE for management of the public electricity distribution and transmission networks are covered, provided they are in line with the costs of an efficient network operator, by the "TURPE" tariffs for using the networks, as stipulated in Articles L. 341-2 and following of the French Energy Code.

These tariffs apply to users connected to the distribution and transmission networks.

TURPE 6 Distribution and Transmission tariffs

The CRE issued two decisions of 21 January 2021 (published in France's *Journal officiel* 0096 of 23 April 2021) on the TURPE 6 Transmission (high voltage) and TURPE 6 Distribution (medium voltage – low voltage), after the Higher Energy Council (*Conseil supérieur de l'énergie*) gave its approval. These tariffs apply from 1 August 2021 for a period of approximately 4 years.

For distribution expenses, in its tariff decision n°2021-13 of 21 January 2021, the CRE set the margin on assets at 2.5% and the additional return on regulated equity at 2.3%. The average tariff increase was +0.91% at 1 August 2021. In decision n°2022-158 of 9 June 2022, the CRE set the increase in the average TURPE Distribution tariff from 1 August 2022 at +2.26%.

For transmission expenses, in its tariff decision n°2021-12 of 21 January 2021, the CRE set a nominal pre-tax weighted average cost of capital (WACC) of 4.6% for the return on RTE's regulated asset base. The average tariff increase was +1.09% at 1 August 2021. In decision n°2022-157 of 9 June 2022, the CRE set the change in the average TURPE Transmission tariff from 1 August 2022 at -0.01%.

In its decision 2022-317 of 1 December 2022, the CRE adapted the price regulation framework to make the TURPE 6 (high voltage) and TURPE 6 (medium voltage – low voltage) tariffs incorporate the impact of wholesale electricity prices on the business of RTE and Enedis, particularly by refocusing certain incentives on purchase volumes and losses, rather than on prices.

In another decision, 2022-323 of 8 December 2022, the CRE decided to put in place an exceptional advance payment of part of the balance of RTE's income and expense adjustment account (CRCP). In a context of significant growth and volatility in wholesale electricity prices at European level, this surplus paid into the CRCP for 2022 essentially results from particularly high interconnection income. This payment will have a direct effect for users connected to the public transmission network operated by RTE, who will receive a one-off payment from RTE by 15 March 2023. Enedis, as the principal user of RTE's network, will be a beneficiary of this advance payment. The Group has therefore recognised a sales credit receivable from RTE amounting to €1,723 million (see note 13.3.4).

Supplier commissioning

In application of the CRE's decision of 18 January 2018, energy suppliers receive remuneration from distribution network operators for the service of managing single-contract customers on their behalf.

The commissioning principle is identical for all suppliers selling single-contract market-price offers. Only regulated electricity tariffs have given rise to slightly lower commissions (€4.50 instead of €6.80 per point of delivery until 1 August 2019), with progressive reduction of this difference to zero by 1 August 2022.

For remuneration of past customer management charges (prior to 1 January 2018), the CRE's decision set an amount it considered as a cap that can be passed on through the TURPE tariff.

However, Law 2017-1839 of 30 December 2017 introduced a measure intended to rule out the possibility of suppliers receiving remuneration from network managers for past customer management services. On 23 December 2016, ENGIE brought an action against Enedis before the Paris Commercial Court claiming such remuneration. In the course of this litigation, ENGIE filed an application for a preliminary ruling on constitutionality in a challenge to the arrangements introduced by the French "Hydrocarbons" law ending the possibility of obtaining supplier commissioning for past services. These arrangements were validated by the Constitutional Council in its decision 2019-776 of 19 April 2019. The proceedings before the Paris Commercial Court ended on 11 April 2022, the Court having formally declared the action extinguished as the time limit was exceeded.

Electricity Equalisation Fund

The TURPE tariff for the medium and low-voltage network is identical for every electricity network operator. It is determined on the basis of forecast expenses to be borne by Enedis, provided they correspond to an efficient network operator, and forecasts of the number of consumers connected to Enedis' networks, their consumption, and the power level subscribed.

As this tariff cannot always cover the specific needs of certain service zones, the Electricity Equalisation Fund (FPE) exists to compensate for disparities in network operating conditions. The Energy Code requires electricity distribution costs resulting from public network operation to be shared between public distribution network operators. There are two equalisation mechanisms: one based on fixed amounts, the other set by the CRE based on analysis of the network operators' accounts. The calculation method for the fixed-rate allocation mechanism is defined by decree and ministerial order. The EDF entities concerned by the Electricity Equalisation Fund are Enedis, Électricité de Strasbourg and SEI.

On 13 July 2022, the CRE published its decision setting the final amount of the allocation from the Electricity Equalisation Fund (*Fonds de péréquation de l'électricité*) to SEI, following analysis of the network operators' accounts. SEI's allocation is set at €158.1 million for 2022.

For the fixed-amount mechanism, the ministerial order of 30 November 2022 set the 2022 contributions payable and allocations receivable from the Electricity Equalisation Fund for distribution network operators. The fixed contribution due by Strasbourg Électricité Réseaux and Enedis amount to €1.6 million and €27.41 million respectively. Enedis is also the CRE's designated operator for collection and payment of Electricity Equalisation Fund contributions from all the Local Distribution Companies.

ARENH

The ARENH (*Accès Régulé à l'Énergie Nucléaire Historique*) scheme for regulated access to historic nuclear power, set up in 2011 and due to end on 31 December 2025, allows alternative suppliers to purchase electricity from EDF to supply their final customers, after signing a framework agreement, at a regulated price for set quantities determined under the provisions of the French Energy Code. This scheme is also open to network operators to cover their energy losses.

The ARENH price, determined by the Ministers for Energy and the Economy following a proposal by the CRE, has been fixed at €42/MWh since January 2012. This includes delivery of the electricity and has incorporated the associated capacity guarantees since 2017.

The maximum total ARENH volume that can be sold by law to suppliers who apply to the scheme to cover the needs of their final customers is set by ministerial order and cannot exceed a legal ceiling. Until 31 December 2019, the ceiling was 100TWh per year. It was then raised to 150TWh by the energy and climate law of 8 November 2019.

The "MUPPA ⁽¹⁾" law of 16 August 2022 law introducing urgent measures to protect purchasing power reduced this legal ceiling to 120TWh. The MUPPA law also set a minimum ARENH price of €49.50/MWh, although its application is conditional on prior approval by the European Commission.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. These measures included EDF making an additional ARENH volume of 20TWh available to eligible suppliers over the period 1 April to 31 December 2022, at the price of €46.20/MWh.

The terms for application of this measure were laid down in a Decree of 11 March 2022 and four ministerial orders. Eligible suppliers wishing to benefit from these additional volumes at the price of €46.20/MWh during the period 1 April to 31 December 2022 were required by the decree to sell EDF an equivalent volume to the volume sold to them by EDF under the ARENH scheme, at the price of €256.98/MWh (the average wholesale market price between 2 and 23 December 2021 for baseload electricity supplies in mainland France in 2022). To allocate the additional volumes between suppliers, the CRE applied the same method as for the delivery period that began on 1 January 2022. In practice, the CRE gave notice of 19.5TWh of additional ARENH volumes allocated.

Applying the procedure set out in its decision 2022-98 of 31 March 2022, the CRE set up a mechanism to monitor and control the methods used by eligible suppliers to pass on the effect of the reduced sourcing cost (resulting from allocation of additional volumes at the price of €46.20/MWh) through their customer invoicing. In accordance with the above CRE decision, EDF was obliged to replicate the terms imposed on alternative suppliers in its own market-price contracts.

This measure thus had two main effects for the Group:

- it was obliged to purchase the additional 19.5TWh of electricity from eligible suppliers at the price of €256.98/MWh (€5.011 billion), and concurrently sell them equivalent volumes of electricity at the price of €46.20/MWh (€900 million), giving a net cost (including the cost of capacity guarantees) of €4.1 billion for the period 1 April 2022 to 31 December 2022; and
- the sale prices to customers on both regulated-tariff and market-price contracts were lower, due to the increased ARENH portion in relation to the market-price portion in the cost stacking system used to calculate regulated tariffs and market-price offers. This measure had a limited incremental impact in 2022 on regulated-tariff contracts because of application of the tariff cap described above, which already limited increases in the regulated electricity tariffs, but it also limits the difference between the frozen tariff and the tariff that would have applied in the absence of the tariff cap in 2022.

In its press release of 13 January 2022, EDF announced that it would take all appropriate measures to protect its interests in view of the decree of 11 March 2022 and the four orders making up the rest of this measure.

As the overall measure generated significant prejudice for the company, EDF made a request to the State in May 2022 for withdrawal of the Decree of 11 March 2022 and the associated orders. The State did not reply within 2 months, indicating an implicit rejection, and on 9 August 2022 EDF filed an appeal against the decree and orders before the Council of State, on the grounds that the State had exceeded its powers.

In parallel, EDF sent the Prime Minister a prior claim for compensation for the prejudice resulting from introduction of this government measure, estimated at €8.34 billion. The State did not reply within 2 months, indicating an implicit rejection, and on 27 October 2022 EDF filed a claim before the Paris Administrative court for full reparation by the State for the prejudices borne as a result of the government measure.

The purpose of this claim before the Paris Administrative Court is to obtain compensation from the State for the prejudices borne by EDF as a direct result of introduction of the Measure. The total amount of these prejudices is estimated at €8.34 billion, the principal causes being:

- the cost of the operation through which EDF purchased volumes of electricity (at the price of €256.98/MWh) which it then sold on to alternative suppliers (at the price of €46.2/MWh), and the associated capacity guarantees in application of the Measure;
- the direct and certain effects of the Measure on the level of regulated electricity sales tariffs (EDF being France' principal supplier of regulated-tariff electricity) due to the calculation methods for these tariffs defined in the French Energy Code;
- the direct and certain effects of the Measure's repercussions on the prices of EDF's market-price contracts in application of the CRE's decision of 31 March 2022 setting out the terms for passing on the effects of the Measure to customers through power supply contracts.

On 3 February 2023, the Council of State rejected EDF's appeal filed on 9 August 2022 (see note 2). The proceedings relating to EDF's claim before the Paris Administrative court for full reparation from the State for the prejudices borne by EDF as a result of the Measure are continuing.

Regarding ARENH allocations for 2022, in decision 2022-287 of 10 November 2022, as required by the Energy Code (Article R. 336-14 of the Energy Code modified by decree 2022-1380 of 29 October 2022), the CRE set out the method for allocating ARENH volumes if applications exceed the maximum total volume defined for 2023. In view of the current exceptional crisis in the electricity market, it also introduced reinforced checks and special rules for accepting the ARENH volumes applied for by suppliers.

The CRE stated that EDF-controlled subsidiaries' applications taking the total volume above limit would be fully curtailed (this does not apply to network operators) and they could enter into contracts with the parent company that replicate the ARENH scheme and terms of supply, particularly the curtailment rate for alternative suppliers.

During 2022, the CRE notified EDF that ARENH deliveries to three alternative suppliers had ceased due to their court-ordered liquidation or suspension of their governmental licence to purchase electricity. 21.9MW of volumes in the May 2022 ARENH session were not delivered by EDF due to (i) defaulting suppliers being placed

(1) Loi portant mesures d'urgence pour la protection du pouvoir d'achat.

in liquidation and (ii) non-implementation of the procedure to transfer their ARENH entitlements to the suppliers of last resort, and the CRE reallocated all these volumes to the November session.

ARENH applications during the November 2022 session for delivery in 2023 totalled 148.87TWh (excluding applications from EDF subsidiaries and network operators). The CRE scaled down certain applications (-0.56TWh in total), bringing the total application volumes validated by the CRE to 148.30TWh, and curtailed each supplier's application, within a total limit of 100TWh. Further volumes were also sold by EDF to its subsidiaries through contracts that replicate the ARENH scheme, and to compensate for network electricity losses (26.6TWh).

Regarding the possibility of a transition to new regulations governing EDF's nuclear power plants, as announced in the draft multi-year energy programme (PPE) published on 25 January 2019, in January 2020 the French government launched a call for contributions regarding the fundamental findings driving the plan to reform the economic regulations for existing nuclear facilities, and its construction and operating principles. The proposed new regulations would replace the ARENH scheme. Like many other actors in the sector, the EDF group participated in this consultation, which ended on 17 March 2020. France's Minister for the Ecological and Inclusive Transition and Minister of the Economy and Finance then commissioned the CRE to carry out an assessment of the costs borne by the nuclear operator, and to determine fair remuneration for its nuclear activities under the government's potential future regulations for existing nuclear facilities. There have been no significant developments in the terms and conditions of these potential new regulations since 2021 (see note 10.8).

5.1.2 Sales

Sales are comprised of:

(in millions of euros)	2022	2021
Sales of energy and energy-related services	129,831	77,432
energy ⁽¹⁾	109,281	56,866
energy-related services (including delivery ⁽²⁾)	20,550	20,566
Other sales of goods and services	6,607	5,511
Trading	7,038	1,518
SALES	143,476	84,461

(1) Sales of energy include €12,229 million of sales related to optimisation operations on the wholesale gas and electricity markets in 2022 (€1,623 million in 2021). These operations are carried out by certain Group entities to balance supply and demand, in compliance with the Group's risk management policy. In 2022, the principal operating segments with a net short position in euros on the markets are France – Generation and supply (gas), Italy (electricity) and Dalkia (electricity). In 2021, the segments were France – Generation and supply (gas) and Italy (electricity).

(2) Delivery services included in this item concern the distribution network operators Enedis, Électricité de Strasbourg and EDF for non-interconnected zones. However, delivery services concerning EDF Energy and Edison are included in Sales of energy, because those entities are classified as the principal under IFRS 15 for both supply and delivery. The delivery services by EDF Energy and Edison have no impact on net income because they are included in "Transmission and delivery expenses" in note 5.2.

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's sales for 2022 were up by 69.4% or €58.6 billion. Most operating segments were concerned by this increase, which reflects the rise in energy prices and generally had neutral or moderate, if not negative, effects on EBITDA. It was particularly marked in the France – Generation and Supply segment (+€15.2 billion), Italy (+€18 billion), Other activities (+€15.5 billion), the United Kingdom (+€6.2 billion), the Other international segment (+€1.9 billion), and Dalkia (+1.3 billion). Sales by the segments with less or little exposure to energy market price effects (EDF Renewables, Framatome) were higher than in 2021.

Sales by the **France – Generation and supply** segment showed organic growth of +€15.2 billion. This increase is mainly explained by price effects estimated at +€7.2 billion, although they were limited by the government's tariff cap measures and the passing on to customers of the effects of the additional ARENH allocation. Volume effects (associated with the weather, portfolio effects, and a downturn in consumption, especially in the final quarter of 2022) are estimated at around €(1.2) billion. Sales also benefited from the impact of resales of electricity covered by purchase obligations (+€4,956 million), principally attributable to higher market prices (the effect on operating income before depreciation and amortisation was neutral due to the CSPE compensation mechanism covering expenses related to purchase obligations). Sales by this segment also include +€895 million increase in revenues from additional ARENH sales to alternative suppliers (with a negative effect on operating income before depreciation and amortisation – see notes 5 and 5.1.1). Finally, the segment's sales growth was also accentuated by the good performance of energy aggregation subsidiaries, which achieved +€2,404 million (with no significant impact on operating income before depreciation and amortisation).

The +€18 billion organic increase in the **Italy** segment's sales comprises €13.4 billion contributed by the Gas activities, mainly due to favourable price effects, and secondarily a rise in volumes sold in the Electricity activities, which contributed €4.6 billion, mainly due to price effects.

The +€15.5 billion organic increase in sales by the **Other activities** segment compared to 2021 essentially concerned the gas activities (+€10 billion), supported by the rise in wholesale gas prices and volumes sold, and EDF Trading's trading margin (+€5.5 billion) which increased due to the trading performance in Europe and the United States in a high-volatility environment on all commodity markets.

The +€6.2 billion organic increase in the **United Kingdom** segment's sales is principally attributable to the impact of rising energy prices and higher nuclear power output, which was up by +1.9TWh as a result of good plant availability and a lighter maintenance programme, despite the shutdowns of Hunterston B in January 2022 and Hinkley Point B in August 2022. Support measures for BtoB and BtoC activities introduced by the UK government from September 2022 are paid directly by the State to final customers, and thus have no impact on the level of sales recognised under IFRS 15.

The +€1.9 billion organic increase in sales by the **Other international** segment principally reflects the rise in sales in Belgium (€1.8 billion, essentially by Luminus). This development resulted from price effects relating to both electricity and gas.

Sales by **Dalkia** showed an organic increase of €1.3 billion, mainly driven by the increase in gas prices. Sales also benefited from dynamic business activity in the United Kingdom and France.

5.2 Fuel and energy purchases

Fuel and energy purchases comprise:

<i>(in millions of euros)</i>	2022	2021
Fuel purchases used – power generation ⁽¹⁾	(34,509)	(14,973)
Energy purchases ⁽¹⁾	(81,943)	(21,417)
Transmission and delivery expenses	(6,142)	(8,088)
Gain/loss on hedge accounting	(6)	(10)
(Increase)/decrease in provisions related to nuclear fuels and energy purchases	1,590	189
FUEL AND ENERGY PURCHASES	(121,010)	(44,299)

(1) Fuel purchases used and Energy purchases include respectively €2,927 million and €41,458 million for optimisation operations on the wholesale gas and electricity markets in 2022 (€864 million and €4,167 million in 2021). In 2022 the principal operating segments with net long positions in euros on the markets are France – Generation and supply (electricity), United Kingdom (gas and electricity), Other international (Luminus – gas and electricity) and Dalkia (gas). In 2021, the same segments were concerned.

Fuel purchases used include costs relating to raw materials for energy generation (principally nuclear fuels and fissile materials, gas, and a non-significant proportion of coal and oil), purchases of services related to the nuclear fuel cycle, and costs associated with environmental schemes (mainly greenhouse gas emission rights and renewable energy certificates).

After elimination of foreign exchange effects and changes in the scope of consolidation, the Group's fuel and energy purchases were up by €76.6 billion from 2021, principally in the France-Generation and Supply segment (€42.2 billion, essentially electricity purchases), Italy (€17.7 billion, essentially gas purchases included in "Fuel purchases used - power generation"), the Other activities

segment (€9.8 billion, mainly in the gas activities), and the United Kingdom (€5 billion, essentially electricity purchases). In France, this increase is principally explained by high-price market purchases, a variation of around €30 billion made necessary by the lower level of nuclear power output (-81.7TWh, particularly due to the stress corrosion phenomenon); it also includes purchases made for the purpose of the specific additional ARENH scheme (€5 billion in 2022, see note 5.1.1).

The value of energy purchases made under the purchase obligation system in France (included in the "Energy purchases" line) was down slightly, due to a volume effect of -8%.

5.3 Personnel expenses

Personnel expenses comprise:

<i>(in millions of euros)</i>	2022	2021
Wages and salaries	(10,254)	(9,351)
Social contributions	(2,208)	(2,059)
Employee profit sharing	(333)	(319)
Other contributions related to personnel	(352)	(350)
Other expenses linked to short-term benefits	(226)	(219)
Short-term benefits	(13,373)	(12,298)
Expenses under defined-contribution plans	(1,096)	(1,029)
Expenses under defined-benefit plans	(855)	(1,003)
Post-employment benefits	(1,951)	(2,032)
Other long-term benefits	121	(132)
Termination payments	(33)	(32)
Other personnel expenses	88	(164)
PERSONNEL EXPENSES	(15,236)	(14,494)

Excluding foreign exchange effects and changes in the scope of consolidation, personnel expenses increased by +4.2% from 2021.

The increase in wages and salaries relates to the effects of inflation-related pay measures introduced in the Group's various entities in 2022.

Personnel expenses under defined-benefit pension plans decreased following the pension plan reform at EDF Energy (see note 16).

Personnel expenses for other long-term benefits include the favourable effect of the higher discount rate applied in France (see note 16.1.3).

Average workforce comprise:

	2022	2021
IEG status	94,232	94,775
Other	70,796	68,648
AVERAGE WORKFORCE	165,028	163,423

Average workforce numbers for the controlled entities and joint operations are reported on a full-time equivalent basis.

A more detailed presentation of workforce categories can be found in section 3.3.3.9, "Detail of Group's workforce" of the 2022 Universal Registration Document.

5.4 Taxes other than income taxes

<i>(in millions of euros)</i>	2022	2021
Payroll taxes	(310)	(301)
Energy taxes	(1,623)	(1,672)
Other non-income taxes	(1,230)	(1,357)
TAXES OTHER THAN INCOME TAXES	(3,163)	(3,330)

After elimination of changes in foreign exchange rates and scope of consolidation, taxes other than income taxes decreased by 6.2% compared to 2021, principally due to lower generation taxes introduced in France's economic recovery plan.

Taxes other than income taxes mainly concern France and essentially comprise land tax and the French business taxes on land and value added.

Inframarginal price cap on electricity production (CRI)

On 6 October 2022 the European Union adopted a regulation for harmonised action to address the energy price crisis. Among other measures, this regulation sets targets for reducing energy consumption during the winter of 2023, and introduces state aid for businesses and households, funded by a windfall tax on the fossil fuel sectors, and an inframarginal price cap on electricity production.

This inframarginal price cap is a compulsory tax measure requiring electricity producers to pay to the State all revenues above a threshold expressed in €/MWh. Under the EU regulation, this cap is applicable from 1 December 2022 to 30 June 2023 with a threshold of €180/MWh, but many EU member states have decided to lengthen the application period and set different thresholds, well below the EU level, for different generation technologies.

In the EDF group, this regulation mainly concerns activities in France, Belgium and Italy.

In France, a 90% tax applies to inframarginal rents during three periods: July - November 2022, December 2022–June 2023, and July - December 2023. Any deficit in one period may be carried over to the next.

Separate inframarginal rent thresholds (in €/MWh) are set for each electricity generation technology (8 different categories), principally €90/MWh for nuclear power, €100/MWh for wind and solar power, €80-€140/MWh for hydropower (depending on the power of each plant). France has also opted to tax gas-fired electricity generation plants (including cogeneration plants), which are subject to caps of €40-€110/MWh, plus fuel costs.

Consequently, in the EDF group in France, the inframarginal price cap concerns EDF and the French entities of the Dalkia group (€14 million), and the EDF Renewables group (€37 million), respectively for their cogeneration and renewable energy output in 2022.

EDF's inframarginal rent was substantially negative for the first cap period in 2022, and in December 2022 in the second period, in line with the purchases made on high-price markets due to the significant decrease in nuclear power output (€(81.7)TWh). Consequently, no tax on inframarginal rents is payable for electricity production in 2022.

Finally, the EDF group is also subject to this EU regulation outside France, mainly in Belgium, where it paid tax of €49 million on nuclear and renewable power generation in 2022 in application of a 100% tax above a cap of €130/MWh. In Italy, the Edison group was principally concerned by additional income tax measures (see note 9).

5.5 Other operating income and expenses

Other operating income and expenses comprise:

<i>(in millions of euros)</i>	Notes	2022	2021
Operating subsidies	5.5.1	1,055	5,685
Net income on deconsolidation	5.5.2	168	302
Gains on disposal of fixed assets	5.5.2	(167)	(29)
Net increase/decrease in provisions on current assets	5.5.3	(307)	124
Net increase in provisions for operating contingencies and losses ⁽¹⁾		(1,059)	(381)
Other items	5.5.4	677	(1,439)
OTHER OPERATING INCOME AND EXPENSES		367	4,262

(1) See notes 15.1.1.1 and 17.2.

5.5.1 Operating subsidies

This item mainly comprises the subsidy received or receivable by EDF in respect of the compensation for public energy service charges, reflected in the financial statements through recognition of income of €808 million for 2022 (€5,472 million in 2021). The public service charges to be covered for purchase obligations

decreased substantially, and were negative in 2022 because market prices were very high, generally much higher than the price of EDF's purchase obligations. However, the public service charges to be covered in 2022 include an amount of €1,571 million in compensation for the lower sales revenues resulting from limits on the sale prices to final customers introduced by the authorities through tariff caps for electricity and gas (see note 5.1.1).

Compensation for public energy charges (CSPE) (France)

Mechanism

The compensation mechanism for public energy service charges (*compensation des charges de service public de l'énergie*) resulted from a reform introduced by France's amended finance law for 2015, published in the *Journal officiel* on 30 December 2015. Under the legislative and regulatory framework, since 2016, public energy service charges (electricity and gas) were to be compensated. Compensation initially came from two State budget items, a special "energy transition" item and a "public energy service" item, but since 1 January 2021 public energy service charges have been compensated entirely through the general budget.

In compensation for the 2022 charges, France's initial finance law for 2022 introduced a €8.4 billion "public energy service" item in the general budget, to cover additional costs incurred on support contracts (purchase obligations and additional remuneration) for renewable energies and biogas, expenses associated with the electricity and gas tariff caps (see note 5.1.1) solidarity charges borne by gas and electricity suppliers, costs associated with support for non-renewable energy production (essentially cogeneration), and the cost of applying the standard national tariffs to zones that are not connected to France's mainland network.

Income generated by the domestic tax on the final consumption of electricity (TICFE), also named the Compensation for Public Electricity Charges (CSPE) on customer invoices, the Compensation for Public Electricity Charges (CSPE) goes directly into the general budget. The TICFE/CSPE tax is collected directly from final consumers of electricity in the form of an additional levy on the electricity sale price (collected by the suppliers), or directly from electricity producers that produce electricity for their own uses.

The level of this tax was set in 2016 at a full rate of €22.5/MWh, and eight reduced rates ranging from €12/MWh to €0.5/MWh depending on criteria of electro-intensiveness, business category and the risk of carbon leakage from installations (the risk of industries relocating to countries where greenhouse gas emissions are higher due to their electricity mix). It remained at that level until the end of 2021. France's electricity tariff cap then effectively reduced the tax to its minimum level of €1/MWh for residential customers and €0.5/MWh for business customers.

In accordance with decree 2016-158 of 18 February 2016 concerning compensation for public service energy charges, unusually, the CRE published two decisions in 2022: the first (2022-202) on 13 July and the second (2022-272) on 3 November, both setting out a forecast of EDF's public service charges for 2023, a revised forecast of charges for 2022, and the actual charges recorded for 2021. The CRE was obliged to update its July 2022 forecasts in November due to significant changes in key parameters.

5.5.2 Net income on deconsolidation and gains on disposal of fixed assets

In 2022, net income on deconsolidation and gains on disposal of property, plant and equipment mainly includes gains on sales of EDF Renewables' generation assets as part of the Development and Sale of Structured Assets (DSSA) activities, amounting to €192 million (€245 million in 2021).

In 2021, it also included gains on sales of real estate assets in France and the gain on disposal of IDG (a gas distribution network in Italy) (see note 3.1.2).

5.5.3 Net increase and decrease in provisions on current assets

In 2022, impairment and net reversals of impairment on current assets principally concern trade receivables in the United Kingdom and Belgium (see note 13.3).

5.5.4 Other items

Other items mainly include costs relating to energy savings certificates used or consumed during the year, losses on non-recoverable operating receivables, French hydropower concession fees and additional remuneration paid to producers of electricity from renewable sources in France. The favourable change in other income and expenses in 2022 is principally explained by abolition of the cap on credit notes related to producers' additional remuneration, corresponding to the impact of the amended Finance Law (Article 38 of the Amended Finance Law for 2022 and the order of 28 December 2022, published in the *Journal officiel* of 31 December 2022) and the rise in spot prices, which generated negative subsidies for producers which they must now repay.

The additional remuneration paid to electricity producers using renewable energies was introduced by France's law on the Energy Transition for green growth. It is a support mechanism intended to guarantee reasonable remuneration for producers who sell their energy directly on the markets, by compensating for the differential between the revenues from those sales and a reference amount. Conversely, when these revenues are higher than the reference amount, the producer must repay the differential received. This mechanism complements the purchase obligation system in France.

From the first half of 2020, other items also include income and expenses related to closure of the Fessenheim plant.

Closure of Fessenheim nuclear power plant

In accordance with the application for termination of operations and the declaration of the permanent shutdown of both reactors at Fessenheim nuclear power plant sent by EDF to the Minister for the Ecological and Inclusive Transition and to the ASN on 30 September 2019, EDF shut down reactor 1 on 22 February 2020 and reactor 2 on 30 June 2020.

On 27 September 2019, due to the cap on nuclear power output set by the "energy transition for green growth" law of 17 August 2015, the French State and EDF signed a protocol agreement whereby the State will compensate EDF for the early closure of Fessenheim.

The compensation paid under the terms of this protocol comprises:

- initial instalments to compensate for expenses incurred after the closure of the plant (end-of-operations expenditure, BNI taxes, dismantling costs and staff redeployment costs), which will be paid over a 4-year period following the

closure. An amount of €370 million was received on 14 December 2020 (see note 13.5);

This compensation is recognised as income in profit and loss as and when the associated costs are incurred;

- subsequent payments corresponding to the lost income that would have been generated by future power generation up until 2041, based on Fessenheim's previous output figures and calculated "ex post" on the basis of nuclear power sale prices, particularly observed market prices. There is no reason to recognise such income in the financial statements at this stage.

Since its decoupling from the network, the Fessenheim plant has entered a post-operating phase that will last approximately five years. During that period, units 1 and 2 will continue to be operated and maintained as "defueled core" and "evacuated fuel" reactors. This will require a series of technical and administrative operations. A significant milestone was reached on 18 October 2021 when the last two packages of spent fuel were dispatched from Fessenheim unit 1 to the Orano site at La Hague. The dismantling decree for Fessenheim is expected to be issued in 2026.

The post-operating expenses and income for these two reactors mainly comprise:

- expenses of €98 million (salaries and social security charges for labour at the site amounting to €48 million, purchases of goods and services amounting to €47 million, taxes other than income taxes, mainly payroll taxes, energy taxes and local taxes);
- the compensation defined in the protocol for expenses that will be incurred after the closure, amounting to €46 million, recognised as an operating subsidy in the income statement under the methods explained above.

Energy savings certificates

Accounting principles and methods

In France, the Law of 13 July 2005 introduced a system of energy savings certificates. Suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level became subject to energy savings obligations, initially for a three-year period.

To meet this obligation, three sources are available to the EDF group: supporting consumers in their energy efficiency operations, funding State-approved energy savings certificate schemes, and purchasing certificates on the secondary market.

Expenses incurred for this purpose are recorded in expenses of the year concerned, in "Other operating income and expenses". Expenses in excess of the accumulated obligation at year-end are included in inventories and may be used to cover the obligation in later years.

A provision is recognised if the volume of energy savings certificates obtained is lower than the cumulative energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

Energy saving regulations in France

The fourth period of France's energy savings certificates scheme (2018-2021) ended on 31 December 2021. Despite the substantially higher energy savings targets, the EDF group met its obligation and had a stock for the start of the fifth period.

Decree 2021-712 on the fifth period of the energy savings certificates scheme (2022-2025) was published in the *Journal officiel* of 5 June 2021. The decree made the scheme more effective (for example by significantly reducing special measures and bringing calculations close to the real savings), increased funding for very vulnerable households (higher obligations intended to benefit households in situations of energy poverty, restriction of the scope to very vulnerable households, an increase in the penalties in this category to €20/MWhc) and encouraged development of carbon-free energies:

- the overall obligation was increased by 17.2% to 2,500TWhc for this period (obligations intended to benefit households in situations of energy poverty: +37% to 730TWhc, "standard" obligations: +11% to 1,770TWhc);
- the Energy Savings Certificate coefficient (MWhc to be produced per MWh of energy sold) was reduced by 10.2% for electricity and increased by 51.8% for gas;
- for electricity and gas, the threshold below which no energy savings certificates are required is being progressively reduced from the current 400GWh/year to 300GWh/year in 2022, 200GWh/year in 2023 and 100GWh/year in 2024 and subsequent years.

However, given the low level of market prices observed in the first few months of the fifth period of the energy savings certificate scheme (the first half of 2022), the number of new energy savings projects decreased significantly. To launch a new dynamic, the DGEC decided to revise the scheme obligations upwards for the fifth period, through decree 2022-1368 of 27 October 2022.

This new decree officially raised the obligations for the fifth period (2022-2025) as follows:

- "Standard" obligation: 1970TWhc vs 1770TWhc initially, and +200TWhc for the period 2023-2025;
- "Energy poverty" obligation: 1130TWhc vs 730TWhc initially, and +400TWhc for the period 2023-2025.

The obligation for the fifth period of the energy savings certificate scheme (2022-2025) is thus significantly higher than in the fourth period (2018-2021) (from 3100TWh versus 2133TWh).

Note 6 Net changes in fair value on energy and commodity derivatives, excluding trading activities

Accounting principles and methods

This item essentially consists of changes over the period in the fair value of derivatives used for economic hedging of commodity purchases or sales that are not eligible for hedge accounting as defined in IFRS 9, and are therefore included directly in profit and loss. The Group reports these changes in a specific line of the income statement, "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" below the operating profit before depreciation and amortisation.

(in millions of euros)

	2022	2021
NET CHANGES IN FAIR VALUE ON ENERGY AND COMMODITY DERIVATIVES, EXCLUDING TRADING ACTIVITIES	(849)	(215)

Net changes in fair value on Energy and Commodity derivatives, excluding trading activities, stood at €(849) million at 31 December 2022 after €(215) million at 31 December 2021, principally reflecting the high price volatility on the commodity (electricity and gas) markets.

Note 7 Other income and expenses

Other income and expenses amount to €(687) million for 2022. They principally comprise:

- exceptional additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR, totalling €(638) million (these are defined by IAS 16.22 as abnormal costs and cannot be included in the cost of assets in progress);
- the gain on sale of EDF Energy Services LLC (the energy sales activity of EDF Trading North America, see note 3.1) and Dalkia Russia (see the Dalkia press release of 23 May 2022 in note 1.4.3), and the compensation paid to partners amounting to a net €68 million;
- the expense of the Employee Reserved Offer (ERO) during the period, amounting to €(64) million (see note 14.1);
- provisions relating to proceedings before the civil, administrative and criminal courts concerning the sale by Montedison of Ausimont (the Bussi site) in Italy to Solvay in 2002 (see note 17.3.5).

Concerning the ERO, the Board of Directors of EDF decided on 11 May 2022 on the principle of an employee shareholding operation. This operation led to an increase in the Group's share capital, through issuance of 18,100,741 new EDF shares on 25 July 2022.

The subscription price for these shares was fixed on 28 June 2022. It included a discount of 30% on the reference price based on the volume-weighted average price of EDF shares traded on Euronext Paris for the twenty trading days preceding the day when the price was determined. The expense corresponding to this discount is recognised in "Other changes" via an adjustment to Group reserves.

Other income and expenses amounted to €(1,123) million in 2021. They principally comprise:

- an amount of €505 million received in application of the agreement signed by AREVA and EDF on 29 June 2021 (see note 2) for a settlement payment of €563 million, less certain amounts, principally payments collected for third parties and assets previously included in the balance sheet;
- exceptional additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR, totalling €(573) million at 31 December 2021 (these are defined by IAS 16.22 as abnormal costs and cannot be included in the cost of assets in progress);
- the net loss on the sales of Dalkia Wastenergy and the investment in CENG, amounting to a total €(286) million (see note 3.1);
- costs relating to the early closure of Dungeness B, amounting to €(164) million including impairment of fuel inventories and spare parts, and provisions for penalties due under the capacity mechanism (see notes 2 and 10.8);
- provisions relating to proceedings before the civil, administrative and criminal courts concerning the sale by Montedison of Ausimont (the Bussi site) in Italy to Solvay in 2002 (see note 17.3.5);
- a provision relating to litigation proceedings in process with France's Competition Authority (ADLC) (see note 17.3.6).

Other income and expenses includes restructuring expenses in certain Group entities, and other items which are operating income and expenses by nature but of non-significant amounts individually.

Note 8 Note 8 Financial result

8.1 Cost of gross financial indebtedness

Details of the components of the cost of gross financial indebtedness are as follows:

(in millions of euros)

	2022	2021
Interest expenses on financing operations ⁽¹⁾	(1,940)	(1,494)
Change in the fair value of derivatives and hedges of liabilities	(31)	15
Transfer to income of changes in the fair value of cash flow hedges	89	32
Net foreign exchange gain on indebtedness	152	(12)
COST OF GROSS FINANCIAL INDEBTEDNESS	(1,730)	(1,459)

(1) Interest expenses on financing operations includes interest on the IFRS 16 lease liability amounting to €(77) million in 2022 and €(75) million in 2021.

Interest expenses on financing operations increased by €446 million; this is explained in equal proportions by an interest rate effect as rates were rising, and a volume effect due to the Group's higher net indebtedness.

8.2 Discount effect

The effect of winding the discount primarily concerns provisions for the back-end of the nuclear cycle, decommissioning and last cores, and long-term and post-employment employee benefits.

Details of the final discount effect are as follows:

<i>(in millions of euros)</i>	2022	2021
Provisions for long-term and post-employment employee benefits ⁽¹⁾	(663)	(498)
Provisions for the back-end of the nuclear cycle, decommissioning and last cores ⁽²⁾	770	(2,109)
Other provisions and advances	67	(63)
DISCOUNT EFFECT	174	(2,670)

(1) See note 16.1.3.

(2) Including the effect of discounting the receivable corresponding to amounts reimbursable by the NLF (see note 18.1.3).

The increase in 2022 in the discount effect on provisions for long-term and post-employment employee benefits of 2022 is explained by the higher discount rate applicable at 1 January 2023 (in France: +1.6%, against -0.4% at 1 January 2022).

The positive discount effect on nuclear provisions at 31 December 2022 is explained by a 50 base point increase in the real discount rate in France in 2022,

after a 10 base point decrease in 2021. In France, the discount effect was a positive net €813 million, principally comprising the €1,830 million cost of unwinding the discount, and the positive €2,548 million effects of the change in the real discount rate in 2022, which were recorded in the income statement for provisions not backed by assets (see note 15.1).

8.3 Other financial income and expenses

Other financial income and expenses comprise:

<i>(in millions of euros)</i>	2022	2021
Financial income on cash and cash equivalents	95	38
Gains/(losses) on other financial assets (including loans and financial receivables)	311	312
Gains/(losses) on debt and equity securities	345	673
Changes in financial instruments carried at fair value through profit and loss	(3,272)	2,683
Other financial expenses	(433)	(217)
Foreign exchange gain/loss on financial items other than debts	75	120
Return on fund assets	419	319
Capitalised borrowing costs	463	561
OTHER FINANCIAL INCOME AND EXPENSES	(1,997)	4,489

"Gains/(losses) on debt and equity securities" in 2022 principally include:

- €467 million of dividends and interest income on debt securities (€605 million in 2021);
- €(122) million of net gains and losses on sales of debt securities carried at fair value through OCI with recycling (including €(68) million on dedicated assets), compared to €68 million in 2021 (including €41 million on dedicated assets).

In 2022, other financial income and expenses include changes in fair value on financial instruments, amounting to €(3,272) million in a context of falling markets, including €(3,096) million on dedicated assets.

In 2021, other financial income and expenses include changes in fair value on financial instruments, amounting to €2,683 million in a context of bullish markets, including €2,739 million on dedicated assets.

Note 9 Income taxes

Accounting principles and methods

Income taxes include the current tax expense (income) and the deferred tax expense (income), calculated under the tax legislation in force in the countries where earnings are taxable.

In compliance with IAS 12, current and deferred taxes are generally recorded in the income statement or in equity symmetrically to the underlying operation.

Under IAS 32, income taxes on distributions to holders of equity instruments (notably dividends and the remuneration paid to holders of perpetual subordinated bonds) must be recognised in accordance with IAS 12. The Group considers that these distributions are paid out of previous years' accumulated profits and as a result the associated tax effects are included in the net income for the period.

In application of IFRIC 23, a tax asset or liability is recognised when there is uncertainty over income tax treatments. If the Group considers it likely that the tax authorities will not accept its chosen treatment, it recognises a tax liability, and if it considers it likely that the tax authorities will reimburse a tax that has already been paid, it recognises a tax asset. The tax assets and liabilities relating to these uncertainties are estimated on a case-by-case basis and stated at the most likely amount, or the weighted average of the various outcomes considered. These tax assets and liabilities are included in deferred taxes.

The current tax expense (income) is the estimated amount of tax due on the taxable income for the period, calculated using the tax rates adopted at the year-end.

Deferred taxes result from temporary differences between the book value of assets and liabilities and their tax basis. No deferred taxes are recognised for temporary differences generated by:

- goodwill which is not tax deductible;
- the initial recognition of an asset or liability in a transaction which is not a business combination and does not affect the accounting profit or taxable profit (tax loss) at the transaction date;
- investments in subsidiaries and associates, investments in branches and interests in joint arrangements, when the Group controls the timing of reversal of the temporary differences, and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets and liabilities are valued at the expected tax rate for the period in which the asset will be realised or the liability extinguished, based on tax rates adopted at the year-end. If the tax rate changes, deferred taxes are adjusted to the new rate and the adjustment is recorded in the income statement, unless it relates to an underlying for which changes in value are recorded in equity, for example in accounting for actuarial gains and losses or fair value on hedging instruments and debt or equity securities.

Deferred taxes are reviewed at each closing date, to take into account changes in tax legislation and the prospects for recovery of deductible temporary differences. Deferred tax assets are only recognised when it is probable that the Group will have sufficient taxable profit to utilise the benefit of the asset in the foreseeable future, or beyond that horizon, if there are deferred tax liabilities with the same maturity.

Deferred tax assets and liabilities are reported on a net basis, determined at the level of a tax entity or tax group.

Pillar two rules

To address concerns about declining tax bases and the shifting of taxable profits between States by large multinational companies, a worldwide agreement to introduce a minimum corporate tax rate has been reached by more than 135 countries. In December 2021, the Organisation for Economic Co-operation and Development (OECD) published a proposed reform of international tax rules, notably including the introduction of a minimum 15% tax rate on profits of multinational groups (the "Pillar Two Rules"). At the date of publication of these financial statements, no country where the Group does business had transposed these rules into its national laws. The Group is closely monitoring legislative progress in each country where it does business, in order to be ready to implement the rules once they are enacted.

Based on the current agreement and the tax rates currently in force in the countries where the Group has operations, subject to the Group developing future businesses or the law changing in the relevant countries before the Pillar Two Rules come into force, the Group does not expect this corporate income tax reform to have any significant impacts.

9.1 Breakdown of tax expense

The tax expense breaks down as follows:

<i>(in millions of euros)</i>	2022	2021
Current tax expense	(1,894)	(2,016)
Deferred taxes	5,820	616
TOTAL	3,926	(1,400)

In 2022, €(562) million of the current tax expenses relates to French companies, and €(1,332) million relates to other subsidiaries (€(1,679) million and €(337) million respectively in 2021).

Deferred tax income, amounting to €5,280 million in 2022 compared to €616 million in 2021, is mainly explained by the losses reported for the year.

9.2 Reconciliation of the theoretical and effective tax expense (tax proof)

(in millions of euros)

	2022	2021
Income of consolidated companies before tax	(22,916)	5,585
Income tax rate applicable to the parent company	25.82%	28.41%
Theoretical tax expense	5,917	(1,587)
Differences in tax rate ⁽¹⁾	145	(349)
Permanent differences ⁽²⁾	(336)	(160)
Taxes without basis ⁽³⁾	(478)	727
Unrecognised deferred tax assets ⁽⁴⁾	(1,320)	(36)
Other	(2)	5
ACTUAL TAX EXPENSE	3,926	(1,400)
EFFECTIVE TAX RATE	17.13%	25.09%

The tax income amounts to €3,926 million in 2022, corresponding to an effective tax rate of 17.13% (compared to a tax expense of €(1,400) million in 2021, corresponding to an effective tax rate of 25.09%).

The €5,326 million change between the tax expense for 2021 and the tax income in 2022 essentially reflects the €28,051 million decrease in the Group's pre-tax income, generating additional tax income of €7,359 million.

The tax income also reflects the unfavourable effect of certain rulings in tax disputes in 2022 (see note 17.3.1), the introduction in Italy of "windfall taxes" on electricity-producing companies, impairment recognised during the year and the absence of any favourable effect equivalent to the impact of asset revaluations for tax purposes in Italy in 2021.

In addition, it includes the unfavourable effect of non-recognition of deferred tax assets in France, partly offset by the favourable effect of deferred tax assets recognised in the United States.

Contrary to 2021, the Group was not affected by any rise in the normative tax rate in the countries where it does business.

After elimination of these non-recurring items (principally impairment, unrealised gains and losses on financial assets and commodities, and tax disputes), the effective current tax rate for 2022 is 18.0%, compared to 21.3% in 2021.

The main factors explaining the difference between the theoretical tax rate and this effective rate are:

- 2022:
 - > ⁽¹⁾ the favourable impact of tax rate differences amounting to €145 million, mainly relating to the United Kingdom where the normative tax rate applicable in 2022 is 19%,
 - > ⁽²⁾ provisions and impairment amounting to €(279) million,
 - > ⁽³⁾ the unfavourable impact of "windfall" taxes in Italy (€(317) million), and tax litigation (€(346) million), partly offset by the favourable impact of deduction of the payments made to bearers of perpetual subordinated bonds, amounting to €156 million,
 - > ⁽⁴⁾ the effect of non-recognition of deferred tax assets, amounting to €(1,320) million including €(1,551) million relating to the French tax group (see note 9.4), partly offset by the favourable effect of deferred tax assets recognised in the United States, amounting to €296 million;
- 2021:
 - > ⁽¹⁾ the unfavourable impact of tax rate differences amounting to €359 million, due to the forthcoming increase in the UK's normative rate from 19% to 25% from 2023,
 - > ⁽³⁾ the favourable impact of asset restatements for tax purposes in Italy (amounting to €422 million) and deduction of payments made to bearers of perpetual subordinated bonds (amounting to €157 million),
 - > ⁽⁴⁾ the effect of non-recognition of deferred tax assets, amounting to €(36) million, including €(309) million of deferred taxes recognised during the year following restatements of the tax value of assets in Italy, partly offset by the favourable effect of deferred tax assets recognised in the United States (€191 million).

9.3 Change in deferred tax assets and liabilities

(in millions of euros)

	2022	2021
Deferred tax assets	1,667	1,150
Deferred tax liabilities	(2,401)	(3,115)
Net deferred taxes at 1 January	(734)	(1,965)
Change in net income	5,820	616
Change in equity	2,323	694
Translation adjustments	79	(93)
Changes in scope of consolidation	13	28
Other movements	(338)	(14)
NET DEFERRED TAXES AT 31 DECEMBER	7,163	(734)
Deferred tax assets	8,696	1,667
Deferred tax liabilities	(1,533)	(2,401)

In 2022, the change in deferred taxes in equity includes €558 million of actuarial gains and losses on post-employment benefits (€(510) million in 2021) and €1,181 million of changes in the fair value of hedges (€(1,223) million in 2021).

9.4 Breakdown of deferred tax assets and liabilities by nature

(in millions of euros)	31/12/2022	31/12/2021
Deferred taxes		
Fixed assets	(6,074)	(6,201)
Provisions for employee benefits	3,927	4,706
Other provisions and impairment	741	346
Financial instruments	2,401	1,408
Tax loss carryforwards and unused tax credits	9,555	2,004
Other	507	1,080
Total deferred tax assets and liabilities	11,057	3,343
Unrecognised deferred tax assets	(3,894)	(4,077)
NET DEFERRED TAXES	7,163	(734)

At 31 December 2022, unrecognised deferred tax assets represent a potential tax saving of €3,894 million (€4,077 million at 31 December 2021), mainly relating to France, Italy and the United States.

The potential tax saving in France, amounting to €2,952 million (€2,913 million in 2021) essentially relates to the stock of deferred tax assets on employee benefits and the losses generated in 2022. These deferred tax assets have no time limit.

The potential tax saving in Italy, amounting to €309 million, relates to the tax value of goodwill, which was revised in 2021 and is amortisable over 50 years for tax purposes. Some of the corresponding deferred tax assets are unrecognised due to the Group's prudent policy concerning recognition of deferred taxes beyond a 10 - year horizon.

The potential tax saving in the United States, amounting to €490 million (€730 million in 2021) relates mainly to tax losses that can be carried forward until dates between 2026 and 2037 (this concerns losses generated before 31 December 2017, and long-term capital losses), or for an unlimited period (for losses generated after 2017).

Recognised deferred tax assets on tax loss carryforwards and unused tax credits amount to €7,898 million (€1,140 million in 2021) and principally concern France (€6,890 million in 2022, €51 million in 2021), the United States (€430 million in 2022, €286 million in 2021), and the United Kingdom (€306 million in 2022, €548 million in 2021).

In France, they include a deferred tax asset of €6,812 million (gross value of €7,872 million and provisions of €1,060 million) recognised on the €30,426 billion reported at 31 December 2022 by the French tax group (EDF SA, Enedis, PEI and

other French subsidiaries owned more than 95%). This tax loss carried by EDF SA is principally due to the exceptionally low nuclear power output (-81.7TWh or -23% compared to 2021) as a result of the stress corrosion phenomenon, which obliged EDF to purchase very significant volumes of electricity on the markets at very high prices throughout the year, with an adverse effect of around €29.1 billion on taxable income.

Based on projected future tax results of the French tax group and the rules allowing tax losses to be carried forward and set against a maximum 50% of future taxable profits, the gross deferred tax asset of €7,872 million is expected to be recovered over a period of more than 10 years, and this led to recognition of a provision of €1,060 million. These projections take account of the Group's 2023 Budget as approved by the Board of Directors and the Group's internal financial trajectory, taking a conservative approach to its more distant years. The French tax group's future tax results for the next ten years are primarily sensitive to the assumptions used concerning the volume of nuclear power output, market prices, and regulations. Regulated tariffs and prices are constructed based on the assumption of full market exposure after 2025, the date of the end of the ARENH scheme, as there is currently no clarity over potential future market regulations. Ultimately, the recoverability period of deferred tax assets will notably depend on the level of any future regulation existing nuclear installations.

In the United States and United Kingdom, deferred tax assets on tax loss carryforwards and tax credits were recognised due to the existence of deferred tax liabilities in the same entities that will reverse over the same time horizons, or because taxable profits are expected.

Note 10 Property, plant and equipment and intangible assets (excluding French public electricity distribution concession assets)

Details of property, plant and equipment and intangible assets (excluding French electricity distribution concession assets) are as follows:

(in millions of euros)	Notes	31/12/2022	Assets in progress ⁽¹⁾	31/12/2021	Assets in progress ⁽¹⁾
Goodwill	10.1	9,513	n.a.	10,945	n.a.
Other intangible assets	10.2	10,619	2,110	10,221	1,793
Property, plant and equipment used in generation and other tangible assets owned by the Group, including right-of-use assets	10.3	101,126	49,700	98,237	45,220
Right-of-use assets	10.4	4,051	n.a.	4,146	n.a.
Property, plant and equipment operated under concessions other than French electricity distribution concessions	10.5	6,816	668	6,881	621
TOTAL PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS (EXCLUDING FRENCH ELECTRICITY DISTRIBUTION CONCESSION ASSETS)		128,074	52,478	126,284	47,634

n.a.: not applicable.

(1) Assets in progress are presented in note 10.6.

10.1 Goodwill

Accounting principles and methods

Determination of goodwill

In application of IFRS 3, "Business combinations" (see note 3), goodwill is the difference between:

- the sum of the following items:
 - > the acquisition-date fair value of the price paid to acquire control;
 - > the value of non-controlling interests in the entity acquired; and
 - > for acquisitions achieved in stages, the acquisition-date fair value of the Group's share in the acquired entity before it acquired control; and
- the net value of the assets acquired and liabilities assumed, measured at fair value at the acquisition date.

When this difference is negative it is immediately included in net income.

The fair values of assets and liabilities and the resulting goodwill are finalised within twelve months of the acquisition.

Measurement and presentation of goodwill

Goodwill on acquisition of subsidiaries is disclosed separately in the balance sheet. Impairment on this goodwill is reported under the heading "Impairment" in the income statement. After initial recognition, goodwill is carried at cost less any impairment recognised.

Goodwill on acquisition of associates and joint ventures is included in the investment's net book value. Impairment on this goodwill is included under the heading "Share in income of associates and joint ventures".

Goodwill is not amortised, but impairment tests are carried out as soon as there is an indication of possible loss of value, and at least annually, as described in note 10.8.

In 2022, goodwill primarily related to EDF Energy (€6,541 million, net of impairment booked in 2022) and Framatome (€1,448 million). The breakdown by operating segment is presented in note 4.1.

Changes in goodwill in 2022 and 2021 were as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Net book value at opening date	10,945	10,265
Acquisitions	154	143
Disposals	(2)	(1)
Impairment (note 10.8)	(1,178)	-
Translation adjustments	(379)	537
Other changes	(27)	1
NET BOOK VALUE AT CLOSING DATE	9,513	10,945
Gross value at closing date	11,650	11,715
Accumulated impairment at closing date	(2,137)	(770)

The changes in goodwill in 2022 primarily related to:

- impairment of €(1,176) million on the goodwill of EDF Energy;
- translation adjustments (€(379) million), mainly resulting from the decline of the pound sterling against the Euro.

The changes in goodwill in 2021 primarily related to:

- the acquisition of Rolls Royce Civil Nuclear I&C from Framatome for €92 million (see note 3.1);
- translation adjustments (€537 million) resulting chiefly from the rise of the pound sterling against the Euro.

10.2 Other intangible assets

Accounting principles and methods

General principles

Other intangible assets mainly comprise:

- software, which is amortised on a straight-line basis over its useful life, including SaaS (Software as a Service) contracts which are not treated as service contracts and included in expenses. To qualify for treatment as fixed assets, SaaS contracts must confer a right of control to the user in addition to access to the software for a fixed period;
- development costs that qualify for capitalisation under IAS 38 amortised on a straight-line basis over their foreseeable useful life;
- purchased brands with an indefinite useful life, or amortised on a straight-line basis over their useful life;
- operating or usage rights for power plants, which are amortised on a straight-line basis over the useful life of the underlying asset;
- the positive value of energy purchase/sale contracts stated at fair value as part of a business combination governed by IFRS 3: this value is amortised as the contractual deliveries take place;
- assets related to concession contracts governed by IFRIC 12, under the "intangible model" (see note 10.5);
- technology related to activities as designer and supplier of nuclear steam supply systems and manufacturer of control rod clusters and nuclear fuel (Framatome) including codes and methods, EPR technology, patents and manufacturing processes, all amortised over their useful life;
- purchased customer contracts and relations, amortised over their useful life;
- incremental costs of winning or renewing customer contracts, which are amortised over the average duration of customer contracts;
- intangible assets related to environmental regulations.

Intangible assets relating to environmental regulations

These include greenhouse gas emission rights and renewable energy certificates purchased (see notes 20.1.1 and 20.1.2).

Greenhouse gas emission rights

EU Directive 2003/87/EC set up a greenhouse gas emission quota system for the European Union. Although the United Kingdom is no longer a member of the European Union, it is still concerned by this system.

This quota system was incorporated into national laws. Among other things it requires obligated actors, which is the case of EDF, to surrender to the State a number of greenhouse gas emission credits each year, corresponding to their emissions for the year.

In the EDF group, the entities subject to this Directive are EDF, EDF Energy, Edison, Dalkia, and Luminus.

The accounting treatment of emission rights depends on the holding intention. Two economic models coexist in the Group:

- rights held under the "Trading" model are included in "Other inventories" at fair value. The change in fair value observed over the year is recorded in the income statement;
- rights held to comply with regulatory requirements on greenhouse gas emissions (the "Generation" model) are recorded in intangible assets as "Greenhouse gas emission rights – green certificates":
 - > at acquisition cost when purchased on the market,
 - > at nil value when allocated free of charge (in countries that still have a free allocation system).

A provision corresponding to emissions for the year is established at the year-end (see note 17.2).

This provision is equal to the acquisition cost up to the amount of rights acquired on forward markets, and to market prices for the balance. It is cancelled when the rights are surrendered to the State.

At the closing date, the portfolio of emission rights and the obligation to surrender rights for the emissions of the year are presented gross, without netting.

If the number of emission rights at the end of the year and not subject to forward sale is higher than the number of rights to be surrendered to the State for the year's emissions, an impairment test must be applied to the excess. If the realisable value is lower than the net book value, impairment is booked.

Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. Although the United Kingdom is no longer a member of the European Union, it is still concerned by this system.

States can use two possible mechanisms to meet these targets:

- introducing a specific sales tariff for energy from renewable sources (this system is used in France and Italy);
- introducing a system of renewable energy certificates to be surrendered by energy suppliers (this system is used in the United Kingdom (Renewable Obligation Certificates) and Belgium (Certificats verts)).

For renewable energy certificate systems, the Group applies the following accounting treatment:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line "Greenhouse gas emission rights - green certificates";
- a provision is established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still be purchased, and where relevant the market penalty price for the balance. The provision is cancelled when the certificates are surrendered to the State (see note 17.2).

The net value of other intangible assets breaks down as follows:

(in millions of euros)	31/12/2021	Acquisitions	Disposals	Translation adjustments	Changes in scope	Other movements	31/12/2022
Software	6,787	965	(96)	(54)	(14)	17	7,605
Positive fair value of commodity contracts acquired in a business combination	504	-	-	-	-	-	504
Greenhouse gas emission rights – green certificates	900	2,457	(2,350)	(20)	-	(8)	979
Other intangible assets	8,152	436	(110)	(24)	(25)	(35)	8,394
Intangible assets in development ⁽¹⁾	1,793	319	(8)	(1)	-	7	2,110
Gross value	18,136	4,177	(2,564)	(99)	(39)	(19)	19,592
Software	(4,282)	(839)	96	47	9	1	(4,968)
Positive fair value of commodity contracts acquired in a business combination	(241)	(25)	-	-	-	-	(266)
Other intangible assets	(3,392)	(555)	105	19	52	32	(3,739)
Accumulated amortisation and impairment	(7,915)	(1,419)	201	66	61	33	(8,973)
NET VALUE	10,221	2,758	(2,363)	(33)	22	14	10,619

(1) Increases in intangible assets in development are stated net of the effects of newly-commissioned assets. Intangible assets in development are detailed in note 10.6.

The gross value of other intangible assets at 31 December 2022 includes:

- the Edison brand and intangible assets related to Edison's hydropower concessions, amounting to €945 million and €489 million respectively;
- the Dalkia brand and intangible assets related to Dalkia's concession agreements in France, amounting to €130 million and €1,433 million respectively;

- the Framatome brand, Framatome's nuclear technology-related intangible assets and Framatome's customer contracts, amounting to €151 million, €777 million and €344 million respectively.

Net impairment of €(65) million was recorded in respect of other intangible assets in 2022 (compared to a net reversal of impairment €59 million in 2021).

EDF's research and development expenses recorded in the income statement total €473 million for 2022 (€487 million in 2021).

10.3 Property, plant and equipment used in generation and other tangible assets by the Group

Accounting principles and methods

Property, plant and equipment is recorded at acquisition or production cost:

- the cost of facilities developed in-house includes all labour and materials costs, and all other production costs that can be included in the construction of the asset;
- borrowing costs attributable to the financing of an asset incurred during the construction period are included in the value of the asset provided it is a qualifying asset as defined by IAS 23 "Borrowing costs";
- the cost of property, plant and equipment also includes the initial estimate of decommissioning costs. These costs are recognised in assets against the provision recognised to cover these obligations. At the date of commissioning, these assets are measured and recorded in the same way as the corresponding provision (see note 15);
- decommissioning costs for nuclear generation installations also include last core costs (see note 15).

When some of the decommissioning costs for a plant are to be borne by a partner, the expected reimbursement is recognised as accrued income in the assets. The difference between the provision and the accrued income is recorded in "Property, plant and equipment", and subsequent payments by the partner are deducted from the accrued income.

The Group capitalises safety expenses incurred as a result of legal and regulatory obligations sanctioning non-compliance by an administrative ban from operation.

Strategic safety spare parts for generation facilities are treated as property, plant and equipment, and depreciated over the residual useful life of the installations.

The costs of operations that are necessary for generation assets to remain in service, and are undertaken at the time of scheduled shutdowns, particularly during major inspections, are capitalised and amortised over a period corresponding to the time elapsing between two inspections.

When a part of an asset has a different useful life from the overall asset's useful life, it is identified as an asset component and depreciated over a specific period.

Depreciation

Items of property, plant and equipment are depreciated on a straight-line basis over their useful life, defined as the period during which the Group expects to draw future economic benefits from their use.

Depending on each country's specific regulations and contractual arrangements, the expected useful lives for the main facilities are as follows:

- nuclear generation facilities: 40 to 50 years;
- wind farm and photovoltaic facilities: 20 to 25 years;
- fossil-fired power plants (mainly CCGT-Combined Cycle Gas Turbine plants): 25 to 45 years;
- transmission and distribution installations (lines, substations): 20 to 60 years;
- other general plant and machinery: 10 to 20 years.

The net values of property, plant and equipment used in generation and other tangible assets owned by the Group are as follows:

(in millions of euros)	31/12/2021	Increases	Decreases	Translation adjustments	Changes in the scope of consolidation ⁽¹⁾	Other movements ⁽²⁾	31/12/2022
Land and buildings	14,217	397	(97)	(38)	-	(25)	14,454
Nuclear power plants	79,536	3,309	(2,805)	(546)	-	65	79,559
Fossil-fired & hydropower plants	17,365	542	(133)	(102)	28	5	17,705
Other installations, plant, machinery, equipment & other	22,637	2,798	(422)	58	(562)	36	24,545
Right-of-use assets ⁽³⁾	6,204	353	-	(13)	(32)	98	6,610
Assets in progress ⁽⁴⁾	45,368	5,761	(40)	(1,141)	(13)	(48)	49,887
Gross value	185,327	13,160	(3,497)	(1,782)	(579)	131	192,760
Land and buildings	(8,330)	(483)	84	23	1	23	(8,682)
Nuclear power plants	(53,655)	(3,056)	2,707	352	-	(1,729)	(55,381)
Fossil-fired & hydropower plants	(12,540)	(639)	131	105	36	(15)	(12,922)
Other installations, plant, machinery, equipment & other	(10,358)	(2,011)	426	19	38	(17)	(11,903)
Right-of-use assets ⁽³⁾	(2,059)	(724)	-	4	16	204	(2,559)
Assets in progress ⁽⁴⁾	(148)	(93)	-	(3)	1	56	(187)
Depreciation and impairment	(87,090)	(7,006)	3,348	500	92	(1,478)	(91,634)
NET VALUE	98,237	6,154	(149)	(1,282)	(487)	(1,347)	101,126

(1) Changes in the scope of consolidation essentially relate to EDF Renewables (€574 million) and Edison (€70 million).

(2) Other movements include the effect on assets associated with provisions and underlying assets of the €(1,956) million change in the real discount rate used to calculate provisions related to EDF's nuclear generation (see note 15.1) and EDF Energy (€188 million) (see note 15.2).

(3) Right-of-use assets are detailed in note 10.4.

(4) Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

The changes observed in property, plant and equipment used in generation owned by the Group include a €(1,282) million impact of translation adjustments, principally due to the depreciation of the pound sterling against the euro (€(1,427) million).

Depreciation periods of nuclear plants in France

As stated in note 1.3.4.1, the depreciation period of nuclear power plants currently in operation in France, i.e. thirty-two 900MW reactors, twenty 1300MW reactors and four 1450MW reactors, is 50 years for 900MW-series plants (since 1 January 2016) and 1300MW-series plants (since 1 January 2021), and 40 years for N4-series plants which do not yet fulfil the conditions for a longer depreciation period.

Under France's multi-year energy programme (PPE, standing for *programmation pluriannuelle de l'énergie*) for the period 2019-2028, adopted in April 2020, twelve French nuclear reactors are to be shut down by 2035. As this includes the shutdowns of two 900MW reactors in 2027 and 2028 ahead of their fifth 10-year inspection, an early shutdown scenario for two 900MW reactors has been adopted. Its effects on nuclear provisions and depreciation in the Group's financial statements are not significant.

Depreciation period of coal-fired plants in France

In view of France's Energy and Climate law of 8 November 2019, the end of the depreciation period for the Cordemais coal-fired plant was brought forward to 2026, with a view to the plant continuing to operate as part of the Ecocombust project, after conversion to biomass. On 8 July 2021, EDF announced that it had decided to terminate the Ecocombust project, since the conditions for its continuation were not fulfilled. The Cordemais plant will remain in operation until 2024, perhaps even 2026, to meet the requirements of the electricity system as defined by RTE, in compliance with the Energy and Climate law which allows the plant to be used at full capacity for a maximum 750 hours a year. Decrees 2022-123 of February 2022 and 2022-1233 of September 2022 took the exceptional step of raising the limit for greenhouse gas emissions by fossil-fired electricity generating installations, removing the cap on operation hours for 2022 and 2023 due to risks of pressure on the electricity system. The end of the depreciation period is currently unchanged at 2026, and the depreciation schedule takes account of the new operating rules.

10.4 Right-of-use assets

Accounting principles and methods

Under IFRS 16, a contract is, or contains, a lease if it confers the right to control the use of an identified asset for a period of time in exchange for a consideration.

Identified arrangements that do not have the legal form of a lease contract but nonetheless convey the right to control the use of an asset or group of specific assets to the purchaser are classified as leases by reference to IFRS 16.

Recognition of a lease contract as lessee under IFRS 16

The Group's lease contracts as lessee essentially concern real estate assets (office and residential properties), industrial installations (land, wind farms) and to a lesser extent vehicles, IT and industrial equipment.

IFRS 16 requires leases to be recognised in the lessee's balance sheet when the leased asset is made available, in the form of a "right-of-use" asset, presented in "Property, plant and equipment used in generation and other tangible assets owned by the Group, including right-of-use assets" with a corresponding financial liability associated with the lease commitment, presented in "Current and non-current financial liabilities".

Upon initial recognition of a lease, the right of use and the lease liability are valued by discounting the future lease payments over the term of the lease, taking into consideration assumptions regarding the renewal or termination of leases if the relevant options are reasonably certain to be exercised.

As a rule, since the implicit interest rate in a lease is difficult to determine, the lessee's incremental borrowing rate is used to discount the lease liability. This rate is based on zero-coupon EDF bond rates, adjusted for the currency risk, a country risk premium, the term of the lease contracts and the subsidiary's credit risk at the date of initial recognition of the contract. In certain cases, it is based on a subsidiary's specific incremental borrowing rate.

Subsequently, the right of use is amortised over the expected term of the lease, while the lease liability is stated at amortised cost, i.e. adding the interest recognised in the financial result, and deducting the amount of the lease payments made.

The Group applies the two exemptions allowed by IFRS 16, and as a result leases with a term of 12 months or less and leases of assets with individual value when new of less than USD 5,000 are not recognised in the balance sheet. Consequently, the payments on these leases are recognised on a straight-line basis over the lease term in the income statement.

If the Group performs a sale and leaseback operation – consisting of selling an asset to a third party and then renting it back as lessee – which is classified as a sale under IFRS 15, it measures the right-of-use asset resulting from the lease as the proportion of the asset's previous book value that corresponds to the right of use retained by the Group. Also, the gain on the sale of the asset by the Group only corresponds to the proportion of the right of use actually transferred to the third party. The lease liability is not adjusted, unless the conditions of the sale or lease do not reflect market values.

Off-balance sheet commitments presented in note 21.1.1 concern:

- short-term leases (12 months or less);
- leases of assets with low value (less than USD 5,000 when new);
- leases signed for which the leased assets have not yet been made available (for example, assets under construction).

Recognition of a lease contract as lessor

The accounting treatment of a lease contract in which the Group is lessor depends on the classification of the contract. For a finance lease which transfers substantially all risks and rewards inherent to ownership of the underlying asset to the lessee, the Group recognises a financial asset in its balance sheet instead of the initial fixed asset; in this case, the receivable is equal to the discounted value of future lease payments.

10.4.1 Change in right-of-use assets

(in millions of euros)	31/12/2021	Increases ⁽¹⁾	Decreases	Changes in the scope of consolidation	Other movements ⁽²⁾	31/12/2022
Land and buildings	5,152	250	-	(33)	133	5,502
Other installations, plant, machinery, equipment & other	1,052	103	-	1	(48)	1,108
Gross value	6,204	353	-	(32)	85	6,610
Land and buildings	(1,529)	(562)	-	14	135	(1,942)
Other installations, plant, machinery, equipment & other	(529)	(163)	-	1	74	(617)
Depreciation and impairment	(2,058)	(725)	-	15	209	(2,559)
NET VALUE	4,146	(372)	-	(17)	294	4,051

(1) Increases concern right-of-use assets recognised in respect of new leases.

(2) Other movements include the effect of contract revisions on right-of-use assets and translation differences.

10.4.2 Impacts in the income statement

The main impacts of recognition in the income statement of lease contracts as lessee, in accordance with IFRS 16, are as follows:

(in millions of euros)	2022	2021
Income from subleases	7	56
Variable lease expenses	(53)	(53)
Expenses on short-term leases or leases of low-value assets	(108)	(70)
Income from sale and leaseback operations	-	-
Operating profit before depreciation and amortisation	(154)	(67)
Depreciation on right-of-use assets	(725)	(723)
Operating profit	(879)	(790)
Interest expense on the lease liability	(77)	(75)
INCOME BEFORE TAXES OF CONSOLIDATED COMPANIES	(956)	(865)

10.4.3 Payments relating to leases

(in millions of euros)

	2022	2021
TOTAL PAYMENTS RELATING TO THE LEASE LIABILITY	(776)	(801)

Payments relating to the lease liability mainly concern principal repayments, and amount to €702 million in 2022 (€729 million in 2021).

10.5 Property, plant and equipment operated under concessions other than French public electricity distribution concessions

Accounting principles and methods

The accounting treatment of concession agreements depends on the nature of the agreements and their specific contractual features.

Concessions in France

In France, the Group is the operator for three types of concessions:

- public electricity distribution concessions granted by local authorities (municipalities or syndicated municipalities) (see note 11);
- hydropower concessions granted by the State;
- heat generation and distribution concessions from public authorities.

Hydropower concessions

Hydropower concessions follow standard rules approved by decree. For concessions granted before 1999, hydropower concession assets consist solely of hydropower generation equipment (dams, pipes, turbines, etc.), while for more recent concessions, they also include hydropower generation equipment and switching facilities (alternators, etc.).

Most concessions that expired before 2012 were initially for 75 years and were renewed for terms of 30 to 50 years. However, the French government has not yet renewed 28 concessions that have expired. Since their expiry these concessions have thus been in the "rolling extension" situation defined by the law, which stipulates that at the expiry date of a concession, if no new concession has been established "the concession is extended on the existing terms until such time as a new concession is granted", so as to ensure continuity of operations in the meantime (Article L. 521-16 par. 3 of the French Energy Code).

As these concession agreements are not concerned by IFRIC 12 "Service concession agreements", the assets used, whether directly owned or part of the concession, are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions" at acquisition cost.

The main useful lives are the following; for concession assets, the depreciation periods also take account of the duration of the concession agreement:

- hydroelectric dams: 75 years;
- electromechanical equipment used in hydropower plants: 50 years;

Heat generation and distribution concessions from public authorities

Heat generation and distribution concession agreements signed by Dalkia with public authorities confer the right to operate facilities remitted by or constructed at the request of those authorities for a limited period, under the concession-granting authority's supervision.

These agreements set the terms for remuneration and transfer of the facilities to the concession-granting authority or another operator taking over at the end of the agreement.

The assets are recorded as "Other intangible assets", in accordance with IFRIC 12 "Service concession agreements".

Concession assets generally comprise:

- boiler houses;
- networks;
- network extensions;
- network connections; and
- sometimes cogeneration assets.

Intangible assets are depreciated on a straight-line basis over the term of the concession, which is generally between 15 and 25 years.

Almost all of these assets are located in France.

Foreign concessions

Foreign concessions are governed by a range of contracts and national laws. Most assets operated under foreign concessions are recorded under "Property, plant and equipment operated under concessions other than French public electricity distribution concessions". Foreign concessions essentially concern Edison in Italy, which operates local gas distribution networks, hydropower generating plants and energy services under concessions. Edison owns all the assets except for some items of property, plant and equipment on the hydropower generation sites, which will be returned to the concession-granting authority for nil consideration or with an indemnity when the concession ends. In compliance with IFRIC 12, certain concession agreements are recorded as intangible assets.

Hydropower generation assets which will be returned for nil consideration at the end of the concession are depreciated over the duration of the concession.

The net values of property, plant and equipment operated under concessions other than French public electricity distribution concessions are as follows:

(in millions of euros)	31/12/2021	Increases	Decreases	Changes in the scope of consolidation	Other movements	31/12/2022
Land and buildings	1,641	11	(4)	1	-	1,649
Fossil-fired & hydropower plants	11,934	295	(32)	(70)	26	12,153
Other	680	34	(23)	(7)	2	686
Assets in progress ⁽¹⁾	639	45	(8)	(1)	10	685
Gross value	14,894	385	(67)	(77)	38	15,173
Land and buildings	(997)	(34)	4	-	1	(1,026)
Fossil-fired & hydropower plants	(6,505)	(343)	29	27	(24)	(6,816)
Other	(492)	(31)	21	-	4	(498)
Assets in progress ⁽¹⁾	(19)	-	-	-	2	(17)
Depreciation and impairment	(8,013)	(408)	54	27	(17)	(8,357)
NET VALUE	6,881	(23)	(13)	(50)	21	6,816

(1) Increases in assets in progress are stated net of the effects of newly-commissioned assets. Assets in progress are detailed in note 10.6.

At 31 December 2022, property, plant and equipment operated under concessions other than French public electricity distribution concessions comprise concession facilities mainly located in France and in Italy (hydropower, excluding public electricity distribution).

10.6 Assets in progress

(in millions of euros)	2022	2021
Intangible assets	2,110	1,793
Property, plant and equipment used in generation and other tangible assets owned by the Group	49,700	45,220
Property, plant and equipment operated under concessions other than French public electricity distribution concessions	668	621
TOTAL ASSETS IN PROGRESS	52,478	47,634

Intangible assets

At 31 December 2022, intangible assets in progress include notably studies for the EPR 2 and SMR projects, amounting respectively to €1,055 million (€761 million at 31 December 2021), and €142 million.

New nuclear reactors in France: the EPR 2 project

The EPR 2 project concerns a new pressurised water nuclear reactor that meets the objectives for third-generation reactor safety, aiming to incorporate design, construction and commissioning experience acquired from EPR reactors and the nuclear reactors currently in operation.

On 16 July 2019, the ASN issued an opinion that the safety levels of EDF's key design options for its EPR 2 were satisfactory. It stated that "the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory".

The EPR 2 will also offer superior operating performance in terms of power (1650MW compared to 1450MW for the most powerful current reactor), output, availability and manoeuvrability.

The draft PPE published on 25 January 2019 by the Ministry for the Ecological and Inclusive Transition stated that the Government, together with the nuclear industry, would conduct a programme of work by mid-2021 to examine the questions of the cost of new nuclear energy production and its advantages and disadvantages in relation to other low-carbon generation methods, the possible financing models, the project management modalities for new reactor projects and public consultation, and matters relating to the management of waste generated by the potential new nuclear fleet, and that based on this information and depending on developments in the energy situation, the Government would make a decision regarding the suitability of launching a renewal programme for nuclear installations.

While awaiting a decision about the EPR2, EDF was authorised by its Board of Directors on 16 December 2020 to continue the project until the end of 2022, with a cost budget of around €1 billion.

In 2021, EDF, working with the French authorities, finalised its contribution to the government-supervised work programme: formal provision of feedback from construction of the first EPRs, and demonstration of the French nuclear sector's ability to handle an industrial programme to build 3 pairs of reactors (using an adjusted EPR model incorporating experience from the earliest EPR projects in France and internationally).

The analysis conducted covered justification of the need, an action plan to mobilise actors in the nuclear sector, estimation of anticipated costs, analysis of the possible options for the programme's leadership and funding (and their consequences as regards regulation and changes in the legal framework), pre-identification of certain potential sites, consideration of questions relating to management of the waste produced by a new nuclear fleet and action to be taken, including interaction with the European Commission and public consultation.

In the summer of 2021, the DGEC audited the parts of this analysis relating to the programme and validated the methods used to estimate the schedule and costs.

The French President declared in a speech in November 2021 that France would restart a nuclear programme and build new reactors on French soil. On 10 February 2022 during a visit to Belfort in eastern France, he announced the launch of a programme to construct 6 EPR2 reactors by 2035, and begin studies for an additional 8 EPR2 reactors by 2050. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR2 units will be built and operated by EDF.

No investment decision yet has been made. An appropriate funding and regulation plan for this programme is currently in preparation, and an updated completion cost for the project is expected in the summer of 2023.

Until a decision is made on the EPR2, EDF was authorised by its Board of Directors on 31 March 2022 to continue development work until the end of 2023, and given a budget extension of approximately €0.6 billion.

NUWARD, France's Small Modular Reactor (SMR) project

Regarding Small Modular Reactors (SMRs), development of the NUWARD™ continued in 2022. NUWARD™ is a third-generation model pressurised water plant consisting of two 170MW units, designed for to be built in large numbers and widely exported. Its main target is as a replacement for fossil-fired plants in the next few decades. Sales will be backed up by a model plant in France, due to start construction by 2030.

The design of the NUWARD™ SMR is being preassessed by the ASN in collaboration with the Czech and Finnish safety authorities SUJB and STUK. The aim of this assessment is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation.

In December 2022, EDF and Fortum signed a cooperation agreement for joint exploration of development opportunities for SMRs and large nuclear reactors in Finland and Sweden.

In late 2022 the Group set up a dedicated subsidiary to lead the next part of the NUWARD™ project, the basic design phase, which will start in early 2023 and should be completed by the end of 2026. This subsidiary, named Nuward, is fully-owned by the Group. It will continue to receive engineering support from EDF, the CEA, TechnicAtome, Naval Group, Framatome and Tractebel.

A €50 million subsidy granted under the "France 2030" plan was received from the French State in December 2022 (see note 13.5.4), after due notification and authorisation from the European Commission. In his speech at Belfort on 10 February 2022, the French President had announced additional State support of €500 million for the NUWARD™ project.

Property, plant and equipment used in generation and other tangible assets owned by the Group

At 31 December 2022, property, plant and equipment in progress used in generation and owned by the Group mainly comprise:

- investments for the Flamanville 3 EPR amounting to €15,245 million, including capitalised interim interest of €3,471 million at 31 December 2022 (€15,014 million at 31 December 2021, including capitalised interim interest of €3,471 million). The amount capitalised for the Flamanville 3 project in the financial statements at 31 December 2022 is €15,472 million, which also includes €221 million ⁽¹⁾ for assets that have been commissioned, including €24 million of interim interest.

This capitalised amount of €15,472 million including capitalised interim interest, includes, in addition to the construction cost:

- > an inventory of spare parts and capitalised amounts totalling €629 million for related projects (notably the initial comprehensive inspection and North Area development),
- > €854 million of pre-operating expenses and other property, plant and equipment related to the Flamanville project,
- > and the elimination of internal balances on balance sheet items and margins between Framatome and EDF SA in connection with the Flamanville 3 EPR project (€381 million, essentially consisting of advances and progress payments),
- > giving a construction cost at historical value of €10,495 million in the consolidated financial statements at 31 December 2022, and a construction cost at completion (excluding interim interest) of €13.2 billion (in 2015 euros).

On 16 December 2022, EDF announced an adjustment to the schedule for the Flamanville 3 project, and the estimated cost to completion was raised from €12.7 billion to €13.2 billion in 2015 euros, excluding interim interest.

The non-recurring additional costs resulting from the necessary repairs to the main secondary circuit welds (see the Group press release of 9 October 2019) are recorded in other income and expenses at the amount of €638 million in 2022 (€573 million in 2021) (see note 7).

The non-recurring additional costs resulting from the adjustment announced on 16 December 2022 principally concern stress-relieving heat treatment for repaired welds, and will also be recorded in other income and expenses;

- investments relating to Hinkley Point C, amounting to €21,647 million including capitalised interim interest of €1,110 million (€18,542 million at 31 December 2021 including capitalised interim interest of €835 million), less impairment of €551 million (see note 10.8). In 2022, investments in this project amounted to €3,890 million (€3,635 million in 2021);

- studies concerning Sizewell C amounting to €808 million (€533 million in 2021).

The balance of property, plant and equipment in progress (excluding assets operated under concessions), i.e. €12,050 million, principally concerns EDF's existing nuclear plants (75%) in line with the *Grand Carénage* programme (replacement of major components, particularly steam generators; work in connection with periodic reviews and 10-year inspections), and to a lesser extent (around 13%) EDF Renewables (power plants in development in Europe, North America and emerging countries).

Property, plant and equipment in progress increased by €4,480 million as the level of investment in 2022 is significantly higher than the amount of assets brought into service during the year (see note 10.3).

Principal projects in progress and investments during the year

Grand Carénage programme

Since 2014 EDF has been implementing its *Grand Carénage* industrial refurbishment programme for the French nuclear fleet, designed to enhance reactor safety and extend their operating lifetimes significantly beyond 40 years. The most recent estimate of the programme's cost for the period 2014-2025, established in late 2021, is €50.2 billion in current euros. This cost factors in the third 10 - year inspections for the Group's 1300MW reactors, a significant portion of the safety improvements undertaken following lessons learned from the Fukushima incident, including construction and operation of 56 emergency diesel generators, creation of auxiliary feedwater pumps at each nuclear plant in operation, and performance of the fourth 10 - year inspections of the Group's 900MW reactors.

To continue the investments necessary to operate the Group's nuclear fleet in complete safety significantly beyond 40 years, on 31 March 2022 EDF's Board of Directors validated a new roadmap for the *Grand Carénage* programme running from 2022 to 2028. The cost estimate for this new period is €33 billion in current euros, or an annual expenditure of €4.7 billion. The extended programme will enable the Group to conduct studies and the fourth 10-year inspections of the 1300MW series, conduct preliminary studies for operation of the 900MW reactors beyond 50 years, in accordance with the multi-year energy programme adopted by France in April 2020, and complete the still substantial maintenance and renovation work on major components, so that power plants can remain in operation for more than 50 years. The broader scope of the programme also covers new safety requirements resulting from the generic opinion of France's Nuclear Safety Authority (ASN) on the fourth 10-year inspections of the 900MW reactors, building on experience from the review with the ASN of the fourth 10-year inspections for 900MW and 1300MW reactors.

The third 10-year inspections of 1300MW reactors are entering their final phase (the last 5 are scheduled for 2023 and 2024). In the 900MW series, ten fourth 10-year inspections have been successfully completed and one is in progress (at Blayais 1). For the 1450MW series, the final second 10-year inspection has been launched at Civaux 2.

Examination with the ASN of the generic phase of the fourth 10-year inspections of the 1300MW series began in 2021 and is continuing. Examination with the ASN of procedures for the 30-year milestone of the 1450MW series, and inspection of the first reactor is expected for 2029.

Additionally, major investments have been made following the lessons of Fukushima: 56 emergency diesel generators have been constructed and put into operation, and every power plant has a permanent or provisional auxiliary feedwater system. Major components (including steam generators and main unit transformers) have also been replaced at many production units.

(1) €341 million in gross value, less €120 million of depreciation.

Stress corrosion

In late 2021, during preventive maintenance checks on reactor 1 at the Civaux nuclear power plant, scheduled as part of its ten-year inspection, defects were detected close to welds on the pipes of the safety injection system (SIS) circuit. Preventive checks were then carried out on the Civaux 2, Chooz 1 and Chooz 2 reactors, which also belong to the N4 series, and similar defects were identified. Preventive maintenance checks conducted during the ten-year inspection of reactor 1 at the Penly nuclear power plant also found similar defects on the SIS circuit.

Through expert assessments and analyses conducted during 2022, EDF identified the reactors where the SIS circuit pipes are the most susceptible to stress corrosion. They are the 16 most recent reactors: the four N4- reactors, and twelve P'4 1300MW reactors.

In its press release of 27 July 2022, the ASN declared its position reached on 26 July 2022 regarding EDF's proposed inspection strategy for the stress corrosion affecting its reactors. The ASN considered EDF's strategy appropriate given the knowledge learned about this phenomenon, and the related safety issues.

Of the 16 reactors identified as the most susceptible to stress corrosion, 10 were treated in 2022 or are currently being treated. All these reactors will have been treated by the end of 2023:

- for the N4 reactors, operations have been completed at Civaux 1, Civaux 2, and Chooz 2, and are being finalised at Chooz 1;
- for the P'4 1300MW reactors currently offline: repairs of two SIS circuit welds are in progress at Cattenom 1, and repairs of four SIS pipes began in 2022 and are continuing at Cattenom 3. EDF has decided to proceed with preventive replacement of all the pipes on the SIS and shutdown reactor cooling circuits at all P'4 1300MW reactors by the end of 2023. This strategy means that repairs can be carried out under an industrial approach, which leads to more efficient scheduling.

Discussions continued with the ASN about the treatment programme for stress corrosion.

Given the outages for inspections and repairs, in 2022 EDF regularly released information about adjustments to nuclear output estimates (see the press releases of 13 January, 7 February, and 19 May mentioned in note 2). As stated in the press release of 3 November 2022, all this information finally led EDF to revise its nuclear power output for 2022 downwards, to a range of 275-285 TWh. The final volume was 279TWh, down by 81.7TWh or 23% from 2021.

Flamanville 3 EPR project

Developments in 2021

The fuel assemblies required for the first fuel load continued to arrive during the first half of the year, and the entire first core is now stored in the Flamanville 3 reactor building pool.

The process of repairing the penetration welds on the main secondary circuit using remote-controlled robots was approved by the ASN on 19 March 2021, several weeks behind the expected date, and work began on the eight welds that were not compliant with the break preclusion principle. All eight were repaired in 2021, then subjected to stress-relieving heat treatment. Demonstration of the qualification of the stress-relieving heat treatment for repairs of VVP (steam discharge pipework circuit) penetration welds was validated by the ASN, which issued authorisation for its use in late 2021. Furthermore, four ARE (steam generator water supply circuit) penetration welds also require repair, and qualification of the repair process is under way at the ASN. This process is an adaptation of the process used for VVP penetration weld repairs.

For the non-penetration welds located on the main secondary circuit that had quality deviations (this concerns 45 VVP welds and 32 ARE welds), the ASN issued approval in April 2021 for the repair of a third batch of 6 welds. In the 3 batches authorised to date, 12 weld upgrades have been completed. In April the ASN gave approval for the related regulatory checks, which are currently in process.

In total, a hundred welds (penetration and non-penetration) on the main secondary circuit were concerned by repairs to the VVP and ARE pipework. The final stage of repair for most of these welds will be an optimised stress-relieving heat treatment, prior to the final verification. Repairing these welds remains one of the key challenges on the Flamanville 3 critical pathway.

On 2 March 2021 EDF declared a significant event to the ASN, concerning incomplete application of the 2006 design standards when installing three nozzles on the main primary circuit (these nozzles connect auxiliary circuits to the primary circuit). At the request of the ASN, three scenarios were examined by the Group's engineering teams. A file was sent to the ASN on 21 June 2021, stating that EDF's chosen solution is to install a "containment collar", and asking the ASN for its position on this solution, so that all the design and procurement activities could be launched by the end of 2021. In a letter of 8 October 2021 the ASN indicated that it had no objections to this solution in principle. Nonetheless the design file for the containment collar will be examined by the French Radiation Protection and Nuclear Safety Institute IRSN (*Institut de radioprotection et de sûreté nucléaire*).

After corrosion was observed on pressuriser valves at the EPR at Olkiluto (Finland), the Group carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. The material used for certain components of the pilots control valves was changed accordingly. Several corrosion stress tests were conducted to select the best material. The ASN was regularly informed of the technical choices, and made no objection to this strategy. The ASN and the IRSN also continued their examination of the operation and reliability of the pressuriser valves. EDF is due to respond to the IRSN's most recent questions so that it can finalise examination of the valve design.

As the work advanced, new technical matters emerged that could increase the completion cost and the risk of deferred timelines. In view of the progress made on operations and preparations for start-up, on 12 January 2022 EDF adjusted the schedule for the Flamanville 3 project. The fuel loading date was deferred from late 2022 to the second quarter of 2023, and the estimated completion cost revised from €12.4 billion to €12.7 billion (in 2015 euros, excluding interim interest). The project has no remaining margin in its schedule or completion cost.

Before loading the fuel into the reactor vessel and carrying out the overall start-up tests, several operations remained to be carried out, mainly:

- completion of the weld repairs on the main secondary circuit;
- a new series of qualification tests of the installation before loading the fuel into the reactor;
- incorporation of experience gained from the technical issue handled at Taishan reactor 1;
- finishing work on the installation, and remittal of all the documents required for operation.

Developments in 2022

The main progress on the Flamanville 3 project in 2022 were:

- continuation of weld repairs on the main secondary circuit (see below);
- completion of full pool testing;
- completion of the last functional tests of the open reactor vessel;
- closure of the vessel head after the reactor vessel has been drained and cleaned, and testing the control rod drives.

As announced in January 2022, inspections of the Taishan 1 reactor's fuel assemblies following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This kind of wear has already been observed in several reactors of the French nuclear fleet. For the future commissioning of Flamanville 3, a solution has been examined with the ASN. EDF's proposed strategy for the Flamanville EPR (supply of around sixty reinforced fuel assemblies) was presented to the High Committee for Transparency and Information on Nuclear Safety (Haut comité pour la transparence et l'information sur la sécurité nucléaire, HCTISN) on 7 June 2022. In January 2023, the IRSN issued a favourable opinion of EDF's proposed strategy, and the ASN will finalise its examination by the end of the first quarter of 2023.

Repair work to the main secondary circuit welds continued at a good pace during the first half of the year. 122 welds are concerned (36 penetration welds and 86 non-penetration welds). At 31 December 2022, 56% had been repaired, 65% had been approved for stress-relieving heat treatment, and 32% were completed and valid after stress-relieving heat treatment. Work is totally finished on the welds on the reactor containment building, which were the most complex cases, and they have been declared valid.

Concerning the SIS (Safety injection system)/CHR (Containment Heat Removal) filtration sumps, EDF proposed a new filtration system which has been trialed and produced results considered satisfactory by the IRSN. Following these trials, in September 2022 EDF replaced the existing filters with finer filters. EDF also decided to reduce the quantities of potential debris that is known to clog up filters. The work to reduce potential debris is practically complete, and should be finished by the end of the first quarter of 2023.

After corrosion was observed on pressuriser valves at the Olkiluoto EPR (Finland), EDF and Framatome carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. EDF and Framatome decided to respond to this finding by changing the material used for certain components of the pilot control valves. Several corrosion stress tests were conducted to select the best material. The components have been made and will be installed in the reactor building in early 2023. Apart from this difficulty, the ASN is continuing its examination of the operation and reliability of the pressuriser valves.

On 16 December 2022, EDF adjusted the schedule for the Flamanville 3 project: the nuclear fuel loading is now scheduled for the 1st quarter of 2024 ⁽¹⁾. The estimated cost at completion has been raised from €12.7 billion to €13.2 billion ⁽²⁾.

This schedule update is mainly due to supplementary studies that were needed to establish a new process for the stress-relieving heat treatment (SRHT) ⁽³⁾ of some welds that have been upgraded in the last two years, which are located close to sensitive equipment for the nuclear plant's operation.

After the nuclear fuel loading, the start-up operations will continue, including notably inspections of all the reactor safety systems, equipment testing and qualification all the way through the temperature and pressure increases of the nuclear steam supply system, and then during the reactor ramping up. At 25% of nominal power, the reactor will be connected to the national electricity grid.

The last few months have seen further achievements in the pre-operation phase of the Flamanville EPR:

- the complex work of upgrading the main secondary circuit penetration welds is complete, and all the welds have been deemed compliant with the break preclusion concept. These first of their kind operations were achieved using remotely operated equipment and required more than twelve months of analyses and qualification prior to implementation at Flamanville;
- system performance testing of electrical equipment and fuel loading operations have been completed and deemed compliant with requirements.

Hinkley Point C

Following the final investment decision (FID) made by EDF's Board of Directors on 28 July 2016, EDF and China General Nuclear Power Corporation (CGN) signed contracts with the UK government for the construction and operation of two EPR reactors at the Hinkley Point site in Somerset (the "Hinkley Point C" or "HPC" project). EDF's share in HPC is 66.5% and CGN's share is 33.5%.

The Contract for Difference signed on 29 September 2016 aims to provide security in the revenues generated from electricity produced and sold by HPC by paying remuneration based on the difference between the contractual strike price and the market price, over a period of 35 years from commissioning of Unit 2. From the plant's start date, if the reference price at which the producer sells electricity on the market is lower than the strike price defined in the contract, i.e. £92.50/MWh (in 2012 sterling), index-linked to UK inflation through the Consumer Price Index,

the producer will receive an additional payment. If the reference price is higher than the strike price, the producer must pay the difference.

A review of the schedule and cost for the two Hinkley Point C reactors was finalised in May 2022 ⁽⁴⁾ and concluded (see also note 10.8):

- the start of electricity generation for Unit 1 is targeted for June 2027. The risk of further delay of the two units is assessed at 15 months, assuming the absence of a new pandemic wave and no additional effects of the war in Ukraine ⁽⁵⁾;
- the project completion costs are now estimated in the range of £25-26 billion (in 2015 sterling) ⁽⁶⁾.

Costs net of operational action plans, in 2015 sterling, excluding interim interest and at a reference exchange rate for the project of £1 = €1.23.

In 2022, as well as the physical progress made on the various sections of the project, an important milestone was reached in the final quarter of 2022 when the Office for Nuclear Regulation (ONR) approved completion of the reactor vessel for HPC Unit 1, and its transport from Framatome's Saint-Marcel site. ONR authorisation will be needed later to install the vessel. Another significant milestone expected in 2023 is the installation of the Unit 1 reactor dome.

Regarding funding of the project:

- the agreements signed by EDF Energy and CGN include a mechanism for compensation by EDF of certain additional costs in the event of initial budget overruns or delays. This mechanism was activated in January 2023. The exact terms were agreed in a contract between the two companies in September 2016 and are confidential;
- since the project's total funding requirements are higher than the shareholders' contractual commitments (committed equity), the shareholders will be asked to contribute additional funding (voluntary equity) by a date expected in the second half-year of 2023. CGN has not yet announced whether it will provide voluntary equity above its maximum committed equity. If CGN does not provide any voluntary equity, the EDF group will be obliged to do so instead of CGN, on condition that CGN has contributed its full share of committed equity based on the current estimate of the project's cost to completion.

Sizewell C

Sizewell C is a project to build a nuclear power plant with two EPRs at Sizewell in Suffolk, England. The Sizewell C plant will have total capacity of 3.26GW, to supply electricity for 6 million households for around 60 years. The project is founded on a strategy of replication of HPC, as far as possible copying the design and logistics chain of the HPC project.

The main developments in the project in 2022 were the following:

- A new law, the Nuclear Energy (Financing) Act, came into force in March 2022 and introduced a Regulated Asset Base (RAB) funding model for future nuclear projects. Discussions are continuing between the Group and the British government to finalise the terms of the Government Support Package for Sizewell C.
- In July 2022, the UK government granted the Development Consent Order (DCO) for Sizewell C, giving the green light to start construction of the plant. A legal challenge to this SCO is in process, with a court hearing set for March 2023.
- In July 2022 the ONR concluded that the application for Sizewell C's nuclear site licence met almost all the regulatory requirements, with only a few outstanding matters to be resolved. The Nuclear Site licence should be formally granted at the date of the Final Investment Decision (FID).

Regarding funding of the project:

- in January 2022, the UK government indirectly invested £100 million of public funds in development of the Sizewell C project, through of a payment to EDF in return for an option to purchase the site land or EDF's investment in the project company;

(1) See EDF's press release of 16 December 2022.

(2) In 2015 euros and excluding interim interest.

(3) Stress-relieving heat treatment (SRHT) is a process carried out after welding to relieve residual welding stresses and achieve the right mechanical characteristics for the welded part.

(4) The review took into account the main aspects of the project. The schedule and cost of electromechanical works and of final testing have not been reviewed.

(5) Since the beginning of construction, the project has been delayed by 18 months in total, mainly due to the Covid-19 pandemic.

(6) Costs net of operational action plans, in 2015 sterling, excluding interim interest and at a reference exchange rate for the project of £1 = €1.23.

- on 29 November 2022, the UK government announced its decision to make a direct investment of about £700 million in Sizewell C, to support the project's development. At 31 December 2022, the UK government held 32% of the project and EDF held the other 68%. The UK government will inject further capital during 2023, until the project is held in equal 50% shares with EDF by the time the FID is made;
- this investment by the UK government led to the withdrawal of China General Nuclear (CGN) from the Sizewell C project. CGN held a 16% share in the project at 28 November 2022.

EDF intends to become a minority shareholder on the date of the FID, by reducing its stake to a maximum 19.99% with correspondingly limited rights, and to deconsolidate the project in the Group's financial statements. EDF's ability to participate along with other investors in a FID and contribute to funding for the construction phase still depends on the fulfilment of conditions which are not guaranteed at this date.

10.7 Investments in intangible assets and property, plant and equipment

The table below provides a breakdown of the investments in intangible assets and property, plant and equipment presented in the cash flow statement:

<i>(in millions of euros)</i>	2022	2021
Acquisitions of intangible assets	(1,720)	(1,645)
Acquisitions of property, plant and equipment	(16,923)	(16,102)
Change in payables to suppliers of fixed assets	319	141
INVESTMENTS IN INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT	(18,324)	(17,606)

Investments in intangible assets and property, plant and equipment during 2022 mainly concern:

- the France – Generation and Supply segment: €5,745 million, primarily (75%) investments made in the nuclear fleet currently in operation, essentially made under the "Grand Carénage" programme and including €376 million for work to address the stress corrosion phenomenon, investments for Flamanville 3, and investments in hydropower generation;
- the France – Regulated activities segment: €4,739 million, essentially investments related to connections for customers and producers, but also

investments for network renewal, quality of service and network modernisation;

- the United Kingdom segment: €4,541 million, mainly concerning investments made for the Hinkley Point C project where the mechanical, electrical and heating (MEH) work on the dome and construction of the reactor vessel for unit 1 are now finished, and civil engineering work is 50% complete;
- the EDF Renewables segment: €1,806 million, with a slight decrease in wind and solar capacities under construction, principally in North America.

10.8 Impairment/reversals

Accounting principles and methods

At the year-end and at each interim reporting date, in application of IAS 36, the Group assesses whether there is an indication that an asset could have been significantly impaired. An impairment test is also carried out at least once a year on cash-generating units (CGUs) or groups of CGUs including an intangible asset with an indefinite useful life, or to which goodwill has been partly or totally allocated.

Impairment tests are carried out as follows:

- the Group measures any long-term asset impairment by comparing the carrying value of these assets and goodwill, grouped into CGUs where necessary, and their recoverable amount;
- CGUs are groups of homogeneous assets that generate identifiable independent cash flows. They reflect the way activities are managed in the Group: they may be subgroups when the activity is optimised across the whole subgroup, or CGUs formed by parts of subgroups corresponding to different types of activity that are managed separately (thermal generation, renewable energy production, services), or single assets;
- the recoverable value of these CGUs is the higher of fair value net of disposal costs, and value in use. When this recoverable value is lower than the carrying amount in the balance sheet, an amount equal to the difference is booked under the heading "Impairment". The loss is allocated first to goodwill, and any surplus to the other assets of the CGU concerned; impairment booked on goodwill is irreversible;
- fair value is the asset's potential sale price in a normal transaction between economic actors;
- value in use is calculated based on projected future cash flows:
 - > over a horizon that is coherent with the asset's useful life and/or operating life,
 - > for certain intangible assets with an indefinite useful life (such as brands), beyond the horizon that can be observed or modelled, a terminal value is determined by discounting to infinity a normative cash flow,
 - > excluding development projects other than those that have been decided at the valuation date, and
 - > discounted at a rate that reflects the risk profile of the asset or CGU;
- the discount rates used are based on the weighted average cost of capital (WACC) for each asset or group of assets concerned, determined by geographical area and by business segment under the CAPM. WACC is calculated after taxes;
- future cash flows are calculated on the basis of the best available information at the closing date:
 - > for the first few years, the flows correspond to the budget, then the Medium-Term Plan (MTP). Over this horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration,
 - > beyond the MTP horizon, cash flows are estimated based on long-term assumptions prepared for each country where the Group controls industrial assets, using a financial trajectory and scenario-building process that is updated annually. Long-term electricity prices are constructed analytically based on a set of assumptions concerning factors such as economic growth, commodity (oil, gas, coal) and CO₂ prices, demand for electricity, interconnections, changes in the energy mix (rise of renewable energies, installed nuclear capacity, etc.) and fundamental models of supply-demand balance. The Group compares each principal component of assumptions with analyses by external bodies (for example, for commodities and CO₂, which are primary influences on electricity prices, the Group compares its own scenarios with scenarios developed by organisations such as the IEA, IHS, Wood Mackenzie or Aurora, bearing in mind that each of these analysts itself proposes a cone of scenarios). Additionally, in constructing these long-term prices, the impact of climate contingencies is incorporated into

assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDEX model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities (temperatures, cloud coverage, wind speeds) and ultimately on the European electricity system between 2027 and 2050. The scenarios used also take account of the objectives of public energy and climate policies such as Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie nationale bas carbone*) in France;

- income from capacity market mechanisms is also taken into consideration in valuing generation assets, provided the countries concerned have introduced or announced the future introduction of a capacity revenue mechanism.

These calculations may be influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and the Group's market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans and where relevant the terminal values taken into consideration.

10.8.1 Impairment by category of asset

Details of impairment recognised and reversed are as follows:

<i>(in millions of euros)</i>	Notes	2022	2021
Impairment of goodwill	10.1	(1,178)	-
Impairment of other intangible assets	10.2	(65)	59
Impairment of tangible assets	10.3-10.5	(519)	(712)
IMPAIRMENT NET OF REVERSALS		(1,762)	(653)

In 2021, impairment recognised amounted to €(653) million and concerned:

- nuclear assets due to the shutdown of Dungeness (€(445) million) and impairment of land in the United Kingdom (€(260) million);
- various CGUs of EDF Renewables, principally in France (€(54) million);

- reversals of impairment related to hydropower assets (€60 million) and wind power assets (€90 million) owned by Edison in Italy; and
- other assets (total €(44) million).

Impairment recognised in 2022 amounts to €(1,762) million. Details are given below.

10.8.2 Impairment tests on goodwill, intangible assets and property, plant and equipment

The following tables present the results of impairment tests carried out on the main goodwill, intangible assets with indefinite useful lives and other Group assets at 31 December 2022, and some of the key assumptions used.

Impairment of goodwill and intangible assets with indefinite useful lives

€(1,178) million of new impairment was recorded on the Group's goodwill at 31 December 2022.

Operating segment	Cash-Generating Unit or asset	Net book value <i>(in millions of euros)</i>	WACC after tax	Growth rate to infinity	Impairment 2022 <i>(in millions of euros)</i>
United Kingdom (EDF Energy) ⁽¹⁾	Goodwill	6,541	6.7%	-	(1,176)
Italy (Edison)	Goodwill (energy services)	148	7.1%	1.5%	(2)
	Edison brand	945			
Framatome	Goodwill	1,448	7%	1.5%	-
	Framatome brand	151		1.5%	-
Dalkia	Goodwill	643	5.2%	1.9%	-
	Dalkia brand	130		1.9%	-
Other impairment		-	-	-	-
IMPAIRMENT OF GOODWILL AND INTANGIBLE ASSETS WITH INDEFINITE USEFUL LIVES					(1,178)

(1) The impairment test of EDF Energy goodwill covers the useful life of industrial assets, currently in operation or under construction, with no projection to infinity. The WACC determined for goodwill takes account of the WACC applicable to each of EDF Energy's CGUs, including the WACC applicable to the HPC CGU, which benefits from a 35 - year regulated model.

Impairment of other intangible assets and property, plant and equipment

Operating segment	Cash-Generating Unit or concerned asset	Impairment indicators	WACC after tax	Impairment 2022 (in millions of euros)
United Kingdom (EDF Energy)	Nuclear assets currently in operation	Higher price scenarios	6.7% to 6.9%	400
	Other assets	Lower prospects for appreciation of land value		(120)
	Nuclear assets under construction	Adjustment of project schedule and costs: significant rise in discount rate		(551)
Italy (Edison)	Various energy services assets	Higher investment expenditure or fewer sales outlets for certain contracts	7.1%	(66)
EDF Renewables	Wind power assets	USA, Texas: Congestion on the transmission networks.	6.2%	(101)
	Various CGUs	Mexico: Cancellation of a PPA		(28)
Other international - China	Biomass asset	Difficulties with production and obtaining operating subsidies	7.4%	(57)
Other impairment				(61)
IMPAIRMENT OF OTHER INTANGIBLE ASSETS AND PROPERTY, PLANT AND EQUIPMENT				(584)

General assumptions

At 31 December 2022, the Group applied its usual method for impairment testing, updating the annual tests for goodwill and intangible assets.

Particular attention was paid to the determination of WACC in an environment of rising and volatile interest rates (see the section on the Discount rates). When performing impairment and sensitivity tests, close attention was also paid to the effects of scenarios concerning prices and measures announced or introduced by the authorities in countries where the Group does business.

Electricity prices

Over the market horizon (generally three years), the forward prices used in the impairment tests are the market prices observed at 31 December, including hedged positions, which (to an even greater extent than at 30 June) were significantly higher than observed forward prices at 31 December 2021, in all geographical zones.

Over the long-term horizon, these tests use price curves constructed analytically founded on assumptions and fundamental models of the supply-demand balance, in an annually updated scenario-building process that is subject to specific internal governance.

The long-term scenarios established for electricity prices in the various countries where the Group has operations take account of the objectives of public energy and climate policies such as the Paris Agreement at worldwide level, Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie nationale bas carbone*) in France. The scenarios used mainly include high CO₂ prices supporting carbon-free electricity production in Europe, and a lower-carbon economy more generally through electrification of uses.

The long-term price curves in the 2022 scenario follow an upward trend early in the horizon due to the effects of the current energy crisis, but in the longer term these effects dissipate and electricity prices are closer to those in the 2021 scenario.

Compared to the 2021 scenario, price levels are substantially higher at the start of the horizon, with an average increase in the baseload power price of around +€10 to +€25/MWh in the four core countries (France, the United Kingdom, Italy and Belgium). From 2030 and over a long-term horizon, electricity prices remain stable compared to the 2021 scenario.

There are several explanatory factors for this pattern:

- the Russian invasion of Ukraine had a major impact on gas supply levels and put great pressure on the gas markets, leading to an upward adjustment to gas prices early in the horizon. In the longer term, Europe is expected to significantly reduce its dependence on Russian gas (and compensate with LNG), and long-term gas price trajectories are relatively similar to 2021;
- to reflect European ambitions for decarbonisation and cutting greenhouse gas emissions, CO₂ quota prices have a rising trajectory and are higher than in 2021 over the horizon 2027-2035. At the start of the horizon, the impact of CO₂ prices on electricity price levels is of secondary importance given the significant upward influence of gas prices;
- at the end of the horizon, the increase in CO₂ prices combines with accelerated development of low-carbon generation facilities (nuclear power and renewable energy) to result in relatively stable electricity prices compared to the projections in the 2021 scenarios.

Demand for electricity is rising across all timescales at European level. Electrification of uses, particularly in transport and industry, is reinforced by a greater need for electrolytic hydrogen. These developments, in addition to RePowerEU plan should accelerate energy independence in Europe, have led an increased in the need for electricity.

As these assumptions are structuring for the determination of the recoverable value of Group's assets, sensitivity analyses are carried out on long-term price curves as part of the impairment tests.

Furthermore, for the assumptions concerning capacity mechanisms generally in European countries, the necessary additional remuneration is expected to be lower than in the 2021 scenario. In the early stages of the 2022 scenario horizon, due to the current energy crisis, the upward revision of electricity prices on the Energy-Only Markets increases returns on peakload generation assets on the open market and automatically decreases the need for additional remuneration on those assets. In the long term, capacity mechanism revenues are also lower overall than in the 2021 scenario. In the case of France, this trend is explained by the increase in generation capacities, in keeping with the strategic orientations presented in the French President's speech at Belfort (construction of new EPRs, extension of the existing fleet's operating lifetime, and accelerated expansion in renewable energies while reducing end-user demand for energy), which give France a greater margin in the medium and long term.

Discount rates

The discount rates used in impairment testing are substantially higher than at 31 December 2021 for all countries where the Group has operations, with increases of 100-130 base points in its four principal countries (France, the United Kingdom, Italy, Belgium). This increase was driven by the rise in risk-free rates.

The impairment test results are also analysed for sensitivity to the discount rate.

The higher WACC was the primary factor driving recognition of impairment of €(1,176 million) on the goodwill of EDF Energy at 31 December 2022.

United Kingdom - EDF Energy (Goodwill and tangible and intangible assets: €33,217 million - see note 4.1.1)

Thermal assets

Significant amounts of impairment have been booked in recent years in respect of the Group's thermal assets in the United Kingdom, reducing the net book value of the remaining assets practically to zero.

At 31 December 2022, the Group has practically no remaining coal-fired or gas-fired operations in the United Kingdom.

Sales and Supply segment

In 2022, the Sales and Supply segment was affected by the United Kingdom's energy market crisis, as it was unable to pass on the total increase in its sourcing costs to consumers, even though the cap on the Standard Variable Tariff (SVT) for domestic customers was raised successively by 54% in April, then 80% in October. In the end, the energy price crisis led the Department for Business, Energy & Industrial Strategy (BEIS) to launch an Energy Price Guarantee to protect consumers from the full impact of the rise in unit tariffs: the government will bear that cost above a threshold (currently set at £2,500 a year, but due to rise to £3,000 for the period 1 April 2023 – 1 April 2024). A similar mechanism, the Energy Bill Relief Scheme, exists for BtoB consumers, but it covers more complex tariffs associated with that market and is scheduled to end on 31 March 2023. Domestic consumers in the United Kingdom have also benefited from other financial support from the government, including the Energy Bills Support Scheme providing a £400 discount to help consumers with their energy bills. The support measures introduced, principally funded by the State budget, thus had limited effects on the profitability of the Sales and Supply segment. Market shares were stable, with a lower churn rate in 2022.

The recoverable value of the Sales and Supply segment is higher than in 2021 due to an improvement in EBITDA over the MTP horizon for BtoC activities in particular, driven by a catch-up effect resulting from the energy crisis, because the SVTs used to set contract prices have been updated. This effect is mitigated by the increase in the WACC. In the long term, profit margin prospects are confirmed for the BtoB and BtoC activities and this segment remains relatively insensitive to price scenarios as wholesale energy costs are generally passed on to consumers over time.

Sensitivity analyses were conducted with major reductions in long-term margin rates and losses of market share. These analyses showed that this CGU is sensitive to these parameters, especially as it has few fixed assets (mainly information systems).

Nuclear assets (plants in operation)

The recoverable value of EDF Energy's nuclear assets in operation is determined by discounting future cash flows over the assets' useful life. This year saw the end of generation at Hunterston on 7 January 2022 and Hinkley Point B on 6 July 2022 (R4) and 1 August 2022 (R3), in accordance with the announcements made by the Group on 27 August 2020 and 19 November 2020 respectively. At 31 December 2022, the Nuclear assets CGU includes the Sizewell B PWR plant, assuming that it will remain in operation until 2055, the Torness and Heysham 2 AGR plants following the decision made in December 2021 to bring their estimated end of operations forward to March 2028, and the two AGR plants at Hartlepool and Heysham 1, which are scheduled to cease operations in 2024.

The prospects of a significant rise in forward market prices, even beyond the medium-term horizon, are partly mitigated by the new Electricity Generator Levy on low-carbon electricity producers introduced by the British Government (45% on revenues above £75/MWh between January 2023 and March 2028), and the

increase in the WACC. The test results confirm the durable rise in headroom, which is higher than in 2021. Consequently €400 million was recovered from the impairment previously booked in June 2020 following generation difficulties and a significant drop in market prices. New impairment of €120 million was also recognised in respect of individual assets (non-operating land close to nuclear plants).

The recoverable value of nuclear assets in operation is sensitive to price assumptions: all other things being equal, a +/-5% difference over the entire horizon of the scenario used for the impairment test would have an impact of +/- €500 million on the test result. The nuclear output assumptions used also have a substantial influence on the calculation: all other things being equal, a +/-5% revision to forecasts over the entire horizon would result in a variation of +/-€700 million in the recoverable value. In addition, a 50bp increase in the discount rate would lead to a decrease of around £200 million in the recoverable value. Taken individually, none of these sensitivities is likely to generate a risk of impairment, all other things being equal.

Goodwill and the HPC Project

EDF Energy's gross goodwill amounted to €7.7 billion (or €6.8 billion including Podpoint) at 31 December 2022 and mainly results from the takeover of British Energy in 2009.

The recoverable value of EDF Energy is determined by discounting future cash flows over the assets' useful life, taking into consideration the two EPRs with a 60-year useful life currently under construction at the Hinkley Point site. Future cash flows from these plants are determined by reference to the Contract for Difference (CfD) between the Group and the UK government. The CfD sets stable, predictable prices for EDF Energy for a period of 35 years from the date the two EPRs are first commissioned: if market prices fall below the CfD exercise price, EDF Energy will receive an additional payment. The CfD exercise price for HPC is set at £92.50/MWh (in 2012 sterling) and is indexed on UK inflation via the consumer price index (CPI). Thus, for the operation period under the CfD, future cash flows include a long-term inflation assumption. For the 25 years of operation after the CfD period, for which no forecasts exist for long-term UK electricity market prices, future cash flows include a very long-term inflation assumption and a price assumption based on the CfD exercise price of £92.50/MWh (in 2012 sterling), which is the best estimate of market price levels over this horizon.

The WACC determined for HPC is a hybrid rate that reflects the specificity of the cash flows being regulated by the CfD for 35 years, then exposed to market prices for the 25 subsequent years. The rate applicable to the project is 6.7% at 31 December 2022, 100bp higher than the 5.7% used in 2021. The WACC used to test EDF Energy goodwill takes account of the WACC applicable to each of the company's CGUs (HPC, Nuclear assets (plants in operation), Sales and Supply). Given the respective importance of cash flows from each CGU, the overall WACC for EDF Energy is also 6.7% at 31 December 2022, after 5.7% at 31 December 2021.

On 19 May 2022 the Group released a review of the schedule and cost for construction of the two nuclear reactors at Hinkley Point C. This review was conducted to update the project assumptions, notably due to the impact of Covid-19 restrictions and Brexit on the supply chain, and the challenges facing both operators and personnel as regards resources (see the Group press release of 19 May 2022, and note 10.6).

The start of electricity generation by Unit 1 is now expected in June 2027 instead of June 2026 as previously (and June 2028 instead of June 2027 for Unit 2). The project completion costs are now estimated in the range of £25-£26 billion (in 2015 sterling), as opposed to the previous estimate of £22 - £23 billion (in 2015 sterling).

This announcement also reported the risk of a further 15-month deferral of the commissioning date, resulting in a lower recoverable value estimated at £2.5 billion that was integrated into the project model.

In the financial statements at 30 June 2022, based on the WACC of 6% at that date (versus 5.7% at 31 December 2021), the Group stated that after taking this risk into consideration, the threshold of the goodwill impairment test would be reached if the discount rate was increased by 15bp, and the threshold of the impairment test of the HPC CGU would be reached if the discount rate was increased by 50bp, all other things being equal.

The impairment test of the HPC project at 31 December 2022, based on an updated project model incorporating the information announced in May 2022 and the 100bp increase in WACC, identified a loss of value of €(551) million at 31 December 2022. This impairment is reversible.

Despite the greater headroom observed at the end of December 2022 in EDF Energy's other CGUs (Nuclear assets plants in operation, Sales and Supply), consideration of the revised value of the HPC project which was seriously affected by the higher discount rate led to recognition of partial impairment of €(1,176) million on EDF Energy goodwill at 31 December 2022.

The book value of the HPC project, and of EDF Energy goodwill, are both now sensitive to any unfavourable variation in assumptions.

Other assets in the new nuclear category

Capitalised costs for the Sizewell C project (note 10.6) amount to €808 million and are included at net book value in the impairment test of EDF Energy's goodwill, without considering prospects for their appreciation in value.

Land and securities accounted for by the equity method in the project company Bradwell (gross value of around €330 million) owned 80% by CGN are totally covered by provisions, partly in 2021 and the rest in 2022 as it no longer certain that the project will go ahead.

Italy - Edison (Goodwill and tangible and intangible assets: €6,024 million - see note 4.1.1)

As an intangible asset with an indefinite useful life, the impairment test of the Edison brand, first recognised at the value of €945 million when Edison was taken over in 2012, is updated annually using the royalty relief method and a 100bp risk premium in determining the discount rate. The test was updated at 31 December 2022, based on the adjusted model of 31 December 2021 which incorporated the recommendations of the most recent external assessment carried out in 2020 (reducing the long-term growth rate from 2% to 1.5% based on GDP forecasts; increasing the royalty rate for the Business customer segment following a survey of business customers). The result shows a rise in the brand's recoverable value, reflecting higher medium and long-term price scenarios, mitigated by the effect of an increase of over 100bp in the WACC. Sensitivity analyses including an additional 50bp increase in the WACC, and a -0.2% decrease in royalties, do not indicate any risk of impairment.

At 31 December 2022, the recoverable value of Edison's generation CGUs (Thermal assets, Hydropower, Wind power, Solar power, Gas) is higher overall due to more favourable medium and long-term price scenarios, although this effect was mitigated by the windfall tax introduced for electricity producing companies by the Italian government in late 2022, and the increase of around 100bp in the WACC. The recoverable value of the Hydropower CGU is down slightly, as future cash flows include an increase in investments in preparation for concession renewals. No risk of impairment was thus identified for these CGUs.

The following sensitivity tests were performed and did not indicate any risk of impairment:

- for the Hydropower, Wind power and Solar power CGUs: a 50bp increase in the WACC then a 5% decrease in prices over the whole horizon;
- for the Thermal assets CGU, on which accumulated impairment of some €600 million had been recorded in the past, the impairment test at 31 December 2022 shows a significantly positive headroom. However, as this result essentially relates to the two new-generation CCGT plants at Marghera and Presenzano (carbon emissions 40% below the national average, NOx emissions reduced by 70%) which will benefit from capacity revenue and are due to be commissioned in 2023, there was no reversal of impairment in 2022. Sensitivity analyses were conducted on these assets, and the results show that a 10% decrease in clean spark spreads or a 50bp increase in WACC would not entail any risk of impairment.

Conversely, impairment of €68 million was recognised on certain specific Energy Services assets (contracts, customer relations, goodwill).

Framatome (Goodwill and tangible and intangible assets: €4,342 million - see note 4.1.1)

The recoverable value of Framatome is determined on the basis of a 10 - year business plan and a terminal value. This business plan is sensitive to assumptions concerning the completion of major construction projects that are incorporated into the reactor scenario, and market share assumptions concerning services to the installed base and fuel deliveries to customers' reactors. The reference scenario includes expansion of the EPR2 programme in France and realisation of the Sizewell C project in the United Kingdom, and also other EPR project opportunities in India or elsewhere. The WACC used to discount future cash flows is weighted according to Framatome's different businesses and their risk profiles. The headroom indicated by the impairment test on goodwill remains very significant (€1,448 million) although lower than at 31 December 2021, principally due to the increase of over 100bp in the WACC (from 5.9% to 7%), partly mitigated by the rise in the long-term growth rate (to 1.5%) in line with inflation.

Sensitivity analyses were conducted using a 50bp increase in WACC, or with a 0% growth rate to infinity. The test conclusions were not affected.

Framatome's intangible assets recognised after its acquisition (technologies, including the EPR, which are depreciated over an average 15 to 20 years; customer relations amortised over an average period of 11 years; and the brand) were tested, and no risk of impairment was identified.

EDF Renewables (Goodwill and tangible and intangible assets: €11,782 million - see note 4.1.1)

EDF Renewables' assets mainly consist of CGUs that benefit from Power Purchase Agreements (PPAs) providing contractually defined revenues over most of the assets' useful lives, and consequently have low market risk exposure.

In 2021, impairment of €(54) million was recognised in respect of various CGUs of EDF Renewables.

Following impairment tests performed at 30 June 2022, impairment was booked in respect of wind farms in Texas (€(60) million on 1 fully consolidated plant, and €(134) million on 3 plants accounted for by the equity method) due to congestion on the transmission networks following recent expansion in renewable energies, with a significant and durable impact on projected sales. This impairment was updated at 31 December 2022 (notably for exchange rate adjustment) and amounts to €(62) million, and €(139) million on investments accounted for by the equity method (see note 12.3).

Furthermore, after the Federal Electricity Commission decided to cancel a PPA, impairment of €(37) million was previously booked on a wind farm under construction in Mexico (€(39) million at 31 December 2022).

Other impairment totalling €(28) million was recognised on specific assets in France and the United States, notably concerning a wind farm in the United States that is likely to be sold for a price below the value of the assets.

Dalkia (Goodwill and tangible and intangible assets: €2,990 million - see note 4.1.1)

At 31 December 2022, Dalkia's goodwill amounts to €643 million, principally resulting from acquisition of the Dalkia group in France under the agreement of 25 March 2014 with Veolia Environnement.

The recoverable value of the Dalkia group is based on future cash flows projected over a medium-term horizon, and a terminal value that represents cash flow projections to infinity. The test update at 31 December 2022 found that the recoverable value had decreased, principally due to the 100bp increase in the WACC (from 4.2% to 5.2%), which was partly mitigated by an increase in the long-term growth rate (to 1.9%) in line with inflation. Sensitivity analyses of these two key parameters, increasing the WACC by 50bp and reducing the growth rate by 30bp, did not identify any risk of impairment.

The Dalkia brand, which was recognised as an asset when the Group took control of Dalkia in 2014 at the value of €130 million, is estimated by the royalty relief method. The updated impairment test at 31 December 2022 supports its current book value.

Finally, the test of the service subsidiary Imtech in the United Kingdom did not indicate any risk of impairment.

France - Generation and Supply (Goodwill and tangible and intangible assets: €61,442 million - see note 4.1.1)

In terms of asset value, this segment consists almost entirely of the generation fleet in mainland France. Due to the integrated management and interdependence of the different generation facilities that make up the French fleet (nuclear, thermal and hydropower plants), independently of their maximum technical capacities, the Group considers the entire fleet as a single CGU. It includes the Flamanville 3 plant, with net book value of €15,472 million (see note 10.6). It does not include any goodwill.

The recoverable value of the generation fleet is estimated by discounting future cash flows by the Group's usual methodology, described in the accounting policies, over the assets' useful life, using an after-tax WACC of 6.3% at 31 December 2022 (120bp higher than the 5.1% at 31 December 2021). For nuclear assets, the Group's benchmark model assumes an operating lifetime of 50 years for 900MW and 1300MW-series plants and 40 years for N4-series plants, based on the depreciation period applicable at 31 December 2022, although it is the Group's strategy to keep plants in operation well beyond 50 years. The impairment test also incorporates the latest forecasts for Flamanville 3 (which has a planned operating lifetime of 60 years), with an adjusted schedule and cost revised (see note 10.6).

For the period 2023-2025, the key assumptions concerning price and regulation take account of forward prices (significantly higher over this horizon than at the 2021 year-end) and hedges already contractualised, an ARENH volume of 100TWh and price of €42/MWh, a tariff cap for final consumers that will be funded by the French State budget in accordance with the current Finance Law (and therefore no loss of cash flow for EDF) and the best estimate of the inframarginal rent cap, considering the negative rents for 2022 (see note 5.4). These assumptions are consistent with the 2023 budget approved by the Board of Directors.

From 2026, when the ARENH scheme ends, since to date there is no regulation of the existing nuclear power fleet, the reference impairment test framework apply an assumption of full market exposure in constructing tariffs and prices (see the section on Electricity prices).

As a result of medium and long-term price analyses, in the context of a gradual recovery in nuclear power generation starting from a range of 300-330TWh for 2023, the impairment test indicates substantially higher headroom than in 2021 (even before the effect of measures associated with the exceptional additional ARENH allocation and the impacts of the drop in nuclear power output in 2022), although the increase is mitigated by the higher WACC. The test shows that the recoverable value is well above the net book value.

The key assumptions in the test still concern:

- the useful life of nuclear assets;
- the long-term market price scenario (after the end of the ARENH scheme) and to a lesser degree the changes in forward prices over the medium-term horizon;
- the volume of nuclear power output;
- the discount rate; and
- to a lesser extent, changes in costs and investments, and the assumed capacity revenue.

These key assumptions were subjected to individual and combined sensitivity analyses (a 50bp increase in the WACC; a 10TWh per year decrease in nuclear power output across the whole period; a 5% increase in investments or operating expenses across the whole period; a decline in capacity prices; and post-2026 market prices 10% below the reference scenario price for a sustained period) and the results did not call into question the existence of a positive difference between the book value and the recoverable value. An additional sensitivity test was also conducted using a less favourable income scenario over the 2024-2025 horizon, particularly considering potential unfavourable regulatory measures which could lead to a significant decrease in the test headroom, all other things being equal.

Other International - Belgium (Goodwill and tangible and intangible assets of the whole Other International segment: €2,325 million - see note 4.1.1)

The impairment test update for Luminus showed that the difference between the recoverable value and the book value was stable overall compared to 2021, due to the combined effects of more favourable medium and long-term price scenarios - although that effect will be largely offset by the inframarginal rent cap introduced (see note 5.4), a 130bp increase in the WACC (from 5.1% to 6.4%), and the contrasting effect of inclusion of the new CCGT plant under construction at the Seraing site, scheduled for commissioning in 2025, which will benefit from capacity revenue.

For tests of the nuclear plants operated by the ENGIE Group in which Luminus owns a 10.2% share (419MW), it has historically been assumed that operations will continue until 2025 at the latest depending on the plants. This test did not take into consideration the possible 10 - year extension for the Doel 4 and Tihange 3 reactors following the agreement in principle between the Belgian government and ENGIE announced in January 2023, since the conditions for the extension and its consequences in terms of future cash flows are not yet known.

Sensitivity analyses were conducted to incorporate the risk that the hydropower concessions may be shortened, and no associated risk of impairment was identified.

Net impairment of €(141) million was recorded on associates at 31 December 2022, principally in respect of assets owned by EDF Renewables (see note 12.3). Impairment of €(219) million was also booked at 31 December 2021 in respect of associates.

Note 11 French public electricity distribution concessions

Accounting principles and methods

The accounting treatment of public distribution electricity concessions in France is determined by the concession agreements, with particular reference to their special clauses. It takes into consideration the possibility that the EDF group, particularly Enedis, may one day lose its status as the sole authorised State concession operator.

In application of the concession agreements, the concession operator manages the facilities at its own risk for the entire term of the concession, and bears substantially all the risks and benefits (both technical and economic) over the useful life of the network infrastructure. Under IAS 16, the assets are controlled by the operator and the grantors have no decisive characteristics of control over the infrastructures as defined by IFRIC 12.

All concession assets are consequently carried in the balance sheet, regardless of their origin (facilities constructed or purchased by the concession operators, and facilities provided by the concession grantors) and the source of financing, while the contractual obligations to the grantor are recognised in the liabilities.

Public electricity distribution facilities that are constructed or purchased by the concession operator are carried at production or acquisition cost:

- purchased facilities are initially recognised at acquisition cost including directly attributable expenses incurred to make the asset ready for use;
- the production cost of facilities developed in-house includes all labour and materials costs, and all other production costs attributable to the construction of the asset, whether incurred directly by the company or invoiced by third parties.

New facilities provided by the concession grantors are carried at the value of the cost the Group would have borne if it had constructed them itself.

In the specific case of rising mains transferred for no consideration to the public distribution network in application of article 176 of French law 2018-1021 of 2 November 2018 on housing, development and digital affairs (the "ELAN" law), these assets are carried at their market value under article 213 of France's national chart of accounts.

Balance sheet liabilities are recognised in respect of new facilities provided for no consideration by the concession grantors and the rising mains transferred under the ELAN law are included in "Special French public electricity distribution concession liabilities" in the balance sheet liabilities.

Distribution assets (pipes, substations, connections) are depreciated over periods of 30 to 60 years, meters and metering equipment over periods of 20 to 30 years. The Group regularly checks the relevance of the main accounting parameters for concession assets (depreciation periods, replacement values, management levels).

Regulations governing distribution concessions in France

Since the enactment of the French Law of 8 April 1946, EDF, and subsequently Enedis, has been the concession operator of most of the public distribution networks in France.

SEI is the concession operator for distribution network zones that are not interconnected with the network in mainland France, under identical concession regulations to Enedis.

Électricité de Strasbourg is the concession operator for public distribution networks in a limited zone depending on a non-nationalised distributor, in application of the Law of 8 April 1946.

In accordance with France's Energy Code and Local Authorities Code, the public distribution of electricity is principally operated under the public service concessions system. The authorities granting the concessions (local authorities or public establishments for cooperation acting as an Energy Distribution Organisation Authority (*Autorité organisatrice de la distribution d'énergie – AODE*)) organise the public electricity distribution service through concession agreements with specifications that define the respective rights and obligations of the parties. Enedis distributes electricity to 95% of the population of mainland France under such concessions, with 386 concession agreements at 31 December 2022. The other 5% are served by Local Distribution Companies (including Électricité de Strasbourg).

2017 concession agreement model

On 21 December 2017, the FNCCR, France Urbaine, EDF and Enedis signed a framework agreement for a new concession agreement model. This new model modernises the relationship between Enedis and concession-granting authorities in the long term and reflects the parties' attachment to the principles of French concessions for electricity distribution: public service, regional solidarity and national optimisation. The FNCCR and France Urbaine represent the concession-granting authorities, particularly towns, syndicated municipalities, boroughs and major cities when they are the authorities with competence to grant public electricity distribution concessions.

Concession agreements signed since 2018 apply the concession agreement model validated on 21 December 2017. At the effective date of a new agreement, the existing special concession liabilities recorded in application of the previous concession agreement (corresponding to the 1992 model) to represent the concession-granting authority's rights in the concession assets remain in the accounts. Like earlier concession agreements signed since 2011, the contractual obligation to establish provisions for replacement no longer exists, and the governance of investments is different.

To provide an effective public service, the distribution network operator and the concession-granting authority now agree to jointly set up a governance system to oversee investments in the public electricity distribution network over the area covered by the concession, including replacement of infrastructures. This system mainly takes the form of a master plan taking a long-term view of developments in the network over the concession area, and multi-year investment plans (*programmes pluriannuels d'investissements – PPIs*) for 4 and 5-year periods that are medium-term applications of the master plan.

PPIs contain detailed objectives for each investment purpose, concerning a selection of quantified, localised investments with financial valuations for the duration of the plan.

PPIs are revised when necessary, after consulting with Enedis and the authority granting the concession, to take account of changes in each party's investment priorities and financial resources.

If it were observed at the end of a PPI that any investment concerned by Enedis' financial commitment had not been made, the concession-granting authority could oblige Enedis to deposit a sum equal to 7% of the investments still to be made. This deposit would then be returned or retained after a two-year period, depending on the investments made by that time.

In accordance with the concession agreement model defined in late 2017 with the FNCCR and France Urbaine, negotiations for concession renewals continued in the regions of France during 2022. The phase of mass renewal of agreements is nearly finished.

By 31 December 2022, 302 concession agreements had been concluded under the new model validated in December 2017, for local projects with all kinds of concession-granting authorities: syndicated counties, two individual counties (*départements*), syndicated municipalities, major cities, urban boroughs, conglomerations and towns. 93% of contracts with the principal concession-granting authorities have thus been renewed under the new model.

Added to the 33 previously renewed or amended concessions that contain stipulations similar to the new model, these 302 concessions bring the total number of modernised concession agreements to 335 of the 364 that were due for renewal. Negotiations are continuing with a view to renewing agreements based on the old model as soon as possible.

11.1 Property, plant and equipment operated under French public electricity distribution concessions

<i>(in millions of euros)</i>	31/12/2021	Increases ⁽¹⁾	Decreases	Other movements ⁽²⁾	31/12/2022
Land and buildings	3,407	139	(30)	1	3,517
Networks	104,700	4,292	(445)	(3)	108,544
Other installations, plant, machinery, equipment & other	5,072	371	(425)	5	5,023
Assets in progress ⁽³⁾	1,886	327	(2)	(7)	2,204
Gross value	115,065	5,129	(902)	(4)	119,288
Land and buildings	(1,661)	(83)	26	(12)	(1,730)
Networks	(48,119)	(233)	327	(2,465)	(50,490)
Other installations, plant, machinery, equipment & other	(3,153)	(229)	417	(137)	(3,102)
Depreciation and impairment	(52,933)	(545)	770	(2,614)	(55,322)
NET VALUE	62,132	4,584	(132)	(2,618)	63,966

(1) Increases also include facilities provided by the concession-granting authorities.

(2) Other movements mainly concern depreciation of assets operated under concessions, booked against amortization recorded in the special concession liability accounts.

(3) Increases in assets in progress are stated net of the effects of newly-commissioned assets.

11.2 Special French public electricity distribution concession liabilities

Accounting principles and methods

Concession liabilities represent the contractual obligations specific to the concession rules for public electricity distribution concessions in France, and comprise the following:

- the concession-granting authority's rights in existing assets (its right to recover all the concession assets):
 - > the value in kind of the facilities (the net book value of assets operated under concessions),
 - > less any as yet unamortised financing provided by the operator;
- the concession-granting authority's rights in assets to be replaced (the operator's obligations relating to assets due for replacement):
 - > amortisation of financing by the grantor: this is a liability owed by the concession operator to the grantor and is recognised progressively as the asset is used,
 - > provision for replacement: this provision exclusively concerns assets due for replacement before the end of concessions using the 1992 concession agreement model, except for the rising mains transferred in application of the ELAN law. It is accrued over the asset's useful life, based on the difference between the asset's replacement value for identical capacity and functions, and the original value. In application of the 2017 concession model, used in almost all current concession agreements, no provision for renewal is now established for concession assets. The balance of provisions at the end of the previous concession agreement have been transferred to the new concession and the provisions for renewal continue to be used for their intended purpose.

When assets are replaced, amortisation recognised on the portion of assets considered to be financed by the grantor, and the provision for replacement established for the relevant asset, are cancelled and transferred to rights in existing assets. Any excess provision is taken to income.

During the concession, the grantor's rights in assets to be replaced are thus transferred upon the asset's replacement to become the grantor's rights in existing assets, with no outflow of cash to the benefit of the grantor.

The Group considers that the obligations related to assets to be replaced are to be valued on the basis of the special clauses contained in the concession agreements. Under this approach, these obligations are stated at the value of the contractual obligations as calculated and reported annually in the reports to the grantors. This contractual value also reflects the eventuality that the EDF group may one day lose its status as the mandatory concession operator.

The changes in special concession liabilities for existing assets and assets to be replaced are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Value in kind of assets ⁽¹⁾	55,788	54,391
Unamortised financing by the operator	(31,681)	(30,307)
Rights in existing assets – net value	24,107	24,084
Amortisation of financing by the grantor	16,331	15,630
Provisions for replacement	9,021	9,139
Rights in assets to be replaced	25,352	24,769
SPECIAL FRENCH PUBLIC ELECTRICITY DISTRIBUTION CONCESSION LIABILITIES	49,459	48,853

(1) Including contributions received to finance concession assets, amounting to €127 million (€129 million in 2021).

Note 12 Investments in associates and joint ventures

Investments in associates and joint ventures are as follows:

<i>(in millions of euros)</i>	Notes	31/12/2022			31/12/2021	
		Ownership%	Share of net equity	Share of net income	Share of net equity	Share of net income
Principal investments in associates						
CTE	12.1	50.10	1,766	250	1,478	307
Taishan (TNPJVC) ⁽¹⁾	12.2	30.00	n.c.	n.c.	1,210	(39)
Other investments held by EDF	12.3	n.a.	1,944	79	2,282	102
Investments held by EDF Renewables	12.3	n.a.	2,519	(52)	1,453	(117)
Other investments in associates and joint ventures	12.3	n.a.	n.c.	n.c.	1,661	260
Subtotal		-	9,421	759	8,084	513
CENG (sold on 6 August 2021)	3.1	n.a.	n.a.	n.a.	n.a.	131
Subtotal			-	-	-	131
TOTAL			9,421	759	8,084	644

n.a. = not applicable.

n.c. = not communicated.

(1) The financial data for Taishan at 31 December 2022 are not reported in this table as CGN (Taishan's parent company) publishes its consolidated financial statements later than the Group.

12.1 Coentreprise de Transport d'Électricité (CTE)

The key financial indicators for the CTE subgroup (on a 100% basis) are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Non-current assets	20,484	19,866
Current assets	6,241	3,577
TOTAL ASSETS	26,725	23,443
Equity	3,525	2,950
Non-current liabilities	15,017	15,163
Current liabilities	8,183	5,330
TOTAL EQUITY AND LIABILITIES	26,725	23,443
Sales	4,928	5,254
Operating profit before depreciation and amortisation	1,841	2,094
Net income	498	612
Net indebtedness	10,831	12,602
Gains and losses recorded directly in equity	433	(161)
Dividends paid	356	259

CTE's affiliate, RTE (Réseau de Transport d'Électricité), is responsible for managing the high voltage and very high voltage public electricity transmission network in France. Enedis uses RTE's network to convey energy to the distribution network.

12.2 Taishan

12.2.1 Taishan financial indicators

The key financial indicators published for Taishan (on a 100% basis) are as follows:

<i>(in millions of euros)</i>	31/12/2021	31/12/2020
Non-current assets	12,265	11,303
Current assets	900	897
TOTAL ASSETS	13,165	12,200
Equity	4,036	3,744
Non-current liabilities	6,680	6,022
Current liabilities	2,449	2,434
TOTAL EQUITY AND LIABILITIES	13,165	12,200
Sales	919	1,027
Net income	(131)	(41)
Dividends paid	-	-

12.2.2 Transactions between the EDF group and Taishan

EDF owns 30% of Taishan Nuclear Power Joint Venture Company Limited (TNPJVC), which was set up to build and operate two EPR nuclear reactors in Taishan, in the province of Guangdong in China. Comprising two 1750MW EPR reactors, Taishan nuclear power plant is the biggest cooperation project between China and France in the energy sector. CGN holds a 51% stake and Guangdong Energy Group a 19% stake.

Following the start of commercial operation by the first reactor on 13 December 2018, the second reactor began commercial operation on 7 September 2019. The first shutdowns for refueling took place in 2020 for Taishan 1 and 2021 for Taishan 2.

On 20 March 2019, the NDRC (National Development and Reform Commission) attributed regulated tariffs to the first three third-generation nuclear projects in China, one of which is Taishan. The tariff attributed to Taishan was set at RMB435/MWh until the end of 2021, with retroactive effect to the date the first unit was commissioned (13 December 2018). The indexing mechanisms applicable from 2022 were not set out in this decision and are still currently unknown. The NDRC announced that the current tariffs would be extended to 3rd generation plants (including Taishan).

On 14 June 2021, during its second cycle of operation, a build-up of noble gases was detected in the primary circuit of reactor 1 at the Taishan plant. The Chinese ministry for ecology and the environment stated that this was due to a few unsealed fuel rods. Following an initial analysis of the situation, on 30 July 2021 the operator of the Taishan plant decided to shut down reactor 1 to assess the situation in more detail, prevent it from progressing, and take remedial action. Defueling operations were completed on 22 August 2021. Inspections carried out on the fuel assemblies of Taishan reactor 1 following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This phenomenon has already been encountered in several reactors in the French nuclear fleet. During the first half of 2022, EDF and Framatome contributed to drawing up the documentation to safely restart Taishan reactor 1, and supported TNPJVC for its examination by the Chinese authorities. On 15 August 2022, Taishan reactor 1 was reconnected to the Chinese electricity network after the final inspection by the competent Chinese authorities at the end of July 2022.

Reactor 2 generated energy continuously throughout the first half of 2022, and was then taken offline for maintenance and refuelling in mid -2022. It was successfully reconnected to the network before the end of the year 2022.

Under the TNPJVC shareholder pact, EDF began an "interpretation" arbitration procedure in January 2021 in the Singapore International Chamber of Commerce against its partner CGN. The disagreement concerns the accounting policy for the power plant, particularly its depreciation period. EDF recommends a 60 - year period in line with the plant's operating lifetime, while CGN considers it should be 41 years, ending at the same time as the entity TNPJVC. This accounting policy

could influence the remuneration received by the EDF group through this partnership. EDF filed an initial request for arbitration in November 2021, and CGN responded in March 2022. Hearings have been scheduled for 10-14 October 2023.

A provision has been established in consideration of the persistent uncertainties regarding the level of tariff changes that could threaten the recoverable value of the investment accounted for by the equity method (this provision is included in "Provisions for contingencies related to subsidiaries and investments" in note 17.2).

12.3 Other investments in associates and joint ventures

The other investments held by EDF are included in dedicated assets (see note 15.1.2).

The other investments held by EDF Renewables are mainly located in North America, and to a lesser degree in Europe, China and Brazil.

Other investments in associates and joint ventures principally concern:

- JERA Global Markets (JERA GM), 33%-owned by EDF Trading, a company specializing in trading and optimization activities, particularly for liquefied natural gas (LNG);
- the supercritical coal-fired plant owned by Jiangxi Datang International Fuzhou Power Generation Company Ltd. in China, 49% - owned by the Group;
- the dam owned by Compagnie Énergétique de Sinop (CES) in Brazil, 51% - owned by the Group;
- the Nachtigal dam in Cameroon, 40%-owned by the Group: construction began in March 2019, with commissioning expected in 2024.

In 2022, €(141) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning associates of EDF Renewables (a net amount of €(121) million). €139 million of this impairment (see note 10.8) concerns wind power assets in Texas, due to congestion problems on the electricity network. Some impairment was also booked in respect of unlisted assets held by EDF (EDF Invest) that are included in dedicated assets.

In 2021, €(219) million of impairment was booked in respect of investments in associates and joint ventures, principally concerning associates of EDF Renewables (€(149) million). This impairment primarily relates to wind power assets in the USA following the major weather event of February 2021 in Texas, photovoltaic plants in France due to revision of purchase obligation tariffs introduced for certain facilities by the French Finance Law for 2021 (see note 10.8.2), and an offshore wind farm currently being built off the coast of Scotland, following construction difficulties with the foundations. Some impairment was also booked on unlisted assets owned by EDF (EDF Invest), included in dedicated assets.

Principal developments in investments accounted for by the equity method in 2022

Successful bid for a maritime zone in New York bight to develop offshore wind energy

On 25 February 2022, EDF Renewables and Shell New Energies US LLC (Shell), equal partners in the Atlantic Shores Offshore Wind LLC (Atlantic Shores) consortium, won development rights for a 32,112 hectare offshore area in the New York Bight, between Long Island and the New Jersey coast. After completing the development phase, the consortium will be able to build and operate an offshore wind project with an estimated capacity of 1.5 gigawatts (GW) for a period of 33 years.

EDF and its partner won one of six proposed lease areas to host offshore wind projects in an auction held by the Bureau of Ocean Energy Management (BOEM) from 23-25 February 2022.

Saint-Nazaire offshore wind farm: erection of France's first offshore wind turbine

On 13 April 2022, EDF Renewables, EIH SARL (owned by Enbridge Inc. and CPP Investments), the joint owners of the Saint-Nazaire offshore wind farm, and GE Renewable Energy, the wind turbine supplier, announced the erection of France's first offshore wind turbine, 12km off the coast of the Guérande peninsula in the Loire-Atlantique department.

The Saint-Nazaire offshore wind farm was commissioned progressively over the second half of the year. It has total capacity of 480MW and is expected to generate the equivalent of 20% of the Loire-Atlantique department's total annual electricity consumption.

EDF Renewables commissioned four solar power plants, including two floating plants, in Israel

On 8 June 2022, EDF Renewables announced the commissioning of four new solar farms in Israel, with a total 54MW of installed capacity. These new facilities are part of the Israeli government's target to increase the share of renewable energy in the country's energy mix to 30% by 2030. It also contributes to the EDF group's Cap 2030 strategy, which aims to double its net renewable energy capacity from 28GW to 60GW between 2015 and 2030.

A consortium consisting of EDF, KEPCO and Kyushu Electric Power Co., finalises the financing of a strategic power transmission project with ADNOC and TAQA in the United Arab Emirates

On 26 September 2022, a consortium composed of EDF, KEPCO and Kyushu Electric Power Co., world leaders in the energy sector, announced the financial closing of a transmission project in the United Arab Emirates alongside Emirati companies ADNOC (Abu Dhabi National Oil Company) et TAQA2 (Abu Dhabi National Electricity Company) for a total amount of \$3.8 billion. The project consists in building and operating a high-voltage, direct current (HVDC-VSC) subsea transmission system, a first-of-its-kind in the Middle East and North Africa region.

This strategic project is expected to reduce the carbon footprint of ADNOC's offshore operations by more than 30%, replacing existing offshore thermal plants with low carbon power sources available on the Abu Dhabi onshore power network.

The consortium, which will hold a combined 40% stake in the project, was selected in December 2021 by ADNOC and TAQA to develop and then operate the 3.2GW innovative transmission system for 35 years.

The construction started in 2022 and the project's commercial operation is scheduled for 2025.

Note 13 Working capital

13.1 Working capital: composition and change

13.1.1 Composition of working capital

Changes in net working capital during 2022 are as follows:

(in millions of euros)	Notes	31/12/2021	Monetary changes	Non-monetary changes	31/12/2022
Inventories and work-in-process	13.2	(16,197)	(1,894)	430	(17,661)
Trade receivables net of provisions	13.3	(22,235)	(3,643)	1,034	(24,844)
Trade payables	13.4	19,565	4,524	(805)	23,284
Compensation receivable for Public Energy Service charges (CSPE payable)	13.3.4	294	5,780	-	6,074
Other receivables and payables ⁽¹⁾	13.3.4 and 13.5	6,050	3,538	(581)	9,007
Other components of working capital ⁽²⁾		(648)	(4)	535	(117)
NET WORKING CAPITAL		(13,171)	8,301	613	(4,257)

(1) Excluding receivables and payables on acquisition/disposal of assets and investment subsidies.

(2) The other components of working capital includes CO₂ emission rights and green certificates presented in intangible assets in the balance sheet, and derivatives related to operations.

13.1.2 Non-monetary changes in working capital

Non-monetary changes include the effect of changes in the scope of consolidation, foreign exchange effects, changes in fair values and the effect of reclassifications. The variation in non-monetary changes in 2022 is mainly explained by the €0.5 billion change in the fair value of operating derivatives.

13.1.3 Monetary changes in working capital

<i>(in millions of euros)</i>	<i>Notes</i>	2022	2021
Change in inventories	13.2	(1,894)	(626)
Change in trade receivables	13.3	(3,643)	(7,411)
Change in trade payables	13.4	4,524	7,407
Change in the Compensation receivable for Public Energy Service charges (CSPE payable)	13.3.4	5,780	2,268
Change in other receivables and payables ⁽¹⁾	13.3.4 and 13.5	3,534	(3,164)
CHANGE IN WORKING CAPITAL		8,301	(1,526)

(1) The change in other receivables and payables includes monetary changes in CO₂ emission rights and green certificates presented in intangible assets in the balance sheet, and derivatives related to operations.

Monetary changes in working capital improved, at €8.3 billion in 2022, mainly as a result of surplus CSPE compensation of €5.8 billion (see note 13.5.4), lower net margin calls in the trading activities (€4.8 billion), and the €(1.9) billion change in the net inventory position (see note 13.2).

13.2 Inventories

Accounting principles and methods

Inventories are recognised at the lower of acquisition cost or net realisable value, except for inventories held for trading activities, which are carried at market value. Inventories consumed are generally valued by the weighted average unit cost method.

Cost includes all direct materials costs, labour costs, and a share of indirect production costs.

Nuclear fuel

Inventory accounts include:

- nuclear materials, whatever their form during the fuel production cycle;
- and fuel components in the warehouse or in the reactor.

The stated value of nuclear fuel and materials and work-in-progress is determined based on direct processing costs including materials, labour and subcontracted services (e.g. fluorination, enrichment, fabrication, etc.).

In accordance with regulatory obligations specific to each country, inventories of fuel (new or not entirely consumed) may also comprise expenses for spent fuel management and long-term radioactive waste management, with corresponding provisions or debts in the liabilities, or full and final payments made when the fuel is loaded.

In France, in application of the concept of “loaded fuel” as defined in the ministerial order of 21 March 2007, the cost of inventories for fuel loaded in the reactors but not yet irradiated includes expenses for spent fuel management and long-term radioactive waste management. The corresponding amounts are taken into account in the relevant provisions.

In compliance with IAS 23, interest expenses incurred in financing inventories of nuclear fuels are charged to expenses for the period provided these inventories are manufactured in large quantities on a repetitive basis.

Nuclear fuel consumption is determined by component (natural uranium, fluorination, enrichment, fuel assembly fabrication) as a proportion of the expected output when the fuel is loaded in the reactor. These quantities are valued at weighted average cost of inventories. Inventories are periodically corrected in view of forecast spent quantities based on neutronic measurements and physical inventories.

Other inventories

Other inventories comprise:

- other fuels, comprising fossil fuels required for operation of fossil-fired power plants and gas stocks;
- other operating supplies, consisting of operating materials and equipment such as spare parts supplied under a maintenance programme (excluding capitalised strategic safety spare parts);
- goods and services in progress, particularly relating to the businesses of EDF Renewables, Dalkia and Framatome;
- other inventories, mainly consisting of certificates issued under the various environmental schemes (see notes 5.5.4 and 10.2) and capacity obligation mechanisms (capacity guarantees in France – see note 5.1).

Other non-trading operating inventories are generally valued at weighted average cost including direct and indirect purchasing costs.

Impairment of spare parts principally depends on the turnover of these parts.

The carrying value of inventories, broken down by nature, is as follows:

(in millions of euros)	31/12/2022			31/12/2021		
	Gross value	Provision	Net value	Gross value	Provision	Net value
Nuclear fuel	10,737	(422)	10,315	10,938	(459)	10,479
Other fuel	2,029	(2)	2,027	1,255	(4)	1,251
Other supplies	1,878	(422)	1,456	1,770	(402)	1,368
Work-in-progress for production of goods and services	622	(35)	587	615	(38)	577
Other inventories	3,326	(50)	3,276	2,540	(18)	2,522
TOTAL INVENTORIES	18,592	(931)	17,661	17,118	(921)	16,197

The long-term portion (more than one year) mainly concerns nuclear fuel inventories and amounts to €8,557 million at 31 December 2022 (8,576 million at 31 December 2021).

The change in inventories in 2022 is principally explained by the increase over the year in stocks of energy savings certificates, presented in "Other inventories" (see note 5.5.4), and the rise in gas prices and volumes, presented in "Other fuel".

13.3 Trade receivables

Accounting principles and methods

Trade receivables are initially recognised at the fair value of the consideration received or receivable, and subsequently carried at amortised cost or at fair value through OCI.

Trade receivables also include the value of unbilled receivables for energy already supplied, which are presented net of advances received from customers who pay in regular monthly instalments.

The Group applies IFRS 9's simplified approach to measure expected credit losses on trade receivables, using provision matrices established on the basis of credit loss histories.

Details of net trade receivables are as follows:

(in millions of euros)	Note	31/12/2022	31/12/2021
Trade receivables, gross value – excluding EDF Trading		21,568	19,781
contract assets	13.3.3	441	545
Trade receivables, gross value – EDF Trading		4,598	3,545
Impairment		(1,322)	(1,091)
TRADE RECEIVABLES – NET VALUE		24,844	22,235

Most trade receivables mature within one year.

Advances received from customers in France who pay in regular monthly instalments, amounting to €7,423 million at 31 December 2022 (€7,071 million at 31 December 2021), are deducted from trade receivables.

The increase in 2022 in the gross value of trade receivables excluding EDF Trading is mainly explained by changes in the prices billed to customers due to the impact of

rising market prices: this mainly concerned EDF Energy (€1.5 billion). In France, the variation in this item was negative due to the tariff cap measures introduced by the government, particularly the lower rate of the TICFE.

Impairment of trade receivables increased, principally in the United Kingdom and Belgium, as the credit risk was considered higher due to the higher prices billed to customers in line with rising market prices.

13.3.1 Trade receivables due and not yet due

(in millions of euros)	31/12/2022			31/12/2021		
	Gross value	Provision	Net value	Gross value	Provision	Net value
TRADE RECEIVABLES	26,166	(1,322)	24,844	23,326	(1,091)	22,235
overdue by up to 6 months	2,037	(183)	1,854	1,285	(215)	1,070
overdue by 6-12 months	678	(242)	436	481	(136)	345
overdue by more than 12 months	1,117	(551)	566	978	(551)	427
Trade receivables due	3,832	(976)	2,856	2,744	(902)	1,842
Trade receivables not yet due	22,334	(346)	21,988	20,582	(189)	20,393

13.3.2 Assignment of receivables

Accounting principles and methods

When it can be demonstrated that the Group has transferred substantially all the risks and benefits related to assignment of receivables, particularly the credit risk, the items concerned are derecognised.

Otherwise, the operation is considered as a financing operation, and the receivables remain in the balance sheet assets, with recognition of a corresponding financial liability.

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Trade receivables assigned and wholly retained in the balance sheet	324	340
Trade receivables assigned and partly retained in the balance sheet	-	-
Trade receivables assigned and wholly derecognised	2,470	1,456

The Group assigned trade receivables for a total of €2,470 millions at 31 December 2022, mainly concerning Edison, EDF, Dalkia and Luminus (€1,456 million at 31 December 2021).

As most assignment operations are carried out on a recurrent, without-recourse basis, the corresponding receivables are no longer carried in the Group's consolidated balance sheet.

13.3.3 Contract assets

Contract assets are rights held by an entity to receive a consideration in return for goods or services supplied to customers, when such rights are conditional on something other than the passage of time. Most contract assets mature within one year.

The contract assets included in receivables represent an amount of €441 million at 31 December 2022 and €545 million at 31 December 2021 and mainly concern Framatome, Dalkia and EDF Renewables.

13.3.4 Other receivables

Details of other receivables are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Prepaid expenses	1,592	1,485
VAT receivables	1,968	2,051
Other tax receivables	274	348
Other operating receivables	13,496	14,405
OTHER RECEIVABLES	17,330	18,289
Non-current portion	2,165	2,092
Current portion	15,165	16,197
Gross value	17,390	18,344
Impairment	(60)	(55)

At 31 December 2022, other operating receivables include €5.2 billion of margin calls made in the trading activity (€9.8 billion in 2021). The decrease in this item is due to collateral being replaced by letters of credit. The amounts of margin calls recognised in assets cannot be netted with the margin calls recognised in liabilities (see note 13.5). Other receivables also include the €1,723 million receivable from RTE, corresponding to transfers of interconnection income following the CRE's

decision 2022-296 of 17 November 2022, confirmed by decision 2023-50 of 31 January 2023 (see note 5.1.1).

Other operating receivables also include €3,234 million of advances paid to suppliers (€1,274 million at 31 December 2021). Most of these advances concern nuclear fuel supply contracts in the France – Generation and Supply segment.

13.4 Trade payables

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Trade payables – excluding EDF Trading	16,001	14,041
Trade payables – EDF Trading	7,283	5,524
TRADE PAYABLES	23,284	19,565

The increase in 2022 in trade payables excluding EDF Trading is mainly explained by changes in market prices, and therefore concerns various Group entities.

The Group has a reverse factoring programme allowing suppliers to transfer their receivables on EDF to a factoring company, at their own initiative. For the Group,

this programme does not cause any change in the substance and features of the receivables held by suppliers on EDF. In particular it does not affect the sequences of operating cash flows. The associated liabilities are therefore included in "trade payables" in the Group's financial statements.

13.5 Other liabilities

Details of other liabilities are as follows:

<i>(in millions of euros)</i>	31/12/2022	Including contract liabilities	31/12/2021	Including contract liabilities
Advances and progress payments received	3,973	2,025	2,114	1,635
Liabilities related to property, plant and equipment	4,631	-	4,368	-
Tax liabilities	3,488	-	5,093	-
Social charges	5,865	-	5,092	-
Deferred income on long-term contracts	3,180	3,144	3,146	3,110
Other deferred income ⁽¹⁾	1,172	694	997	592
Other	16,163	-	9,254	-
OTHER LIABILITIES	38,472	5,863	30,064	5,337
Non-current portion	4,968	2,929	4,816	3,107
Current portion	33,504	2,934	25,248	2,230

(1) Including the payment made under the Fessenheim compensation protocol (see note 5.5.4).

13.5.1 Advances and progress payments received

Advances and progress payments received comprise €630 million of payments made by the customers in Framatome's long-term contracts (€642 million at 31 December 2021).

13.5.2 Tax liabilities

At 31 December 2022, tax liabilities mainly include an amount of €116 million for the CSPE to be collected by EDF on energy supplied but not yet billed, less the CSPE tax collected on advances from customers who pay in regular monthly instalments (€562 million at 31 December 2021).

13.5.3 Deferred income on long-term contracts

EDF's deferred income on long-term contracts at 31 December 2022 comprises €1,777 million (€1,746 million at 31 December 2021) of partner advances made to EDF under the nuclear plant financing plans.

Deferred income on long-term contracts also includes an advance of €1.7 billion paid to the EDF group in 2010 under the agreement with the Exeltium consortium. This advance is transferred to the income statement progressively over the term of the contract (24 years).

13.5.4 Other

At 31 December 2022, other operating liabilities include €5.9 billion of margin calls made in the trading activity (€5.8 billion in 2021). The amounts of margins calls recognised in liabilities cannot be netted with margin calls recognised in assets (see note 13.3.4).

Other liabilities at 31 December 2022 also include a €6,074 million operating liability due to the State in connection with the CSPE (€294 million at 31 December 2021).

The final line of the table of other liabilities includes investment subsidies received during 2022, amounting to €566 million (€536 million in 2021). Investment subsidies received by Group companies are included in liabilities under the heading "Other liabilities" and transferred to income as and when the economic benefits of the corresponding assets are utilised.

EDF's public service charges

The amount of public service charges to be compensated to EDF for 2022 is €808 million (€5,472 million in 2021). Public service charges to be covered in connection with purchase obligations decreased significantly and became negative in 2022 because of very high market prices, which were generally well above the purchase obligation cost for EDF. However, the public service charges to be covered in 2022 include an amount of €1,571 million to cover the sales revenue shortfall caused by the cap on sale prices to final customers introduced by the French authorities through the electricity and gas tariff caps (see note 5.1.1).

The amounts received in 2022 out of the State's General Budget totalled €6,602 million (this includes a payment of €141 million for forecast 2022 expenses relating to the gas tariff cap).

This compensation received from the State in 2022 was defined in the Finance Law for 2022 based on 2021 market prices, and was thus ultimately much higher than the public service charges to be covered for 2022.

At 31 December 2022, EDF therefore recognised an operating liability of €6,074 million payable to the State (€294 million at 31 December 2021).

The compensation mechanism for public energy service charges in France is presented in note 5.5.1.

13.5.5 Contract liabilities

Contract liabilities represent an entity's obligations to provide customers with goods or services for which it has already been paid, or for which payment is due. Changes in contract liabilities were as follows:

(in millions of euros)	31/12/2021	Amounts recorded during the period	Amounts transferred to sales during the period	Amounts cancelled during the period with no impact on sales	Effect of unwinding the discount	Change in scope of consolidation	Foreign exchange effect	31/12/2022
Advance payments received	1,635	1,824	(1,360)	(25)	(1)	2	(50)	2,025
Deferred income on long-term contracts	3,110	439	(476)	-	51	10	10	3,144
Other deferred income	592	613	(515)	-	-	2	2	694

These liabilities comprise the majority of advances and progress payments received, amounting to €2,025 million (principally concerning the Framatome, United Kingdom and France – Regulated activities segments), and the majority of deferred income (on long-term and other contracts), amounting to €3,838 million (principally concerning the France – Generation and Supply segment). They thus total €5,863 million at 31 December 2022 (€5,337 million at 31 December 2021).

Contracts expiring in more than one year on which obligations are unfulfilled or partially fulfilled at the reporting date should generate sales revenues of approximately €12,211 million which have not yet been recognised. €997 million of these sales revenues will be recognised progressively until 2034 on the Exeltium contract, and the balance will be recognised over the operating period for contracts relating to jointly-operated power plants, and over the term of the contract for other firm sale contracts (excluding energy sales).

Note 14 Equity and earnings per share

14.1 Share capital

Accounting principles and methods

Share issue expenses correspond exclusively to external costs expressly related to the capital increase. They are charged against the issue premium at their net-of-tax value.

Other expenses are classified as expenses of the period.

At 31 December 2022, EDF's share capital amounts to €1,943,859,210 comprising 3,887,718,420 fully subscribed and paid-up shares with nominal value of €0.50, owned 89.01% by the French State, 9.38% by the public (institutional and private investors) and 1.59% by current and retired Group employees, with 0.02% held by EDF as treasury shares. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the Offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANES. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations Énergie En Actions and Association pour la Défense des Actionnaires Minoritaires seeking annulment of the AMF's approval of the Offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

On 7 April 2022, EDF carried out a cash capital increase, maintaining the shareholders' preferential subscription rights. This capital increase totalled €3,164 million gross (including the issue premium) and led to the issuance

of 498,257,960 new shares with a unit issue price of €6.35, recognised in the financial statements as follows:

- a €249 million increase to the share capital;
- a €2,899 million increase to the issue premium, net of expenses.

The French State, as undertaken, subscribed €2.7 billion or approximately 83.88% of this capital increase.

In June 2022, the payment of part of the dividend for 2021 in the form of a scrip dividend led to a €66 million increase in the share capital and an issue premium of €913 million following issuance of 131,545,635 new shares.

On 25 July 2022, the "ERO 2022" capital increase reserved for employees, with elimination of preferential subscription rights, led to a €9 million increase in the share capital and an issue premium of €94 million, following the issue of 18,100,741 new EDF shares (see note 7).

In December 2022, conversion of OCEANE bonds resulted in a €0.57 million increase in the share capital, following the issue of 1,137,336 new EDF shares (see note 14.5).

Under Article L. 111-67 of the French Energy Code, the French State must hold more than 70% of the capital of EDF at all times.

14.2 Treasury shares

Accounting principles and methods

Treasury shares are shares issued by EDF and held either by that company or by other entities in the consolidated Group. They are valued at acquisition cost and deducted from equity until the date of disposal. Net gains or losses on disposals of treasury shares are directly included in equity and do not affect net income.

A share repurchase programme authorised by the General Shareholders' Meeting of 9 June 2006 was implemented by the Board of Directors, within the limit of 10% of the total number of shares making up the Company's capital. The initial duration of the programme was 18 months, renewed for 12 months then by tacit agreement every year.

A liquidity contract exists for this programme, as required by the French market regulator AMF (Autorité des marchés financiers).

At 31 December 2022, treasury shares deducted from consolidated equity represent 888,511 shares with total value of €7 million.

14.3 Dividends

At the Ordinary and Extraordinary Shareholders' meeting of 12 May 2022 it was decided to distribute an ordinary dividend of €0.58 per share in respect of 2021, offering shareholders the choice of payment in cash or shares (scrip option).

In application of Article 24 of the Company's articles of association, shareholders who have held their shares continuously for at least 2 years at the year-end and still hold them at the dividend distribution date benefit from a 10% bonus on their dividends. The number of shares carrying an entitlement to the bonus dividend

cannot exceed 0.5% of the Company's capital per shareholder. The bonus dividend amounts to €0.638 per share.

The French government opted for the scrip dividend for 2021.

The amount of the cash dividend paid to shareholders who did not opt for the scrip dividend for 2021 amounts to €72 million.

No interim dividend was paid for 2022.

14.4 Perpetual subordinated bonds

Accounting principles and methods

Perpetual subordinated bonds ("hybrid" bond issue)

The perpetual subordinated bonds issued by the Group ("hybrid" bond issue) incorporate options for redemption at the initiative of EDF. These options may be exercised after a minimum period that depends on the specific terms of each issue, and subsequently at each coupon date or in the event of highly specific circumstances. The annual yield is fixed and reviewable based on contractual clauses that vary according to the specific terms of the issuance. There is no obligation for EDF to make any payment, due to the existence of contractual clauses entitling it to defer payment indefinitely.

However, those clauses stipulate that any deferred payments must be made in the event of a dividend distribution. All these features give EDF an unconditional right to avoid paying out cash or another financial asset for the principal or interest. Consequently, in compliance with IAS 32, these bonds are recorded as equity instruments and any payment made is treated in the same way as dividends.

14.4.1 Outstanding perpetual subordinated bonds at 31 December 2022

At 31 December 2022, perpetual subordinated bonds carried in equity amounted to €11,722 million (less net-of-tax transaction costs) (€12,264 million at 31 December 2021).

On 30 November 2022 the Group issued hybrid bonds, recorded in equity, with a total value of €994 million (see note 14.4.2).

On 29 January 2023 EDF exercised its option to redeem all the perpetual subordinated bonds, totalling USD 2,098 million. EDF consequently reclassified these equity instruments as financial liabilities at 31 December 2022 at the amount of €1,538 million, considering the redemption as certain (see note 18.3.2.1).

Interest paid by EDF to the bearers of perpetual subordinated bonds issued totalled €606 million in 2022 and €547 million in 2021. The resulting cash payout is reflected in a corresponding reduction in Group equity.

In January 2023, EDF paid interest of around €224 million to the bearers of perpetual subordinated bonds.

Perpetual subordinated bonds in the accounts of EDF

(in millions of currency units)

Entity	Issue ⁽¹⁾	Nominal amount	Currency	Redemption option	Coupon
EDF	01/2013	1,250	EUR	12 years	5.38%
EDF	01/2013	1,250	GBP	13 years	6.00%
EDF	01/2014	1,500	USD	10 years	5.63%
EDF	01/2014	1,000	EUR	12 years	5.00%
EDF	01/2014	750	GBP	15 years	5.88%
EDF	10/2018	1,250	EUR	6 years	4.00%
EDF	11/2019	500	EUR	8 years	3.00%
EDF	09/2020	850	EUR	6.5 years	2.88%
EDF	09/2020	1,250	EUR	10 years	3.38%
EDF	06/2021	1,250	EUR	7 years	2.63%
EDF	12/2022	1,000	EUR	6 years	7.50%

(1) Date funds were received.

14.4.2 Changes in perpetual subordinated bonds during 2022

On 30 November 2022, EDF launched a Euro-denominated 1 billion hybrid note offering, with a 7.5% coupon and a 6 – year first call date.

The Company can redeem the hybrid note for cash at any time during the 90 days before the first interest reset date, which is expected to be in six years and on every coupon payment date thereafter. Although the proposed hybrid note are perpetual, they can be called at any time for withholding tax, tax deductibility, tax gross-up, rating methodology, accounting, or clean-up call event, or through the exercise of the make-whole call.

The amount of New Notes issued has been calibrated so that EDF's aggregate outstanding nominal amount of hybrid capital does not decrease by more than 10% after redemption of the USD Hybrid Notes ⁽¹⁾ and the Company remains committed to raising financing through hybrid capital securities as a permanent component of its capital structure.

This issue was recorded in equity upon reception of the proceeds, at the total net value of €994 million.

EDF exercised its option to redeem on 29 January 2023 all of the USD Hybrid Notes, which are admitted to trading on the regulated market of the Luxembourg Stock Exchange. If the Company proceeds with the redemption, the holders of the USD Hybrid Notes will be formally notified of such redemption according to the Terms and Conditions of the USD Hybrid Notes.

14.5 Convertible Green Bonds (OCEANES)

Accounting principles and methods

OCEANES (bonds convertible into new shares and/or exchangeable for existing shares)

OCEANE bonds, which are convertible by remittance of a fixed number of shares in exchange for a fixed amount of cash (the "fixed-for-fixed" rule) give rise to recognition of a debt component and an equity component, in accordance with IAS 32.

The debt-equity proportions remain constant even if there is a change in the likelihood that the conversion option will be exercised.

The debt component is measured by the discounted future cash flows method using a discount rate applicable to a comparable market bond with no conversion option. The equity component corresponds to the difference between the fair value of the bond and the fair value of the debt component.

Issue expenses are allocated between the debt and equity components in the same proportions as the initial allocation.

On 8 September 2020, EDF made an issuance of Green Bonds convertible into new shares and/or exchangeable for existing shares (*OCEANES Vertes*) with the nominal amount of €2,400 million and an issue value of €2,569 million.

In accordance with the terms of the OCEANE bonds, a consequence of the Simplified Tender Offer initiated by the French government (see note 2) was that if the offer was declared compliant by the AMF, the opening of the Offer would lead to temporary adjustment of the EDF share allocation ratio for conversion of the bonds during the defined Tender Offer Adjustment Period.

The bondholders were thus formally notified on 23 November 2022 that the new share allocation ratio (NRAA – *nouveau ratio d'attribution d'actions*) would be 1.289 EDF shares for one OCEANE bond from 24 November 2022.

At 31 December 2022, 882,340 OCEANE bonds had been converted into new shares (during the period 24 November-31 December 2022), giving rise to creation of 1,137,336 shares.

These operations increased the share capital by €0.57 million since exchange for new shares was the only option. They generated a bond/share conversion premium of €9.08 million (see note 14.1).

For information, the French government acquired 127,147,355 bonds (OCEANES) through this Simplified Tender Offer, with the result that it held 214,979,011 OCEANE bonds or 98.30% of the total portfolio of OCEANES at 31 December 2022.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023 (see notes 2 and 14.1). Consequently, in accordance with paragraph 2.6.3 (public offerings) of the terms of the offer, the share allocation ratio adjustment period in the event of a tender offer will expire on 1 March 2023, i.e. 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 shares per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer. Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 shares per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

(1) The US\$3,000,000,000 Reset Perpetual Subordinated Notes of which US\$2,097,614,000 is currently outstanding.

14.6 Non-controlling interests (minority interests)

14.6.1 Details of non-controlling interests

(in millions of euros)	31/12/2022			31/12/2021	
	Ownership %	Equity (non-controlling interests)	Net income attributable to non-controlling interests	Equity (non-controlling interests)	Net income attributable to non-controlling interests
Principal non-controlling interests:					
EDF Energy Nuclear Generation Ltd.	20.00%	2,198	142	2,567	(307)
NNB Holding Company (HPC) Ltd.	33.50%	6,778	(514)	6,305	(39)
NNB Holding Company (SZC) Ltd.	32.06%	719	-	394	-
EDF Investissements Groupe SA	7.54%	519	11	518	11
Luminus SA	31.37%	538	(49)	381	(30)
Framatome	24.50%	63	(12)	86	(22)
Other non-controlling interests		1,457	137	1,527	102
TOTAL		12,272	(285)	11,778	(285)

Non-controlling interests in EDF Energy Nuclear Generation Ltd., which is owned 80% by the Group via EDF Energy, correspond to Centrica's share.

Non-controlling interests in NNB Holding Company (HPC) Ltd, the holding company for the Hinkley Point C project, which is owned 66.5% by the Group via EDF Energy, correspond to CGN's share.

Non-controlling interests in NNB Holding Company (SZC) Ltd, the holding company for the Sizewell C project, which is owned 67.94% by the Group via EDF Energy, correspond to His Majesty's Government's share in the project at 31 December 2022 after its investment made on 30 November 2022 and CGN's withdrawal from the entity at the same date (see note 10.6).

Non-controlling interests in EDF Investissements Groupe correspond to the investment held by Natixis Belgique Investissements.

Non-controlling interests in Luminus correspond principally to the investments held by Belgian local authorities, and partner contributions to the Seraing CCGT project.

Non-controlling interests in Framatome, which is owned 75.5% by the Group via EDF, correspond to the 19.5% share held by Mitsubishi Heavy Industries and the 5% share held by Assystem.

Other non-controlling interests principally consist of the minority interests in subsidiaries of the Edison and EDF Renewables subgroups.

Other non-controlling interests also include instruments in the form of bonds convertible into shares, issued by the Dalkia group and subscribed by minority interests, amounting to a total €129 million at 31 December 2022 (€165 million in 2021).

14.6.2 Key financial indicators for EDF Energy Nuclear Generation Ltd.

The key financial indicators (100% basis) for EDF Energy Nuclear Generation Ltd. are as follows:

(in millions of euros)	31/12/2022	31/12/2021
Non-current assets	24,348	25,784
Current assets	3,132	3,868
TOTAL ASSETS	27,480	29,652
Equity	10,988	12,837
Non-current liabilities	16,019	16,352
Current liabilities	473	463
TOTAL EQUITY AND LIABILITIES	27,480	29,652
Sales	3,472	1,842
Net income	710	(1,535)
GAINS AND LOSSES RECORDED DIRECTLY IN EQUITY	(1,515)	906
Net cash flow from operating activities	1,002	84
Net cash flow from investing activities	(307)	(420)
Net cash flow from financing activities	(340)	(11)
CASH AND CASH EQUIVALENTS – OPENING BALANCE	279	585
Net increase/(decrease) in cash and cash equivalents	355	(347)
Effect of currency fluctuations	(15)	42
Other	(1)	-
CASH AND CASH EQUIVALENTS – CLOSING BALANCE	618	279
Dividends paid to non-controlling interests	70	2

14.7 Basic earnings per share and diluted earnings per share

The diluted earnings per share is calculated by dividing the Group's share of net income, corrected for dilutive instruments and the payments made during the year to bearers of perpetual subordinated bonds, by the weighted average number of potential shares outstanding over the period after elimination of treasury shares.

The following table shows the reconciliation of the basic and diluted earnings used to calculate earnings per share (basic and diluted), and the variation in the weighted average number of shares used in calculating basic and diluted earnings per share:

(in millions of euros)	2022	2021
Net income attributable to ordinary shares	(17,940)	5,113
EDF net income from continuing operations	(17,946)	5,114
EDF net income from discontinued operations	6	(1)
Payments on perpetual subordinated bonds	(606)	(547)
Net income used to calculate earnings per share	(18,546)	4,566
from continuing operations	(18,552)	4,567
from discontinued operations	6	(1)
Cancellation of the effect of dilutive instruments	2	2
Net income used to calculate diluted earnings per share	(18,544)	4,567
from continuing operations	(18,550)	4,568
from discontinued operations	6	(1)
Average weighted number of ordinary shares outstanding during the year	3,683,790,611	3,138,060,309
Effect of dilutive instruments	244,227,763	222,574,780
Average weighted number of diluted shares outstanding during the year	3,928,018,374	3,360,635,089
Earnings per share (in euros):		
BASIC EARNING PER SHARE	(5.03)	1.46
DILUTED EARNINGS PER SHARE	(5.03)	1.36
BASIC EARNINGS PER SHARE OF CONTINUING OPERATIONS	(5.03)	1.46
DILUTED EARNINGS PER SHARE OF CONTINUING OPERATIONS	(5.03)	1.36
BASIC EARNINGS PER SHARE OF DISCONTINUED OPERATIONS	-	-
DILUTED EARNINGS PER SHARE OF DISCONTINUED OPERATIONS	-	-

The diluted earnings per share incorporates the impact of conversion of OCEANE bonds (see note 18.3.2.2) and adjustment of the conversion/exchange ratio following capital increases undertaken during the year.

As the EDF net income was negative in 2022, conversion of the OCEANE bonds had an accretive effect and consequently the diluted earnings per share is identical to the basic earnings per share.

Note 15 Provisions related to nuclear generation and dedicated assets

Accounting principles and methods

The Group recognises provisions when it has a present obligation (legal or constructive) arising from a past event, an outflow of resources will probably be required to settle the obligation, and the obligation amount can be estimated reliably.

If it is anticipated that all or part of the expenses covered by a provision will be reimbursed, the reimbursement is recognised under receivables if and only if the Group is virtually certain of receiving it.

Provisions are determined based on the Group's expectation of the cost necessary to settle the obligation. Estimates are based on management data from the information system, assumptions adopted by the Group, and if necessary, experience of similar transactions or operations, based on independent expert reports, or contractor quotes. The various assumptions are reviewed for each closing of the accounts.

In the case of decommissioning provisions for power plants in operation, adjustments are recorded via fixed assets.

The discount effect generated at each closing to reflect the passage of time is recorded under "Discount effect" in financial expenses.

Changes in provisions resulting from a change in discount rates, a change in the disbursement schedule or a change in contractor quote are recorded:

- as an increase or decrease in the corresponding assets, up to the net book value, if the provision was initially covered by balance sheet assets;
- in the income statement in all other cases.

Provisions related to nuclear generation mainly cover the following:




- back-end nuclear cycle expenses: provisions for spent fuel management, for waste removal and conditioning and long-term radioactive waste management are established in accordance with the obligations and final contributions specific to each country;
- costs for decommissioning power plants;
- costs relating to fuel in the reactor when the reactor is shut down (provisions for last cores). These correspond to the cost of the fuel stock in the reactor that is not totally spent at the time of the final reactor shutdown and cannot be reused due to technical and regulatory constraints, the cost of processing for that fuel, and the cost of removal and storage of the resulting waste.

Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved.

The breakdown between current and non-current provisions related to nuclear generation is as follows:

(in millions of euros)	31/12/2022			31/12/2021		
	Current	Non-current	Total	Current	Non-current	Total
Provisions for the back-end of the nuclear cycle	1,602	24,982	26,584	1,359	28,155	29,514
Provisions for decommissioning and last cores	1,539	31,039	32,578	1,346	33,912	35,258
Provisions related to nuclear generation	3,141	56,021	59,162	2,705	62,067	64,772

The breakdown of provisions by company is shown below:

(in millions of euros)	 EDF	 EDF Energy	 Belgium	Total
	Note 15.1	Note 15.2	Note 15.3	
Provisions for spent fuel management	11,379	1,284	-	12,663
Provisions for waste removal and conditioning	-	373	-	373
Provisions for long-term radioactive waste management	12,475	1,066	7	13,548
PROVISIONS FOR THE BACK-END OF THE NUCLEAR CYCLE AT 31/12/2022	23,854	2,723	7	26,584
Provisions for the back-end of the nuclear cycle at 31/12/2021	26,052	3,455	7	29,514
Provisions for nuclear plant decommissioning	17,094	11,296	625	29,015
Provisions for last cores	2,434	1,129	-	3,563
PROVISIONS FOR DECOMMISSIONING AND LAST CORES AT 31/12/2022	19,528	12,425	625	32,578
Provisions for decommissioning and last cores at 31/12/2021	20,390	14,434	434	35,258
PROVISIONS RELATED TO NUCLEAR GENERATION AT 31/12/2022	43,382	15,148	632	59,162
Provisions related to nuclear generation at 31/12/2021	46,442	17,889	441	64,772

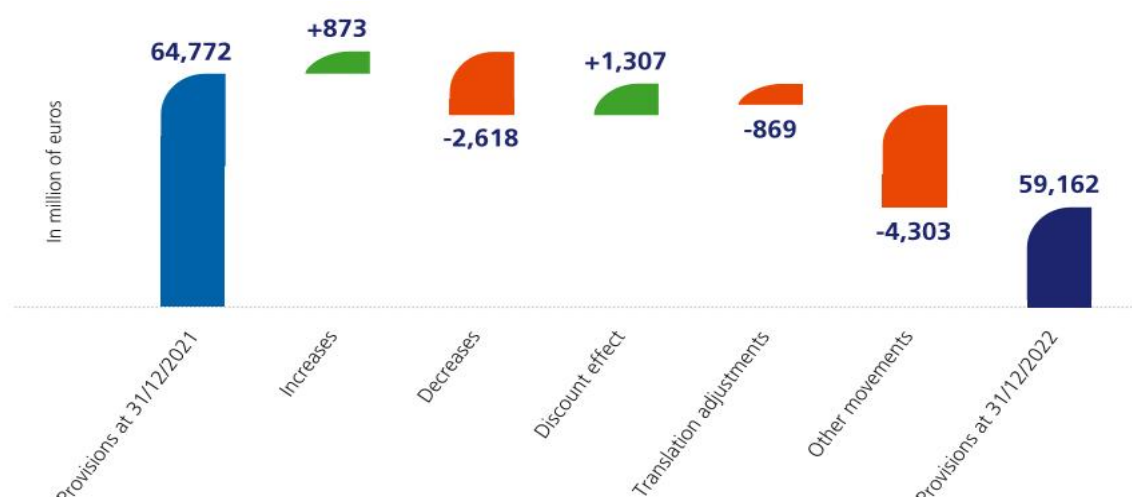
The movement in provisions for the back-end of the nuclear cycle, provisions for decommissioning and provisions for last cores break down as follows:

(in millions of euros)	31/12/2021	Increases	Decreases	Discount effect	Translation adjustments	Other movements	31/12/2022
Provisions for spent fuel management	13,220	439	(1,014)	245	(72)	(155)	12,663
Provisions for waste removal and conditioning	639	1	-	80	(25)	(322)	373
Provisions for long-term radioactive waste management	15,655	130	(204)	(1,126)	(63)	(844)	13,548
Provisions for the back-end of the nuclear cycle	29,514	570	(1,218)	(801)	(160)	(1,321)	26,584
Provisions for nuclear plant decommissioning	30,759	303	(824)	1,979	(637)	(2,565)	29,015
Provisions for last cores	4,499	-	(576)	129	(72)	(417)	3,563
Provisions for decommissioning and last cores	35,258	303	(1,400)	2,108	(709)	(2,982)	32,578
PROVISIONS RELATED TO NUCLEAR GENERATION	64,772	873	(2,618)	1,307	(869)	(4,303)	59,162
Current portion	2,705						3,141
Non-current portion	62,067						56,021

The change in provisions related to nuclear generation in 2022 is mainly due to:

- a 50 base point increase in the real discount rate in France (see note 15.1.1.5): the corresponding effects of €(4,069) million are presented in the "Discount effect" (€(2,548) million) for changes in provisions adjusted via profit and loss, and in "Other movements" (€(2,061) million) for changes in provisions backed by assets (assets associated with provisions and underlying assets);
- an increase in the real discount rate in the United Kingdom (particularly +100 base points on provisions for the back-end of the nuclear cycle and decommissioning – see note 15.2.4): the corresponding effects are presented in "Other movements" (€(2,934) million) for changes in these provisions backed by assets (specifically, the receivable representing reimbursements due from the Nuclear Liabilities Fund (NLF) and the British government in the case of provisions for the back-end of the nuclear cycle and decommissioning, or associated assets and underlying assets in the case of provisions for last cores).

Details of the change in provisions related to nuclear generation in 2021 are as follows:



15.1 Provisions related to nuclear generation and dedicated assets in France

15.1.1 Nuclear provisions

In France, the provisions established by EDF SA for the nuclear generation fleet result principally from the Law of 28 June 2006 on long-term management of radioactive materials and waste, and the associated implementing provisions concerning secure financing of nuclear expenses.

In compliance with the accounting principles described above:

- EDF books provisions to cover all obligations related to the nuclear facilities it operates;
- EDF also holds dedicated assets for secure financing of long-term obligations (see note 15.1.2).

The calculation of provisions incorporates a level of risks and uncertainties as appropriate to the operations concerned. It also includes uncertainty factors as described in note 1.3.4.2.

Details of changes in provisions for the back-end of the nuclear cycle, decommissioning and last cores in France are as follows:

(in millions of euros)	Notes	31/12/2021	Increases	Decreases	Discount effect	Other movements	31/12/2022
Provisions for spent fuel management	15.1.1.1	11,819	417	(849)	51	(59)	11,379
amount unrelated to the operating cycle		1,726	23	(41)	(85)	(16)	1,607
amount outside the scope of the Law of 28 June 2006		1,136	44	(41)	56	-	1,195
Provisions for long-term radioactive waste management	15.1.1.2	14,233	128	(204)	(1,308)	(374)	12,475
Provisions for the back-end of the nuclear cycle		26,052	545	(1,053)	(1,257)	(433)	23,854
Provisions for nuclear plant decommissioning	15.1.1.3	17,730	273	(201)	340	(1,048)	17,094
Provisions for last cores	15.1.1.4	2,660	-	-	104	(330)	2,434
Provisions for decommissioning and last cores		20,390	273	(201)	444	(1,378)	19,528
PROVISIONS RELATED TO NUCLEAR GENERATION		46,442	818	(1,254)	(813)	(1,811)	43,382
Provisions related to nuclear generation within the scope of the Law of 28 June 2006 ⁽¹⁾		45,306	774	(1,213)	(869)	(1,811)	42,187
Provisions related to nuclear generation outside the scope of the Law of 28 June 2006 ⁽¹⁾		1,136	44	(41)	56	-	1,195

(1) Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations (see below).

The discount effect principally comprises the €1,830 million cost of unwinding the discount, and the €(2,548) million effects of the change in the real discount rate in 2022 for provisions not backed by assets, which were recorded in the income statement (cost of unwinding the discount).

Other movements mainly include the €(2,061) million effect of the change in the real discount rate at 31 December 2022 for provisions backed by assets.

In 2021, the change in EDF SA's provisions related to nuclear generation was mainly explained by the extension of the depreciation period of 1300MW-series

power plants, which had an impact of €(1,016) million at 1 January 2021 (see note 1.4.1 to the consolidated financial statements at 31 December 2021), distributed as follows: €(916) million on provisions for decommissioning, €(214) million on provisions for last cores, and €114 million on provisions for long-term radioactive waste management.

Concerning non-EDF installations:

- EDF, COGEMA (now Orano Recyclage) and the French Atomic Energy Commission (Commissariat à l'Énergie Atomique or CEA) signed an agreement

in December 2004 which transferred the management and financing of final shutdown, decommissioning and waste recovery and reconditioning for the UP1 reprocessing facility at Marcoule to the CEA. In return, EDF paid the CEA a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs;

- EDF, AREVA and AREVA NC (now Orano Recyclage) signed two agreements in December 2008 and July 2010 defining the legal and financial terms for the transfer to AREVA NC of EDF's contractual obligations regarding its financial contribution to the dismantling of La Hague installations and the recovery and conditioning of waste. In application of those agreements, EDF paid Orano Recyclage a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs.

15.1.1.1 Provisions for spent fuel management

EDF's currently adopted strategy with regards to the fuel cycle, in agreement with the French State, is to process spent fuel, to recycle the separated plutonium in the form of MOX fuel (Mixed OXide of plutonium and uranium) and to recycle the reprocessed uranium.

The quantities processed by Orano Recyclage at the request of EDF, totalling approximately 1,100 tonnes per year, are determined based on the quantity of recyclable plutonium in the reactors that are authorised to load MOX fuel (currently, 24 authorised reactors).

Consequently, provisions for spent fuel management (€11,379 million) mainly cover the following services to be provided by Orano Recyclage

- removal of spent fuel from EDF's generation centres, and its reception and interim storage;
- processing, including conditioning and storage of recyclable matter.

The processing expenses included in these provisions concern spent fuel that can be recycled in existing facilities, including the portion in reactors but not yet irradiated.

Expenses are measured based on forecast physical flows at the year-end, with reference to the contracts with Orano Recyclage which define the terms of the framework agreement for the period 2008-2040. The most recent contract, signed on 5 February 2016, covers the period 2016-2023. These contracts contain price indexes that are revised annually.

Negotiations are currently in process with Orano Recyclage, notably concerning the current amendment for the period 2016-2023. At 31 December 2021, EDF adjusted its provisions for spent fuel management using its best estimate of the costs to be incurred under this amendment, which are currently in negotiation, considering progress in the discussions with Orano. An additional provision of €267 million was recognised to cover the increase in EDF's processing costs associated with the various Orano projects, notably in view of changes concerning the new fission product concentrators. In 2022, some of these costs were defined in letters of agreement relating to the 2016-2023 amendment, while others are still in negotiation. Negotiations also took place in 2022 for an amendment to cover the period 2024-2026, to be continued in 2023, and a corresponding provision for contingencies and losses was recognised at 31 December 2022 (see note 17.2).

Furthermore, the provisions for spent fuel management incorporate specific provisions for the interim storage of spent fuel, which is a key issue for the back-end of the nuclear cycle because usage forecasts for Orano's interim storage facilities at La Hague for spent fuel from EDF's generation fleet suggest that the pools at La Hague could be saturated by 2030. To prevent saturation, the long-term storage capacity for spent fuel is to be increased by construction of a centralised fuel storage pool under EDF's supervision. Commissioning of the new pool is scheduled for 2034 and it will be operated by EDF. The following measures will also be taken to address storage needs.

For the period until the centralised storage pool is built, studies of transitional solutions were launched by Orano in 2019 in association with EDF and the Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN). The preferred solution is densification of the existing pools at Orano's La Hague. A supplementary solution would be to use a dry storage facility for plutonium (MOX) fuel and reprocessed uranium (RepU). The need for interim storage is accentuated by production issues at Orano's Melox plant, which are affecting the pace of processing in the short and medium term: the lower level of recycling has caused an increase in the quantities requiring storage in the medium term.

In 2022, studies of the transitional solutions continued, notably on densification of the existing pools at Orano's La Hague site with the submission in December 2022 to the ASN of the application file for a notable modification. Development studies regarding this solution are expected to continue until the end of 2024.

The provisions for spent fuel management also cover long-term storage of spent fuel that cannot currently be recycled in industrial facilities that already exist or are under construction: plutonium fuel (spent MOX fuel) or uranium fuel derived from processing (spent RepU), and fuel from Creys-Malville and Brennilis until fourth-generation reactors become available. Dedicated assets are held in association with these provisions, which is unrelated to the operating cycle as defined by the law of 2006 (see note 15.1.2). The provision is founded on a scenario assuming construction of a centralised storage pool at La Hague, to be managed by EDF as nuclear operator. This project was presented during the public debate on the National Plan for Managing Radioactive Matter and Waste (PNGMDR) in 2019-2020, and was subject to a specific public consultation organised by France's National Public Debate Commission (CNDP) that began on 22 November 2021 and ended on 8 July 2022. On 7 October 2022 EDF published a document on the lessons of the consultation and the Company's responses, entitled "*Enseignements de la concertation préalable et suites données par EDF*". EDF plans to set up a formal structure for continuous exchanges and dialogue, under the supervision of guarantors appointed by the CNDP. EDF has also stated that at this stage, it is moving ahead with the project, and preparing to file the application for authorisation to create the installation by the end of 2023, with a view to a public inquiry being held in 2025.

In total, provisions for specific storage solutions for spent fuel amount to €257 million for the cost of densification of Orano's pools at La Hague, and €1,607 million for interim storage of spent MOX fuel and spent RepU, first at La Hague then in the centralised storage pool (these fuels cannot be recycled in existing facilities or facilities currently under construction).

Finally, in 2018, the Board of Directors approved resumption of reprocessed uranium recycling, which had been suspended in 2013 pending availability of a new industrial schema. The corresponding contracts were signed with the respective suppliers in the second quarter of 2018. The first assemblies are being made at the Framatome plant in Romans sur Isère and will be loaded in 2023 into a 900MW reactor that is already authorised. Subject to completion of technical modifications and issuance of the necessary authorisations by the safety authority, other 900MW reactors and certain 1300MW reactors will be loaded with assemblies based on reprocessed uranium by 2027. Since 2021, the provision for storage of uranium for reprocessing included in the provisions for spent fuel management (€410 million) has been based on a 50-year operating lifetime for nuclear plants for the considered series, following the extension of the depreciation period of 1300MW-series plants from 40 to 50 years.

15.1.1.2 Provisions for long-term radioactive waste management

Provisions for long-term radioactive waste management concern the following future expenses:

- interim storage, removal and storage of radioactive waste packages resulting from spent fuel processing;
- direct storage, after long-term interim storage where relevant, of spent fuel that cannot be recycled in existing installations: specifically plutonium (MOX) fuel or uranium fuel derived from processing, and fuel from Creys-Malville and Brennilis;
- characterisation, processing, conditioning and interim storage of radioactive waste resulting from decommissioning and certain operating waste, and removal and final storage of this radioactive waste;
- EDF's share of the costs of studies, construction, operation and maintenance, shutdown and surveillance of existing and future storage centres.

The volumes of waste concerned by provisions include existing packages of waste and all waste to be conditioned, resulting in particular from plant decommissioning or spent fuel processing at La Hague (comprising all fuel in reactors at 31 December, irradiated or otherwise). These volumes are regularly reviewed, in keeping with the data declared for the purposes of the national waste inventory undertaken by ANDRA.

The provisions for long-term radioactive waste management break down as follows:

(in millions of euros)		Storage centre	31/12/2022	31/12/2021
Very low-level and low and medium-level waste	Very low-level waste: CIRES -Morvilliers (ANDRA)		2,958	3,093
	Low and medium-level waste: CSA – Soulaines (ANDRA)			
Long-lived low-level waste	Project under examination: Soulaines (ANDRA)		363	394
Long-lived medium and high-level waste	Geological storage centre (Cigéo project)/ICEDA conditioning and interim storage facility		9,154	10,746
PROVISIONS FOR LONG-TERM RADIOACTIVE WASTE MANAGEMENT			12,475	14,233

Very low-level and low and medium-level waste

Basis for estimation

Very low-level waste and low and medium-level waste come from nuclear facilities in operation or in the process of being decommissioned:

- very low-level waste mainly comes from nuclear plant decommissioning, and generally takes the form of metals (large components, piping, support structures, etc.) or rubble (concrete, earth, etc.). This type of waste is stored at surface level at the Morvilliers storage centre managed by ANDRA commissioned in 2003;
- low and medium-level waste (gloves, filters, resins, materials, etc.) is stored at surface level at the Soulaines storage centre managed by ANDRA, commissioned in 1992.

The cost of removing, processing and storing short-lived waste (very low-level and low and medium-level) is assessed on the basis of:

- current contracts with transporters, and ANDRA for operation of the existing storage centres;
- the costs of the plant run by the subsidiary Cyclife France (the Centraco site at Marcoule, commissioned in 1999) for processing some of this waste that can be melted prior to storage in the ANDRA's centres;
- an estimate of the cost of a centralised facility for interim storage, segmentation and conditioning of major components such as steam generators.

Furthermore for the management of very low-level waste, the regulations (decrees by the Ministry for the Ecological Transition) governing recycling of very low-level metallic waste in France were published in the *Journal Officiel* of 15 February 2022. EDF is thus continuing with the development of a segmentation and fusing facility to process and recycle the very low-level metallic waste resulting from decommissioning of nuclear plants. This project, called Technocentre, is led by EDF in collaboration with Orano, with a target commissioning date of 2031. In line with France's 5th National Plan for Managing Radioactive Matter and Waste, a roadmap setting out the objectives and timetable for the Technocentre project is due to be released in early 2023.

Developments in 2021

In 2021, in addition to changing the technical assumptions underlying provisions so as to reflect the impacts of extending the depreciation period for 1300MW-series plants (the modified timing of waste production from decommissioning results in an increase in decommissioning waste to be sent to storage in some years and industrial solutions will be required to smooth the waste dispatch flows), the industrial scenario for management of decommissioning waste prior to storage was optimized by introducing prior processing to reduce the volumes stored. This had no significant impact on provisions.

Developments in 2022

In 2022, the annual review incorporated the most recent assumptions regarding management of this waste. This had no significant impact on provisions.

Long-lived low-level waste

Long-lived low-level waste belonging to EDF essentially consists of graphite waste from the ongoing decommissioning of the former UNGG (natural uranium graphite gas-cooled) nuclear plants.

As this waste has a long lifetime but is lower-level than long-lived medium and high-level waste, specific subsurface storage requirements apply under the French Law of 28 June 2006.

Following the initial geological investigations, in July 2015 ANDRA remitted a report on a proposed storage centre for long-lived low-level waste on a site located in the Soulaines region (Aube) in France. This report was submitted to the ASN for its opinion. Uncertainties remain about the site's capacity to accommodate all of the waste included in the baseline inventory of the long-lived low-level waste storage facility.

Further studies were planned under the 2016-2018 period of the National Plan for the Management of Radioactive Materials and Waste (PNGMDR), concerning both the feasibility of this storage centre and the search for additional waste management solutions. The ASN's opinion on management of this waste, issued on 6 August 2020, and the 5th PNGMDR (decree 2022-1547 and the implementation decision were published in the *Journal Officiel* of 10 December 2022) have set ANDRA the deadline of 2023 to produce a file presenting the technical and safety options selected for storage of long-lived low-level waste at the Vendeuvre-Soulaines site.

Long-lived medium and high-level waste

Long-lived medium and high-level waste essentially comes from processing of spent fuel, and to a lesser extent waste resulting from nuclear plant decommissioning (metallic components that have been inside the reactor).

The Cigéo project for an industrial geological storage centre

The French Law of 28 June 2006 requires reversible storage in deep geological layers for long-lived medium and high-level waste.

On 15 January 2016 the Ministry of Ecology, Sustainable Development and Energy issued a ministerial order setting the target cost for the Cigéo storage project at €25 billion under 2011 year-end economic conditions. The cost as defined constitutes an objective to be met by ANDRA, in compliance with safety standards set by the ASN, working in close cooperation with the operators of nuclear installations.

The provisions for storage of long-lived medium and high-level waste, totalling €8,381 million (including preliminary interim storage of radioactive waste resulting from spent fuel processing, removal to the storage site, direct storage of spent fuel that cannot be recycled in existing installations), are based on the cost objective for storage, taking account of producers' shares that depend on the volumes and characteristics of the waste.

In application of this ministerial order, the cost of the Cigéo project will be regularly updated, at least at each key milestone in the course of the project's development (authorisation to create the facility, commissioning, end of the "pilot industrial phase", safety reviews) in accordance with the opinion of the ASN.

This project has seen the following developments since 2016:

- 2016: in April 2016, ANDRA sent the ASN a safety option report (DOS), and the law of 11 July 2016 clarified the concept of reversibility;
- 2018: in January 2018, the ASN issued its opinion on the DOS. It considered that the Cigéo project had reached satisfactory overall technological maturity at that stage. This opinion included a requirement for examination of alternatives to the proposal to store bituminous waste at Cigéo with no processing;
- 2019: in September 2019, a group of experts appointed by the DGEC to draw up a report on current bituminous waste management concluded that various options were feasible (storage or neutralisation) but stressed the importance of continuing the studies in order to identify the most appropriate option. A quadripartite research programme involving producers and ANDRA is still examining this question;

- 2020: A detailed design review by a group of independent experts, organised at the request of the DGEC, reported its conclusions. While issuing a generally favourable opinion for ANDRA's submission, the experts made a certain number of recommendations for finalisation of the detailed design studies and the application for authorisation to create the centre, calling for closer involvement of EDF, Orano and the CEA on these matters.

Also in 2020, the French finance law for 2021, published in the *Journal officiel* of 30 December 2020, included a change to the tax treatment of this project (based on storage tax instead of the standard tax regime). At the 2022 year-end, the associated measures still remain to be defined and bounded by the Government to prevent any related cost increase for the Cigéo project.

- 2021: After its filing by ANDRA in August 2020, its examination by the government departments and a public inquiry from 15 September to 23 October 2021, the application for a *Déclaration d'utilité publique* (DUP) officially recognising the public utility of the Cigéo storage centre received a favourable opinion from the inquiry commissioners on 20 December 2021;
- 2022: On 8 July 2022, the DUP decree was published.

The delivery horizon for the first waste packages was also clarified. It should begin between 2035 and 2040 according to the ANDRA report of October 2022 summarising the consultations on the pilot industrial phase and governance of the Cigéo project, whereas at the end of 2021, producers were working on the hypothesis that the first waste packages would be received in 2031. Consequently, the provision has been updated to reflect this deferred reception date for the first packages, with no significant impact.

On 16 January 2023, ANDRA filed its application for authorisation to create Cigéo (DAC) with the Ministry for the Energy Transition. This step marks the start of a new phase: examination of the project by the ASN, after which the project could be authorised and construction could begin. Based on ANDRA's latest schedule, the decree authorising creation is now expected for 2027 (instead of 2025 as previously).

ICEDA

The provision established for long-lived medium and high-level waste, also includes €773 million to cover the conditioning and interim storage of long-lived medium-level waste, principally at the ICEDA conditioning and storage facility (*Installation de Conditionnement et d'Entreposage des Déchets Activés*).

This facility, constructed at the Bugey power plant, received its first waste packages in September 2020 after the ASN authorised its commissioning on 28 July 2020. The ASN's decision approving and governing the conditioning of long-lived medium-level waste into packages at the ICEDA facility was formally received on 19 July 2021. At the end of 2021 the first waste packages were sealed, in compliance with the authorisations granted and the commissioning schedule. Two waste packaging campaigns were completed in 2022, as expected.

15.1.1.3 Provisions for nuclear plant decommissioning

EDF bears full technical and financial responsibility for decommissioning of the basic nuclear facilities (*Installations Nucléaires de Base*, INB) it operates. The final shutdown and decommissioning process is governed by legal provisions and regulations set out in Articles L. 593-20 to L. 593-25 and R.593-65 to R.593-74 of the Environmental Code. It involves the following operations for each INB:

- a definitive shutdown declaration, to be made at least two years prior to the planned shutdown date:

- > since the Energy Transition Law of 17 August 2015, the final shutdown of the INB, which takes place during its operating phase, is considered separately from its dismantling, as a significant modification of lesser importance (simply requiring a declaration by the operator to the Minister and the ASN);

- a dismantling plan compiled by the operator and sent to the minister in charge of nuclear safety, which after examination by the authorities and a public inquiry, leads to a decree prescribing dismantling that authorises the start of dismantling operations;
- key-stage progress reviews submitted for the ASN's approval, with a safety file specific to the dismantling operations to be performed;
- an internal control process concerning significant modifications introduced by the operator in the case of operations that must be declared to or approved by the ASN;
- finally, once these operations are complete, declassification of the facility, which removes it from the scope of the laws governing basic nuclear facilities.

The decommissioning scenario adopted by EDF complies with France's Environmental Code, which requires as short a period as possible to elapse between final shutdown and dismantling in economically acceptable conditions and in compliance with the principles laid down in Article L. 1333-1 of the Public Health Code (radioprotection) and section II of Article L. 110-1 of the Environmental Code (protection of the environment). The intended end-state is industrial use: the sites will be restored to their original condition and will be reusable for industrial purposes.

The ongoing dismantling operations concern plants that were constructed and operated before the nuclear fleet currently in operation, known as "first-generation" plants, the Superphenix plant, and the Irradiated Materials Workshop in Chinon. These operations cover four different technologies: a heavy water reactor (Brennilis), a sodium-cooled fast-neutron reactor (the Superphenix at Creys-Malville), natural uranium graphite gas-cooled (UNGG) reactors (at Chinon, Saint Laurent and Bugey) and a pressurised water reactor (PWR, at Chooz). For the Fessenheim PWR plant, the dismantling application is currently under examination by the ASN, and the operations completed concern the pre-dismantling phase.

Each of these operations is a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no international experience. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists. Decommissioning of the PWR is benefiting from past experience (essentially in the US and limited). The Chooz plant also has the specificity of being located in a cave: this means it is also a unique operation, generating experience that is not immediately transposable and involves specific challenges.

Based on the ongoing decommissioning operations at permanently shut-down plants (particularly the experience gained from the Chooz PWR), the studies conducted for the Summary Preliminary Plan for the two 900MW reactors at Fessenheim, and the preparatory work for dismantling of Fessenheim, it was possible at the end of 2021 to establish a detailed reference estimate of future decommissioning costs for the nuclear fleet currently in operation ("second-generation" plants). However, neither EDF nor any other operator has yet begun a decommissioning programme on a scale comparable to the current PWR fleet, and as a result the estimates include both opportunities and risks, especially associated with the scale effect.

The decommissioning provisions cover future decommissioning expenses as described above (excluding the cost of removing waste from the site and storing it, which is covered by the provisions for long-term waste management).

Details of changes in provisions for nuclear plant decommissioning are as follows:

(in millions of euros)	31/12/2021	Increases	Decreases	Discount effect	Other movements	31/12/2022
Provisions for decommissioning nuclear plants in operation	12,680	-	(7)	500	(1,048)	12,125
Provisions for decommissioning permanently shut-down nuclear plants	5,050	273	(194)	(160)	-	4,969
PROVISIONS FOR NUCLEAR PLANT DECOMMISSIONING	17,730	273	(201)	340	(1,048)	17,094

Other movements in provisions for decommissioning nuclear plants in operation include principally the effects of the change in the real discount rate at 31 December 2022, as well as the effects of the other changes in cost estimates, for provisions backed by assets.

Decreases reflect decommissioning expenses paid in 2022. Increases essentially correspond to changes to estimates during the year, detailed below, for provisions not backed by assets.

For nuclear power plants currently in operation (PWR pressurized water reactor plants with 900MW, 1300MW and N4 reactors)

History of the calculation of provisions and the 2014-2015 Audit commissioned by the DGEC

Until 2013, provisions were estimated based on a 1991 study by the French Ministry of Trade and Industry, which set an estimated benchmark cost for decommissioning expressed in €/MW, confirming the assumptions defined in 1979 by the PEON commission. These estimates were confirmed from 2009 by a detailed study of decommissioning costs conducted by EDF at the representative site of Dampierre (four 900MW units), and the results of that study were corroborated by an intercomparison with the study carried out by consultants La Guardia, based mainly on the Maine Yankee reactor in the United States.

In 2014 the Dampierre study was reviewed by EDF to make sure that the previous calculations were still valid in view of recent developments and experience, both internationally and internally, which called the past estimates into question. For this review, the decommissioning provisions for plants in operation were based on costs resulting from the Dampierre study, in order to incorporate the Company's best estimates and experience from inside and outside France. This change of estimate had no significant impact on the level of provisions at 31 December 2014.

Between June 2014 and July 2015, an audit of decommissioning costs for EDF's nuclear fleet currently in operation was conducted by specialised consulting firms, at the request of the French Department for Energy and Climate (Direction Générale de l'Énergie et du Climat or DGEC). On 15 January 2016 the DGEC published a summary of the audit report. It stated that although estimating the cost of decommissioning nuclear reactors is a demanding exercise due to relatively limited past experience, the prospects of changes in techniques and the distant timing of the expenditure, overall, the audit confirmed EDF's estimate of decommissioning costs for its nuclear fleet currently in operation. The DGEC also made a number of recommendations to EDF following this audit.

Revision in 2016 and current basis for estimation

In 2016, EDF revised the decommissioning estimate, in order to incorporate the recommendations resulting from the audit commissioned by the DGEC, and past experience gained from dismantling operations for first-generation reactors (particularly Chooz A).

A detailed analytical approach was used to revise this estimate, identifying all costs for the engineering, construction work, operation and waste processing involved in future decommissioning of reactors currently in operation. This led to figures based on detailed timetables for plant decommissioning. The approach adopted provided a more thorough assessment of costs specific to the first-of-their-kind units, estimated for each series based on transposition coefficients applied to the baseline costs for the initial 900MW unit, and the series and mutualisation effects, as these costs and effects are inherent to the fleet's size and configuration.

The natures of the principal series and mutualisation effects used to arrive at the estimate are explained below.

Series effects (effects of work at a first-of-a-kind site on the following sites of the same series) are mainly of two types:

- first, in a fleet using the same technology, many studies do not need to be repeated each time;
- second, in a fleet using the same technology, robots and tooling can be largely reused from one site to another.

Mutualisation effects (effects between units on the same site, whether in operation or being decommissioned) are of several different types:

- some of them relate to the fact that several reactors may share ordinary buildings and facilities on the same site, and these buildings and facilities will not have to be dismantled twice;
- certain costs are not higher when two or four reactors are dismantled on the same site. This is usually the case for surveillance costs, ordinary equipment, and the cost of maintaining safe operating conditions on the site.

Due to mutualisation effects, dismantling a pair of reactors on the same site costs less than dismantling two standalone reactors on two different sites. In France, unlike other countries, there are no single reactors but sites with two or four, and in one case six reactors.

Series and mutualisation effects reduce the estimated decommissioning cost by 10% and 7% respectively compared to an estimate for PWR fleet that ignores these effects. Series and mutualisation effects vary depending on the series: they are greater when there are more units in a series (series effect) and more units on a site (mutualisation effect), leading to a combined effect (series and mutualisation effect) of over 17% for the 900MW series.

In particular, series and mutualisation effects explain why it is not appropriate simply to compare the average dismantling cost per reactor between the French fleet and other countries' nuclear fleets.

Conversely, the estimates only marginally reflect changes in productivity and the learning effect. The DGEC-ordered external audit of the decommissioning cost for the fleet currently in operation considered that this approach resulted in a prudent estimation method.

For reasons of prudence, the estimate also includes an assessment of risks and uncertainties as follows:

- incorporation of uncertainties relating to each "elementary" block of costs, series effects, mutualisation effects, transposition coefficients and fleet expenses;
- incorporation of risks, corresponding to the completion risks (which are identifiable and quantifiable, but only contingent). An initial register of risks on the Fessenheim project was drawn up in 2021 based on the ongoing studies, and detailed assessment of these risks is continuing for one first-of-a-kind 900MW reactor on the Fessenheim site that has no specificities. Until the results are released, the financial impact of the risks and opportunities is included via a flat-rate increase.

The above method for assessing risks and uncertainties led to an overall margin of some 16.3% for the whole fleet (21% for the reference estimate for the first-of-a-kind 900MW reactor).

Since its in-depth revision in 2016 this cost estimate has been reviewed annually. The reviews have led to non-significant annual adjustments.

EDF also confirms its analyses through an international intercomparison, taking care to identify and characterise a number of factors that could distort direct comparisons, for example differences in the scope concerned by the cost estimate, or national and regulatory contexts.

Developments in 2021

In 2021, to take account of the impacts of the longer depreciation period for 1300MW-series plants (see note 15.1.1), the sequence of operations for dispatching waste resulting from decommissioning was adapted to reflect the increase in decommissioning waste to be sent for interim storage in certain years.

Additionally, the reference estimate of decommissioning costs for the first 900MW units was updated following preliminary studies conducted in preparation for the decommissioning of Fessenheim, and experience gained at the beginning of the pre-dismantling phase. This update also incorporates optimisation of the industrial scenario for management of decommissioning waste before storage, involving prior processing to reduce the volumes stored. Extrapolation of these elements to the whole PWR fleet had a limited impact on the provisions for decommissioning nuclear plants in operation: they were increased by €149 million via adjustment to balance sheet assets.

Developments in 2022

The annual review of the estimate did not lead to any significant impact on provisions.

Based on the estimates of the different types of cost, the cost to completion (in 2022 euros) for decommissioning of the two 900MW units of Fessenheim amounts to approximately €1.0 billion, giving an average of €0.5 billion per 900MW unit, compared to an average cost of €0.38 billion per unit for the entire PWR fleet, including the series and mutualisation effects described above.

For permanently shut-down nuclear power plants

Decommissioning of shut-down reactors involves pilot operations corresponding to four different technologies, each with clear specificities: a PWR reactor at Chooz A located in a cave, UNGG (natural uranium graphite gas-cooled) reactors at Bugey, Saint-Laurent and Chinon, a heavy water reactor at Brennilis, a sodium-cooled fast neutron reactor at Creys-Malville, and the first-of-a-kind second-generation PWR reactor at Fessenheim.

Basis for estimation

The decommissioning costs are based on estimates that take account of accumulated industrial experience, unforeseeable and regulatory developments, and the latest available figures. They have been revised annually since 2015.

The industrial scenario for dismantling of the UNGG reactors was reviewed in depth in late 2015, leading in particular to a switch from “underwater” to “in-air” dismantling, which involves:

- An essentially remote-controlled dismantling process;
- Qualification of tools and the remote operation platform on an “industrial demonstrator”, which was inaugurated in 2022;
- Dismantling of the initial first-of-a-kind reactor (Chinon A2), and putting the 5 other reactors into a safe storage configuration.

Under this new strategy, dismantling operations for the reactor caissons should be completed between 2063 and 2093, depending on the reactors.

Updating the industrial decommissioning scenario for first-generation power plants, particularly UNGG plants, led to a €590 million increase in the provision at 31 December 2015.

From 2016 to 2020:

The amendment made in 2015 to the industrial scenario for dismantling of the UNGG reactors was presented to the ASN’s commissioners on 29 March 2016, and examined by the ASN until 2019. It was reviewed by international experts, examined by the IRSN, and was the subject of three hearings before the ASN’s commissioners, before the ASN issued two decisions dated 3 March 2020. These decisions and the discussions prior to their adoption by the ASN showed that there was convergence on most major technical questions: the dismantling technique (“in-air”), the usefulness of setting up an industrial demonstrator to develop the tools required for these complex operations, the timetable for dismantling the Chinon A2 reactor, and the need to gain experience from operations on a first reactor.

Regarding the timetable of operations, in draft decisions issued for public consultation in 2019, the ASN asked for this work to be brought forward compared to EDF’s proposed schedule, so that dismantling operations on the five reactors after Chinon A2 would begin “no later than 31 December 2055”.

In view of this request for a shorter timescale, the nuclear provisions were increased in 2019 by a total €108 million: €77 million for decommissioning provisions for permanently shut-down nuclear power plants and €31 million for provisions for long-term radioactive waste management (for long-lived low-level waste, very low-level and low and medium-level waste).

The ASN’s decisions concerning dismantling of UNGG reactors were published in March 2020 and did not contradict the principles of the draft decisions of 2019. Consequently, the nuclear provisions for decommissioning of UNGG plants were

not subjected to any particular reestimation in 2020, and reflect the best estimate of the industrial and technical scenario.

Developments in 2021

In 2021, the annual review of the cost estimates for decommissioning of permanently shut-down plants led to a €77 million increase in provisions due to revision of the industrial decommissioning strategy for Chooz A. That strategy was switched to a full continuous decommissioning scenario, dropping the period of cave runoff water surveillance between the end of installation dismantling and the start of final dismantling and decontamination work, as the quality of the water means this is no longer necessary. Also, the cost estimate for decommissioning of the APEC Fuel Storage Workshop at Creys-Malville – a facility operated by EDF with the principal activity of storing fuel from the Superphénix reactor – was updated based on Summary Preliminary Plan studies conducted in 2020-2021, leading to a €61 million increase in provisions.

Finally, in accordance with its powers under Article 594-4 of the Environment Code, in June 2020 the DGEC commissioned an external audit of the estimated cost of dismantling operations for EDF’s permanently shut-down nuclear facilities (UNG G plants and management of its long-lived low-level waste, Superphenix and Brennilis), conducted by a consortium of specialist firms. This audit took place from December 2020 to July 2021, and the audit report was posted on the Ministry for the Ecological Transition website in November 2021. Its conclusions (confirming the ASN’s observations during its inspection of complex project management, the conclusions of which were released in the first quarter of 2021) highlight “an organization with a structural focus on execution of dismantling projects”, an “annual estimation and revision process [that] is robust, and provides good traceability for the assumptions used and the original data”, and “a long-term industrial approach to overcome the small number of technological challenges that remain”. Finally, the report states that apart from a non-significant correction (taken into account in the 2021 provisions), “the provisions are coherent with the basic scenarios of the projects and cover the full scope of expenses for the scope audited”, and of “adequate sizing” through testing the sizing of EDF’s expenses and provisions.

Developments in 2022

In 2022, following the recommendations made by the DGEC-commissioned audit to confirm scheduling risk assessments and the uncertainty levels concerning estimates, an analytical methodology for assessment of scheduling risks and uncertainties (applied to most of decommissioning projects currently in process) and an additional level of uncertainty for estimates “based on expert assessment” (used in provisions for decommissioning and radioactive waste management) were introduced. This led to an increase of €116 million to decommissioning provisions for permanently shut-down nuclear plants.

The provision for decommissioning of Chooz A was also increased by €37 million to take account of confirmed experience, regarding unforeseen events and delays observed during the dismantling of the reactor vessel (slower segmentation, and unavailability of the bridge crane). As a result of this experience, the vessel dismantling work has been prolonged by 18 months, and a risk of a further 14-month delay on the overall timetable has been identified.

For UNGG plants, the annual review of cost estimates took into consideration delays in obtaining the dismantling decrees (which are now expected in late 2026 rather than late 2025 as previously). This did not have a significant impact on the provisions.

Over a short-term horizon, the provisions take into account expectations that the rises in certain commodity, energy and transport prices will exceed forecast inflation, particularly given the types of purchases relating to decommissioning expenses. This had an impact of €33 million on provisions for decommissioning of permanently shut-down nuclear plants.

At 31 December 2022, the gross amounts estimated under year-end economic conditions (amounts still to be spent) and the present value of those amounts are as follows, presented by type of reactor technology:

(in millions of euros)	31/12/2022	
	Costs based on year-end economic conditions	Amounts in provisions at present value
Pressurised water reactor – PWR – Chooz A	331	289
Pressurised water reactor – PWR – Fessenheim ⁽¹⁾	911	740
Natural uranium graphite gas-cooled reactors – UNGG – Bugey, Saint Laurent, Chinon	5,771	2,948
Heavy water reactor – Brennilis	374	321
Sodium-cooled fast neutron reactor – Superphenix at Creys Malville	559	492

(1) Excluding interim storage and processing of steam generators.

Provisions for decommissioning of permanently shut-down nuclear plants also cover dismantling costs for related facilities such as the APEC Fuel Storage Workshop at Creys-Malville and the BCOT Operational Hot Unit at Tricastin.

Compared to decommissioning costs for the PWR technology, the cost at completion (all costs both settled and remaining) for decommissioning of the other reactors is higher, to different extents depending on their specific characteristics:

- costs are around twice as high for Brennilis (completion cost of approximately €0.96 billion for one reactor) due to its compactness, the fact that the core is encased in concrete and thus difficult to access, the absence of a fuel pool, which complicates remote-controlled segmentation, and the presence of zircaloy (a fire hazard), meaning that segmentation work takes longer and must be more closely supervised;
- costs are around twice as high for UNGG reactors (completion cost of approximately €7 billion for six reactors), because they require removal of 20 times more material than a PWR due to their size, and contain graphite which is hard to access and requires special handling such that specific remote-controlled equipment must be developed;
- costs are around four times as high for Superphenix (completion cost of approximately €1.9 billion for one reactor), due to processing of sodium for which elimination is very sensitive, and the size of the facilities, especially the reactor (with a vessel 20 times bigger than the vessel of the 1300MW PWR).

The following progress has been made on permanently shut-down plants:

- Chooz A: the reactor was shut down in 1991 and nuclear dismantling began in 2007 after the dismantling decree was issued. The final stage of dismantling began in 2016 and involves segmentation, conditioning and removal of reactor vessel internals, followed by dismantling of the vessel itself. These operations should be completed by December 2025. Under the new full continuous decommissioning scenario adopted in 2021, this plant is expected to be declassified by late 2035;
- Fessenheim: the two pressurised water reactors were shut down definitively on 22 February 2020 and 30 June 2020 respectively, in accordance with the law and before the end of their technical operating lifetime. The dismantling plan was sent to the ASN in September 2019 together with the declaration of the permanent shutdown of this INB. The studies conducted in 2019 and 2020 focused on preparing the dismantling plan, which was sent to the ASN on 2 December 2020. In early 2022, the *Mission de la Sûreté Nucléaire et de la Radioprotection* (MSNR) and the ASN formally acknowledged reception of an expanded version of this plan. The dismantling decree for the Fessenheim installations is now expected to be issued in early 2026, and its issuance will mark the start of the dismantling phase. At the end of 2022, the pre-dismantling operations (full defueling of reactors 1 and 2, treatment and removal of boron as planned, total chemical decontamination of the primary circuit of reactor 1 and connected circuits, etc) were in line with the provisional schedule. Total decontamination of reactor 2 was deferred to early 2023, without affecting the critical path;
- UNGG reactors: these six reactors were shut down between 1973 and 1994 and received their dismantling decrees between 2008 and 2010 (except for Chinon A1 and A2). Defuelling and circuit draining have been completed for all these reactors, and dismantling operations are in process for the conventional

and nuclear buildings in the periphery of the “reactor caissons”. Following the ASN’s decision of 2020, applications for dismantling permits were submitted for all these reactors in December 2022, to obtain new decrees allowing continuation of dismantling operations under an “in-air” strategy (these are expected for the end of 2026 at the earliest). Opening of the top part of the first UNGG reactor caisson – Chinon A2 – is expected in 2034: the initial extractions of vessel internals and graphite blocks are due to start in 2041 and last 14 years. In parallel, the other UNGG sites are finalising work to put the sites into a safe storage configuration (by 2037). A safe storage configuration state means that 80% of surfaces have been dismantled and the reactor caissons are safe while awaiting the full benefit experience on dismantling the caisson of the Chinon A2 first-of-a-kind unit. Opening of subsequent caissons is scheduled to begin from 2056;

- Superphenix: this plant was shut down in 1998 and received its dismantling decree in 2006. The following key stages have been completed: defuelling, dismantling of the turbine hall, drainage of the circuits, processing and elimination of the sodium used for cooling in all circuits, filling the reactor vessel, opening and extracting the vessel caps, and the start of dismantling of the core vessel cap (which weighs several hundred tonnes). The next stages are dismantling the vessel internals (due to be completed in 2026), electromechanical dismantling in the reactor building, then decontamination (the plant is expected to be declassified in 2034);
- Brennilis: this plant was shut down in 1985 and received a partial dismantling decree in 2011 allowing dismantling of all installations peripheral to the “reactor block”. The following key stages have been completed: defuelling, dismantling of the machine room, the fuel building, auxiliary buildings, heat exchangers and the effluent treatment station. The next stages are examination of the application for full dismantling authorisation, with a view to obtaining a dismantling decree in 2023 that would enable EDF to dismantle the reactor block (the end of these operations is currently forecast at 2040). Following a public inquiry held from 15 November 2021 to 2 February 2022, the inquiry commissioner issued an unreservedly favourable opinion on 2 March 2022.

15.1.1.4 Provisions for last cores

These provisions cover the future expenses resulting from scrapping fuel that will only be partially irradiated when the reactor is shut down. They are estimated based on:

- the cost of the loss on fuel in the reactor that is not totally spent at the time of final reactor shutdown and cannot be reused due to technical and regulatory constraints (“front-end” expenses);
- the cost of fuel processing, and waste removal and storage operations (“back-end” expenses). These costs are estimated in a similar way to provisions for spent fuel management and long-term radioactive waste management.

These unavoidable costs are components of the cost of nuclear reactor shutdown and decommissioning. As such, they are fully covered by provisions from the commissioning date and an asset associated with the provision is recognised. In a decision of 11 December 2020, France’s Council of State challenged the tax-deductibility of the consequences of immediate recognition of a provision for dismantling of the last core (“front-end” last core expenses) (see note 17.3.1).

In 2020 after the Fessenheim plant was definitively shut down, €99 million of the provision for last cores, concerning the two reactors at Fessenheim, was reversed with a corresponding reduction in the inventories of non-irradiated fuel in the reactor at the time of the shutdown, and in parallel, provisions for spent fuel management and long-term radioactive waste management were recognised for the cost of processing this fuel and storage of the waste that will result.

In 2021, apart from the effects of extending the depreciation period for 1300MW-series plants at 1 January 2021 (see note 15.1.1), there were few changes in provisions for last cores.

In 2022, provisions for last cores were adjusted after experience with core management at Fessenheim and its optimisation was finalised. The main consequence was an update to the masses of unused heavy metals included in the calculation of the last core provisions for the entire fleet, resulting in a €145 million decrease in provisions.

15.1.1.5 Discount rate, inflation and sensitivity analyses

Calculation of the discount rate and inflation rate

The methodologies used to determine the discount rate changed as follows from 31 December 2020:

The discount rate is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (OAT bond 0-20 year curve) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) – with yields that become close to the UFR after 50 years – plus a curve of the spread of corporate bonds rated A to BBB. Based on the disbursement outflows expected to meet nuclear obligations, a single equivalent discount rate is deduced by applying the discount rates from the interest rate curve constructed in this way to each flow as appropriate to its maturity. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions.

The UFR was defined by the European Insurance and Occupational Pensions Authority (EIOPA) for very long-term insurance liabilities that will involve disbursements beyond market horizons. The UFR calculated for 2022 is 3.43%. This is used in the calculation methodology, in compliance with the decision by the French authorities, which in the ministerial order of 1 July 2020 amending the order of 21 March 2007 on secure financing of nuclear expenses (see below) changed the formula of the regulatory ceiling for the discount rate, such that it now refers to the UFR instead of the arithmetic 48-month average of the TEC 30-year rate. The UFR is considered more relevant for nuclear provisions in view of the very long-term maturities. The sovereign yield curve at 31 December 2022 indicates rates in a range of [2.7%; 3.3%] [-0.6%; 0.6%] in 2021) for outflows between 0 and 20 years, [3.3%; 3.4%] [0.6%; 3.1%] in 2021) for outflows between 20 and 50 years, and a rate moving towards 3.43% (3.46% in 2021) for outflows after 50 years.

This calculation methodology for the discount rate provides the best assessment of the time value of money with regard to nuclear provisions, which are characterised by very long-term disbursement outflows, well beyond market horizons. This assessment is largely achieved through:

- use of an interest rate curve based on observed year-end market data with liquid horizons, converging over nonliquid horizons towards a very long-term rate with no cycle effect, *i.e.* yield data for all the maturities associated with nuclear provisions;
- use of a very long-term rate (calculated UFR) produced by an independent body and now adopted by the French authorities in setting the formula for the

regulatory ceiling, to take account of long trends in yield movements, in coherence with the distant disbursement horizon;

- references from bond spreads to include corporate bonds rated A to BBB by ratings agencies, in order to construct a robust spread curve since there are few AA-rated bonds, particularly on long maturities, whereas most "Investment Grade" bonds are BBB-rated bonds and the great majority of them have longer maturities.

The inflation assumption is based on an inflation curve constructed by reference to inflation-indexed market products and economic forecasts, in long-term coherence with the inflation assumption underlying the UFR (2%).

The discount rate determined is thus 4.8% at 31 December 2022 (3.7% at 31 December 2021), assuming inflation of 2.3% (1.7% at 31 December 2021), *i.e.* a real discount rate of 2.5% at 31 December 2022 (2.0% at 31 December 2021).

The increase in the discount rate reflects the observed increase in OAT bond rates and the broader corporate bond spreads since 31 December 2021, notably driven by changes in the ECB's monetary policy and a riskier economic environment.

The increase in the inflation rate assumption reflects the higher inflation forecasts in France since that date, particularly for 2023, the forecast breakeven inflation rate beyond that horizon in the current context of geopolitical and economic crisis. A 2% long-term inflation rate is still used given the ECB's target level, consistent with the inflation assumption underlying the UFR (Ultimate Forward Rate).

Furthermore, cost estimates were adjusted to 2022 year-end economic conditions, with a total impact of €215 million on provisions for decommissioning, spent fuel management and waste management, since actual inflation rates exceeded initial inflation forecasts.

Regulatory discount rate limit

The discount rate must comply with two regulatory limits. Under the decree of 1 July 2020 on secure financing for nuclear expenses (which codified and updated the initial decree of 23 February 2007 as part of the Environmental Code) and the ministerial order of 1 July 2020 on secure financing for nuclear expenses (which amended the initial ministerial order of 21 March 2007), it must be lower than:

- a regulatory maximum, expressed in real value, *i.e.* net of inflation; this value is equal to the unrounded value representative of expectations concerning the real long-term interest rate, as used for the calculation of the Ultimate Forward Rate (UFR) applicable at the date concerned published by the European Insurance and Occupational Pensions Authority (EIOPA), plus 150bp. This maximum is applicable from 2024. Until 2024, the maximum is the weighted average of 2.3% and the above calculation. The weighting applied to the 2.3% rate is set at 50% for 2020, 25% for 2021, 12.5% for 2022 and 6.25% for 2023;
- and the expected rate of return on assets covering the liability (dedicated assets).

The maximum discount rate calculated by reference to the UFR in application of the order that took effect on 1 July 2020 is 2.85% at 31 December 2022 (2.80% at 31 December 2021).

The real discount rate used in the financial statements at 31 December 2022, calculated by the method presented above, is 2.5%.

Analyses of sensitivity to macro-economic assumptions

Sensitivity to assumptions concerning costs, inflation rate, long-term discount rate, and disbursement schedules can be estimated through comparison of the gross amount estimated under year-end economic conditions with the present value of the amount.

Provisions related to nuclear generation within the scope of the Law of 28 June 2006	31/12/2022		31/12/2021	
	Costs based on year-end economic conditions	Amounts in provisions at present value	Costs based on year-end economic conditions	Amounts in provisions at present value
<i>(in millions of euros)</i>				
Spent fuel management	16,194	10,184	16,121	10,683
- amount unrelated to the operating cycle	3,417	1,607	3,282	1,726
Long-term radioactive waste management	36,996	12,475	36,779	14,233
BACK-END NUCLEAR CYCLE EXPENSES	53,190	22,659	52,900	24,916
Decommissioning of nuclear plants in operation	21,381	12,125	20,479	12,680
Decommissioning of shut-down nuclear plants	8,219	4,969	7,718	5,050
Last cores	4,189	2,434	4,349	2,660
DECOMMISSIONING AND LAST CORE EXPENSES	33,789	19,528	32,546	20,390
PROVISIONS RELATED TO NUCLEAR GENERATION within the scope of the law of 28 June 2006		42,187		45,306

The cumulative disbursements of nuclear expenses (based on gross values at year-end economic conditions) are distributed as follows:

Provisions related to nuclear generation within the scope of the Law of 28 June 2006	31/12/2022		
	Costs based on year-end economic conditions		
	Disbursement expected within 10 years ⁽¹⁾	Disbursement expected within 10 years ⁽¹⁾	Total
<i>(in millions of euros)</i>			
Spent fuel management	7,892	8,302	16,194
- amount unrelated to the operating cycle	534	2,883	3,417
Long-term radioactive waste management	5,422	31,574	36,996
BACK-END NUCLEAR CYCLE EXPENSES	13,314	39,876	53,190
Decommissioning of nuclear plants in operation	499	20,882	21,381
Decommissioning of shut-down nuclear plants	3,093	5,126	8,219
Last cores	499	3,690	4,189
DECOMMISSIONING AND LAST CORE EXPENSES	4,091	29,698	33,789

(1) Over a 20-year and 50-year horizon, 22% and 42% respectively of cumulative disbursements (at year-end economic conditions) will concern long-term radioactive waste management provisions, and 36% and 96% respectively will concern decommissioning provisions.

For additional information, the table below shows the estimated impact of a +/-20bp change in the discount rate on the present value of provisions for the back-end of the nuclear cycle, decommissioning of nuclear plants and last cores:

At 31 December 2022

(in millions of euros)	Amounts in provisions at present value	Sensitivity to discount rate			
		Balance sheet provisions		Pre-tax net income	
		+0.20%	-0.20%	+0.20%	-0.20%
Back-end nuclear cycle expenses:					
spent fuel management	11,379	(200)	213	170	(182)
long-term radioactive waste management	12,475	(684)	769	541	(614)
Decommissioning and last core expenses:					
decommissioning of nuclear plants in operation	12,125	(518)	544	-	-
decommissioning of shut-down nuclear plants	4,969	(155)	165	154	(165)
last cores	2,434	(85)	90	-	-
TOTAL	43,382	(1,642)	1,781	865	(961)
Amount covered by dedicated assets	31,649	(1,460)	1,591	764	(853)

The impact of a +/-10 base point variation in discount rates on the present value of provisions for the back-end of the nuclear cycle, decommissioning and last cores is estimated at €(837)/894 million, including €444/(490) on the pre-tax net income.

15.1.2 EDF's dedicated assets

Regulations

Articles L. 594-1 and following of France's Environment Code and their implementing regulations require assets (dedicated assets) to be set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste. These regulations govern the way dedicated assets are built up, and the management and governance of the funds themselves. Dedicated assets are clearly identified and managed separately from the Company's other financial assets and investments. They are also subject to specific monitoring and control by the Board of Directors and the administrative authorities.

The law requires the realisable value of dedicated assets to be higher than the value of the provisions corresponding to the present value of the long-term nuclear expenses defined in France's Environment Code.

The Decree of 1 July 2020 codified the regulatory obligations concerning dedicated assets in Articles D. 594-1 and following of the Environment Code, complemented by the ministerial order of 21 March 2007 amended by the order of 1 July 2020. These documents define the list of eligible assets, which is largely based on France's Insurance Code and mainly includes unlisted assets. In particular, they authorise allocation to dedicated assets of the shares of CTE, which has held 100% of the capital of RTE since 31 December 2017 (see note 15.1.2.2 below).

EDF received ministerial authorisation on 31 May 2018 to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions (this does not apply to the shares of CTE or real estate assets).

Since the decree of 1 July 2020, EDF is no longer obliged to add to dedicated assets when the coverage rate of obligations, determined by the ratio of the assets' realisable value to the amount of the provisions concerned, is above 100%, and withdrawals from assets are not authorised unless that rate is above 120%. The decree also increased the maximum period for allocating funds to dedicated assets in the event of undercoverage, subject to authorisation by the administrative authority, to 5 years (instead of 3 years previously).

15.1.2.2 Strategic allocation and composition of dedicated assets

Given the regulations governing dedicated assets, they form a highly specific category of assets.

Dedicated assets are structured and managed according to a strategic allocation defined by the Board of Directors and reported to the administrative authorities. The strategic allocation is designed to meet the overall objective of long-term coverage of obligations, and determines the structure and management of the portfolio as a whole. It takes into account regulatory constraints concerning the nature and liquidity of the dedicated assets, the financial outlook for the equity and bond markets, and the diversifying contribution of unlisted assets.

Several changes have been made to this strategic allocation in order to pursue the diversification into unlisted assets, particularly in 2010 when the shares in RTE (now held via CTE) were allocated to dedicated assets, and in 2013 when an unlisted asset portfolio (consisting of infrastructures, real estate and debt or equity funds) was set up. This portfolio is managed by EDF's "EDF Invest" Division.

On 29 June 2018 the Board of Directors validated the principle of strategic allocation for dedicated assets:

- yield assets (target of 30% of dedicated assets), consisting of infrastructure assets, including the shares of CTE, and real estate property;
- growth assets (target of 40% of dedicated assets), consisting of equity funds investing in listed or unlisted equities;
- fixed-income assets (target of 30% of dedicated assets), consisting of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

These targets should be reached gradually by 2025.

Growth assets and fixed-income assets

Certain growth and fixed-income assets take the form of bonds held directly by EDF. Others consist of specialised collective investment funds on leading international markets and French general-purpose investment funds (FIVGs), managed by independent asset management companies. They take the form of open-end funds and "reserved" funds located in France, established for the Company. The reserved funds are owned by EDF and are not consolidated as EDF does not participate in management of these funds and provides no financial support for them.

The value of the assets of the reserved investment funds amounts to €12,192 million at 31 December 2022 (€13,106 million at 31 December 2021). These funds mainly consist of 17 listed funds with total value of €11,000 million (at 31 December 2021, 16 listed funds with total value of €12,153 million).

The listed equity funds consist of international equities (mainly in North America but also in Europe, Asia-Pacific and emerging countries). Listed bonds and listed bond funds consist of sovereign and corporate bonds.

These investments are structured and managed in line with the strategic allocation, which takes into consideration international stock market cycles, for which the statistical inversion generally observed between equity market cycles and bond market cycles – as well as between geographical areas – has led the Group to define a long-term investment policy with appropriate allocation between growth assets and fixed-income assets.

Growth assets also include a small portion of funds invested in unlisted equities, and fixed-income assets also include a small portion of funds invested in unlisted debt. These funds are mainly managed by EDF Invest (see yield assets below).

At the year-end, dedicated assets are presented in debt and equity securities in the balance sheet, at their liquidation value.

In the course of operational asset monitoring, the Group applies long-term, specific management rules defined and supervised by its governance bodies (maximum investment ratios, volatility analyses and assessment of individual fund manager quality).

Yield assets

The yield assets managed by EDF Invest consist mainly of assets related to investments in infrastructures and real estate, made either directly by EDF Invest or by investment funds under delegated management arrangements.

Through unlisted investment funds, EDF Invest also manages growth assets and fixed-income assets.

At 31 December 2022, the assets managed by EDF Invest represent a total realisable value of €9,540 million, including €8,772 million of yield assets. Yield assets particularly include:

- 50.1% of the Group's shares in CTE, amounting to €3,791 million at 31 December 2022 (€3,343 million at 31 December 2021), presented in investments in associates in the consolidated balance sheet;
- the Group's investments in Madrileña Red de Gas (MRG), *Aéroports de la Côte d'Azur*, Energy Assets Group, Nam Theun Power Company, companies that own wind and solar power plants (in the United States, Canada, and the United Kingdom) and companies that own real estate assets (Central Sicaf, Ecowest, Korian & Partenaires Immobilier, Issy Shift, 92 France), presented in investments in associates in the consolidated balance sheet;
- the Group's investments in Teréga, Porterbrook, Autostrade per l'Italia, Q-Park, Géosel, Norlys, Databank and companies that own wind farms in the United Kingdom, presented in debt and equity securities in the consolidated balance sheet.

15.1.2.3 Changes in dedicated assets in 2022

As the coverage of provisions by dedicated assets was above 100% at 31 December 2021 (109.3%), EDF had no obligation to add to the dedicated asset portfolio in 2022, and no allocation was made during the year (in 2021, there was also no such obligation and no allocation to dedicated assets was made).

In 2022, the markets were affected by strong inflationary pressure and the realisation by the central banks and the markets that bold measures, particularly interest rate rises, would be necessary to prevent de-anchoring of inflation expectations. The issue was exacerbated by the war in Ukraine and the disruption it caused to energy supplies for Europe. This situation initially affected bond instruments, which ended the year on a record low with -18.5% on government bonds (FTSE EMU Government Bond Index (EGBI)). Credit instruments also suffered significantly (the FTSE EuroBIG Corporate index fell by -14.5%) under the double effect of higher interest rates and wider spreads. However, despite the partial currency hedge set up by the Group, the rise of the dollar limited the decline in the Euro value of assets expressed in dollars. The equity markets declined, but for the time being have only echoed the rise in real interest rates, apparently without responding to the risk to profits in a depressed economic environment. The markets

seem to be counting on the central banks to succeed in containing inflation without creation a recession, and this situation will need to be closely monitored in 2023.

Negative changes in the fair value of the dedicated asset portfolio (investment funds, equities) amounting to €(3,096) million were recognised in the financial result in 2022 (see note 8.3), compared to positive changes amounting to €2,739 million in 2021. Negative changes in the fair value of the bonds in the dedicated asset portfolio amounting to €(875) million were recognised in OCI in 2022 (see note 18.1.2), compared to negative changes amounting to €(244) million in 2021.

In 2022, EDF Invest continued to extend its portfolio of unlisted assets, purchasing minority stakes in telecoms infrastructures (Norlys Fiber, a fibre optics network in Denmark), digital infrastructures (DataBank, a group of data centres in the United States), and shares in diversified unlisted investment funds. EDF Invest also sold its entire interest in Thyssengas (a gas network in Germany) and part of its stake in the Transport Stockage Hydrocarbures/Géosol group (salt cavern oil storage in France) and 50% of the MiRose wind farms in the US.

Withdrawals from dedicated assets in 2022 totalled €416 million, equivalent to payments made in respect of the long-term nuclear obligations to be covered during the year (€389 million in 2021).

15.1.2.4 Valuation of EDF's dedicated assets

EDF's dedicated assets are included in the Group's consolidated financial statements at the following values:

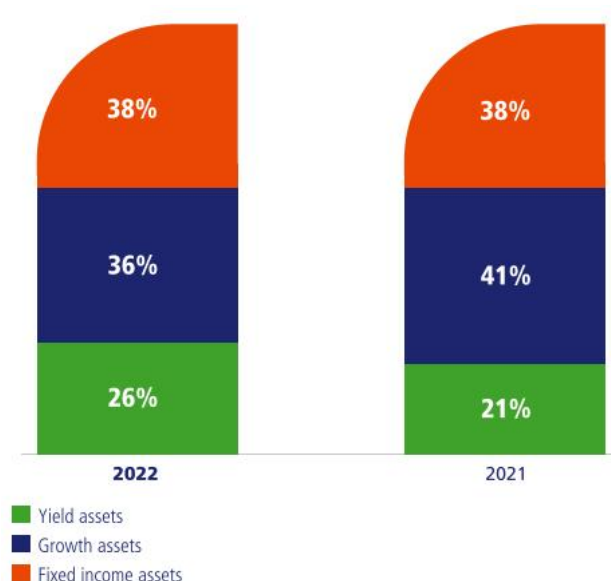
(in millions of euros)		31/12/2022		31/12/2021	
		Book value	Realisable value	Book value	Realisable value
Yield assets (EDF Invest)		6,477	8,772	5,626	7,908
CTE	Investments in associates ⁽¹⁾	1,766	3,791	1,478	3,343
Other associates	Investments in associates ⁽²⁾	2,268	2,495	2,567	2,923
Other unlisted assets	Debt and equity securities and other net assets ⁽³⁾	2,422	2,465	1,581	1,642
Derivatives	Fair value of derivatives	21	21	-	-
Growth assets		12,251	12,251	15,320	15,320
Equities (investment funds)	Debt securities	11,625	11,625	14,815	14,815
Unlisted equity funds (EDF Invest)	Debt securities	553	553	519	519
Derivatives	Fair value of derivatives	73	73	(14)	(14)
Fixed-income assets		12,881	12,881	14,226	14,226
Bonds	Debt securities	11,264	11,264	13,007	13,007
Unlisted debt funds (EDF Invest)	Debt securities	215	215	199	199
Cash portfolio	Debt securities	1,414	1,414	1,016	1,016
Derivatives	Fair value of derivatives	(12)	(12)	4	4
TOTAL EDF DEDICATED ASSETS		31,609	33,904	35,172	37,454

(1) The Group's investment of 50.1% of CTE, the Company that holds 100% of the shares in RTE. The CTE shares are included at their equity value in the consolidated financial statements (book value in the table). The realisable value of CTE in the above table has been determined by an independent assessor, in the same way as for EDF Invest's other assets.

(2) Including the value of the share in equity of the controlled companies owning these investments.

(3) Including debt and equity securities amounting to €2,299 million and the value of the share in equity of other controlled companies.

The structure of the dedicated asset portfolio in 2022 and 2021 is as follows (in realisable value):



15.1.3 Coverage of EDF's long-term nuclear obligations

The Group's long-term nuclear obligations in France concerned by the regulations for dedicated assets related to nuclear generation are included in the EDF group's consolidated financial statements at the following values:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Provisions for spent fuel management – portion unrelated to the operating cycle as defined in the regulations	1,607	1,726
Provisions for long-term radioactive waste management	12,475	14,233
Provisions for nuclear plant decommissioning	17,094	17,730
Provisions for last cores – portion for future long-term radioactive waste management	473	587
PRESENT COST OF LONG-TERM NUCLEAR OBLIGATIONS	31,649	34,276
REALISABLE VALUE OF DEDICATED ASSETS	33,904	37,454
REGULATORY COVERAGE RATE	107.1%	109.3%

At 31 December 2022, by the regulatory calculations provisions are 107.1% covered by dedicated assets. The potential regulatory caps on the realisable value of certain investments set in the Environment Code were not applicable at 31 December 2022. At 31 January 2023, nuclear provisions (as measured at

31 December 2022) were 109.7% covered by dedicated assets, in line with the noticeable positive developments on the financial markets in January 2023.

At 31 December 2021, by the regulatory calculations provisions were 109.3% covered by dedicated assets. Again, the regulatory caps were not applicable.

15.2 EDF Energy's nuclear provisions

The specific financing terms for long-term nuclear commitments related to EDF Energy are reflected as follows in the EDF group's financial statements:

- the obligations are reported in liabilities in the form of provisions amounting to €15,148 million at 31 December 2022;
- in the assets, EDF Energy reports receivables corresponding to the amounts payable under the restructuring agreements by the Nuclear Liabilities Fund

(NLF), for non-contracted obligations or decommissioning obligations, and by the British Government for contracted obligations (or historical liabilities).

These receivables are discounted at the same real rate as the obligations they are intended to finance. They are included in "Financial assets" in the consolidated balance sheet (see note 18.1.3) at the amount of €14,000 million at 31 December 2022 (€15,986 million at 31 December 2021).

Details of changes in provisions for the back-end of the nuclear cycle and provisions for decommissioning and last cores are as follows:

(in millions of euros)	31/12/2021	Increases	Decreases	Discount effect	Translation adjustments	Other movements	31/12/2022
Provisions for spent fuel management	1,401	21	(166)	194	(72)	(94)	1,284
Provisions for waste removal and conditioning	639	1	-	80	(25)	(322)	373
Provisions for long-term radioactive waste management	1,415	2	-	181	(63)	(469)	1,066
Provisions for the back-end of the nuclear cycle	3,455	24	(166)	455	(160)	(885)	2,723
Provisions for nuclear plant decommissioning	12,595	3	(623)	1,588	(637)	(1,630)	11,296
Provisions for last cores	1,839	-	(576)	25	(72)	(87)	1,129
Provisions for decommissioning and last cores	14,434	3	(1,199)	1,613	(709)	(1,717)	12,425
PROVISIONS RELATED TO NUCLEAR GENERATION	17,889	27	(1,365)	2,068	(869)	(2,602)	15,148

"Other movements" include the changes in nuclear liabilities with a corresponding adjustment in the amount of reimbursements receivable from the NLF and the British government, and the change in the provision for last cores via an adjustment to fixed assets.

The overall change of the "other movements" is mainly due to an increase in the real discount rate in the United Kingdom (particularly +100 base point on provisions for the backend of the cycle and decommissioning), resulting in a decrease of the provisions for an amount of €(2,934) million.

As planned, in 2022, EDF Energy ended power generation at the Hunterston B and Hinkley Point B power plants (on 7 January 2022 and 1 August 2022 respectively). Defueling began on 16 May 2022, for Hunterston B and on 14 September 2022, for Hinkley Point B. The provision for last cores consequently decreased by €(576) million and the stock of nuclear fuel decreased by an equivalent amount, corresponding to the fuel stock still in the reactor.

15.2.1 Regulatory and contractual framework

Amendments signed with the Nuclear Liabilities Fund (NLF – an independent trust set up by the UK Government as part of the restructuring of British Energy) following the EDF group's acquisition of British Energy had a limited impact on the contractual financing commitments made to British Energy by the UK Secretary of State and the NLF under the "Restructuring Agreements". These agreements were entered into by British Energy on 14 January 2005 as part of the restructuring led by the UK Government in order to stabilise British Energy's financial position. These agreements were amended and restated on 5 January 2009 as part of the acquisition of the British Energy Generation Limited by the Group. British Energy Generation Limited changed its name to EDF Energy Nuclear Generation Limited on 1 July 2011 and replaced British Energy in these agreements and amendments.

Under the terms of the Restructuring Agreements:

- the NLF agreed to fund, to the extent of its assets: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for management of spent fuel from the Sizewell B power station); and (ii) qualifying decommissioning costs for EDF Energy's existing nuclear power stations;
- the Secretary of State agreed to fund: (i) qualifying contingent and/or latent nuclear liabilities (including liabilities for the management of spent fuel from the Sizewell B power station) and qualifying decommissioning costs related to EDF Energy's existing nuclear power stations, to the extent that they exceed the assets of the NLF; and (ii) subject to a cap of £2,185 million (in December 2002 monetary values, adjusted accordingly), qualifying known existing liabilities for EDF Energy's spent fuel (including liabilities for management of spent fuel from plants other than Sizewell B loaded in reactors prior to 15 January 2005);

- EDF Energy is responsible for funding certain excluded or disqualified liabilities (e.g. those defined as EDF Energy liabilities), and additional liabilities which could be created as a result of failure by EDF Energy to meet minimum performance standards under applicable law. The obligations of EDF Energy to the NLF and the Secretary of State are guaranteed by the assets of the principal members of EDF Energy.

EDF Energy also made commitments to pay:

- annual decommissioning contributions for a period limited to the useful life of the plants as at the date of the "restructuring agreements"; the corresponding provision amounts to €90 million at 31 December 2022;
- £150,000 (indexed to inflation) per tonne of uranium loaded in the Sizewell B reactor after the date of the "restructuring agreements".

Furthermore, EDF Energy entered into a separate contract with the Nuclear Decommissioning Authority (NDA) for management of AGR spent fuel and associated radioactive waste resulting from operation of power plants other than Sizewell B after 15 January 2005, and bears no responsibility for this fuel and waste once it is transferred to the processing site at Sellafield. The corresponding costs of £150,000 (indexed to inflation) per tonne of loaded uranium – plus a rebate or surcharge dependent on market electricity price and electricity generated in the year – are included in inventories.

On 23 June 2021 EDF and the UK government signed an update to the Restructuring Agreements. The changes and clarifications to the Agreements confirm the recovery of qualifying costs and stipulate that once the AGR stations have finished defueling under EDF Energy responsibility, they will transfer to the NDA which will be responsible for subsequent decommissioning activities. These amended agreements have no consequences in the Group financial statements at 31 December 2022.

Phase 1 of the Decommissioning Plan Submission (DPS 20) submitted in 2020, which was an update to the defueling liability, was approved by the NDA in June 2021. The Integrated Plan (IP) 22, which updated the AGR defueling cost estimates previously submitted in 2020, was approved by the Non-Nuclear Liabilities Assurance team (NLA) in December 2021.

Phase 2 of the Decommissioning plan submission (DPS 21) which included updates for all the other decommissioning activities for the AGR plants, decommissioning of Sizewell B and an update to the Uncontracted Liability Discharge Plan (UCLDP), was approved by the NLA in August 2022.

The IP23, which updated the cost estimates from IP22 and DPS21, respectively, was approved by the NLA in December 2022.

The cost estimates from IP23 form the basis of EDF Energy's Back End Nuclear Cycle and Nuclear Plants Decommissioning provision as at 31 December 2022, incorporating the deferral of Sizewell B's decommissioning costs associated with life extension in 2021.

15.2.2 Provisions for the back-end of the nuclear cycle

Spent fuel from the Sizewell B PWR (pressurised water reactor) plant is stored on site. Spent fuel from the AGR plants is transferred to Sellafield for storage and reprocessing.

EDF Energy's provisions for the back-end of the nuclear cycle concern obligations for reprocessing and storage of spent fuel and long-term storage of radioactive waste, required by the existing regulations in the UK approved by the Nuclear Decommissioning Authority (NDA). Their amount is based on contractual agreements or if this is not possible, on the most recent technical estimates.

	31/12/2022		31/12/2021	
	Costs based on year-end economic conditions ⁽¹⁾	Amounts in provisions at present value	Costs based on year-end economic conditions ⁽¹⁾	Amounts in provisions at present value
<i>(in millions of euros)</i>				
Spent fuel management	3,695	1,284	2,725	1,401
Waste removal and conditioning	1,867	373	2,154	639
Long-term radioactive waste management	5,158	1,066	5,126	1,415
BACK-END NUCLEAR CYCLE EXPENSES	10,720	2,723	10,005	3,455

(1) The costs based on year-end economic conditions include spent fuel and associated waste management over the operating life of the reactors (including future load fuel for Sizewell B only); the provisions are based on the fuel committed to date.

15.2.3 Provisions for nuclear plant decommissioning

Provisions for decommissioning of nuclear plants cover the full cost of decommissioning and are measured on the basis of existing techniques and methods that are most likely to be used for application of current regulations.

As explained above, the Restructuring Agreements updated in June 2021 provide that once the AGR power plants have finished defueling that they will transfer to the NDA for subsequent decommissioning activities.

The signature of these agreements has no immediate accounting consequences for decommissioning provisions or the receivable representing reimbursements to be made by the NLF and the UK government. Nuclear decommissioning liabilities and the associated assets will be derecognised during the agreement's operational implementation phase.

Phase 1 of the Decommissioning Plan Submission (DPS 20) submitted in early 2020 and approved by the NDA in June 2021, which was an update to the defueling liability, led to a €1.9 billion increase in the provision at 31 December 2019, notably reflecting i) the extension of the defueling period following risk and contingency modelling, ii) better definition of the costs covered, and iii) an updated

estimate of the costs of preparing and removing fuel, following a review of the industrial scenario.

The Integrated Plan (IP) 22, approved by the NLA in December 2021, which updated the AGR defueling cost estimates previously submitted in 2020, led to a €0.9 billion increase in the provision at 31 December 2021. This increase is mainly explained by the unexpected early end of generation at Dungeness B in June 2021, previously expected to be 2028, leading in particular to a longer defueling duration (and hence an increase in costs) due to the unplanned nature of this shutdown.

Furthermore, in 2021 EDF Energy updated the cost estimates relating to phase 2 of the decommissioning plan submission (DPS 21) which includes the other decommissioning activities for the AGR plants, decommissioning of Sizewell B and an update to the UCLDP. The updated cost estimate represented an increase in the provision of €0.2 billion at 31 December 2021, which includes the upward effects of the unexpected early end of generation at Dungeness (previously planned for 2028) and the new assumptions regarding the closure of Heysham 2 and Torness AGR plants, scheduled for 2028 (previously 2030), as well as the downward effect of extension of the depreciation period of Sizewell B (PWR plant) at 31 December 2021. As mentioned above, phase 2 of the DPS 21 was approved by the NLA in August 2022.

The IP23 was approved by the NLA in December 2022, which updated the cost estimates from IP22 and DPS21.

	31/12/2022		31/12/2021	
	Costs based on year-end economic conditions	Amounts in provisions at present value	Costs based on year-end economic conditions	Amounts in provisions at present value
<i>(in millions of euros)</i>				
PLANT DECOMMISSIONING EXPENSES	20,875	11,206	19,864	12,494

15.2.4 Discounting of EDF Energy's provisions related to nuclear generation

The method used to determine the discount rate changed as follows from 31 December 2020:

- Like the discount rate for nuclear provisions in France, the discount rate for EDF Energy's provisions is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (UK gilt 0-20 year yield) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) plus a curve of

the spread of corporate bonds rated A to BBB. Based on expected disbursements corresponding to nuclear obligations, a single equivalent discount rate is deduced from the curve constructed in this way. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions;

- The inflation assumption is based on an inflation curve constructed by reference to economic forecasts and inflation-indexed market products, in long-term coherence with the inflation assumption underlying the UFR (2%).

Determined under this method, the real discount rate used to calculate provisions for the back-end of the nuclear cycle and decommissioning of nuclear plants is 2.9% (1.9% as at 31 December 2021).

15.3 Nuclear provisions in Belgium

In Belgium, the law of 11 April 2003 assigned management of provisions concerning the Belgian nuclear plants, and the funds that cover them, to Synatom (a subsidiary of the ENGIE group). Luminus contributes *via* Synatom to these funds, to cover its share of plant decommissioning and back-end nuclear fuel expenses as a co-owner of 4 nuclear plants. These funding mechanisms are reflected through the following items in the consolidated financial statements:

- obligations presented in the liabilities in the form of provisions, amounting to €377 million at 31 December 2022 (€272 million at 31 December 2021);
- a receivable representing the advance payments made to Synatom, recognised in the consolidated balance sheet assets as financial assets carried at fair value (see note 18.1.3) at the value of €253 million at 31 December 2022

(€282 million at 31 December 2021). This receivable, which corresponds to the fair value of the share of funds held by Synatom on behalf of Luminus, is discounted by applying the same real discount rate used to determine the obligations they will cover.

Other provisions related to nuclear generation in Belgium correspond to liabilities covered by provisions that are not part of the mechanisms described above.

At 31 December 2022, nuclear provisions in Belgium reflect the three-year review of nuclear provisions, which incorporated the conclusions of the Nuclear Provisions Commission that were reported to Synatom and Electrabel (ENGIE group subsidiaries) on 16 December 2022. Following the review, decommissioning provisions were increased by €183 million.

Note 16 Provisions for employee benefits

Accounting principles and methods

The Group grants its employees post-employment benefits (pension plans, retirement indemnities, etc.) and other long-term benefits (e.g. long-service awards) in compliance with the specific laws and measures in force in each country where it does business.

Calculation and recognition of employee benefit obligations

Obligations under defined-benefit plans are calculated by the projected unit credit method, which determines the present value of entitlements earned by employees at year-end under all types of plan, taking into consideration the prospects for wage increases and each country's specific economic conditions.

Post-employment benefit obligations are valued mainly using the following methods and assumptions:

- retirement age, determined on the basis of the applicable rules for each plan, and the requirements to qualify for a full pension;
- career-end salary levels, with reference to employee seniority, projected salary levels at the time of retirement based on the expected effects of career advancement, and estimated trends in pension levels;
- forecast numbers of pensioners, determined based on employee turnover rates and mortality data available in each country;
- reversion pensions where relevant, taking into account both the life expectancy of the employee and his/her spouse and the marriage rate;
- a discount rate that depends on the geographical zone and the duration of the obligations, determined at the year-end date by reference to the market yield on high-quality corporate bonds or the rate on government bonds whose duration is coherent with EDF group's commitments to employees.

The amount of the provision corresponds to the value of obligations less the fair value of the fund assets that cover those obligations.

The net expense booked during the year for employee benefit obligations includes:

- in the income statement:
 - > the current service cost, corresponding to additional benefit entitlements earned during the year,
 - > the net interest expense, corresponding to interest on obligations net of the return on fund assets, which is calculated using the same discount rate as for the obligations,
 - > the past service cost, including the income or expense related to amendments or settlements of benefit plans or introduction of new plans,
 - > the actuarial gains and losses relating to other long-term benefits;
- in other components of consolidated comprehensive income:
 - > the actuarial gains and losses relating to post-employment benefits and any return on hedging assets in excess of the discount rates used,
 - > the effect of the limitation to the asset ceiling if any.

Post-employment benefit obligations

When they retire, Group employees benefit from pensions determined under local rules. They may also be entitled to benefits directly paid by the companies, and additional benefits prescribed by the relevant regulations.

French entities covered by the IEG system

Entities belonging to the specific IEG (electricity and gas) sector system, namely EDF, Enedis, Électricité de Strasbourg and EDF PEI, are Group companies where almost all employees benefit from the IEG statutes, including the special pension system and other statutory benefits.

After the financing reform for the IEG sector system took effect on 1 January 2005 (law of 9 August 2004), pension provisions were recognised by IEG companies to cover entitlements not funded by France's standard systems (CNAV, AGIRC and ARRCO), to which the IEG system is affiliated, or by the CTA (*contribution tarifaire d'acheminement*) levy on gas and electricity transmission and distribution services.

As a result of the system affiliation mechanism, any change (whether favourable or unfavourable to employees) in the standard French pension system that is not passed on to the IEG pension system is likely to cause a variation in the amount of the provisions recorded by the Group to cover its obligations.

The obligations concerned by the pensions and for which a provision is recorded thus include:

- specific benefits of employees in the deregulated or competitive activities;
- specific benefits earned by employees from 1 January 2005 for the regulated activities (transmission and distribution) (benefits earned prior to that date are financed by the CTA levy).

In addition to pensions, other benefits are granted to IEG status former employees (not currently in active service), as detailed below:

- benefits in kind: Article 28 of the IEG national statutes entitles such employees and current employees to benefits in kind in the form of supplies of electricity or gas at preferential prices. The obligation for supplies of energy to employees of the EDF and ENGIE (formerly GDF-Suez) groups corresponds to the probable present value of kWh to be supplied to beneficiaries or their dependants during their retirement, valued on the basis of the unit cost (which mainly depends on the marginal production cost and taxes). It also includes the payment made under the energy exchange agreement with ENGIE;
- retirement gratuities: these are paid upon retirement to employees due to receive the statutory old-age pension, or to their dependants if the employee dies before reaching retirement. These obligations are almost totally covered by an insurance policy;
- bereavement benefit: this is paid out upon the death of an inactive or disabled employee, in order to provide financial assistance for the expenses incurred at such a time (Article 26 § 5 of the National Statutes). It is paid to the deceased's principal dependants (statutory indemnity equal to three months' pension, subject to a ceiling) or to a third party that has paid funeral costs (discretionary indemnity equal to the costs incurred);
- bonus pre-retirement paid leave: all employees eligible to benefit immediately from the statutory old-age pension and aged at least 55 at their retirement date are entitled to 18 days of bonus paid leave during the last twelve months of their employment;
- other benefits include help with the cost of studies, time banking for pre-retirement leave, and pensions for personnel sent on secondment to subsidiaries not covered by the IEG system.

EDF Energy

Regarding pension obligations in the United Kingdom, EDF Energy's three defined-benefit plans (BEGG (British Energy Generation Group), EEGSG (EDF Energy Generation and Supply Group), and EEPS (EDF Energy Pension Scheme)) were closed at 31 December 2021, and replaced by a new defined-contribution plan called "myRetirement Plan". The rights vested under the previous plans up to their closing date still exist, and the corresponding obligations are update for changes in discount and inflation rates, but are no longer affected by new members or wage increases. Meanwhile, the closed plans were merged into a single plan called "EDF group of the Electricity Supply Pension Scheme (ESPS)" (EDFG).

Other long-term benefit obligations

These benefits concern employees currently in service, and are earned according to local regulations, particularly the statutory regulations for the electricity and gas sector for EDF and French subsidiaries covered by the IEG regime. They include:

- annuities following incapacity, invalidity, industrial accident or work-related illness;
- long-service awards;
- specific benefits for employees who have been in contact with asbestos.

16.1 Group provisions for employee benefits

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Provisions for employee benefits – current portion	790	792
Provisions for employee benefits – non-current portion	16,231	21,716
PROVISIONS FOR EMPLOYEE BENEFITS	17,021	22,508

16.1.1 Breakdown of the change in the provision by geographical area: obligations, fund assets, net liability

(in millions of euros)

	France ⁽¹⁾	United Kingdom	Other	Total
Obligations at 31/12/2021	35,436	10,410	910	46,756
Net expense for 2022	1,110	222	65	1,397
Actuarial gains and losses	(9,260)	(3,386)	(143)	(12,789)
Employees' contributions to funds	-	1	-	1
Benefits paid ⁽²⁾	(1,232)	(439)	(50)	(1,721)
Changes in scope of consolidation	-	-	1	1
Translation adjustment	-	(407)	-	(407)
Other movements	-	-	(8)	(8)
OBLIGATIONS AT 31/12/2022	26,054	6,401	775	33,230

(in millions of euros)

	France ⁽¹⁾	United Kingdom	Other	Total
Fund assets at 31/12/2021	(13,411)	(13,124)	(446)	(26,981)
Net expense for 2022	(171)	(242)	(6)	(419)
Actuarial gains and losses	3,737	5,505	53	9,295
Employer's contributions to funds	-	(102)	(55)	(157)
Employees' contributions to funds	-	(1)	-	(1)
Benefits paid	447	439	13	899
Changes in scope of consolidation	-	-	-	-
Translation adjustment	-	486	(13)	473
Other movements	-	-	7	7
FUND ASSETS AT 31/12/2022	(9,398)	(7,039)	(447)	(16,884)

(in millions of euros)

	France ⁽¹⁾	United Kingdom	Other	Total
Net employee benefit liability at 31/12/2021 ⁽²⁾	22,025	(2,714)	464	19,775
Net expense for 2022	939	(20)	59	978
Actuarial gains and losses	(5,523)	2,119	(90)	(3,494)
Employer's contributions to funds	-	(102)	(55)	(157)
Benefits paid	(785)	-	(37)	(822)
Changes in scope of consolidation	-	-	1	1
Translation adjustment	-	79	(13)	66
Other movements	-	-	(1)	(1)
NET EMPLOYEE BENEFIT LIABILITY AT 31/12/2022	16,656	(638)	328	16,346
Including:				
Provisions for employee benefits				17,021
Non-current financial assets ⁽²⁾				(675)

(1) France comprises the two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 16.2).

(2) The net liability at 31 December 2021 comprised €22,508 million for the provisions for employee benefits and €(2,733) million of non-current financial assets, giving a net liability amount of €19,775 million.

Actuarial gains and losses on obligations in 2022

Actuarial gains and losses on obligations amount to €(12,789) million for 2022, including:

- €(9,260) million in France as a result of:
 - > the €(16,997) million change in the discount rate,
 - > the €(145) million change in demographic assumptions,
 - > the €5,045 million change in the inflation rate,
 - > the €2,276 million impact of pay rise measures decided in 2022 for application from January 2023,
 - > the €561 million change in experience adjustments; and

- €(3,386) million in the United Kingdom, essentially associated with changes in the discount and inflation rates (€(4,475) million) and experience adjustments (€1,257 million) (see note 16.1.2).

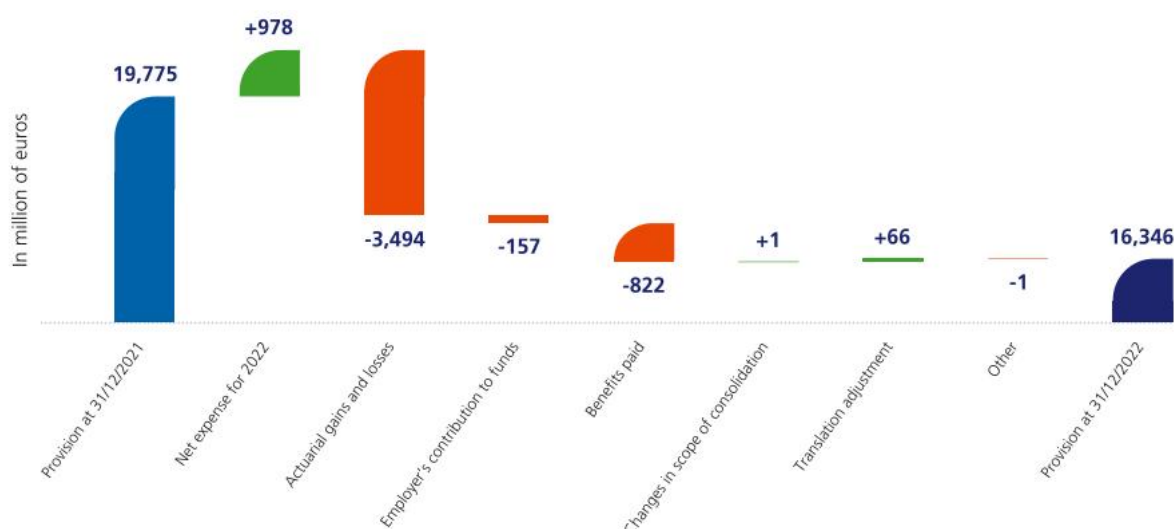
Actuarial gains and losses on obligations amounted to €(239) million for 2021, including:

- €110 million in France as a result of:
 - > the €(3,099) million change in the discount rate,
 - > the €(540) million change in experience adjustments,
 - > the €151 million change in the ARRCO-AGIRC agreement,
 - > the €3,598 million change in the inflation rate; and
- €(356) million in the United Kingdom, essentially associated with changes in the discount and inflation rates (see note 16.1.2).

Actuarial gains and losses on fund assets in 2022

Actuarial gains and losses on fund assets amount to €9,295 million for 2022. They mainly result from a €3,737 million change in France and a €5,505 million change in the United Kingdom, in an environment of falling bond and equity markets.

Changes in the net liability in 2022 were as follows:



Net employee benefit liability at 31 December 2022

The net liability at 31 December 2022 amounted to €16,346 million, including:

- €16,656 million in France;
- €(638) million in the United Kingdom, reflecting recognition by EDF Energy of surplus funding on its EDFG pension scheme, totalling €658 million compared to €2,733 million at 31 December 2021. This surplus funding, which has decreased due to the negative performance by fund assets given substantial interest rate increases over the period, is recognised in balance sheet assets under "non-current financial assets".

16.1.2 Actuarial assumptions and sensitivity analyses

The following actuarial assumptions are used:

(in %)	France		United Kingdom	
	31/12/2022	31/12/2021	31/12/2022	31/12/2021
Discount rate/rate of return on assets ⁽¹⁾	3.90%	1.30%	4.75%	1.90%
Inflation rate	2.30%	1.70%	2.90%	2.95%
Wage increase rate ⁽²⁾	3.70%	2.80%	2.65%	2.70%

(1) The interest income generated by assets is calculated using the discount rate. The difference between this interest income and the real return on assets is recorded in actuarial gains and losses in equity.

(2) Average wage increase rate, including inflation and projected over a full career.

The discount rate used for employee benefit obligations is determined by applying the yield rate on high-quality corporate bonds of appropriate duration to maturities corresponding to the future disbursements resulting from these obligations. For longer durations, the calculation also takes into consideration data from a wider selection of corporate bonds adjusted for comparability with the high-quality bonds, given the smaller panel of bonds with these durations since 2017.

Changes in the economic and market parameters used have led the Group to set the nominal discount rate in France at 3.90% at 31 December 2022 (1.30% at 31 December 2021). The increase in the discount rate essentially relates to the increase in risk-free rates observed in 2022.

The inflation assumption is based on an inflation curve constructed from economic forecasts and inflation-indexed market products. As a result of changes in the

economic and market parameters, the assumed average inflation rate used as the Group's benchmark for Euro zone countries is 2.30% at 31 December 2022 (1.70% at 31 December 2021).

The pay rise agreements signed in 2022 have been taken into consideration in calculating the obligations. For 2024 and subsequent years, the wage laws referred to for these calculations are based on average wage increases observed in recent years (adjusted for non-recurring effects).

The mortality table used to calculate obligations is based on the INSEE 2013-2070 generation table (produced by the French statistics office), corrected for differences in mortality between the general French population and the population covered by the IEG regime.

Sensitivity analyses on the amount of the obligations are as follows:

(in millions of euros)	31/12/2022	
	France	United Kingdom
Impact of a 25bp increase or decrease in the discount rate	(1,066) / 1,144	(269) / 256
Impact of a 25bp increase or decrease in the inflation rate	1,115 / (1,043)	235 / (238)
Impact of a 25bp increase or decrease in the wage increase rate	1,028 / (964)	n.a

n.a: not applicable.

16.1.3 Breakdown by geographical area of post-employment and other long-term employee benefits

(in millions of euros)	2022			
	France	United Kingdom	Other	Total
Current service cost	(779)	(32)	(52)	(863)
Past service cost	-	-	(2)	(2)
Actuarial gains and losses – other long-term benefits	131	-	-	131
Net expenses recorded as operating expenses	(648)	(32)	(54)	(734)
Interest expense (discount effect)	(462)	(190)	(11)	(663)
Return on fund assets	171	242	6	419
Net interest expense included in financial result	(291)	52	(5)	(244)
EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT	(939)	20	(59)	(978)
Actuarial gains and losses – post-employment benefits	9,260	3,386	143	12,789
Actuarial gains and losses on fund assets	(3,737)	(5,505)	(53)	(9,295)
Actuarial gains and losses	5,523	(2,119)	90	3,494
Translation adjustments	-	(79)	13	(66)
GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY	5,523	(2,198)	103	3,428

(in millions of euros)	2021			
	France	United Kingdom	Other	Total
Current service cost	(793)	(223)	(25)	(1,041)
Past service cost	-	35	-	35
Actuarial gains and losses – other long-term benefits	(123)	-	(6)	(129)
Net expenses recorded as operating expenses	(916)	(188)	(31)	(1,135)
Interest expense (discount effect)	(321)	(168)	(9)	(498)
Return on fund assets	119	196	4	319
Net interest expense included in financial result	(202)	28	(5)	(179)
EMPLOYEE BENEFIT EXPENSES RECORDED IN THE INCOME STATEMENT	(1,118)	(160)	(36)	(1,314)
Actuarial gains and losses – post-employment benefits	(110)	356	(7)	239
Actuarial gains and losses on fund assets	287	859	22	1,168
Actuarial gains and losses	177	1,215	15	1,407
Translation adjustments	-	123	-	123
GAINS AND LOSSES ON EMPLOYEE BENEFITS RECORDED DIRECTLY IN EQUITY	177	1,338	15	1,530

The actuarial gains and losses on obligations in France are as follow:

(in millions of euros)	2022	2021
Experience adjustments	(767)	437
Changes in demographic assumptions	145	1
Changes in financial assumptions ⁽¹⁾	10,013	(671)
ACTUARIAL GAINS AND LOSSES ON OBLIGATIONS	9,391	(233)
Including:		
Actuarial gains and losses on post-employment benefits	9,260	(110)
Actuarial gains and losses on other long-term benefits	131	(123)

(1) Financial assumptions mainly concern the discount rate, inflation rate and wage increase rate.

16.2 France (regulated activities, and generation and supply)

The two operating segments "France – Generation and Supply" and "France – Regulated activities" (see note 4.1) are combined here into a single subtotal, "France", which primarily includes EDF and Enedis. Almost all of these companies' employees have IEG status, including the special IEG pension and other IEG benefits.

16.2.1 Breakdown of obligations by type of beneficiary

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Current employees	12,831	18,463
Retirees	13,223	16,973
OBLIGATIONS	26,054	35,436

16.2.2 Provision for employee benefits by nature

At 31 December 2022

<i>(in millions of euros)</i>	Obligations	Fund assets	Provisions in the balance sheet
Provisions for post-employment benefits at 31/12/2022	24,650	(9,398)	15,252
Including:			
Pensions	19,564	(8,827) ⁽¹⁾	10,737
Benefits in kind (electricity/gas)	3,129	-	3,129
Retirement gratuities	754	(557)	197
Other	1,203	(14)	1,189
Provisions for other long-term employee benefits at 31/12/2022	1,404	-	1,404
Including:			
Annuities following work-related accident and illness, and invalidity	1,191	-	1,191
Long service awards	188	-	188
Other	25	-	25
PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2022	26,054	(9,398)	16,656

(1) Mainly EDF's fund assets (49% of pension obligations were covered by funds at 31 December 2022).

At 31 December 2021

<i>(in millions of euros)</i>	Obligations	Fund assets	Provisions in the balance sheet
Provisions for post-employment benefits at 31/12/2021	33,813	(13,411)	20,402
Including:			
Pensions	26,196	(12,620) ⁽¹⁾	13,576
Benefits in kind (electricity/gas)	4,925	-	4,925
Retirement gratuities	897	(776)	121
Other	1,795	(15)	1,780
Provisions for other long-term employee benefits at 31/12/2021	1,623	-	1,623
Including:			
Annuities following work-related accident and illness, and invalidity	1,362	-	1,362
Long service award	230	-	230
Other	31	-	31
PROVISIONS FOR EMPLOYEE BENEFITS AT 31/12/2021	35,436	(13,411)	22,025

(1) Mainly EDF's fund assets (53% of pension obligations were covered by funds at 31 December 2021).

16.2.3 Fund assets

For France, fund assets, managed under an asset/liability model, amount to €9,398 million at 31 December 2022 (€13,411 million at 31 December 2021) and concern the coverage of retirement gratuities and the specific benefits of the special pension system.

They consist of insurance contracts with the following risk profile:

- 65% in a hedging pocket consisting of bonds, designed to replicate variations in the obligation caused by changes in interest rates;
- 33% in a growth asset pocket consisting of international equities;
- 2% in real estate investments.

Fund assets break down as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
FUND ASSETS	9,398	13,411
Assets funding special pension benefits	8,827	12,620
Including (%)		
Listed debt instruments (bonds)	65%	67%
Listed equity instruments (shares)	33%	33%
Real estate property	2%	-
Assets funding retirement gratuities	557	776
Including (%)		
Listed debt instruments (bonds)	69%	67%
Listed equity instruments (shares)	31%	33%
Other fund assets	14	15

At 31 December 2022, the bonds held as part of fund assets are distributed as follows:

- approximately 59% of the total are AAA and AA rated bonds;
- approximately 41% of the total are bonds with A, BBB and other ratings.

Around 59% of bonds are sovereign bonds issued by Euro zone countries, and the balance mainly consists of bonds issued by financial and non-financial firms.

At 31 December 2022, the equities held as part of fund assets are distributed as follows:

- approximately 62% of the total are shares in North American companies;
- approximately 19% of the total are shares in European companies;
- approximately 19% of the total are shares in companies in the Asia-Pacific zone and emerging countries.

This distribution is relatively stable compared to the distribution at 31 December 2021.

The performance of pension fund assets in France is -27.1% in 2022.

16.2.4 Future Cash Flows

Cash flows related to future employee benefits are as follows:

<i>(in millions of euros)</i>	Cash flow under year-end economic conditions	Amount covered by provisions (present value)
Less than one year	1,258	1,237
One to five years	4,493	3,997
Five to ten years	5,765	4,265
More than ten years	53,963	16,555
CASH FLOWS RELATED TO EMPLOYEE BENEFITS	65,479	26,054

At 31 December 2022, the average duration of employee benefit commitments in France is 16.8 years.

16.3 United Kingdom

16.3.1 Breakdown of obligations by type of beneficiary

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Current employees	2,603	5,837
Retirees	3,798	4,573
OBLIGATIONS	6,401	10,410

16.3.2 Fund assets

The investment strategy applied in these funds is a liability driven investment strategy. The allocation between growth and back-to-back is regularly reviewed by the trustees, at least after every actuarial valuation, to ensure that the funds' overall

investment strategy remains coherent in order to achieve the target coverage level required.

These assets break down as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
FUND ASSETS	7,039	13,124
Including (%)		
Listed equity instruments (shares)	0%	10%
Listed debt instruments (bonds)	62%	60%
Real estate properties	10%	5%
Cash and cash equivalents	3%	5%
Other (including private equity)	25%	20%

At 31 December 2022, the bonds held as part of fund assets are distributed as follows:

- approximately 67% of the total are AAA and AA-rated bonds;

- approximately 33% of the total are bonds with A, BBB and other ratings.

Around 65% of all these bonds are sovereign bonds, mainly issued by the United Kingdom. The balance mainly consists of bonds issued by financial and non-financial firms.

16.3.3 Future cash flows

Cash flows related to future employee benefits are as follows:

<i>(in millions of euros)</i>	Cash flow under year-end economic conditions	Amount covered by provisions (present value)
Less than one year	235	256
One to five years	1,003	897
Five to ten years	1,414	1,025
More than ten years	12,098	4,223
CASH FLOWS RELATED TO EMPLOYEE BENEFITS	14,750	6,401

The average weighted duration of funds in the United Kingdom is 17.2 years at 31 December 2022.

Note 17 Other provisions and contingent liabilities

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<i>(in millions of euros)</i>	Notes	31/12/2022			31/12/2021		
		Current	Non-current	Total	Current	Non-current	Total
Other provisions for decommissioning	17.1	127	2,006	2,133	95	1,872	1,967
Other provisions	17.2	3,885	2,665	6,550	3,245	3,570	6,815
OTHER PROVISIONS		4,012	4,671	8,683	3,340	5,442	8,782

17.1 Other provisions for decommissioning

The breakdown by company is as follows:

<i>(in millions of euros)</i>	EDF	EDF Energy	Edison	Framatome	Other	Total
OTHER PROVISIONS FOR DECOMMISSIONING AT 31/12/2022	987	108	192	418	428	2,133
Other provisions for decommissioning at 31/12/2021	770	123	188	443	443	1,967

Other provisions for decommissioning principally concern fossil-fired power plants, installations for the production of nuclear fuel assemblies, and dismantling of wind farms.

The costs of decommissioning fossil-fired power plants are calculated using regularly updated studies based on estimated future costs, measured by reference to the charges recorded on past operations and the most recent estimates for plants still in operation. The provision recorded at 31 December 2022 reflects the most recent known cost estimates and includes rehabilitation costs for generation sites.

Provisions for decommissioning notably include €153 million for Basic nuclear facilities (INB) in France, in the amounts of €110 million for Framatome and

€43 million for Cyclife France. Dedicated assets are set aside to cover these provisions as required by the regulations.

Dedicated assets of Framatome and Cyclife France

The dedicated assets of Framatome and Cyclife France relating to Basic nuclear facilities (INB) in France have realisable values of €92 million in Framatome and €53 million in Cyclife France and the degree of coverage of provisions according to the regulations is 83% for Framatome and 123% for Cyclife France. At Framatome, a plan is currently in preparation to reach at least 100% coverage within 5 years, in accordance with decree 2020-830 of 1 July 2020.

17.2 Other provisions

Details of changes in other provisions are as follows:

(in millions of euros)	31/12/2021	Increases	Decreases		Changes in scope	Other changes ⁽¹⁾	31/12/2022
			Utilisations	Reversals			
Provisions for contingencies related to subsidiaries and investments	585	315	(17)	(257)	(9)	(12)	605
Provisions for tax liabilities (excluding income tax)	112	2	(56)	(10)	- ⁽¹⁾	2	49
Provisions for litigation	327	89	(66)	(32)	-	3	321
Provisions for onerous contracts and losses on completion	1,651	117	(360)	(654)	(3)	(113)	638
Provisions related to environmental schemes	1,572	2,341	(1,932)	(2)	-	(53)	1,926
Other provisions for contingencies and losses	2,568	4,197	(3,553)	(164)	1	(38)	3,011
TOTAL	6,815	7,061	(5,984)	(1,119)	(12)	(211)	6,550

(1) Other changes principally concern foreign exchange effects resulting from adjustment of the provisions for onerous contracts concerning Dunkirk LNG, and the rise of the pound sterling against the euro.

Provision for onerous contracts

Provisions for onerous contracts mainly relate to multi-year agreements for the purchase or sale of energy and services:

- losses on energy purchase agreements are measured by comparing the acquisition cost under the contractual terms with the forecast market price;
- losses on energy sale agreements are measured by comparing the estimated income under the contractual terms with the cost of the energy to be supplied;
- losses on gas-related service agreements are measured by comparing the costs of fulfilling a contract with the resulting economic benefits, based on market and sales assumptions.

Provisions for onerous contracts are mainly attributable to the Group's LNG activities (long-term LNG purchase contracts and a long-term regasification contract with Dunkerque LNG).

A provision for a liquefied natural gas (LNG) supply contract from the United States was totally recovered at 31 December 2022 following an improvement in medium-term and long-term United States/Europe spreads, in a market that remains very volatile.

A partial reversal of a provision concerning a regasification contract was recognised at 31 December 2022, as a result of better use of European terminals in the new geopolitical context for gas.

The revenues and margin on Framatome's long-term contracts are recorded under the percentage-of-completion method. When the estimated result upon completion is negative, the loss is immediately recorded in profit and loss, after deducting the loss already recognised under the percentage-of-completion method, and a provision is booked.

Provisions related to environmental schemes

Provisions related to environmental schemes include provisions to cover shortfalls in greenhouse gas emission rights, renewable energy certificates and where relevant

energy savings certificates, based on the assigned obligations (see notes 5.5.4, 10.2, 20.1 and 20.2.1).

Through the **renewable energy certificates scheme**, the EDF group has an obligation to surrender renewable energy certificates, particularly in the United Kingdom and Belgium.

At 31 December 2022, a provision of €1,117 million was booked in connection with the obligation to surrender renewable energy certificates at that date, essentially concerning EDF Energy (United Kingdom) and Luminus (Belgium). A large portion of these obligations is covered by purchases of certificates included in intangible assets (see note 10.2).

One of the main features of the fourth period (2021-2030) of the European Union **greenhouse gas emission quota system** (SEQUEU or EU-ETS) is to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015. One key step was accelerating annual quota reductions to 43 million tonnes per year.

In the EDF group, the entities concerned by this European system are EDF, Edison, Dalkia, PEI and Luminus. Free emissions quota allocations for the Group stopped in 2020.

The volume of emissions at 31 December 2022 stood at 18 million tonnes (17 million tonnes for 2021).

Actual greenhouse gas emissions amounted to €799 million at 31 December 2022 (€380 million at 31 December 2021) and are included in provisions in the balance sheet.

In 2022, the Group surrendered 17 million tonnes in respect of emissions generated in 2021 under the EU ETS (in 2021 it surrendered 16 million tonnes in respect of emissions generated in 2020).

Now that Brexit has taken place, the United Kingdom is no longer a member of the European system (EU ETS) and has set up its own system (UK ETS – Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of EDF Energy's emissions at 31 December 2022 stood at 0.1 million tonnes (2 million tonnes for 2021). Actual greenhouse gas emissions amounted to €9 million at 31 December 2022 (€36 million at 31 December 2021) and are included in provisions in the balance sheet.

In 2022, EDF Energy surrendered 2 million tonnes in respect of emissions generated in 2021 under the UK ETS (in 2021 it surrendered 3 million tonnes in respect of emissions generated in 2020).

Other provisions for contingencies and losses

At 30 June 2022, other provisions for contingencies and losses included a provision of €2,749 million for the cost in the second half-year of 2022 of the additional ARENH allocation introduced by the decree of 11 March 2022 and its implementing orders. This provision was used entirely during the second half-year as and when the sales and purchases took place.

At 31 December 2022, a provision for contingencies was also recognised in connection with ongoing negotiations for a significant contract (see note 15.1.1.1).

These provisions also cover various contingencies and expenses related to operations (employers' matching contributions to employee profit sharing, restructuring operations, contractual maintenance obligations, etc.). No individual provision is significant.

In extremely rare cases, specific litigation covered by a provision may be unmentioned in the notes to the financial statements if such disclosure could cause serious prejudice to the Group.

At 31 December 2021, other provisions for risks and liabilities include a provision related to proceedings before the French Competition Authority (ADLC). On 22 February 2022, in a settlement procedure, the ADLC fined the EDF group €300 million for abuse of its dominant position. The provision was reversed when the expense, which was disbursed in July 2022, was recognised.

17.3 Contingent liabilities

Accounting principles and methods

A contingent liability is:

- a potential obligation arising from past events, which will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control, or
- a present obligation arising from past events that is not recognised in the financial statements because an outflow of resources representing economic benefits is unlikely to be necessary to extinguish the obligation, or because the amount of the obligation cannot be measured reliably.

The principal contingent liabilities at 31 December 2022 are the following:

17.3.1 Tax inspections

EDF

For the period 2008 to 2019, EDF was notified of proposed tax adjustments, notably concerning the tax-deductibility of certain long-term nuclear liabilities. In two rulings made in 2017 and one in 2019, Montreuil Administrative Court recognised the tax-deductibility of these liabilities and validated the position taken by the Company. The Minister appealed against two of these rulings. In January 2020, the Versailles Administrative Court upheld EDF's position for the year 2008, but the Minister appealed. In a decision of 11 December 2020 the Council of State overturned the Versailles court's decision and sent the case back before the same court. On 17 June 2021 the Administrative Appeal Court found against the Company and cancelled the first-instance rulings that had been in its favour. The Company lodged a further appeal before the Council of State, which was deemed admissible in late 2022. EDF is now waiting for a hearing date to be set. EDF recognised a net tax liability of €510 million in its 2020 financial statements in connection with this dispute, and has a tax liability covering the residual risk at 31 December 2022.

For the years 2012 to 2019, the French tax authorities questioned the tax-deductibility of certain long-term nuclear provisions. In a ruling of 29 August 2022, Montreuil Administrative Court validated the Company's position for one of the contested provisions, but upheld the tax adjustment for the other. In execution of this decision, the Company paid €297 million (see note 9.2) and filed an appeal against the unfavourable part of the ruling.

EDF International

Following the tax inspections of EDF International for the years 2009 to 2014, the French tax authorities questioned the valuation of the bond convertible into shares issued to refinance the acquisition of British Energy. The total amount concerned was approximately €310 million. EDF International contested this reassessment.

In judgements of 2 July 2019 for the period 2009-2013 and 30 January 2020 for the year 2014, Montreuil Administrative Court confirmed the tax reassessments. EDF International therefore paid the tax in execution of these decisions, but also appealed against them. In a ruling of 25 January 2022, Versailles Administrative Court found in favour of EDF International and cancelled the first-instance judgments, thus nullifying the notified reassessments. In early 2022, EDF International received a full refund of the amounts it had paid. In a decision of

16 November 2022, the Council of State overturned the Administrative Court's ruling and sent the case back to be rejudged before the same court. In application of this decision, EDF International repaid the full amount previously received (see note 9.2).

17.3.2 Labour litigation

EDF and its subsidiaries are party to a number of labour lawsuits. The Group considers that none of these lawsuits, individually, is likely to have a significant impact on its financial results or financial position. However, because they relate to situations that could concern a large number of EDF's employees in France, any increase in such litigations could have a potentially negative impact on the Group's financial position.

Additionally, EDF and its subsidiaries in France regularly undergo inspections by social security bodies such as URSSAF, some of which are currently in process.

17.3.3 Litigation with photovoltaic producers

Announcements in France in 2010 of a cut in purchase tariffs for photovoltaic electricity (the PV purchase tariff) triggered an upsurge in connection applications submitted to distribution network operators. By a decree of 9 December 2010 (the "moratorium decree") the French Government suspended the conclusion of new contracts with purchase obligations for a three-month period, and stated that any applications not approved by 2 December 2010 would have to be resubmitted at the end of this three-month period, based on a new tariff. The decision setting that tariff was issued on 4 March 2011, and significantly reduced the PV purchase tariffs. A tender system was developed in parallel.

A ruling given by the French Council of State on 16 November 2011 rejecting appeals against the moratorium decree generated a large volume of legal proceedings against Enedis and EDF in late 2011 which continued until 2015. Since March 2016, new actions for compensation relating to the photovoltaic moratorium have been definitively barred.

In response to an application for a preliminary ruling, on 15 March 2017 the Court of Justice of the European Union (CJEU) confirmed that the decisions of 10 July 2006 and 12 January 2010 setting the PV purchase tariffs constituted State aid that had been implemented without prior notification to the European Commission, and was therefore illegal. The CJEU concluded that it was now up to the national courts to take the appropriate action.

On 18 September 2019, the Court of Cassation issued several decisions rejecting claims concerning both Enedis and EDF, judging the aid illegal because it had not been notified; consequently, the prejudice of producers who could not benefit from that aid is deemed not legally reparable. Since then, further Court of Cassation decisions have essentially confirmed its ruling of 18 September 2019 and rejected producers' appeals founded on state aid arguments.

Since court decisions were now consistently following this precedent, some producers brought actions before administrative courts, claiming reparation from the State. To date the administrative courts have dismissed the producers' claims.

In parallel to the compensation claims before civil courts, EDF and Enedis sought to apply their Civil Liability insurance policy, but the insurers refused their claim. The French Court of Cassation considered in a ruling of 9 June 2015 (for the Green Yellow case) that the insurance payment was due and that the distribution network operator was at fault. Following that ruling, Enedis and EDF brought action against their insurers in April 2017, applying to the courts for formal recognition of two partial serial claims. If the courts were to recognise the existence of two partial serial claims, a single excess and a single limit would apply for all claims with the same technical cause. In view of the favourable developments in cases before the Court of Cassation, EDF and Enedis decided to apply for this case to be removed from the court list on 17 February 2021, to suspend the procedure for 2 years in order to draw up the final list of cases still outstanding. EDF and Enedis will file submissions by 17 February 2023 in order to suspend the time limit on this civil action for 2 years.

17.3.4 ARENH dispute - Force majeure

In the crisis caused by the Covid-19 pandemic, some suppliers applied to the President of the Paris Commercial Court in 2020 for an emergency order suspending ARENH deliveries either totally, or partially, equivalent to the decline in electricity consumption by their customer portfolio during the crisis, citing the *force majeure* clause contained in the master ARENH agreement signed with EDF.

On 20, 26 and 27 May 2020, after summary proceedings the Paris Commercial Court issued provisional rulings on the applications for suspension of ARENH contracts made by four alternative suppliers (TotalEnergies, Gazel, Alpiq and Vattenfall). The urgent application judge ruled that *force majeure* was established, and ordered the suspension of deliveries for three of the applicants (TotalEnergies, Gazel, and Alpiq). EDF appealed against this ruling. On 28 July 2020, the Paris Court of Appeal upheld these Commercial Court decisions. On 24 September 2020 EDF filed an appeal before the Court of Cassation which was rejected on 11 May 2022.

Meanwhile, as a precautionary measure to protect its rights, on 2 June 2020 EDF notified the energy suppliers Alpiq, Gazel and TotalEnergies of the termination of their ARENH contracts. By an order of 1 July 2020, the president of the Paris Commercial Court declared this termination null and void. EDF appealed against that decision. On 19 November 2020, the Paris Court of Appeal overturned the Commercial Court's order and stated that there were no grounds for summary proceedings, thus restoring the effects of the termination.

Further summary proceedings were initiated in late September 2020 by Ohm Energie, seeking a suspension of payments due for ARENH volumes, claiming that deliveries had been continued illegally by EDF since it had requested suspension of ARENH deliveries from April to June 2020 due to *force majeure*. On 23 October 2020 the Paris Commercial Court rejected all of Ohm Energie's claims.

In parallel, seven cases concerning the substance of the matter were brought by suppliers, claiming compensation from EDF for the prejudice caused by its allegedly unlawful refusal to apply the *force majeure* clause. The suppliers concerned are Hydroption, Vattenfall, Priméo Energie Grands Comptes and Priméo Energie Solutions, Arcelor Mittal Energy, Plüm Energy et Entreprises et Collectivités, TotalEnergies and Ekwater.

On 13 April 2021, the Paris Commercial Court issued a first judgement on the merits in the Hydroption case, ordering EDF to pay the claimant €5.88 million in damages. The court considered that the conditions for *force majeure* were fulfilled and concluded that in continuing its ARENH deliveries against Hydroption's wishes EDF had committed a breach of contract for which it could be held liable. On 15 October 2021, the Paris Court of Appeal overturned the Commercial Court's judgement insofar as it considered EDF liable and ordered it to pay damages to

Hydroption, considering that the exemption clause of *force majeure* was not established, and that EDF was not obliged to satisfy a request for suspension of the contract. On 2 December 2021, the Toulon Commercial Court placed Hydroption SAS in liquidation. The liquidator filed an appeal before the Court of Cassation on 19 January 2022, and the proceedings are still ongoing.

On 30 November 2021 the Paris Commercial Court issued two more judgements on the merits in the cases brought by TotalEnergies et Ekwater, ordering EDF to pay damages of €53.93 million to TotalEnergies and €1.77 million to Ekwater. EDF has appealed against these two judgments, and the proceedings are still ongoing.

On 6 December 2022, the Paris Commercial Court issued two further judgements on the merits in the cases brought by Priméo Energie Grands Comptes and Priméo Energie Solutions, ordering EDF to pay these two companies damages of €1.73 million and €2.36 million respectively. EDF has appealed against these two judgments, and the proceedings are still ongoing.

The other cases on the merits are still ongoing.

17.3.5 Edison

Sale of Ausimont (site de Bussi)

Several legal actions before the civil, administrative and criminal courts were begun following the sale by Edison of the Ausimont SpA industrial complex to Solvay Solexis SpA in 2002. The following proceedings are still ongoing:

- two administrative cases:
 - > On 28 February 2018, the Province of Pescara notified Solvay Speciality Polymers Italy SpA (formerly Solvay Solexis SpA) and Edison SpA of the launch of an administrative procedure to determine who was responsible for the pollution of the land outside the industrial complex belonging to Ausimont SpA which had been sold. The Province also ordered Edison to remove waste that was on the land concerned. Edison first appealed against this order before Pescara regional administrative court, and then before the Italian Council of State. In April 2020 the Council of State rejected the claim and Edison, considering the ruling unfair and unlawful, filed applications for its annulment before the Italian Court of Cassation, the Italian Council of State and the European Court of Human Rights (ECHR). The application before the Council of State has been rejected, while the case before the ECHR is still in process.
- Edison has nonetheless begun work to make the site safe in agreement with the competent Public Administrations. In particular, Edison has completed the prevention measures (covering) of the polluted areas, reactivated the pump and stock system for the shallow waters and conducted further deep inspections on the soils. Furthermore, the Company has recently submitted a plan to the Ministry for the Environment for the first phase of environmental remediation relating to the disposal and management of waste.
- On 11 June 2021 the Council of State published a ruling rejecting the appeal by the Ministry for the Environment against the decision of the Abruzzo regional administrative court concerning annulment of the award of the integrated contract for remediation work in these areas to the Belgian company Dec Deme.
- Edison, which had already started the aforementioned work to make these areas safe and clean following the decision of the Council of State of April 2020, is currently discussing the cleanup and waste removal operations under its responsibility with the relevant bodies.
- > In an announcement of 18 December 2019, the Province of Pescara ordered Edison SpA to clean up the land located inside the industrial complex. Edison challenged this order before the Pescara regional administrative court and the proceedings are ongoing. While awaiting the court's decision, Edison has signed a transitional agreement with the current owners to define the practicalities for the transfer and management of existing power plants and the environmental remediation activities;
- one arbitration case: in 2012, arbitration proceedings were launched by Solvay SA and Solvay Specialty Polymers Italy SpA (the purchaser of Ausimont) for violation by Edison of the representations and warranties in environmental matters concerning the Bussi and Spinetta Marengo sites contained in the sale agreement.

At the end of June 2021, the Arbitral Tribunal issued a partial award, largely accepting the claims by Solvay Specialty Polymers Italy in relation to the environmental warranties given by Montedison under the Ausimont sale agreement signed in 2001. The Tribunal ordered Edison to pay compensation of €91 million for the period from May 2002 (closing date) to December 2016. This sentence was issued with one dissenting opinion by a member of the Arbitral Tribunal.

Edison's appeal against this award to the Swiss federal court of Lausanne was rejected in January 2022. The enforcement proceedings before the Milan Court of Appel ended on 24 January 2023 when Edison's action was dismissed, making the Arbitral Tribunal award enforceable. Edison intends to appeal to the Court of Cassation.

The Arbitral Tribunal postponed quantification of the damages suffered by Solvay Specialty Polymers Italy in the period after December 2016 and the legal fees incurred by the parties to a further phase of the arbitration, unless the parties reach an agreement in this respect.

- one civil case: on 8 April 2019, the Italian Ministry for the Environment brought a civil action against Edison, claiming damages for environmental disaster. These proceedings are ongoing and are currently in the provisional investigation phase.

Mantua – criminal and environmental proceedings

Criminal proceedings

The Public Prosecutor's Office of Mantua has decided to initiate criminal proceedings against some executive directors working or having worked for Edison since 2015 and some of Edison's representatives, due to alleged environmental offences, also on the basis of Legislative Decree 231 of 2001, which allegedly occurred in certain areas of the Mantua petrochemical plant. Such orders of the Province of Mantua were confirmed by the Council of State's ruling of April 2020 as described below. These proceedings are ongoing.

The Mantua petrochemical plant – which Edison (as the successor of Montedison) has not owned or managed since 1990 – is subject to a large-scale and complex program of environmental clean-up and restoration activities which also regarded all of the areas targeted by the procedure initiated by the Public Prosecutor. The ENI group has initiated these activities. After the transfer of the clean-up projects to Edison in June of last year, following the previously mentioned ruling of the Council of State, Edison is carrying out large part of the activities.

Environmental procedure

Over the past few years, the Italian province of Mantua notified Edison of eight orders to rehabilitate the land and the whole Mantua petrochemical site sold by Montedison to the ENI group in 1990, despite two settlement agreements concerning these environmental issues signed by ENI and the Italian Ministry for the Environment.

Edison appealed against all these rulings before the Brescia Division of the Lombardy regional administrative court, but lost its appeal in August 2018. Edison then took the matter to the Italian Council of State, which rejected Edison's appeal in a ruling of 1 April 2020 confirming the first-instance decisions. Edison pursued its appeal before the ECHR, and the proceedings are ongoing.

However, as mentioned above, Edison has already begun cleanup work on the site, taking over from the previous operators and conducting a series of tenders.

17.3.6 Investigations by France's Competition Authority ("ADLC")

At 31 December 2021 France's Competition Authority (the ADLC) was investigating the EDF group in relation to four separate matters (the ENGIE complaint, the referral concerning heat networks, the Plüm complaint, the Xélan complaint), which are described in the notes to the consolidated financial statements at 31 December 2021.

- There were significant developments in the first half of 2022 in the investigation that which followed a complaint filed by ENGIE on 19 June 2017 relating to EDF's commercial practices regarding retail electricity and gas sales, and specifically the circumstances in which EDF gave electricity suppliers, upon request, access to its file of customers paying the regulated "Green" and "Yellow" tariffs from the end of 2015, when these tariffs were about to be discontinued. Documents collected during search and seizure operations in November 2016 were used in the ENGIE proceedings. On 27 May 2021 EDF, Dalkia, Dalkia Smart Building, Citelum and Cham were notified of the ADLC's objections concerning the markets for retail electricity and gas supply, multi-technique management/maintenance and energy optimisation services, and energy control measures leading to issuance of energy savings certificates.

On 22 February 2022, the ADLC fined the EDF group €300 million for dominant position abuse practices that allegedly enabled it to maintain its market shares in the electricity supply sector and strengthen its position in the associated gas supply and energy services markets. EDF benefited from the settlement procedure in this case and made two commitments: firstly, to make its file of customers on the "blue" regulated tariff available to alternative electricity suppliers upon request, and secondly, to separate the telephone subscription process for existing and prospective "blue" tariff customers from the process for existing and prospective customers on market-price contracts. A related provision was recognised at 31 December 2021. It was reversed when the expense, which was disbursed in July 2022, was recognised (see note 17.2).

- In the investigation following an ex-officio referral to the ADLC on 4 November 2019 concerning the formation of a partnership for heat network operations, EDF, Dalkia, Électricité de Strasbourg, ES Services Energétiques and EDEV received initial notification of the ADLC's objections on 3 May 2021, and an additional notification of objections on 8 July 2022. These notifications were the first step in a procedure that allows both sides to present their arguments. On 15 February 2023 the Rapporteur of the ADLC sent EDF her report in response to the observations made by the parties. The parties now have two months to make their observations on this report. The procedure will continue in 2023 and there is no indication as yet of the final outcome.

There were no significant developments in the other two ADLC investigations.

Finally, in a decision of 18 January 2022 the ADLC dismissed a complaint and application for interim measures made against EDF by ANODE (the national association of retail energy operators). This complaint concerned EDF's refusal to provide access to the database of non-residential customers concerned by discontinuation of the "blue" regulated sales tariffs, who were switched automatically to a follow-on market-price contract at 31 December 2020. However, the ADLC considered that ANODE's arguments were not backed up by sufficient evidence proving the existence of the alleged practices. ANODE filed an appeal against this decision on 1 March 2022 before the Paris Court of Appeal and in parallel, EDF made a declaration of voluntary intervention on 30 March 2022. The Court of Appeal ruled on 3 November 2022 that EDF's declaration of voluntary intervention was inadmissible, considering that the ADLC should not have informed EDF of its decision to dismiss ANODE's complaint. On 30 November 2022 EDF filed an appeal against this inadmissibility ruling. The appeal proceedings concerning the merits of the ADLC's decision of 18 January 2022 are still ongoing.

Note 18 Financial assets and liabilities

Accounting principles and methods

Financial assets comprise equity instruments (particularly non-consolidated investments), debt securities, loans and receivables at amortised cost, derivative assets (see note 18.7) and cash and cash equivalents (see note 18.2).

The classification and measurement of financial instruments depend on the business model and the instruments' contractual characteristics. They are carried at amortised cost, fair value through other comprehensive income (OCI), or fair value through profit and loss.

Financial liabilities comprise loans and other financial liabilities, bank credit and derivative liabilities (see note 18.7).

Financial assets and liabilities are recorded in the balance sheet as current if they mature within one year and non-current if they mature after one year, apart from derivatives held for trading, which are all classified as current.

Derecognition of financial assets and liabilities

The Group derecognises a financial asset when:

- the contractual rights to the cash flows generated by the asset expire, or
- the Group transfers the rights to receive contractual cash flows related to the financial asset through the transfer of substantially all of the risks and rewards associated with ownership of the asset.

Any interest created or retained by the Group in transferred financial assets is recorded as a separate asset or liability.

The Group derecognises a financial liability when its contractual obligations are extinguished, cancelled or expire. When a debt is renegotiated with a lender the Group derecognises the debt and recognises a new liability when the new terms are substantially different; otherwise, the book value is recalculated. In either case, the impacts of the debt renegotiation are recorded in profit and loss.

18.1 Financial assets

Accounting principles and methods

Financial assets comprise debt and equity securities. The accounting treatment applied depends on their contractual characteristics and business model

Financial assets carried at fair value through OCI with or without recycling

Financial assets carried at fair value through OCI comprise:

- non-consolidated investments for which the Group has irrevocably opted to recognise subsequent fair value changes in OCI, with no recycling to profit and loss in the event of sale. Only dividends received from these investments are recognised in the income statement, under "Other financial income";
- debt securities (such as bonds) invested under a mixed "collect and sell" business model for which contractual cash flows consist entirely of principal and interest payments reflecting the time value of money and the credit risk associated with the instrument (the IFRS 9 "SPPI" test – Solely Payment of Principal and Interest). Changes in fair value are recorded directly in OCI with recycling and transferred to profit and loss when the securities are sold. For these debt securities, interest income is calculated at the effective interest rate and credited to the income statement under the heading "Other financial income".

Upon **initial recognition**, these financial assets are recorded at fair value plus transaction costs attributable to their acquisition.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using the discounted future cash flow method or by reference to external sources otherwise. Changes in the fair value of these instruments are recorded directly in OCI with recycling (for debt securities) or OCI with no recycling (for equity instruments) in the income statement.

Financial assets carried at fair value through profit and loss

Financial assets carried at fair value through profit and loss comprise:

- assets acquired from inception with the intention of resale in the short term;
- derivatives not classified as hedges (derivatives held for trading) (see note 18.7);
- equity instruments (non-consolidated investments) which the Group has not irrevocably opted to classify as at fair value through OCI with no recycling;
- debt securities that do not meet the requirements of the SPPI test, regardless of their business model. This chiefly concerns shares in investment funds.

These assets are recorded **at the transaction date** at fair value, which is generally equal to the amount of cash paid out. Transaction costs directly attributable to the acquisition are recorded in the income statement.

At each reporting date, they are adjusted to fair value based on quoted prices where possible, or using recognised valuation techniques such as the discounted cash flow method or reference to external sources otherwise. Changes in the fair value of these instruments are recorded in the income statement under the heading "Other financial income and expenses".

Financial assets carried at amortised cost

Loans and financial receivables are carried at amortised cost if the business model involves holding the instrument in order to collect contractual cash flows which consist entirely of principal and interest.

The interest received is calculated under the effective interest rate method and recorded in "Other financial income" in the income statement.

Loans and financial receivables that are not eligible for classification at amortised cost are carried at fair value through profit and loss, and recorded in "Other financial income and expenses" in the income statement.

Impairment model

The impairment model is based on expected credit loss (ECL). The Group applies a rating-based approach for counterparties with low credit risk. In application of the risk management policy, the Group's bond portfolio consists almost entirely of instruments issued by low-risk counterparties rated "Investment Grade".

In this situation, the ECL is estimated over a 12-month horizon following the year-end.

The threshold indicating a significant increase in credit risk is reached when the counterparty ceases to be rated "Investment Grade". The significant increase in the default risk may lead to reassessment of the ECL over the instrument's residual life.

For loans and receivables, the Group has chosen an approach based on the probability of default by the counterparty and assessment of changes in the credit risk.

18.1.1 Breakdown between current and non-current financial assets

Current and non-current financial assets break down as follows:

(in millions of euros)	31/12/2022			31/12/2021		
	Current	Non-current	Total	Current	Non-current	Total
Instruments at fair value through OCI with recycling	17,014	4,982	21,996	10,519	5,810	16,329
Instruments at fair value through OCI with no recycling	36	207	243	37	253	290
Instruments at fair value through profit and loss	1,409	23,490	24,899	2,855	25,369	28,224
Debt and equity securities	18,459	28,679	47,138	13,411	31,432	44,843
Trading derivatives – Positive fair value	30,566	-	30,566	20,061	-	20,061
Hedging derivatives – Positive fair value	6,903	5,376	12,279	4,522	5,388	9,910
Loans and financial receivables ⁽¹⁾	2,105	14,457	16,562	1,943	18,789	20,732
CURRENT AND NON-CURRENT FINANCIAL ASSETS	58,033	48,512	106,545	39,937	55,609	95,546

(1) Including impairment of €(386) million at 31 December 2022 (€(299) million at 31 December 2021).

The increase in the positive fair value of trading derivatives (+€10.5 billion) is explained by an increase in the value of derivatives used in the trading activity, principally associated with commodity market price movements observed in 2022, and to a lesser extent the higher volumes contracted.

18.1.2 Debt and equity securities

Details of debt and equity securities

Financial assets are monitored and managed by the Group with two main objectives:

- **dedicated assets set aside in France for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste, as required by Article L. 594 of France's Environment Code.** These assets consist of diversified investments in bonds, monetary and equity investment funds, and equity investments held by EDF

Invest. The general management policy for dedicated assets and a breakdown of the portfolio is presented in note 15.1.2;

- **assets managed according to a liquidity-oriented policy** ("liquid assets"). These are financial assets consisting of funds or interest rate instruments with initial maturity of over three months that are readily convertible into cash. EDF's monetary investment funds included in liquid assets amount to €1,115 million at 31 December 2022 (€2,597 million at 31 December 2021).

Details of debt and equity securities are shown in the table below:

(in millions of euros)	31/12/2022				31/12/2021
	At fair value through OCI with recycling	At fair value through OCI with no recycling	At fair value through profit and loss	Total	Total
Debt and equity securities					
EDF dedicated assets	4,627	-	22,742	27,369	31,013
Liquid assets	17,148	-	1,359	18,507	12,737
Other assets ⁽¹⁾	221	243	798	1,262	1,093
TOTAL	21,996	243	24,899	47,138	44,843

(1) Investments in non-consolidated companies.

Changes in debt and equity securities

(in millions of euros)	31/12/2021	Net increases	Changes in fair value	Changes in scope	Translation adjustments	Other	31/12/2022
Instruments at fair value through OCI with recycling	16,329	7,416	(2,007)	3	139	116	21,996
Instruments at fair value through OCI with no recycling	290	322	(15)	(353)	-	(1)	243
Instruments at fair value through profit and loss	28,224	(770)	(2,814)	55	(6)	210	24,899
TOTAL DEBT AND EQUITY SECURITIES	44,843	6,968	(4,836)	(295)	133	325	47,138

Changes in fair value recorded in equity

Changes in the fair value of debt and equity securities were recorded in equity (EDF share) over the period as follows:

(in millions of euros)	2022			2021		
	Gross changes in fair value recorded in OCI with recycling ⁽¹⁾	Gross changes in fair value recorded in OCI with no recycling ⁽¹⁾	Gross changes in fair value recycled to profit and loss ⁽²⁾	Gross changes in fair value recorded in OCI with recycling ⁽¹⁾	Gross changes in fair value recorded in OCI with no recycling ⁽¹⁾	Gross changes in fair value recycled to profit and loss ⁽²⁾
EDF dedicated assets	(1,081)	-	(206)	(202)	-	42
Liquid assets	(850)	-	(65)	(81)	-	21
Other assets	-	(16)	-	-	15	-
DEBT AND EQUITY SECURITIES ⁽³⁾	(1,931)	(16)	(271)	(283)	15	63

(1) +/-: increase/decrease in equity (EDF share).

(2) +/-: increase/decrease in income (EDF share).

(3) Excluding associates and joint ventures.

In 2022, gross changes in fair value recorded in OCI with recycling principally concern EDF (€1,660) million, including €(875) million for dedicated assets). In 2021, gross changes in fair value recorded in OCI with recycling principally concern EDF (€(346) million, including €(244) million for dedicated assets).

No significant impairment was recorded in 2022.

18.1.3 Loans and financial receivables

Loans and financial receivables consist of the following:

(in millions of euros)	31/12/2022	31/12/2021
Amounts receivable from the NLF	14,000	15,986
Loans and financial receivables – other	2,562	4,746
LOANS AND FINANCIAL RECEIVABLES	16,562	20,732

At 31 December 2022 loans and financial receivables mainly include:

- amounts representing reimbursements receivable from the Nuclear Liabilities Fund (NLF) and the British government for coverage of long-term nuclear obligations, totalling €14,000 million at 31 December 2022 (€15,986 million at 31 December 2021), discounted at the same rate as the provisions they finance (see note 15.2);
- other loans and financial receivables notably include:
 - > the overfunding of EDF Energy's EDFG (EDF group of the ESPS) pension scheme by €658 million at 31 December 2022, compared to €2,733 million at 31 December 2021 (see note 16.1.1),
 - > an amount of €253 million representing the advance payments made by Luminus to Synatom to cover long-term nuclear obligations (€282 million at 31 December 2021 and see note 15.3). In Luminus' financial statements these amounts are discounted at the same rate as the provisions they fund. This receivable is equal to the fair value of the amounts held by Synatom on behalf of Luminus as fund assets,
 - > loans made by EDF Renewables in the course of its project development activity, mainly in connection with wind farms in France, the United Kingdom and North America, amounting to €823 million at 31 December 2022 compared to €525 million at 31 December 2021.

Changes in loans and financial receivables

(in millions of euros)	31/12/2021	Net increases	Discount effect	Changes in scope	Translation adjustments	Other	31/12/2022
Loans and financial receivables	20,732	(581)	-	4	(920)	(2,673)	16,562

Other changes in loans and financial receivables principally correspond to the changes in the receivable representing amounts reimbursable by the Nuclear Liabilities Fund (NLF) and the British government, and the surplus funding of EDF Energy's EDFG pension scheme, reflecting the higher discount rates used.

18.2 Cash and cash equivalents

Accounting principles and methods

Cash and cash equivalents comprise immediately available liquidities and very short-term investments that are readily convertible (e.g. in monetary funds) into a known amount of cash, usually maturing within three months or less of the acquisition date, and with negligible risk of fluctuation in value. These items are held to cover short-term obligations rather than for short-term investments or other purposes. When they mature in more than 3 months, they are included in Liquid assets in Debt and equity securities (see note 18.1.2).

"Cash equivalents" are recorded at fair value, with changes in fair value included in the heading "Other financial income and expenses".

Cash and cash equivalents include the following amounts recorded in the balance sheet:

(in millions of euros)	31/12/2022	31/12/2021
Cash	10,261	9,178
Cash equivalents	687	741
CASH AND CASH EQUIVALENTS	10,948	9,919

Cash restrictions

Cash and cash equivalents include €566 million of cash subject to restrictions at 31 December 2022 (€198 million at 31 December 2021) (see note 1.3.5).

18.3 Financial liabilities

Accounting principles and methods

Loans and other financial liabilities are carried at amortised cost, adjusted for changes in the value of the risks hedged when they are covered by a fair value hedge (see note 18.7). Interest expenses are calculated at the effective interest rate and recorded in the income statement in "Cost of gross financial indebtedness" over the duration of the loan or financial liability.

18.3.1 Breakdown between current and non-current financial liabilities

Current and non-current financial liabilities break down as follows:

(in millions of euros)	31/12/2022			31/12/2021		
	Non-current	Current	Total	Non-current	Current	Total
Loans and other financial liabilities	67,340	28,713	96,053	54,334	15,072	69,406
Trading derivatives – negative fair value ⁽¹⁾	-	28,884	28,884	-	22,027	22,027
Hedging derivatives – negative fair value ⁽¹⁾	3,718	14,247	17,965	2,209	7,915	10,124
FINANCIAL LIABILITIES	71,058	71,844	142,902	56,543	45,014	101,557

(1) See note 18.7.

The increase in the negative fair value of trading derivatives (+€6.9 billion) is explained by the increase in prices observed on the commodity markets in 2022, and to a lesser extent the increase in volumes contracted.

18.3.2 Loans and other financial liabilities

18.3.2.1 Changes in loans and other financial liabilities

<i>(in millions of euros)</i>	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Accrued Interest	Total
Balances at 31/12/2021	49,242	3,690	10,992	4,337	1,145	69,406
Increases	2,971	17,126	14,108	353	204	34,762
Decreases	(2,833)	(476)	(1,942)	(702)	(104)	(6,057)
Translation adjustments	(237)	21	(145)	(6)	5	(362)
Changes in scope of consolidation	(10)	(82)	2	(19)	-	(109)
Changes in fair value	(3,983)	3	(9)	-	-	(3,989)
Other changes ⁽¹⁾	-	(4)	2,109	306	(9)	2,402
BALANCES AT 31/12/2022	45,150	20,278	25,115	4,269	1,241	96,053

(1) Other changes include €2,2021 millions corresponding to reclassification of perpetual subordinated bonds as Other financial liabilities in view of the commitment to redeem those bonds at 29 January 2023 (see note 14.4.1).

The principal **bond**-related operations of 2022 were:

- senior bond issues in October 2022 with gross value of €3.0 billion (see note 18.3.2.2);
- bond redemptions of €2.8 billion during the year, comprising €2 billion in January 2022, €0.3 billion in June 2022, and €0.5 billion in December 2022.
- The principal operations in 2022 relating to **loans from financial institutions** were the conclusion of bilateral 3-year credit lines with a group of 18 banks for €13.1 billion, US\$2.2 billion and ¥38 billion (a total of €15.4 billion), and new drawings on the European Investment bank financing

amounting to €0.8 billion, maturing in 2032. Drawings were made on all these credit facilities in 2022.

At 31 December 2022, EDF's **other financial liabilities** include negotiable debt instruments amounting to €10,638 million, and an amount of €9,265 million recognised in respect of the cash received for debt securities transferred to several banks under repurchase agreements. These operations do not affect the net indebtedness.

A breakdown of the issuance and repayments of borrowings as presented in the cash flow statement is presented below:

<i>(in millions of euros)</i>	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Termination of hedging derivatives	31/12/2022
Issuance of borrowings	2,971	17,126	14,108	-	(40)	34,165
Repayments of borrowings	(2,833)	(476)	(1,942)	(702)	77	(5,876)

18.3.2.2 Principal borrowings of the Group

The Group's principal borrowings (excluding Green Bonds and OCEANes) at 31 December 2022 are as follows:

Type of borrowing (in millions of currencies)	Entity	Issue date ⁽¹⁾	Maturity	Issue amount	Currency	Rate
Euro MTN	EDF	09/2012	03/2023	2,000	EUR	2.75%
Euro MTN	EDF	09/2009	09/2024	2,500	EUR	4.63%
Euro MTN	EDF	11/2010	11/2025	750	EUR	4.00%
Bond	EDF	10/2022	12/2026	750	EUR	3.88%
Bond	EDF	01/2017	01/2027	107,900	JPY	1.09%
Euro MTN	EDF	03/2012	03/2027	1,000	EUR	4.13%
Bond	EDF	09/2018	09/2028	1,800	USD	4.50%
Bond	EDF	10/2022	10/2029	1,000	EUR	4.38%
Euro MTN	EDF	04/2010	04/2030	1,500	EUR	4.63%
Euro MTN	EDF	10/2018	10/2030	1,000	EUR	2.00%
Euro MTN	EDF	07/2001	07/2031	650	GBP	5.88%
Euro MTN	EDF	02/2003	02/2033	850	EUR	5.63%
Euro MTN	EDF	06/2009	06/2034	1,500	GBP	6.13%
Euro MTN	EDF	10/2016	10/2036	750	EUR	1.88%
Bond	EDF	09/2018	09/2038	650	USD	4.88%
Bond	EDF	01/2009	01/2039	1,750	USD	6.95%
Bond	EDF	01/2010	01/2040	850	USD	5.60%
Euro MTN	EDF	11/2010	11/2040	750	EUR	4.50%
Euro MTN	EDF	10/2011	10/2041	1,250	GBP	5.50%
Bond	EDF	01/2014	01/2044	1,000	USD	4.88%
Bond	EDF	10/2015	10/2045	1,500	USD	4.75%
Bond	EDF	10/2015	10/2045	1,150	USD	4.95%
Bond	EDF	09/2018	09/2048	1,300	USD	5.00%
Euro MTN	EDF	12/2019	12/2049	1,250	EUR	2.00%
Euro MTN	EDF	09/2010	09/2050	1,000	GBP	5.13%
Euro MTN	EDF	10/2016	10/2056	2,164	USD	4.99%
Euro MTN	EDF	11/2019	12/2069	2,000	USD	4.50%
Bond	EDF	01/2014	01/2114	700	USD	6.00%
Bond	EDF	01/2014	01/2114	1,350	GBP	6.00%

(1) Date funds were received.

On 5 October 2022 EDF launched a senior bond issue in 3 tranches for a nominal amount of €3 billion euros:

- a €750 million bond, with 4-year maturity and a 3.875% fixed coupon;
- a €1 billion bond, with a 7-year maturity and a 4.375% fixed coupon;
- a €1.25 billion Green bond, with a 12-year maturity and a 4.75% fixed coupon (see below).

At 31 December 2022, the Group's principal Green Bonds (see note 20.3.1) are as follows:

Type of borrowing (in millions of currency units)	Entity	Issue date	Maturity	Issue amount	Currency	Rate
Bond (Green Bond)	EDF	10/2015	10/2025	1,250	USD	3.63%
Euro MTN (Green Bond)	EDF	10/2016	10/2026	1,750	EUR	1.00%
Euro MTN (Green Bond)	EDF	11/2021	11/2033	1,850	EUR	1.00%
Bond (Green Bond)	EDF	10/2022	10/2034	1,250	EUR	4.75%

On 8 September 2020, EDF made an offering of Green Bonds convertible into new shares and/or exchangeable for existing shares (OCEANes Vertes). The key features of this issue are as follows:

Type of borrowing (in millions of currency units)	Entity	Issue	Maturity	Issue amount	Currency	Rate
OCEANes Green Bonds	EDF	09/2020	09/2024	2,400	EUR	0%

Holders of these bonds have the right to convert them into new EDF shares and/or exchange them for existing EDF shares.

The conversion and/or exchange ratio was set at one share per bond, subject to the standard adjustments including anti-dilution and dividend protections as described in the terms of the issue. For the 2020 dividend distribution to EDF shareholders, the conversion/exchange rate was raised to 1.018 EDF share per bond from 7 June 2021, and when the interim dividend for 2021 was paid, the conversion/exchange ratio was raised to 1.042 EDF share per bond from 2 December 2021.

In 2022, the conversion/exchange ratio was raised to 1.087 EDF share per bond after the capital increase of 7 April 2022, then 1.124 EDF share per bond from 13 June 2022 when the dividend for 2021 was paid. Finally, as a result of the simplified public buyout offer launched by the French government on 23 November 2022, the conversion/exchange ratio was raised to 1.289 EDF share per OCEANE bond.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on

3 February 2023 (see notes 2 and 14.1). Consequently, in accordance with paragraph 2.6.3 (public offerings) of the terms of the offer, the share allocation ratio adjustment period in the event of a tender offer will expire on 1 March 2023, i.e. 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 share per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer. Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 share per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

The bonds may be redeemed prior to maturity at the option of the Company, subject to certain conditions.

Unless previously converted, exchanged, redeemed or repurchased and cancelled, the bonds will be redeemed at nominal value when they reach maturity.

18.3.3 Loans and financial liabilities by maturity, currency and interest rate

18.3.3.1 Maturity of loans and financial liabilities

<i>(in millions of euros)</i>	Bonds	Loans from financial institutions	Other financial liabilities	Lease liability	Accrued interest	Total
Less than one year	2,021	482	24,637	688	885	28,713
From one to five years	11,496	17,141	106	2,042	94	30,879
More than five years	31,633	2,655	372	1,539	262	36,461
LOANS AND OTHER FINANCIAL LIABILITIES AT 31/12/2022	45,150	20,278	25,115	4,269	1,241	96,053

The non-discounted lease liability matures as follows:

<i>(in millions of euros)</i>	31/12/2022				31/12/2021
	Total	< 1 year	1-5 years	Maturity > 5 years	Total
NON-DISCOUNTED CONTRACTUAL CASH FLOWS	4,844	756	2,214	1,874	4,899

18.3.3.2 Breakdown of loans and other financial liabilities by currency

The breakdown of loans and other financial liabilities by currency includes the effect of derivatives classified as hedges (of debts in foreign currencies and net investments in foreign subsidiaries) under IFRS 9.

At 31 December 2022

<i>(in millions of euros)</i>	31/12/2022					
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging		
	amount	% of debt		amount	% of debt	
Euro (EUR)	62,269	65%	13,789	76,058	79%	
American dollar (USD)	21,465	22%	(15,813)	5,652	6%	
Pound sterling (GBP)	8,149	9%	3,284	11,433	12%	
Other	4,170	4%	(1,260)	2,910	3%	
LOANS AND OTHER FINANCIAL LIABILITIES	96,053	100%	-	96,053	100%	

At 31 December 2021

(in millions of euros)	31/12/2021				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
	amount	% of debt	amount	amount	% of debt
Euro (EUR)	38,003	55%	11,119	49,122	71%
American dollar (USD)	18,128	26%	(12,910)	5,218	7%
Pound sterling (GBP)	10,018	14%	2,410	12,428	18%
Other	3,257	5%	(619)	2,638	4%
LOANS AND OTHER FINANCIAL LIABILITIES	69,406	100%	-	69,406	100%

18.3.3.3 Breakdown of loans and other financial liabilities by type of interest rate

The breakdown of loans and other financial liabilities by type of interest rate includes the effect of derivatives classified as hedges under IFRS 9.

€219 million before derivatives (€224 million in 2021), and €18 million including the effect of derivatives (€17 million in 2021).

Floating-rate loans indexed on the LIBOR USD that have not yet been "switched" to the interbank interest rate benchmark reform (see note 1.2.3) amount to a total

At 31 December 2022

(in millions of euros)	31/12/2022				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
	amount	% of debt	amount	amount	% of debt
Fixed rates	69,748	73%	(13,784)	55,964	58%
Floating rates	26,305	27%	13,784	40,089	42%
LOANS AND OTHER FINANCIAL LIABILITIES	96,053	100%	-	96,053	100%

At 31 December 2021

(in millions of euros)	31/12/2021				
	Initial debt structure		Impact of hedging instruments	Debt structure after hedging	
	amount	% of debt	amount	amount	% of debt
Fixed rates	64,335	93%	(15,434)	48,901	70%
Floating rates	5,071	7%	15,434	20,505	30%
LOANS AND OTHER FINANCIAL LIABILITIES	69,406	100%	-	69,406	100%

A large portion of the EDF group's fixed-rate loans is swapped to variable rates.

18.3.4 Early repayment clauses

Project financing loans from non-Group parties to SPV-type project companies owned by EDF Renewables may include early repayment clauses that principally apply when the project company concerned fails to respect certain covenants, particularly a minimum Debt Service Coverage Ratio (DSCR). In general, early repayment clauses are activated when this ratio falls below 1.

In other Group entities, certain clauses contained in contracts for financing or other commitments may make reference to Group credit ratings but are not classified as covenants.

Seven loans with a combined total of €2,042 million contain a rendez-vous clause requiring contact between the borrower and lender if the borrower's credit rating falls below a specified level, possibly leading to renegotiation of the terms of the loan.

No early repayment took place in 2022 as a result of any Group entity's failure to comply with contractual clauses concerning loans.

18.4 Unused credit lines

In 2022, EDF concluded four new credit lines with a combined total of €2,600 million, including €2,000 million with BNP. Four other credit lines totalling €900 million matured, and the available balance of the EIB credit line (€400 million) was fully drawn.

At 31 December 2022, the Group has unused credit lines with various banks totalling €14,051 million (€13,039 million at 31 December 2021), including €10,053 million of credit lines indexed on ESG criteria.

(in millions of euros)	31/12/2022				31/12/2021
	Total	Maturity			Total
		< 1 year	1-5 years	> 5 years	
CONFIRMED CREDIT LINES	14,051	2,617	11,412	22	13,039

18.5 Fair value of financial instruments

Accounting principles and methods

Financial instruments are stated at fair value, which corresponds to the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction on the principal or most advantageous market at the measurement date. The valuation methods for each level are generally as follows:

- level 1 (unadjusted quoted prices): prices accessible to the entity at the measurement date on active markets, for identical assets or liabilities;
- level 2 (observable data): data concerning the asset or liability, other than the market prices included in initial level 1 input, which are directly observable (such as a price) or indirectly observable (i.e. deduced from observable prices);
- level 3 (non-observable data): data that are not observable on a market, including observable data that have been significantly adjusted.

The distribution of financial assets and liabilities in the balance sheet by level is as follows:

At 31 December 2022

<i>(in millions of euros)</i>	Balance sheet value	Fair value	Level 1 Unadjusted quoted prices	Level 2 Observable data	Level 3 Non- observable data
Equity securities	2,597	2,597	-	2,093	504
Debt securities	44,541	44,541	2,849	41,542	150
Hedging derivatives	12,279	12,279	188	12,091	-
Trading derivatives	30,566	30,566	882	28,378	1,306
Cash equivalents	687	687	64	623	-
FINANCIAL ASSETS CARRIED AT FAIR VALUE	90,670	90,670	3,983	84,727	1,960
Receivables from the NLF	14,000	14,000	-	14,000	-
Other loans and financial receivables	2,562	2,562	-	2,562	-
FINANCIAL ASSETS CARRIED AT AMORTISED COST	16,562	16,562	-	16,562	-
Hedging derivatives	17,965	17,965	9	17,913	43
Trading derivatives	28,884	28,884	773	27,447	664
FINANCIAL LIABILITIES CARRIED AT FAIR VALUE	46,849	46,849	782	45,360	707
Loans and other financial liabilities	96,053	93,264	-	93,264	-
FINANCIAL LIABILITIES CARRIED AT AMORTISED COST	96,053	93,264	-	93,264	-

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

At 31 December 2021

<i>(in millions of euros)</i>	Balance sheet value	Fair value	Level 1 Unadjusted quoted prices	Level 2 Observable data	Level 3 Non- observable data
Equity securities	1,889	1,889	3	1,413	473
Debt securities	42,954	42,954	2,607	40,225	122
Hedging derivatives	9,910	9,910	153	9,757	-
Trading derivatives	20,061	20,061	249	19,349	463
Cash equivalents	741	741	34	707	-
FINANCIAL ASSETS CARRIED AT FAIR VALUE	75,555	75,555	3,046	71,451	1,058
Receivables from the NLF	15,986	15,986	-	15,986	-
Other loans and financial receivables	4,746	4,746	-	4,746	-
FINANCIAL ASSETS CARRIED AT AMORTISED COST	20,732	20,732	-	20,732	-
Hedging derivatives	10,124	10,124	4	10,120	-
Trading derivatives	22,027	22,027	322	21,216	489
FINANCIAL LIABILITIES CARRIED AT FAIR VALUE	32,151	32,151	326	31,336	489
Loans and other financial liabilities	69,406	78,114	-	78,114	-
FINANCIAL LIABILITIES CARRIED AT AMORTISED COST	69,406	78,114	-	78,114	-

Level 3 debt and equity securities are principally non-consolidated investments carried at historical value.

18.6 Market and counterparty risks

As an operator in the energy sector worldwide, the EDF group is exposed to financial market risks, energy market risks and counterparty risks. All these risks could generate volatility in the financial statements.

A more detailed description of these risks and the sensitivity analyses required by IFRS 7 can be found in section 5.1.6 "Management and control of market risks" of the 2022 Universal Registration Document.

Financial market risks

The main financial market risks to which the Group is exposed are the liquidity risk, the foreign exchange risk, the interest rate risk and the equity risk.

The objective of the Group's liquidity risk management is to seek resources at optimum cost and ensure their constant accessibility.

The foreign exchange risk relates to the diversification of the Group's businesses and geographical locations, and results from exposure to the risk of exchange rate fluctuations. These fluctuations can affect the Group's translation differences, balance sheet items, financial expenses, equity and net income.

The interest rate risk results from exposure to the risk of fluctuations in interest rates that can affect the value of assets invested by the Group, the value of the liabilities covered by provision, or its financial expenses.

The Group is exposed to equity risks, particularly through its dedicated asset portfolio held for secure financing of long-term nuclear commitments, through external pension funds, and to a lesser extent through its cash assets and directly-held investments.

Energy market risks

The EDF group operates on deregulated energy markets, mainly in Europe, through its generation, supply and trading activities. This exposes the Group to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO₂ emissions quota market, with a potentially significant impact on the financial statements.

Counterparty risks

Counterparty risk is defined as the total loss that the EDF group would sustain on its business and market transactions if a counterparty defaulted and failed to perform its contractual obligations.

Regarding the customer risk, which is another component of the counterparty risk, a statement of receivables not yet due and overdue is shown in note 13.3.1.

18.7 Derivatives and hedge accounting

Accounting principles and methods

The Group uses derivatives such as swaps and forward contracts to hedge its interest rate, foreign exchange, energy and commodity risks.

In accordance with IFRS 9, hedge accounting can be applied to derivatives when they meet certain eligibility criteria. Some derivatives classified as "own use" are excluded from application of IFRS 9.

Derivatives not covered by IFRS 9: "own use" contracts

Forward purchase and sale contracts for physical delivery of energy or commodities are considered to fall outside the scope of application of IFRS 9 when they are entered into as part of the Group's normal business activity ("own use"). This is demonstrated to be the case when all the following conditions are fulfilled:

- a physical delivery takes place under all such contracts;
- the volumes purchased or sold under these contracts correspond to the Group's operating requirements;
- the contracts cannot be considered as options as defined by the standard. In the specific case of electricity sale contracts, the contract is equivalent to a firm forward sale or can be considered as a capacity sale.

The Group considers that transactions negotiated with a view to balancing the volumes between electricity purchase and sale commitments are part of its normal business as an integrated electricity operator, and are thus outside the scope of IFRS 9.

Measurement and recognition of derivatives

Derivatives are initially recorded at fair value, based on quoted prices and market data available from external sources. If no quoted prices are available, the Group may refer to recent comparable transactions or, if no such transactions exist, base its valuation on internal models that are recognised by market participants, giving priority to information directly derived from observable data such as over-the-counter listings.

In application of IFRS 13, the fair value of derivatives incorporates the counterparty credit risk for derivative assets and the own credit risk for derivative liabilities.

Derivatives classified as hedges

The EDF group uses derivatives to hedge its foreign exchange and interest rate risks, as well as risks related to certain commodity contracts.

The Group applies the criteria defined by IFRS 9 to identify operations subject to hedge accounting, particularly regarding the existence of formal documentation from their inception and compliance with hedge effectiveness requirements.

The hedging relationship ends when it ceases to satisfy the above criteria. This includes situations in which the hedging instrument expires or is sold, terminated or exercised, or when the risk management objectives initially defined are no longer met.

Only derivatives external to the Group, and internal derivatives that are matched with similar transactions external to the Group, qualify for hedge accounting.

The Group uses the following categories for hedges:

- fair value hedge;
- cash flow hedge;
- net foreign investment hedge.

Hedge categories

Fair value hedge

This is a hedge of exposure to changes in the fair value of an asset or liability recorded in the balance sheet, or a firm commitment to purchase or sell an asset. Changes in the fair value of the hedged item attributable to the hedged component of that item are recorded in profit and loss and offset by corresponding variations in the fair value of the hedging instrument. Only the ineffective portion of the hedge has an impact on profit and loss.

Some loans and financial liabilities, and some commodity contracts, are covered by a fair value hedge. In such cases their balance sheet value is adjusted for changes in fair value attributable to the hedged risks (foreign exchange, interest rate and price risks).

Cash flow hedge

This is a hedge of exposure to variability in cash flows associated with an asset or liability or a highly probable future transaction for which variations in cash flows generated by the hedged item are offset by changes in the value of the hedging instrument.

The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity, and the ineffective portion (*i.e.* changes in the fair value of the hedging instrument in excess of changes in the fair value of the hedged item) is recorded in profit and loss.

When the hedged cash flows materialise, the amounts previously recognised in equity are recycled to profit and loss in the same way as for the hedged item, or are treated as an adjustment to the value of the non-financial asset acquired.

Net foreign investment hedge

This is a hedge of exposure to the foreign exchange risk related to a net investment in an entity which does not have the same functional currency as the Group. The effective portion of accumulated changes in the hedging instrument's fair value is recorded in equity until the disposal or liquidation of the net investment, when it is included in the gain or loss on disposal. The ineffective portion (defined in the same way as for cash flow hedges) is recorded directly in profit and loss.

This risk is hedged in the EDF group level either by matching it with debts in the same currency, or by using derivatives.

Hedging costs: foreign currency basis spread on cross-currency swaps

Hedging costs include the foreign currency basis spread on cross-currency swaps. Fair value variations are included in equity with recycling, and subsequently transferred to interest expenses on financing operations, which are included in the cost of gross financial indebtedness in the income statement.

Trading derivatives

Trading derivatives comprise:

- derivatives subscribed for economic hedging that do not qualify as hedges for accounting purposes; changes in the value of these instruments are reported in profit and loss. When the derivatives are used for economic hedging of negotiable debt instruments and purchased bonds, they are included in "Other financial income and expenses". When the derivatives are used for economic hedging of generation and supply operations, they are included in "Net changes in fair value on Energy and Commodity derivatives, excluding trading activities" (see note 6);
- derivatives used in trading activities; changes in the fair value of these instruments are included in sales (see note 5.1).

18.7.1 Breakdown of hedging and trading derivatives

The fair value of hedging and trading derivatives reported in the balance sheet breaks down as follows:

<i>(in millions of euros)</i>	<i>Notes</i>	31/12/2022	31/12/2021
Positive fair value of hedging derivatives	18.1.1	12,279	9,910
Negative fair value of hedging derivatives	18.3.1	(17,965)	(10,124)
FAIR VALUE OF HEDGING DERIVATIVES		(5,686)	(214)
Positive fair value of trading derivatives	18.1.1	30,566	20,061
Negative fair value of trading derivatives	18.3.1	(28,884)	(22,027)
FAIR VALUE OF TRADING DERIVATIVES		1,682	(1,966)

The fair value of hedging and trading derivatives by type of risk hedged is shown below:

<i>(in millions of euros)</i>	<i>Notes</i>	31/12/2022	31/12/2021
Hedging derivatives – interest rate risk	18.7.2	1,138	3,613
Hedging derivatives – foreign exchange risk	18.7.3	1,638	407
Hedging derivatives – commodity risks	18.7.4	(8,462)	(4,234)
FAIR VALUE OF HEDGING DERIVATIVES		(5,686)	(214)
Trading derivatives – interest rate risk	18.7.2	(28)	(27)
Trading derivatives – foreign exchange risk	18.7.3	(217)	(45)
Trading derivatives – commodity risk	18.7.4	1,927	(1,894)
FAIR VALUE OF TRADING DERIVATIVES		1,682	(1,966)

The fair value of hedging derivatives by type and purpose of hedge is shown below:

<i>(in millions of euros)</i>	Notes	31/12/2022	31/12/2021
Fair value hedges of loans and liabilities		(1,385)	3,148
Cash flow hedges of loans and liabilities		3,409	614
Sub-total	19.2	2,024	3,762
Fair value hedges of commodity contracts		(1,091)	(492)
Cash flow hedges of commodity contracts		(6,959)	(3,564)
Sub-total		(8,050)	(4,056)
Net foreign investment hedges		173	94
Fair value hedges of dedicated assets		93	(14)
Fair value hedges of liquid assets		74	-
FAIR VALUE OF HEDGING DERIVATIVES		(5,686)	(214)

18.7.2 Interest rate derivatives

The Group is exposed to the risk of fluctuations in interest rates that can affect the value of its loans and financial liabilities, its assets (liquid assets and dedicated assets), and its future financial expenses.

The Group hedges its exposure to changes in the fair value of fixed-rate debts, many of which are converted to floating rates. The derivatives used for these hedges are

fixed/floating interest rate swaps and cross-currency swaps, with changes in fair value recorded in profit and loss symmetrically to changes in the value of the hedged debts.

The Group also hedges its floating-rate debt against future changes in interest rates by using floating/fixed interest rate swaps for cash flow hedges.

Details of interest rate derivatives used in a hedging relationship or designated as trading derivatives are shown below:

<i>(in millions of euros)</i>	Notional at 31/12/2022				Notional at 31/12/2021	Fair Value	
	< 1 year	1-5 years	> 5 years	Total	Total	31/12/2022	31/12/2021
Purchases of Caps	8	30	35	73	-	10	-
Interest rate transactions	8	30	35	73	-	10	-
Fixed rate payer/floating rate receiver	515	5,059	5,704	11,278	5,904	1,807	264
Floating rate payer/fixed rate receiver	779	6,536	14,732	22,047	20,989	(1,713)	2,976
Floating rate/floating rate	800	604	1,266	2,670	2,434	76	69
Fixed rate/fixed rate	-	1,921	7,271	9,192	9,366	958	304
Interest rate swaps	2,094	14,120	28,973	45,187	38,693	1,128	3,613
INTEREST RATE DERIVATIVES – HEDGING	2,102	14,150	29,008	45,260	38,693	1,138	3,613
Purchase of options	-	-	552	552	518	(22)	-
Interest rate swaps	3,407	5,172	970	9,549	1,006	(6)	(27)
INTEREST RATE DERIVATIVES – TRADING	3,407	5,172	1,522	10,101	1,524	(28)	(27)

The fair value of interest rate/exchange rate cross-currency swaps comprises the interest rate effect only.

The notional value of cross-currency swaps is included both in this note and the note on currency derivatives (see note 18.7.3).

18.7.3 Currency derivatives

The Group is exposed to the risk of exchange rate fluctuations due to the diversification of its businesses, supply contracts in foreign currencies for goods and services, and its geographical locations. These fluctuations can affect the Group's translation differences recognised in equity, balance sheet items, financial expenses, equity and net income.

There are several types of hedged item:

- liabilities in foreign currencies, for which cross-currency swaps are used in cash flow hedge;
- financial assets subscribed in foreign currencies;
- purchases of commodities and fuels, for which the Group hedges the associated foreign exchange risk;
- Net investments in subsidiaries in foreign currencies.

Details of currency derivatives used in a hedging relationship or designated as trading derivatives are shown in the following tables. The notional value of cross-currency swaps is included both in this note and the note on interest rate hedging derivatives (see note 18.7.2).

At 31 December 2022

(in millions of euros)	Notional amount to be received at 31/12/2022				Notional amount to be given at 31/12/2022				Fair value 31/12/2022
	< 1 year	1-5 years	> 5 years	Total	< 1 year	1-5 years	> 5 years	Total	
Forward exchange transactions	4,451	1,010	-	5,461	4,405	964	-	5,369	87
Swaps	25,682	9,303	15,647	50,632	25,257	8,992	14,720	48,969	1,531
Options	-	1,693	-	1,693	-	1,828	-	1,828	20
CURRENCY DERIVATIVES – HEDGING	30,133	12,006	15,647	57,786	29,662	11,784	14,720	56,166	1,638
Forward transactions	9,979	6,281	25	16,285	9,940	6,131	23	16,094	149
Swaps	22,274	7,457	231	29,962	22,484	7,694	225	30,403	(366)
Options	-	-	-	-	-	-	-	-	-
CURRENCY DERIVATIVES – TRADING	32,253	13,738	256	46,247	32,424	13,825	248	46,497	(217)

At 31 December 2021

(in millions of euros)	Notional amount to be received at 31/12/2021				Notional amount to be given at 31/12/2021				Fair value 31/12/2021
	< 1 year	1-5 years	> 5 years	Total	< 1 year	1-5 years	> 5 years	Total	
Forward exchange transactions	3,251	652	-	3,903	3,273	629	-	3,902	-
Swaps	23,421	6,506	17,195	47,122	23,362	6,311	16,921	46,594	406
Options	553	119	-	672	556	113	-	669	1
CURRENCY DERIVATIVES – HEDGING	27,225	7,277	17,195	51,697	27,191	7,053	16,921	51,165	407
Forward transactions	7,003	7,872	-	14,875	6,982	7,772	-	14,754	84
Swaps	24,729	4,018	263	29,010	24,810	4,048	257	29,115	(128)
Options	-	-	-	-	-	-	-	-	-
CURRENCY DERIVATIVES – TRADING	31,732	11,890	263	43,885	31,792	11,820	257	43,869	(44)

The notional value of cross-currency swaps shown in this note is also included in the note on interest rate derivatives (see note 18.7.2).

18.7.4 Commodity derivatives

The Group is exposed to price variations on the wholesale markets for energy (electricity, gas, coal, oil products) and the CO₂ emissions quota market with a potentially significant impact on the financial statements.

The Group hedges its forecast sales and purchases of electricity, gas, and coal using futures, forwards, options and swaps, essentially through cash flow hedges.

Details of commodity derivatives used for hedging are as follows:

(in millions of euros)	Units of measure	31/12/2022					31/12/2021	
		Net notional					Net notional	Fair value
		< 1 year	1-5 years	> 5 years	Total	Fair value		
Electricity	TWh	(1)	17	-	16	(3,619)	(31)	(3,808)
Gas	Millions of therms	1,137	(864)	-	273	(4,999)	943	(925)
Oil products	Thousands of barrels	5,263	6,781	-	12,044	96	14,097	166
CO ₂	Thousands of tonnes	2,490	1,646	-	4,136	60	7,224	333
Other commodities		-	-	-	-	-	-	-
COMMODITY DERIVATIVES – HEDGING						(8,462)	-	(4,234)

The negative fair value of commodity derivatives used for hedging at 31 December 2022 (€8.5 billion) is mainly explained by the wider contractual market price/exercise price spread on electricity and gas hedging instruments, due to the rise in commodity prices in 2022.

These factors also explain the difference in the fair value between 2022 and 2021, essentially concerning hedges undertaken for the France – Generation and Supply, United Kingdom and Italy segments.

Details of commodity derivatives used for trading are as follows:

(in millions of euros)	Units of measure	31/12/2022		31/12/2021	
		Net notional	Fair value	Net notional	Fair value
Electricity	TWh	(13)	(1,090)	(111)	(1,719)
Gas	Millions of therms	(2,497)	2,990	47,423	630
Oil products	Thousands of barrels	4,065	46	6,812	17
CO ₂	Thousands of tonnes	(1,417)	(28)	(7,880)	(628)
Coal and freight	Millions of tonnes	(1)	15	-	(48)
Other commodities		-	(6)	-	(146)
COMMODITY DERIVATIVES – TRADING			1,927		(1,894)

These instruments mainly include contracts included in EDF Trading's portfolio.

18.7.5 Impact of hedging derivatives on comprehensive income

Changes in the fair value of hedging derivatives included in equity (EDF share) and profit and loss are detailed below:

(in millions of euros)	2022			2021		
	Gross changes in fair value recorded in equity ⁽¹⁾	Gross changes in fair value transferred to income - Recycling ⁽²⁾	Gross changes in fair value transferred to income - Ineffectiveness	Gross changes in fair value recorded in equity ⁽¹⁾	Gross changes in fair value transferred to income - Recycling ⁽²⁾	Gross changes in fair value transferred to income - Ineffectiveness
Interest rate hedging ⁽⁴⁾	392	-	(1)	(98)	-	-
Exchange rate hedging	2,653	598	92	2,684	720	(38)
Net foreign investment hedging	308	-	-	(1,078)	(405)	-
Commodity hedging	(9,002)	(3,131)	(2)	(7,356)	(2,198)	(2)
HEDGING DERIVATIVES ⁽³⁾	(5,649)	(2,533)	89	(5,848)	(1,883)	(40)

(1) +/(): increase/(decrease) in equity (EDF share).

(2) +/(): increase/(decrease) in net income (EDF share).

(3) Excluding associates and joint ventures.

(4) Gross changes in fair value recorded in equity in 2022 include +€155 million of changes in the fair value of hedging costs resulting from the foreign currency basis spread on and cross-currency swaps. These changes are transferred to profit and loss via interest expenses on financing operations, which are included in the cost of gross indebtedness in the income statement (see note 8.1).

The gross change in the fair value of hedging instruments recognised in equity (EDF share), including recycling, is €(3,116) million in 2022 (€(3,965) million in 2021).

In 2022 this change is explained by the gross fair value changes in net foreign investment hedges, amounting to +€308 million (€(673) million in 2021), interest rate, exchange rate and commodity hedges, amounting to €(3,579) million (€(3,292) million in 2021) and hedging costs resulting from the foreign currency basis spread on and cross-currency swaps, amounting to +€155 million in 2022 – see the consolidated statement of comprehensive income.

The amount transferred to operating profit before depreciation and amortisation in 2022 is €(3,131) million in respect of commodity hedges comprises:

- €(1,794) million for gas hedging contracts, concerning the France – Generation and supply and United Kingdom segments,
- €(1,218) million for electricity hedging contracts, concerning the France – Generation and supply and United Kingdom segments,
- €(119) million for other hedging contracts.

18.7.6 Offsetting of financial assets and liabilities

Accounting principles and methods

A financial asset and financial liability must be netted if the entity currently has a legally enforceable right to do so and intends either to settle the net amount or to realise the asset and settle the liability simultaneously.

At 31 December 2022

(in millions of euros)	As reported in balance sheet	Balance with offsetting under IAS 32			Amounts covered by a general offsetting agreement but not offset under IAS 32		
		Balance without offsetting	Gross amount recognised (before offsetting)	Gross amount offset under IAS 32	Net amount recognised after offsetting under IAS 32	Financial instruments	Fair value of financial collateral Net amount
Fair value of derivatives – assets	42,845	4,493	76,159	(37,807)	38,352	(3,548)	(7,289) 27,515
Fair value of derivatives – liabilities	(46,849)	(5,533)	(79,123)	37,807	(41,316)	3,548	7,503 (30,265)

At 31 December 2021

(in millions of euros)	As reported in balance sheet	Balance with offsetting under IAS 32			Amounts covered by a general offsetting agreement but not offset under IAS 32		
		Balance without offsetting	Gross amount recognised (before offsetting)	Gross amount offset under IAS 32	Net amount recognised after offsetting under IAS 32	Financial instruments	Fair value of financial collateral Net amount
Fair value of derivatives – assets	29,971	3,948	70,140	(44,117)	26,023	(1,645)	(8,309) 16,069
Fair value of derivatives – liabilities	(32,151)	(5,316)	(70,952)	44,117	(26,835)	1,645	5,996 (19,194)

Note 19 Financial indicators

The financial indicators are not defined by the accounting standards and are not directly visible in the Group's financial statements. The principal financial indicators are the following.

19.1 Net income excluding non-recurring items

Net income excluding non-recurring items corresponds to the Group's share of net income (EDF net income) excluding non-recurring items, net changes in the fair value of energy and commodity derivatives (excluding trading activities), and net changes in the fair value of debt and equity instruments, net of tax.

The following tables show the transition from EDF net income to net income excluding non-recurring items:

At 31 December 2022

(in millions of euros)	Notes	2022			EDF net income
		Gross value	Income taxes	Non-controlling interests	
Net income					(17,940)
Changes in the fair value of debt and equity instruments ⁽¹⁾	8.3	3,160	(822)	(12)	2,326
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	6	849	(227)	-	622
Impairment		1,905	(132)	(478)	1,295
impairment of fixed assets ⁽²⁾	10.8.1 and 10.8.2	1,762	(121)	(478)	1,163
impairment of investments in associates and joint ventures ⁽³⁾	12.3	143	(11)	-	132
Other items		858	181	(4)	1,035
other operating income and expenses	7	687	(141)	(4)	542
provisions for financial risks on equity investments		187	-	-	187
expenses related to tax litigation		-	322	-	322
other		(16)	-	-	(16)
NET INCOME EXCLUDING NON-RECURRING ITEMS					(12,662)

(1) Including fair value hedges of dedicated assets.

(2) In 2022, this impairment notably concerns goodwill at EDF Energy (€(1,176) million), wind farms in the United States and Mexico (€(129) million) and impairment of land in the United Kingdom (€(120) million).

(3) In 2022, this impairment principally concerns wind farms in the United States (€(139) million).

The net income excluding non-recurring items amounts to €(12,662) million at 31 December 2022, down by €(17,379) million compared to 2021.

At 31 December 2021

(in millions of euros)	Notes	2021			
		Gross value	Income taxes	Non-controlling interests	EDF net income
Net income					5,113
Changes in the fair value of debt and equity instruments ⁽¹⁾	8.3	(2,804)	776	3	(2,025)
Net changes in fair value on Energy and Commodity derivatives, excluding trading activities	6	215	(66)	-	149
Impairment ⁽²⁾		872	(177)	(87)	608
impairment of fixed assets	10.8.1 and 10.8.2	653	(177)	(87)	389
impairment of investments in associates and joint ventures	12.3	219	-	-	219
Other items		1,054	(152)	(30)	872
other operating income and expenses	7	1,123	(220)	(30)	873
tax revaluation of assets in Italy		-	(103)	-	(103)
increase in the income tax rate in the UK	9.2	-	359	-	359
recognition of deferred tax assets in the United States	9.2	-	(191)	-	(191)
other		(69)	3	-	(66)
NET INCOME EXCLUDING NON-RECURRING ITEMS					4,717

(1) Including fair value hedges of dedicated assets and changes in the fair value of debt and equity instruments comprised in investments in associates and joint ventures.

(2) In 2021, impairment includes €(445) million concerning assets of the Dungeness power plant.

19.2 Net indebtedness

Net indebtedness comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or interest rate instruments with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented policy.

Net indebtedness are as follows:

(in millions of euros)	Notes	31/12/2022	31/12/2021
Loans and other financial liabilities	18.3.2	96,053	69,406
Derivatives used to hedge liabilities	18.7.1	(2,024)	(3,762)
Cash and cash equivalents	18.2	(10,948)	(9,919)
Debt and equity securities – liquid assets	18.1.2	(18,507)	(12,737)
Derivatives hedging liquid assets	18.7.1	(74)	-
NET INDEBTEDNESS		64,500	42,988

The Group's net indebtedness amounts to €64,500 million at 31 December 2022 (€42,988 million at 31 December 2021).

Note 20 Climate-related matters relevant to the financial statements

Introduction and background

In accordance with EDF's *raison d'être*: "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development" and its CAP 2030 strategy, the Group has defined 16 Corporate Social Responsibility (CSR) commitments focusing on four issues – Carbon neutrality and the climate, Preserving the planet's resources, Well-being and solidarity, and Responsible development. The commitments are transposed into the functions and investment projects with the help of an assessment grid.

These commitments and their implementation in the Group are also managed and monitored by several governance bodies, under the supervision of the Board of Directors (see section 3.5.2 of the 2022 Universal Registration Document "CSR governance bodies").

On 10 December 2021 the European Union adopted Article 8 of European regulation 2020-852 which aims to classify economic activities based on their contribution to the achievement of environmental objectives. This "Taxonomy

regulation" is part of the European strategy to promote emergence of sustainable finance that contributes to attainment of carbon neutrality by 2050, particularly by encouraging capital inflows into sustainable investments. It was supplemented by a specific Delegated Act for nuclear and gas activities, published on 2 February 2022 and applicable from 2022. The information and indicators contained in this regulation (proportion of sales, capital expenditure and operating expenditure associated with eligible activities and aligned with the European taxonomy) are described in section 3.8.4 of the 2022 Universal Registration Document, "Details on the taxonomy". See note 20.4 below presents the amount of taxonomy-aligned CAPEX.

The Group's financial statements incorporate issues relating to climate change and sustainable development at different levels, as summarised below. Those issues are taken into consideration through the Group's investment and divestment strategy, introduction of sustainable financing, specific expenditure incurred in response to environmental challenges, particularly under applicable laws and regulations, and also through the valuation methods used for the Group's assets and liabilities.

Themes	Notes	Content
Regulatory mechanisms related to greenhouse gas emission rights, Energy Savings Certificates, Renewable Energy Certificates – see note 20.1	Note 5.5.4 “Other items” Note 10.2 “Other intangible assets” Note 17.2 “Other provisions”	Climate and environmental issues are addressed in compliance with the regulatory systems existing in different countries for greenhouse gas emission rights, renewable energy certificates and energy savings certificates. These systems have an impact on the Group’s financial statements at several levels: the income statement and the balance sheet.
Nuclear provisions and provisions for contingencies and losses incorporating environmental risks – see note 20.2.1	Note 15 “Provisions related to nuclear generation and dedicated assets” Note 17 “Other provisions and contingent liabilities”	These are provisions relating to: - nuclear generation, comprising provisions for the back-end of the cycle (spent fuel management and long-term radioactive waste management), provisions for plant decommissioning, and provisions for last cores; - environmental measures; - environmental litigations.
Valuation of assets – see note 20.2.2	Note 10.8 “Impairment/reversals”	Climate issues are addressed in impairment tests, notably through the long-term scenarios applied for electricity prices in line with the trajectories of European decarbonisation objectives
Sustainable finance – see note 20.3	Note 18.3.2 “Loans and other financial liabilities” Note 14.4 “Perpetual subordinated bonds” Note 18.4 “Unused credit lines”	The Group has made several finance issues indexed on environmental indicators or to advance CSR projects: Green Bonds, Social bonds and credit lines indexed on ESG criteria
Expenses for protection of the environment and the climate – see notes 20.4 and 20.5	Note 10.2 “Other intangible assets”	The Group devotes a significant portion of its research and development budget to decarbonisation and the energy system transition, and undertakes other expenses for the environment or to adapt its installations to changes in the climate. The accounting policies applicable to research and development expenses are described in note 10.2.

20.1 Regulatory expenses

20.1.1 Greenhouse gas emission rights

EU Emissions Trading System (EU ETS)

The European Union’s Emissions Trading System (SEQE-UE or EU ETS) exists to fight climate change and reduce greenhouse gas emissions.

This system, which applies in all EU countries, sets an annual cap on emissions. Businesses (including EDF) receive or buy emission quotas, then the following year surrender to the European Commission a number of greenhouse gas emission rights corresponding to their Scope 1 emissions for the year elapsed, such as direct greenhouse gas emissions from production of the goods sold (e.g. electricity, heat, steel, paper, etc.). Fines are payable if there is a shortfall (€100 per tonne of CO₂ not covered by quotas, and an obligation to cover these amounts by quota the following year).

The cap is being progressively reduced in order to bring down the total emissions in Europe.

The legislative framework of the EU-ETS for the fourth trading period (2021-2030) has been tightened up to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU’s contribution to the Paris Climate

Agreement adopted in 2015 (which set a general target of a 40% cut in emissions compared to 1990 levels for the whole EU) ⁽¹⁾. One key step was accelerating annual quota reductions to 43 million tonnes per year (2.2% below the allocations for 2010).

The European Commission also presented a package of proposals on July 2021 entitled “Fit for 55”, intended to bring the European Union closer to the augmented target of cutting CO₂ emissions by at least 55% (compared to 1990 levels) by 2030.

The European “trilogue negotiation”, finalised in December 2022, raised the initial targets set by the European Commission in its legislative proposals in July 2021. The quotas for the sectors concerned by the ETS will be reduced by 62% (compared to 2005) by 2030.

In the EDF group, the entities concerned by application of these European regulations are EDF, Edison, Dalkia, PEI and Luminus.

The volume of emissions at 31 December 2022 stood at 18 million tonnes (17 million tonnes for 2021).

Actual greenhouse gas emissions amounted to €799 million at 31 December 2022 (€380 million at 31 December 2021) and are included in provisions.

In 2022, the Group surrendered 17 million tonnes in respect of emissions generated in 2021 under the EU ETS (in 2021 it surrendered 16 million tonnes in respect of emissions generated in 2020).

(1) The current EU ETS allocations trajectory does not yet include changes to be made in application of the Fit for 55 package.

British Emissions Trading Scheme (UK ETS)

Since Brexit, the United Kingdom has set up its own system (UK ETS – Emissions Trading Scheme). The UK ETS, which uses a bidding system, covers the same sectors as the EU ETS and operates under generally similar rules, with comparable accounting treatment.

The volume of emissions by EDF Energy in 2022 stood at 0.1 million tonnes (2 million tonnes for 2021). Actual impacts of greenhouse gas emissions amounted to €9 million (€36 million in 2021) and are included in provisions.

In 2022, EDF Energy surrendered 2 million tonnes in respect of emissions generated in 2021 (in 2021 it surrendered 3 million tonnes in respect of emissions generated in 2020).

Accounting treatment of CO₂ quotas

Emission rights held to comply with the regulatory requirements on greenhouse gas emissions are recorded in intangible assets as “Greenhouse gas emission rights – green certificates” at acquisition cost when they are purchased on the market.

At the year-end a provision corresponding to the emissions is established, equal to the acquisition cost up to the amount of rights acquired on the spot or forward markets, and to market prices for the balance. This provision is cancelled when the rights are surrendered to the State.

20.1.2 Renewable energy certificates (green certificates)

In application of EU Directive 2009/28/EC on the promotion of the use of energy from renewable sources, every EU member state has set national targets for consumption of electricity from renewable sources. The United Kingdom has its own equivalent system.

Guarantee of Origin certificates prove the renewable origins of this electricity, which transits through the grid. They are sold by operators of renewable energy plants and bought by customers who want to use renewable-source electricity.

There are two systems for States to meet their targets:

- setting a specific sales tariff for renewable energies (this is the approach taken in France);
- setting an obligation for electricity producers to surrender a certain volume of renewable energy certificates (as is the case in the United Kingdom, Italy and Belgium).

The renewable energy certificate system may apply to:

- non-obligated electricity producers when the obligation applies to sales (EDF Renewables);
- obligated electricity producers when the obligation applies to generation;
- electricity producers who are also sellers of electricity when the obligation applies to energy sales (EDF Energy, Edison and Luminus).

A provision of €1,117 million was recognised, essentially by EDF Energy (United Kingdom) and Luminus (Belgium), at 31 December 2022 (€1,156 million in 2021) concerning the obligations for renewable energy certificates to be surrendered at that date. A large portion of these obligations is covered by purchased certificates recorded in intangible assets.

20.2 Valuation of assets and liabilities

20.2.1 Provisions relating to environmental issues

Most of these provisions are provisions related to nuclear generation, which comprise provisions for back-end nuclear cycle expenses (management of spent fuel and radioactive waste), provisions for plant decommissioning and provisions for last cores. Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved. Details of these provisions are provided in note 15 concerning EDF and EDF Energy.

Accounting treatment of green certificates

For the entities that produce and sell electricity:

- certificates earned through energy generation are not recognised, since their cost is nil;
- certificates purchased are recognised as intangible assets in the line “Greenhouse gas emission rights – green certificates”.

A provision is also established to reflect the obligation to surrender certificates. It is based on the cost of certificates earned (with nil value) and purchased (on the spot or forward market), the market price of the certificates still to be purchased, and where relevant the market price or penalty price for the balance. This provision is cancelled when the certificates are surrendered to the State.

20.1.3 Energy savings certificates

In all its subsidiaries, the Group is engaged in a process to control its energy consumption through various legislative measures in application of European Union Directives and national laws.

In France, the Law of 13 July 2005 introduced a system of energy savings certificates, imposing energy savings obligations on suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level. At the end of the period concerned, obligated actors are required to present energy savings certificates that correspond to their obligatory energy savings, otherwise sanctions apply. These certificates are obtained in return for energy savings operations conducted directly or indirectly, or purchased from other obligated or “eligible” economic actors.

After meeting its energy savings obligation for the fourth period of the scheme (2018-2021), EDF has entered its fifth period, which began on 1 January 2022 and will end on 31 December 2025. The obligation is significantly higher in this fifth period.

To meet this obligation, three sources are available to the EDF group: supporting consumers in energy efficiency operations (in 2022, for example, 192,000 renovation projects were completed), funding State-approved energy savings programmes, and purchasing certificates from eligible actors.

In the United Kingdom, EDF Energy voluntarily helps companies explore and develop solutions by enabling them to save energy, carbon and costs, particularly through its Powershift flexibility platform.

Accounting treatment of energy savings certificates

Expenses incurred for energy savings certificates are recorded in expenses of the year concerned, in “Other operating income and expenses”. Expenses in excess of the accumulated obligation at the year-end are included in inventories and the stocks of energy savings certificates may be used to cover the obligation in later years.

A provision is recognised if the volume of certificates earned is lower than the accumulated energy savings obligation at the year-end. The amount of the provision is equal to the cost of actions still to be taken to extinguish the obligations related to the energy sales made.

They also include provisions for environmental schemes including provisions for greenhouse gas emission rights, renewable energy certificates and energy savings certificates. At 31 December 2022, these provisions totalled €1,926 million (€1,572 million in 2021, see note 17.2).

Contingent liabilities also exist in connection with environmental litigation, described in note 17.3.5, such as the litigation following the sale of Ausimont (the Bussi site) to Solvay 3 by Edison in 2002.

20.2.2 Valuation of assets

In valuing the Group's long-term assets, climate issues are taken into account through impairment testing. The long-term scenarios used for electricity prices in countries where the Group does business are consistent with the trajectories of European decarbonisation targets, particularly as set in the Paris climate agreement. As explained in note 10.8, in constructing long-term electricity prices, the impact of climate contingencies is incorporated into assumptions concerning demand (particularly energy requirements for heating, and summer comfort), generation of renewable energies (onshore and offshore wind power, solar power) for all European countries, the contribution of hydropower, and environmental tax cuts for nuclear power generation in France. Climate time series analyses are based on the European EUROCORDER model and include the impact of climate change. A deliberately prudent approach is adopted to avoid any bias towards underestimation of the practical effects of climate change on the relevant physical quantities (temperatures, cloud coverage, wind speeds) and ultimately on the European electricity system between 2027 and 2050. Scenarios also take account of the objectives of public energy and climate policies such as the Paris Agreement at worldwide level, Fit For 55 and RepowerEU at European Union level, and the National Low Carbon Strategy (*Stratégie Nationale Bas Carbone*) in France. The scenarios used mainly include high CO₂ prices supporting carbon-free electricity production in Europe, and a lower-carbon economy more generally through electrification of uses.

The Group controls and operates thermal (gas-fired, coal-fired, oil-fired) electricity generation plants principally in France and Italy, to a smaller extent in Brazil, in Laos and Belgium, and to a now marginal degree in England (since the sale of West Burton B in 2021, see note 3.1.2). The net book value of the assets concerned is €5 billion at 31 December 2022 (unchanged from at 31 December 2021), including €3.6 billion for assets in France and €1.0 billion for assets in Italy.

In **mainland France**, the electricity generated by EDF's fleet of thermal power plants (CCGT, CT, and coal), with net book value of €1.8 billion at 31 December 2022 (€1.9 billion at 31 December 2021) accounted for around 3.57% of EDF's total electricity output in 2022. These plants operate in semi-baseload and peak periods and are used to variable degrees throughout the year, playing a significant role in system security when there are tensions in the supply-demand balance, which was the case during the winter of 2022.

With the end of coal-fired generation in application of the Multi-year energy programme, the coal-fired plant at Le Havre (0.6GW) was closed at 1 April 2021 and the Cordemais plant is due to cease operations in 2026 at the latest.

EDF is modernising its fleet of natural gas CCGT plants (Blénod, Martigues, Bouchain) to reduce air emissions of CO₂, NOx and SO₂. The Bouchain plant in particular produces CO₂ emissions of around 360g/kWh on average.

In the **island territories**, electricity is principally generated by an oil-fired fleet (with net book value of €1.8 billion at 31 December 2022), and to a smaller degree hydroelectric plants and other renewable energy plants. Where required by the Multi-year energy programme, EDF intends to operate new plants running on liquid biomass, or to convert its existing plants to run on bioliquid.

In **Italy**, Edison's thermal fleet consists of CCG plants. In keeping with the "National plan for energy and the climate" supporting development of gas-based electricity generation and its integration with renewable energy generation, Edison began construction in 2019 of the first new-generation CCG plant at the Marghera Levante site (780MW), and in 2020 of a 760MW greenfield project at Presenzano (in Campania), using the same technology, for low environmental impact (CO₂ emissions 40% below the national average, and a 70% reduction in NOx emissions). Both plants should be commissioned in 2023.

20.3 Sustainable financing

20.3.1 Green Bonds

Since 2013 the Group has made seven Green Bond issues for a value equivalent to €9.96 billion. These issues were made under its Green Bond Framework and were intended to finance construction of new wind and solar power projects, investments to renovate and modernise its hydropower assets in mainland France and internationally, energy efficiency projects, and biodiversity protection projects.

In July 2022, the Group produced the fourth edition of its Green Bond Framework, which is now a Green Financing Framework covering all its green financing operations. Eligible projects must meet the European Taxonomy criteria. Two new eligible categories have been added to the scope of application: distribution networks and nuclear generation assets. EDF has also made a commitment to inform investors before every bond issue if the proceeds of the issue will be used to finance nuclear activities. On 5 October 2022 the Group issued a €1.25 billion bond to finance distribution network activities.

The Green Financing Framework was also reviewed by an independent body which confirmed that it respects best practices on the Green Loan market (the Green Loan Principles published by the Loan Syndications and Trading Association).

Allocation of the funds raised by EDF's Green Bond issues is certified by one of the Statutory Auditors (see section 6.7 of the Universal Registration Document). This certification can be consulted on the EDF website's sustainable development page.

20.3.2 Social bonds (social hybrid notes)

On 26 May 2021 EDF launched an issue of Euro-denominated perpetual social hybrid notes with total nominal value of €1.25 billion.

The funds raised were used to finance eligible projects, as defined in the EDF group's Social Bond Framework. These projects include investment expenditure by EDF in Small and Medium-Sized Enterprises (SMEs) that contribute to the development and maintenance of electricity generation and distribution assets in Europe (including the United Kingdom).

The Social Bond Framework's compliance with the Social Bond Principles published by the International Capital Markets Association (ICMA) has been validated by an independent body.

20.3.3 Bilateral green loan

On 18 November 2022 EDF and Crédit Agricole CIB signed a €1 billion bilateral green loan that complies with EDF's Green Financing Framework. This loan will contribute to the *Grand Carénage* programme to enhance safety and extend the operating lifetime of French nuclear reactors beyond 40 years. The funds will be entirely dedicated to maintenance of French power plants, in order to continue production of very low-carbon energy (4g CO₂ equivalent per kWh over the life cycle⁽¹⁾).

20.3.4 Credit lines indexed on ESG criteria

The EDG group has 18 renewable bilateral credit lines and two syndicated credit facilities indexed on the Group's sustainable development performance (incorporating a cost adjustment mechanism for financing costs):

- a €4 billion 5-year "green" syndicated credit line with more than 20 banks. The margin is adjusted based on the Group's performance on three environmental KPIs;
- a €1.5 billion 5-year "social" credit facility with 9 banks. The margin is adjusted based on the Group's performance on four KPIs focusing on EDF's Fair and Inclusive Transition principles;

(1) Source: *Analyse Cycle de Vie du kWh nucléaire d'EDF* published by EDF in 2022 and reviewed by independent experts https://www.edf.fr/sites/groupe/files/2022-11/edfgroup_acv-4_plaquette_2022111_en.pdf

- 18 renewable bilateral credit lines indexed on ESG criteria. The margins are adjusted based on the Group's performance on KPIs selected with the banks.

At 31 December 2022, undrawn ESG-indexed renewable credit lines (including syndicated credit facilities) totalled over €10.05 billion, or 72% of the EDF group's

total undrawn credit lines (see note 18.4). In 2022, the Group respected the required indicators.

20.4 Carbon-free investments

In 2022 the Group continued its programme of gross operating investments, which amounted to €19.2 billion and included €18.3 billion of gross investments in intangible assets and property, plant and equipment (see notes 4 and 10.7) and €0.9 billion of gross financial investments.

In 2022, nearly 94% of the Group's investments were in line with its net-zero trajectory (94% in 2021), with 50% of investments concerning the nuclear sector (50% in 2021). 66% of the Group's investments were aligned with the current European Taxonomy at 31 December 2022 (compared to 44% in the published figures for 2021 and 63% in proforma figures for 2021 including the effects of the complementary delegated act on nuclear and gas activities). This notably covered investments in nuclear activities in France, networks, renewable energy generation facilities (solar power, wind power), hydropower facilities and certain energy services (see section 3.8.4 of the 2022 Universal Registration Document, "Details on the taxonomy").

EDF promotes innovation to contribute to achievement of the net zero objective, by investing in startups and venture capital funds dedicated to innovation (the EDF Pulse Ventures programme), and by developing intrapreneurial projects (the EDF Pulse Incubation programme). The Group has formed several subsidiaries for these purposes, such as Hynamics, a company that produces and sells low-carbon hydrogen produced by water electrolysis to meet the needs of the heavy-duty transport industry.

The Group's *raison d'être* is also expressed in the management policy for its portfolio of dedicated assets held to finance long-term nuclear expenses in France (realisable value of €33.9 billion at 31 December 2022), and its responsible investor's charter introduced in 2020, which has three focal points (compliance with the United Nations' Principles for Responsible Investment; respect of the major international agreements on human rights; and annual reporting on responsible investments). This charter is applicable both to assets managed directly and assets managed by specialist companies under delegated management arrangements.

In 2022, a review was conducted of these delegated management companies' compliance with the United Nations' Principles for Responsible Investment and the major international agreements, and for climate risks, a carbon emission assessment was established for listed and unlisted assets. The climate scenarios incorporated into risk/return studies of dedicated assets were analysed in accordance with the recommendations of the NGFS (Network for Greening the Financial System), to assess the risk of nuclear provisions being underfunded in the event of a climate stress scenario that could affect the value of dedicated assets, depending on different time horizons.

For unlisted assets, EDF is committed to integrating environmental, social and governance (ESG) considerations as effectively as possible into its decisions for investments and management of investments, notably by requiring the companies in its portfolio to carry out a carbon review and monitor their environmental footprint.

20.5 Expenses for protection of the environment and the climate, and to adapt installations to climate change

The Group is continuing its commitments to address environmental issues, for example through the following actions.

20.5.1 Research and development (R&D)

Given the goal of carbon neutrality by 2050, and the fact that electricity is a major lever in action to decarbonise the French economy, R&D has a crucial role to play in the electricity, climate, digital and societal transition.

In 2022, the EDF group's total R&D budget amounted to €649 million, comprising €473 million for EDF's R&D, and separate R&D by certain subsidiaries, principally Framatome, EDF Energy and Edison.

In France, 99% of EDF's R&D budget is dedicated to achieving the net zero goal, and the energy system transition.

The R&D budget is particularly channelled into research into energy efficiency, uses of electricity as a substitute for fossil fuel-based energies, renewable energies and

their insertion into the grid, energy storage and production, carbon-free hydrogen and its applications for decarbonising the economy, sustainable cities, the local impacts of climate change and other environmental issues such as biodiversity, water quality, and the mitigation of all forms of pollution.

Research concerning electricity storage, enhancement of energy performance diagnosis methods, improvement of techniques for urban heating and cooling networks, platforms for sharing studies relevant to the ecological transition, and increasing safety at nuclear power plants is supported by public subsidies, notably from the European Union.

The CAP 2030 Decarbonised Thermal Project, launched in March 2021, aims to give each of the Group's thermal fleets a decarbonisation strategy for existing assets and a development strategy for new decarbonised assets, with a roadmap to guarantee the availability of such decarbonised thermal generation facilities at the appropriate time, for good control of the related technologies and skills. All the EDF group's gas activities thus follow carbon trajectories (covering both direct and indirect emissions) set for each entity in line with the Group's 2030 objectives.

20.5.2 Other expenses for protection of the environment and climate

Accounting principles and methods

Other expenses for protection of the environment and climate are identifiable expenses incurred to prevent, reduce or repair damage that has been or may be caused by the Group as a result of its activities. These expenses are treated as follows:

- they are **capitalised** if they are incurred to prevent or reduce future damage or protect resources (e.g. expenses for structures to facilitate the passage of migrating fish, effluent treatment installations, etc.);
- they are booked as environmental liabilities and increases to **provisions for environmental risks** if they correspond to an obligation that exists at the year-end and it is probable or certain at the reporting date that they will lead to an outflow of resources;
- they are recognised as expenses if they are **operating expenses** for the units in charge of environmental concerns, environmental supervision, environmental duties and taxes, processing of liquid and gas effluents and non-radioactive waste, or research unrelated to an investment.

All of the Group's functions, employees, activities and projects are mobilised to fulfil EDF's objective of being an environmentally responsible company. Some of the actions concerned are presented below.

Action for biodiversity

The EDF group has been committed to action for biodiversity since 2006 with a dedicated policy, and today its biodiversity ambitions are reflected in formal commitments made through two initiatives, *Entreprises engagées pour la nature* (Committed companies for nature) and "Act4nature international". These voluntary commitments cover some twenty actions to reduce contributions to major pressure points on biodiversity (as identified by IPBES, the biodiversity equivalent of the IPCC), recreate biodiversity-friendly spaces and conditions, further improve and share knowledge, strengthen biodiversity governance and raise employee awareness.

In addition to these commitments, between 2013 and 2022, the Group undertook more than 66 operations through EDF hydro and its hydropower activities for a cumulative total investment of €107 million (excluding subsidies received), to facilitate fish migration at ecologically sensitive sites in mainland France ("list 2" sites for the purposes of the "national law on water and aquatic environments"), installing fish passes and fish ladders and removing river weirs.

Action for employees and vehicle fleet electrification

Consistent with its ambitions for the environment and the climate, the Group works to raise awareness among its employees and educate them about environmental and sustainable development issues. In 2022 its "Environment and sustainable development" training offering comprising courses on environmental management, standards and regulations, and environmental analysis, provided 1,755 employees with 19,061 hours of training.

In addition, the rollout at Group level of the "Climate Collage" collaborative workshop, led in person or online by volunteer employees after internal training, gave 66,000 employees greater awareness of the issues of climate disruption.

Based on a concept similar to the "Climate Collage", the "Biodiversity Collage" raises awareness of the causes of biodiversity erosion. The goal of providing biodiversity training and awareness-raising for 1,000 employees by the end of 2022 has been exceeded.

As the first French Group to sign the EV100 initiative, EDF made a commitment to have a fully-electric light vehicle fleet by 2030. By the end of 2022 the worldwide fleet numbered more than 45,000 light vehicles (especially in Europe) and more than 22.6% were already electric (over 10,300 electric vehicles, an increase of more than 2,500 from 2020). Joining the EV100 initiative is also an encouragement for Group employees to control their energy consumption and reduce their carbon footprint, as it gives them access to competitive offers from car suppliers and offers for recharging services sold by EDF group subsidiaries.

For 2022, the vehicle fleet electrification indicator accounts for 10% of EDF's and Enedis' profit-sharing criteria.

20.5.3 Expenses to adapt the Group's assets to climate change

To adapt France's current and future nuclear power plants, in addition to work on safety and security in compliance with regulations and safety authority recommendations, EDF has established a plan to adapt its facilities and their operations. The ADAPT project is part of a systemic approach for analysing the resilience of all ecosystems, natural or socio-economic, which are decisive for generation capacity.

This project sees climate change as systemic and changing. Among other things, these analyses are a basis for:

- imagining the climate futures of different areas and regions over different time horizons;
- improving the level of protection for the group's installations against unforeseeable natural events, through better quantification of their extreme versions;
- reducing the environmental impact of the Group's facilities;
- identifying innovative solutions, for example for recovering evaporated water from cooling towers, and testing the most promising ideas on site in the near future.

The increasing pace of climate change is also leading the Group to reinforce its R&D and engineering capacities, by increasing the number of people hired with key skills in all the related areas: climatology, hydrogeology, environmental matters, and of course technical engineering.

Note 21 Off-balance sheet commitments

This note presents off-balance sheet commitments given and received by the Group at 31 December 2022. The amounts of commitments correspond to non-discounted contractual values.

21.1 Commitments given

The table below shows off-balance sheet commitments given by the Group that have been valued. Other commitments are described separately in the detailed notes.

<i>(in millions of euros)</i>	Notes	31/12/2022	31/12/2021
Operating commitments given	21.1.1	61,990	54,268
Investment commitments given	21.1.2	16,900	16,996
Financing commitments given	21.1.3	6,345	5,837
TOTAL COMMITMENTS GIVEN		85,235	77,101

In almost all cases, these are reciprocal commitments, and the third parties concerned are under a contractual obligation to supply the Group with assets or services related to operating, investment and financing activities.

21.1.1 Operating commitments given

Operating commitments given by the Group are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Fuel and energy purchase commitments ⁽¹⁾	43,863	37,908
Operating contract performance commitments given	17,456	16,047
Operating lease commitments as lessee	671	313
TOTAL OPERATING COMMITMENTS GIVEN	61,990	54,268

(1) Excluding gas purchases and related services

21.1.1.1 Fuel and energy purchase commitments

In the course of its ordinary generation and supply activities, the Group has entered into long-term contracts for purchases of electricity, gas, other energies and commodities and nuclear fuel, for periods of up to 20 years.

The Group has also entered into long-term purchase contracts with a certain number of electricity producers, by contributing to the financing of power plants.

At 31 December 2022, fuel and energy purchase commitments mature as follows:

<i>(in millions of euros)</i>	31/12/2022					31/12/2021
	Total	< 1 year	1 to 5 years	5 to 10 years	> 10 years	Total
Electricity purchases and related services ⁽¹⁾	30,085	5,702	9,626	5,815	8,942	24,557
Other energy and commodity purchases ⁽²⁾	362	118	132	112	-	346
Nuclear fuel purchases	13,416	1,944	5,710	4,771	991	13,005
FUEL AND ENERGY PURCHASE COMMITMENTS	43,863	7,764	15,468	10,698	9,933	37,908

(1) There are no remaining commitments by controlled entities to joint ventures at 31 December 2022 (€487 million at 31 December 2021).

(2) Excluding gas purchases and related services (see note 21.1.1.4).

21.1.1.1 Electricity purchases and related services

Electricity purchase commitments at 31 December 2022 mainly concern EDF and EDF Energy. In the case of EDF many of these commitments are borne by the Island Energy Systems (SEI), which have made commitments to purchase the electricity generated using bagasse and coal.

The change over the year is mainly explained by the €3 billion increase in EDF Energy's purchase commitments due to the higher electricity price projections for the next 10 years. The €2 billion increase in purchase commitments by EDF, Enedis and Luminus is explained by the extension of certain contracts and the significant rise in energy prices.

In addition to the obligations reported above and under Article 10 of the Law of 10 February 2000, in mainland France, EDF is obliged, at the producer's request and subject to compliance with certain technical features, to purchase the power produced by co-generation plants and renewable energy generation units (wind

turbines, small hydro-electric plants, photovoltaic power, etc.). The additional costs generated by this obligation are offset, after validation by the CRE, by the CSPE. These purchase obligations total 50TWh for 2022 (54TWh for 2021), including 6TWh for co-generation (7TWh for 2021), 22TWh for wind power (25TWh for 2021), 13TWh for photovoltaic power (11TWh for 2021) and 3TWh for hydropower (4TWh for 2021).

21.1.1.2 Other energy and commodity purchases

Purchase commitments for other energies and commodities mainly concern purchases of biomass fuel used by Dalkia in the course of its business.

21.1.1.3 Nuclear fuel purchases

Commitments for purchases of nuclear fuel arise from supply contracts for the nuclear plants intended to cover the EDF group's needs for uranium and fluorination, enrichment and fuel assembly production services.

21.1.1.4 Gas purchases and related services

Gas purchase commitments are principally undertaken by Edison and EDF. The volumes concerned for both entities at 31 December 2022 are as follows:

	31/12/2022				31/12/2021
	Maturity				
(in billions of m ³)	Total	< 1 year	1 to 5 years	> 5 years	Total
Edison	124	12	48	64	137
EDF	56	4	12	40	23

Gas purchase contracts

Edison has entered into agreements to import natural gas from Libya, Algeria, Azerbaijan and Qatar, for a total maximum volume of 11.9 billion m³ per year. The residual terms of these contracts vary between 5 and 22 years.

In 2020, EDF signed a 5-year purchase contract for 3 billion m³ of gas per year from Norway.

In 2017 Edison signed a purchase contract for LNG from the United States (1 million tonnes per year, i.e. 1.4 billion m³ of natural gas, for a 20 – year term). Deliveries under this contract will not begin until 2023.

In 2014, EDF signed a contract for LNG imports from the United States, for an annual supply of 0.7 million tonnes of LNG (1 billion m³ of natural gas per year) over a 20-year period starting from May 2020. In 2020 EDF also signed a 20-year purchase contract for LNG from the United States (1 million tonnes per year, i.e.

1.4 billion m³ of natural gas). Deliveries under this contract are due to begin in 2026.

Some of these contracts contain "take-or-pay" clauses committing the buyer to pay for a minimum volume of gas every year, whether or not it actually takes delivery of that volume.

Gas-related service contracts

Under the contract with Terminale GNL Adriatico, Edison also benefits from approximately 80% of the terminal's regasification capacities until 2034.

Under the contract with the Dunkerque LNG methane terminal, EDF benefits from approximately 61% of the terminal's regasification capacities until 2037, in return for payment of an annual premium of approximately €150 million. A provision for onerous contracts has been recorded in connection with this contract since 2018.

21.1.1.4 Operating contract performance commitments given

At 31 December 2022, these commitments mature as follows:

	31/12/2022				31/12/2021
	Maturity				
(in millions of euros)	Total	< 1 year	1 to 5 years	> 5 years	Total
Operating guarantees given	9,648	3,259	3,711	2,678	8,693
Operating purchase commitments ⁽¹⁾	7,611	4,294	2,685	632	7,173
Other operating commitments	197	67	100	30	181
OPERATING CONTRACT PERFORMANCE COMMITMENTS GIVEN ⁽²⁾	17,456	7,620	6,496	3,340	16,047

(1) Excluding fuel and energy.

(2) Including commitments given by controlled entities to joint ventures, amounting to €1,912 million at 31 December 2022 (€1,928 million at 31 December 2021).

In the course of its business, the Group provides contract performance guarantees, generally through the intermediary of banks.

Operating guarantees given at 31 December 2022 mainly consist of guarantees given by EDF Renewables in connection with its development projects, Edison and EDF.

The change in these guarantees is essentially explained by new EDF Renewables projects in development (particularly in the United States) and arrangement of new guarantees by Edison in the course of their activities.

21.1.1.4.1 Operating guarantees given

Operating guarantees given are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
EDF Renewables	3,252	3,024
Edison	2,373	1,882
EDF	1,314	1,228
Framatome	1,111	1,087
EDF Energy	622	571
Other entities	976	901
TOTAL	9,648	8,693

21.1.1.4.2 Operating purchase commitments

Operating purchase commitments are as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
EDF	3,399	3,360
Framatome	1,493	1,399
Enedis	896	794
EDF Renewables	450	544
EDF Energy	317	381
Other entities	1,056	695
TOTAL	7,611	7,173

21.1.1.4.3 Lease commitments as lessee

At 31 December 2022, lease commitments as lessee break down as follows:

<i>(in millions of euros)</i>	31/12/2022				31/12/2021
	Maturity				
	Total	< 1 year	1 to 5 years	> 5 years	Total
LEASE COMMITMENTS AS LESSEE	671	49	248	374	313

The only remaining off-balance sheet lease commitments are:

- Leases that are exempt from recognition in application of IFRS 16. The total amount concerned at 31 December 2022 is €83 million (€204 million at 31 December 2021);

- Leases of assets that have not yet been made available to the Group (principally real estate and LNG tankers under construction). The right-of-use assets and the lease liability will be recognised in the balance sheet when the leased asset is made available. The total amount concerned at 31 December 2022 is €588 million (€109 million at 31 December 2021).

21.1.2 Investment commitments given

At 31 December 2022, details of investment commitments are as follows:

(in millions of euros)	31/12/2022				31/12/2021
	Total	< 1 year	Maturity 1 to 5 years	> 5 years	Total
Commitments related to acquisition of tangible and intangible assets	15,867	10,411	5,013	443	15,905
Commitments related to acquisition of financial assets	864	12	751	101	929
Other commitments related to investments	169	165	4	-	162
TOTAL INVESTMENT COMMITMENTS GIVEN ⁽¹⁾	16,900	10,588	5,768	544	16,996

(1) Including commitments given by controlled entities to joint ventures, amounting to €183 million at 31 December 2022 (€194 million at 31 December 2021).

21.1.2.1 Commitments related to acquisition of tangible and intangible fixed assets

The commitments related to acquisition of tangible and intangible fixed assets are as follows:

(in millions of euros)	31/12/2022	31/12/2021
EDF	4,041	4,109
EDF Energy	5,179	6,346
Enedis	2,956	2,568
EDF Renewables	2,050	1,431
Framatome	666	520
Other entities	975	931
TOTAL	15,867	15,905

Commitments given related to acquisition of tangible and intangible fixed assets remained stable. The rise in commitments by EDF Renewables (an increase in orders, principally in the United States and Brazil, partly offset by progress and commissioning of solar and wind power plants, notably in Canada), and to a lesser degree by Enedis (higher purchase commitments for electric equipment, and lower commitments associated with the end of the national Linky meter rollout) was offset by the decrease in commitments given by EDF Energy (due to progress on the HPC project, combined with the effect of the pound sterling's fall against the euro).

21.1.2.2 Commitments related to acquisition of financial assets

The decrease in commitments related to acquisition of financial assets is principally due to Framatome's acquisition of the captive insurance company Foyer during the first half of 2022.

The main share purchase commitments that cannot be valued concern Luminus.

21.1.2.3 Other commitments related to investments

Other commitments given related to investments at 31 December 2022 mainly comprise guarantees given by EDF Norte Fluminense in connection with its 51% investment in CES, the operator of a hydroelectric dam on the Teles Pires river in Brazil.

Luminus signed an amendment to the shareholder pact on 26 October 2015 defining a liquidity clause for the investments held by its minority shareholders, which could, in certain conditions under the control of EDF, result in sale of their shares through an IPO, or purchase of their shares by the Group at market value. This liquidity clause is valid at all times from 1 July 2018 to 31 December 2025.

Regarding the investment in EDF Investissements Groupe (EIG), C3 (a fully-owned EDF subsidiary) has a call option to buy the EIG shares held by NBI (Natixis Belgique Investissement, a subsidiary of the Natixis group) at a fixed price, exercisable at any time until May 2026. Meanwhile, NBI has a cash-settled put option to sell EDF all of its EIG shares for a fixed price, exercisable subject to certain conditions between February 2024 and May 2025.

Due to their features, in compliance with IAS 32, NBI's put option and C3's call option are considered as derivatives and their net value is included in the positive or negative fair value of trading derivatives. At 31 December 2022, the fair value of these trading derivatives is low.

21.1.3 Financing commitments given

Financing commitments given by the Group at 31 December 2022 comprise the following:

(in millions of euros)	31/12/2022				31/12/2021
	Total	Maturity			Total
		< 1 year	1 to 5 years	> 5 years	
Security interests in real property	3,616	1,321	421	1,874	3,986
Guarantees related to borrowings	1,587	33	996	558	1,265
Other financing commitments	1,142	1,034	28	80	586
TOTAL FINANCING COMMITMENTS GIVEN ⁽¹⁾	6,345	2,388	1,445	2,512	5,837

(1) Including commitments given by controlled entities to joint ventures, amounting to €2,609 million at 31 December 2022 (€1,597 million at 31 December 2021). These financing commitments to joint ventures mainly concern EDF Renewables and Jera.

Security interests and assets provided as guarantees mainly concern pledges or mortgages of tangible assets and shares representing investments in consolidated subsidiaries which own property, plant and equipment, for EDF Renewables.

The guarantees given for borrowings are essentially guarantees provided by EDF Renewables for its project financing.

21.2 Commitments received

The table below shows off-balance sheet commitments received by the Group that have been valued. Other commitments received are described separately in the detailed notes.

(in millions of euros)	Notes	31/12/2022	31/12/2021
Operating commitments received ⁽¹⁾	21.2.1	8,916	9,065
Investment commitments received	21.2.2	317	609
Financing commitments received ⁽²⁾	21.2.3	22	18
TOTAL COMMITMENTS RECEIVED		9,255	9,692

(1) Excluding commitments related to supplies of energy and related services (see note 21.2.1.4).

(2) Excluding commitments related to credit lines, which are described in note 18.4.

21.2.1 Operating commitments received

Operating commitments received by the Group at 31 December 2022 comprise the following:

(in millions of euros)	31/12/2022				31/12/2021
	Total	Maturity			Total
		< 1 year	1 to 5 years	> 5 years	
Operating lease commitments as lessor	509	100	202	207	661
Operating sale commitments	6,348	1,743	3,298	1,307	6,360
Operating guarantees received	1,998	1,241	230	527	1,991
Other operating commitments received	61	19	27	15	53
OPERATING COMMITMENTS RECEIVED	8,916	3,103	3,757	2,056	9,065

21.2.1.1 Operating lease commitments as lessor

In 2022, the Group benefits from commitments as lessor in operating leases amounting to €509 million. These commitments mainly concern the Independent Power Projects (IPPs) and real estate leases.

21.2.1.2 Operating sale commitments

Operating sale commitments received exclude energy deliveries and principally concern firm orders made through contracts recorded on a percentage-of-

completion basis at Framatome (construction and engineering contracts) and EDF Renewables (agreements for operation services, maintenance services, and development and sale of structured assets).

21.2.1.3 Operating guarantees received

Operating guarantees received principally concern Framatome, and relate to supply and technical assistance contracts for EDF's nuclear power plants with guarantees received from suppliers, particularly in connection with ARENH deliveries.

21.2.1.4 Electricity supply commitments

In the course of its business, the EDF group has signed long-term contracts to supply electricity as follows:

- long-term contracts with a number of European electricity operators, for a specific plant or a defined group of plants in the French nuclear generation fleet, corresponding to installed power capacity of 3.5GW;

- in execution of France's "NOME" Law on organisation of the French electricity market, EDF has a commitment to sell some of the energy generated by its existing nuclear power plants to other suppliers, until 31 December 2025. This has concerned a maximum volume of 150TWh each year since 1 January 2020 (see note 5.1.1).

21.2.2 Investment commitments received

(in millions of euros)	31/12/2022				31/12/2021
	Total	Maturity			Total
		< 1 year	1 to 5 years	> 5 years	
INVESTMENT COMMITMENTS RECEIVED	317	235	35	47	609

The decrease in investment and/or divestment commitments received is explained by the expiry in early 2022 of a guarantee received in connection with a repurchase agreement concerning securities held by EDF.

21.2.3 Financing commitments received

(in millions of euros)	31/12/2022				31/12/2021
	Total	Maturity			Total
		< 1 year	1 to 5 years	> 5 years	
FINANCING COMMITMENTS RECEIVED	22	3	13	6	18

Note 22 Related parties**Accounting principles and methods**

Related parties include the French State, companies in which the State holds majority ownership and certain of their subsidiaries, and companies in which the EDF group exercises joint control or significant influence. They also include members of the Group's management and governance bodies.

Details of transactions with related parties are as follows:

(in millions of euros)	Associates and joint ventures		Joint operations		French State or State-owned entities ⁽¹⁾		Group Total	
	31/12/2022	31/12/2021	31/12/2022	31/12/2021	31/12/2022	31/12/2021	31/12/2022	31/12/2021
Sales	933	797	-	-	2,709	2,501	3,642	3,298
Energy purchases	2,279	4,196	2	2	2,895	2,441	5,176	6,639
External purchases	13	16	7	7	206	343	226	366
Financial assets	135	160	-	-	-	-	135	160
Other assets	2,195	844	-	-	560	630	2,755	1,474
Financial liabilities	-	-	-	-	-	-	-	-
Other liabilities	441	1,367	1	1	558	623	1,000	1,991

(1) Excluding tax and social liabilities and the CSPE receivable.

22.1 Transactions with entities included in the scope of consolidation

Transactions with the principal associates (CTE (the company that owns RTE) and Taishan) are presented in note 12.

Transactions with other associates, joint ventures, and partner entities in joint arrangements with the Group mainly consist of sales and purchases of energy.

22.2 Relations with the French State and State-owned entities

22.2.1 Relations with the French State

The French State holds 89.01% of the capital of EDF at 31 December 2022, and is thus entitled in the same way as any majority shareholder to control decisions that require approval by the shareholders. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the Offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANEs. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations *Énergie En Actions* and *Association pour la Défense des Actionnaires Minoritaires* seeking annulment of the AMF's approval of the Offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

In accordance with the legislation applicable to all companies having the French State as their majority shareholder, the EDF group is subject to certain inspection procedures, in particular economic and financial inspections by the State, audits by the French Court of Auditors (*Cour des Comptes*) or Parliament, and verifications by the French General Finance Inspectorate (*Inspection générale des finances*).

The public service contract between the French State and EDF was signed on 24 October 2005. This contract is intended to form the framework for public service missions assigned to EDF by the lawmaker for an unlimited period. The Law of 9 August 2004 does not stipulate the duration of the contract.

22.2.2 Relations with ENGIE

Enedis and GRDF's ordinary service function, defined by Article L. 111-71 of the French Energy Code, is not a legal entity in its own right. Enedis and GRDF are bound by an agreement that defines their relations within this ordinary service function, its competences, and the resulting division of costs. The agreement has an unlimited term and can be terminated at any time subject to 18 months' notice: in such a case, the parties undertake to renegotiate the agreement during the notice period. It is updated regularly. In 2019, the Enedis-GRDF governance agreements were entirely reviewed.

Concerning the ordinary service of LPG distribution and supply in the cities of Ajaccio and Bastia in Corsica, ENGIE informed EDF in October 2020 that it was considering terminating its LPG activities in Corsica.

Article 96 of France's Finance Law for 2022 allows the State to bear part of the costs associated with conversion of the LPG networks to electricity or renewable energies, for a maximum period of twenty years to be set by official order.

This measure currently has no impact for EDF. Ultimately, the prospect of ending LPG distribution operations and converting uses to electricity will need investments to reinforce the electricity distribution networks.

ENGIE has made a formal demand to the cities of Bastia and Ajaccio to notify attribution of concessions by 31 July 2023 at the latest, otherwise it will terminate its LPG operations in Corsica.

22.2.3 Relations with public sector entities

The EDF group's relations with public sector entities mainly concern Orano.

Transactions with Orano concern:

- the front-end of the nuclear fuel cycle (uranium supplies, conversion and enrichment services);
- the back-end of the nuclear fuel cycle (transportation, storage, processing and recycling services for spent fuel).

Front-end of the cycle

Several important agreements were negotiated between EDF and Orano:

- for supplies of natural uranium: Orano Mining contracts;
- for fluorination and enrichment of natural uranium into uranium 235: an Orano Chimie-Enrichissement contract (formerly Orano cycle contract).

Back-end of the cycle

Relations between EDF and Orano Recyclage (formerly Orano Cycle) concerning transportation, processing and recycling of spent fuels are described in note 15.1.1.1.

22.3 Management compensation

The Company's key management and governance personnel are the Chairman and CEO, the members of the COMEX (Executive Committee) throughout 2022 or since their date of appointment if they joined the COMEX during the year, and the directors. Directors representing the employees receive no remuneration for their services.

The total compensation paid by EDF and controlled companies to the Group's key management and governance personnel amounted to €12.5 million in 2022 (€18.6 million in 2021, including long-term bonuses that were conditional on meeting performance criteria for 2019-2021). This amount covered short-term benefits (basic salaries, performance-related salary, profit share and benefits in kind), special IEG post-employment benefits where relevant, and the corresponding employer contributions, plus any director's fees.

EDF's key management and governance personnel benefit from no special pension system, starting bonus or severance payment entitlement except by contractual negotiation.

Note 23 Subsequent events

No event has arisen subsequent to the year-end apart from those presented in note 2 to the consolidated financial statements.

Note 24 Statutory Auditors' fees

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2022:

(in thousands of euros)	Deloitte network		KPMG network	
	Amount (excluding taxes)	% (excluding taxes)	Amount (excluding taxes)	%
Audit – Statutory audit, certification, review of company and consolidated accounts				
EDF	3,022	26.7	2,928	14.2
Controlled entities ⁽¹⁾	6,531	57.7	15,464	75.2
Sub-total	9,553	84.4	18,392	89.4
Non-audit services ⁽²⁾				
EDF	1,480	13.0	678	3.3
Controlled entities ⁽¹⁾	292	2.6	1,508	7.3
Sub-total	1,772	15.6	2,187	10.6
TOTAL	11,325	100	20,579	100

(1) Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

(2) Services required by laws and regulations, and services supplied at the request of the Group. Non-audit services mainly correspond to (i) certifications of financial and accounting information or Independent Reports on social, environmental and societal information required under Article L. 225-102-1 of the French Commercial Code, (ii) services relating to disposals of entities, (iii) tax services authorised by local legislation, and (iv) operating process reviews and information system consulting services that are unrelated to the production of accounting and financial information.

Statutory Auditors' fees for 2021

The following table sets forth the fees paid for work done by the Statutory Auditors and their network during 2021:

(in thousands of euros)	Deloitte network		KPMG network	
	Amount (excluding taxes)	% (excluding taxes)	Amount (excluding taxes)	%
Audit – Statutory audit, certification, review of company and consolidated accounts				
EDF	2,840	27.9	2,942	15.9
Controlled entities ⁽¹⁾	5,033	49.4	14,276	77.3
Sub-total	7,873	77.2	17,218	93.2
Non-audit services ⁽²⁾				
EDF	832	8.2	520	2.8
Controlled entities ⁽¹⁾	1,493	14.6	735	4.0
Sub-total	2,325	22.8	1,255	6.8
TOTAL	10,198	100	18,473	100

(1) Fully consolidated subsidiaries and jointly controlled entities whose auditors' fees are included in the consolidated income statement.

(2) Services required by laws and regulations, and services supplied at the request of the Group. Non-audit services mainly correspond to (i) certifications of financial and accounting information or Independent Reports on social, environmental and societal information required under Article L. 225-102-1 of the French Commercial Code, (ii) services relating to disposals of entities, (iii) tax services authorised by local legislation, and (iv) operating process reviews and information system consulting services that are unrelated to the production of accounting and financial information.

6.2 Statutory auditors' report on the consolidated financial statements

For the year ended December 31, 2022

This is a translation into English of the statutory auditors' report on the consolidated financial statements of the Company issued in French and it is provided solely for the convenience of English-speaking users.

This statutory auditors' report includes information required by European regulation and French law, such as information about the appointment of the statutory auditors or verification of the information concerning the Group presented in the management report. This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

To the Shareholders,

Opinion

In compliance with the engagement entrusted to us by your General Meeting, we have audited the accompanying consolidated financial statements of Électricité de France S.A. ("EDF", the "Company" or the "Group") for the year ended December 31, 2022.

In our opinion, the consolidated financial statements give a true and fair view of the assets and liabilities and of the financial position of the Group as at December 31, 2022 and of the results of its operations for the year then ended in accordance with International Financial Reporting Standards as adopted by the European Union.

The audit opinion expressed above is consistent with our report to the Audit Committee.

Basis for Opinion

Audit Framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under those standards are further described herein in the *Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements* section of our report.

Independence

We conducted our audit engagement in compliance with independence requirements of the French Commercial Code (*Code de Commerce*) and the French Code of Ethics (*Code de Déontologie*) for statutory auditors for the period from January 1, 2022 to the date of our report and specifically we did not provide any prohibited non-audit services referred to in Article 5(1) of Regulation (EU) No 537/2014.

Justification of Assessments – Key Audit Matters

In accordance with the requirements of Articles L.823-9 and R.823-7 of the French Commercial Code (*Code de Commerce*) relating to the justification of our assessments, we inform you of the key audit matters relating to risks of material misstatement that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period, as well as how we addressed those risks.

These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on specific items of the consolidated financial statements.

Valuation of provisions related to nuclear generation in France – back-end of the nuclear cycle, plant decommissioning and last cores – and dedicated assets

Notes 1.3.4.2, 15, 18.1 and 20 to the consolidated financial statements

Key Audit Matter

As at December 31, 2022, the provisions recorded to cover obligations relating to nuclear power plants for which EDF is the operator in France total €43,382 million, including €23,854 million with respect to the back-end of the nuclear cycle (management of spent fuel and radioactive waste) and €19,528 million with respect to the decommissioning of nuclear power plants and last cores.

The valuation of these provisions depends on the regulatory context is described in Notes 1.3.4.2 and 15. It requires defining technical and financial assumptions and using complex calculation models.

They are updated and the assumptions taken into consideration in the models are reviewed at least once a year. The selected assumptions reflect management's best estimate at the reporting date of the impacts of the applicable regulation, the implementation of decommissioning, spent fuel management and storage processes or changes in the main financial parameters, inflation and discounting. More specifically in 2022, they reflect the impacts of (i) the increase in the real discount rate, (ii) the adjustment to 2022 year-end economic conditions in connection with real inflation. In addition, as every year, variations in the provisions include the effects of increasing volumes of spent fuels to be reprocessed and specific revisions of planning and decommissioning cost estimates.

Furthermore, the Company is required to allocate so-called "dedicated" assets to secure financing of certain categories of nuclear provisions in France. The realizable value of these assets should allow the Company's commitments relating to the decommissioning of nuclear power plants and long-term storage of radioactive waste in France to be covered (Notes 1.3.4.5, 15.1.2 and 18.1). The realizable value of these dedicated assets, impacted by the decrease in the

Responses

We have analysed the measures for recognising provisions related to nuclear generation in France and gained an understanding of the industrial scenarios for decommissioning nuclear power plants and the technical solutions adopted in terms of management of spent fuel and radioactive waste. We have assessed the compliance of the methods for determining the provisions with regard to applicable accounting, legal and regulatory measures.

We have verified the calculation models used by the Company and assessed the assumptions adopted in terms of cost, forecast cash outflows and financial parameters (discount and inflation rates).

Our work also consisted in verifying the type of costs used to determine provisions and assessing the reconciliation of forecast costs and forecast cash outflows with industrial scenarios as well as the available studies and quotes, based on the current year change in assumptions.

We have also assessed the appropriateness of:

- margins for uncertainties and risks included in the provisions, to take into account the degree of control over decommissioning techniques and the management of spent fuel and radioactive waste.
- the series and mutualisation effects adopted in the quotes for decommissioning nuclear power plants in operation, including the studies carried out to prepared the dismantling of Fessenheim, for which the nominal cost represents €21,381 million to economic conditions at the end of the period, for a provision of €12,125 million in discounted value (Note 15.1.1.5).

Concerning the inflation and discount rates and their calculation methods adopted by management described in note 15.1.1.5, we have verified their compliance with applicable accounting standards and regulatory measures, since

financial markets, for an amount of €33,904 million (or a net carrying amount of €31,609 million) as of December 31, 2022, was determined based on the fair value of diversified equity and bonds investments, and the equity value of a non-listed assets portfolio managed by the division EDF Invest. These dedicated assets are classified as growth assets, fixed-income assets and yield assets and ought to be compliant with the chart of responsible investor implemented in 2020.

We considered the valuation of provisions related to nuclear generation and dedicated assets to be a key audit matter due to:

- the sensitivity of the assumptions on which the valuation of these provisions is based, notably in terms of assumptions considered for decommissioning, spent fuel reprocessing, storage, costs, uncertainties and aleas, inflation and long-term discount rates, as well as the depreciation periods of nuclear power plants in operation, and forecast cash outflows; the modification of these parameters can lead to a material revision in the provisioned amounts;

- the negative impacts on the financial position of the Company (cash earmarked to increase the amount of dedicated assets) in the event of an increase in nuclear provisions in France, a change in the realisable values of dedicated assets or changes in the coverage rate of nuclear provisions for dedicated assets,

it being specified that the valuation of provisions covers and includes uncertainties related to the fact that certain scenarios and technical solutions have never been implemented.

2020. We have reconciled the data used for this purpose with available market data or expertise-based documentation.

Concerning the securing of financing for certain of these provisions through dedicated assets, we have reconciled the realisable value of the dedicated assets in the portfolio at the reporting date with the available certificate of depository statements, and available external data and valuations. We have also assessed the accounting treatment and their valuation, in particular, the compliance with the IFRS 9 accounting standard of the impairment model described in the accounting principles and methods of the Note 18.1.

Finally, we have verified the appropriateness of the disclosures given in the Notes for the provisions related to nuclear generation in France and the dedicated assets, notably regarding the sensitivity of the valuation of provisions to changes in macro-economic and technical assumptions (Note 15.1.1.5) and the climate and environmental matters taken into consideration (notes 20.2.1 et 20.4).

Valuation of goodwill, intangible assets with indefinite useful life, property, plants and equipments

Notes 1.3.4.1, 1.3.4.4, 10 and 20.2.2. to the consolidated financial statements

Key Audit Matter

As at December 31, 2022, the goodwill, intangible assets with indefinite useful life, tangible assets and investments in associates and joint ventures represent significant amounts of the Group's equity. They are mostly related to non-regulated activities

Notes 1.3.4.4 and 10.8 describe the methodologies adopted and applied to determine if indicators exist showing that an asset may be subject to an impairment loss. These notes also describe the methods for performing impairment tests. Note 20.2.2. also describes how the impairment tests took into consideration climate and environmental matters. The tests and the determination of recoverable amounts are carried out annually at the cash-generating unit (CGU) level for those holding intangible assets with indefinite lives or goodwill. The recoverable amount corresponds, for the majority of these CGU, to the value in use determined based on the discounted value of future cash flows.

Those tests led, as described in note 10.8, to the accounting of a total impairment for €1,762 million in 2022, including €1,176 million for the goodwill and €551 million for the nuclear assets under construction of EDF Energy.

We considered in particular the valuation of non-regulated assets in France, the United Kingdom and in Italy, to be a key audit matter, due to the sensitivity of valuations to macro-economic, industry and financial assumptions to determine recoverable amounts and the estimates and judgments that they require from management. This sensitivity is increased by the specific 2022 context, including the rise and volatility of energy market prices, inflation, interest rates and discount rates, a lower nuclear power output in France and the government measures implemented to limit the amounts billed to final customers

In particular, as indicated in note 10.8.2, in a market environment with upward trends of power price, increasing European efforts towards decarbonized power mix and persistent low interest rates, a lowering demand for energy, in connection with energy efficiency policies and development of renewable energies, tariff increases limited by laws or strained power generation plants, may significantly decrease the recoverable amount of certain goodwill, intangible and tangible assets related to non-regulated activities and may lead to significant impairment losses.

Responses

As part of our work, we examined the existence of indicators of impairment losses (or reversal of impairment losses) at the CGU level. We have also gained an understanding of the process for formulating estimates and assumptions made by management as part of impairment testing and we have also assessed the appropriateness of the valuation model.

We have verified, for the CGU tested, that the discounted future cash flow projections correspond to those generated by the assets included in these CGU and that they were consistent with (i) the CGU budget data, and, beyond, with the Group's long-term assumptions, (ii) past performances, (iii), market outlook and (iv) the expected operating life of the assets.

We have assessed, by conducting interviews with management, the different underlying assumptions (economic growth, price of raw material and CO₂, electricity demands, production capacities and interconnections and changes in energetic mix) on which the medium and long-term price assumptions are based, by substantiating them with external studies carried out by international organisms or experts in energy.

In particular, we have verified the underlying assumptions of the long-term price scenarios were on track with European targets for decarbonization, as described in Note 10.8.2 and examined the reasonableness, with regard to IAS 36, of the assumption of full market exposure in the construction of tariffs and prices in France applied from 2026, end of the Arenh mechanism, as described in the notes.

We have verified the determination methods and the consistency of the discount rate assumptions, based on the weighted average cost of capital (WACC) by geographic area and by activity and, in particular, analyzed, with the assistance of our internal experts, the consistency of risk-free rates and the risk premiums adopted by management with the underlying market assumptions.

Finally, we have verified that Notes 1.3.4.4 and 10.8 of the consolidated financial statements provide appropriate disclosure in particular in terms of assumptions adopted to perform impairment tests and sensitivity analyses.

Valuation and accounting of deferred tax assets in connection with tax loss carryforwards in France*Notes 1.3.4.8 and 9 to the consolidated financial statements***Key Audit Matter**

Deferred tax assets on tax loss carryforwards amount to €7,898 million as at 31 December 2022. They include €6,812 million in connection with the France tax group loss for 2022. Non recognized tax assets related to this tax loss amount to €1,060 million, due to uncertainties regarding its allocation on French future tax results in a foreseeable time horizon.

As described in note 9, the Group determines deferred tax at a level of a tax entity or tax group and recognizes deferred tax assets only when it is probable that the tax entity or tax group will have sufficient taxable profit to utilize the benefit of the assets on a foreseeable future. As at 31 December 2022, according to the accounting Group policy, this foreseeable future corresponds to a period of 10 years for the French tax group.

We considered the valuation and the accounting of deferred tax assets in connection with tax loss carryforwards in France, to be a key audit matter, due to their materiality at closing date, the sensitivity of the assumptions to estimate their expected recoverability, and the justification of the accounting, in particular in terms of future taxable profits and management judgment.

Responses

Our audit approach consisted in assessing the documentation used by Management to estimate the probability that the Group could use within a 10-year horizon its tax losses carried forward generated to date, in particular with regard to the ability of the France tax group to generate future taxable profits.

We have, with the assistance of our internal experts:

- reviewed the process for preparing the 2023 budget established by Management and approved by the Board of Directors, as well as the underlying assumptions of the Group's internal financial trajectory;
- assessed the relevance of the methods for extrapolating tax results beyond the financial year 2026;
- compared the earnings projections for previous fiscal years with the actual results for the fiscal years concerned, in order to assess the reliability of the process for preparing tax earnings projections;
- analyzed the reversal of the main timing differences over the projection horizon;
- studied the assumptions used to carry out sensitivity analyzes in the event of unfavorable scenarios defined by the Group;

We have also assessed the appropriate nature of the information given with respect to these deferred tax assets in note 9 to the appendix.

Specific Verifications

We have also performed, in accordance with professional standards applicable in France, the specific verifications required by laws and regulations of the Group's information given in the management report of the Board of Directors.

We have no matters to report as to its fair presentation and its consistency with the consolidated financial statements.

We attest that the consolidated non-financial statement required by Article L.225-102-1 of the French Commercial Code is included in the information pertaining to the Group presented in the management report, being specified that, in accordance with the provisions of Article L.823-10 of the code, we have not verified the fair presentation and the consistency with the consolidated financial statements of the information contained therein and should be reported on by an independent insurance services provider.

Report on Other Legal and Regulatory Requirements**Format of presentation of the consolidated financial statements intended to be included in the annual financial report**

We have also verified, in accordance with the professional standard applicable in France relating to the procedures performed by the statutory auditor relating to the annual and consolidated financial statements presented in the European single electronic format, that the presentation of the consolidated financial statements intended to be included in the annual financial report mentioned in Article L.451-1-2, I of the French Monetary and Financial Code (code monétaire et financier), prepared under the responsibility of the Chief Executive Officer, complies with the single electronic format defined in the European Delegated Regulation N° 2019/815 of 17 December 2018. As it relates to consolidated financial statements, our work includes verifying that the tagging of these consolidated financial statements complies with the format defined in the above delegated regulation.

Based on the work we have performed, we conclude that the presentation of the consolidated financial statements intended to be included in the annual financial report complies, in all material respects, with the European single electronic format.

Due to the technical limits inherent in the block-tagging of the consolidated financial statements according to the European single electronic format, the content of certain tags of the notes may not be rendered identically to the accompanying consolidated financial statements.

In addition, we have no responsibility to verify that the consolidated financial statements that will ultimately be included by your company in the annual financial report filed with the AMF are in agreement with those on which we have performed our work.

Appointment of the Statutory Auditors

We were appointed as statutory auditors of Electricité de France S.A. by the General meeting of June 6, 2005 for KPMG Audit and the by decision of the Board of Directors of April 25, 2002 for Deloitte & Associés.

As at December 31, 2021, KPMG Audit was in the 17th year of total uninterrupted engagement and Deloitte & Associés was in the 20th year of total uninterrupted engagement, which for both 17 years since securities of the Company were admitted to trading on a regulated market.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards as adopted by the European Union, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless it is expected to liquidate the Company or to cease operations.

The Audit Committee is responsible for monitoring the financial reporting process and the effectiveness of internal control and risks management systems and where applicable, its internal audit, regarding the accounting and financial reporting procedures.

The consolidated financial statements were approved by the Board of Directors.

Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements**Objectives and audit approach**

Our role is to issue a report on the consolidated financial statements. Our objective is to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As specified in Article L. 823-10-1 of the French Commercial Code (*Code de commerce*), our statutory audit does not include assurance on the viability of the Company or the quality of management of the affairs of the Company.

As part of an audit conducted in accordance with professional standards applicable in France, the statutory auditor exercises professional judgment throughout the audit and furthermore:

- Identifies and assesses the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence considered to be sufficient and appropriate to provide a basis for his opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control.
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management in the consolidated financial statements.
- Assesses the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of his audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the statutory auditor concludes that a material uncertainty exists, there is a requirement to draw attention in the audit report to the related disclosures in the consolidated financial statements

or, if such disclosures are not provided or inadequate, to modify the opinion expressed therein.

- Evaluates the overall presentation of the consolidated financial statements and assesses whether these statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The statutory auditor is responsible for the direction, supervision and performance of the audit of the consolidated financial statements and for the opinion expressed on these consolidated financial statements.

Report to the Audit Committee

We submit a report to the Audit Committee which includes in particular a description of the scope of the audit and the audit program implemented, as well as the results of our audit. We also report, if any, significant deficiencies in internal control regarding the accounting and financial reporting procedures that we have identified.

Our report to the Audit Committee includes the risks of material misstatement that, in our professional judgment, were of most significance in the audit of the consolidated financial statements of the current period and which are therefore the key audit matters, that we are required to describe in this report.

We also provide the Audit Committee with the declaration provided for in Article 6 of Regulation (EU) N° 537/2014, confirming our independence within the meaning of the rules applicable in France such as they are set in particular by Articles L.822-10 to L.822-14 of the French Commercial Code (*code de commerce*) and in the French Code of Ethics (*Code de Déontologie*) for statutory auditors. Where appropriate, we discuss with the Audit Committee the risks that may reasonably be thought to bear on our independence, and the related safeguards.

Paris La Défense, February 16, 2023

The Statutory Auditors

KPMG S.A.

Marie Guillemot

Michel Piette

Deloitte & Associés

Damien Leurent

Christophe Patrier

6.3 EDF financial statements at 31 December 2022

NB: Most figures in the tables are reported in millions of euros. The resulting approximation can lead to slight differences in totals or movements and changes.

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Income statement

(in millions of euros)		Notes	2022	2021
Sales	3		87,129	53,001
in France			50,374	37,564
outside France			36,755	15,437
Change in inventories and capitalised production			1,520	1,439
Operating subsidies	4		883	5,554
Reversals of depreciation, amortisation and operating provisions	5		6,491	3,649
Other operating income and transfers of charges	6		3,552	1,100
I TOTAL OPERATING INCOME			99,575	64,743
Purchases and other external expenses	7		106,080	43,528
Fuel purchases used			9,059	4,422
Energy purchases			78,202	21,752
Services and other purchases used			18,819	17,354
Taxes other than Income taxes	8		1,974	2,254
Personnel expenses	9		6,615	6,407
Depreciation, amortisation and provisions			10,307	7,507
Depreciation and amortisation	10		4,490	4,363
Provisions and impairment	5		5,817	3,144
Other operating expenses	6		2,661	2,480
II TOTAL OPERATING EXPENSES			127,637	62,176
OPERATING PROFIT (LOSS) (I - II)			(28,062)	2,567
III JOINT OPERATIONS			-	-
IV FINANCIAL RESULT	11		(3,269)	(1,465)
PROFIT OR LOSS BEFORE INCOME TAXES AND EXCEPTIONAL ITEMS (I - II + III + IV)			(31,331)	1,102
V EXCEPTIONAL RESULT	12		536	1,765
VI INCOME TAXES	13		147	(1,410)
PROFIT OR LOSS (I - II + III + IV + V + VI)			(30,648)	1,457

Balance sheet

Assets

		31/12/2022			31/12/2021
			Amortisation, depreciation and impairment		
(in millions of euros)	Notes	Gross values		Net values	Net values
Intangible assets	14	3,492	2,167	1,325	1,232
Intangible assets in progress	14	1,604	-	1,604	1,370
Property, plant and equipment owned by EDF	15	96,851	67,499	29,352	30,961
Property, plant and equipment operated under concessions	15	16,394	9,577	6,817	6,686
Tangible assets in progress	15	22,112	32	22,080	20,783
Investments and related receivables		61,525	3,521	58,004	60,265
Investment securities		25,309	1,918	23,391	25,145
Loans and other financial assets		34,207	166	34,041	23,683
Financial assets	16	121,041	5,605	115,436	109,093
I TOTAL FIXED ASSETS		261,494	84,880	176,614	170,125
Inventories and work-in-progress	17	13,151	318	12,833	10,953
Advances on orders	18	727	2	725	716
Trade and other receivables	18	26,953	397	26,556	23,816
Marketable securities	19	18,447	730	17,717	10,585
Cash instruments	18	3,603	-	3,603	2,529
Cash and cash equivalents	18-20	6,810	-	6,810	8,397
Prepaid expenses	18	1,089	-	1,089	1,015
II TOTAL CURRENT ASSETS		70,780	1,447	69,333	58,011
Deferred charges (III)		217	-	217	226
Bond redemption premiums (IV)		740	348	392	363
Unrealised foreign exchange losses (V)	21	1,906	-	1,906	1,324
TOTAL ASSETS (I + II + III + IV + V)		335,137	86,675	248,462	230,049

Equity and liabilities

(in millions of euros)

	Notes	31/12/2022	31/12/2021
Capital		1,944	1,619
Capital-related premiums		21,868	17,952
Revaluation surplus		692	688
Reserves			
Legal reserves		162	155
Other reserves		2,976	2,977
Retained earnings		8,187	8,734
Profit or loss for the financial year		(30,648)	1,457
Interim dividend		-	(947)
Investment subsidies		218	167
Tax-regulated provisions		5,742	5,777
TOTAL EQUITY	22	11,141	38,579
Additional equity	23	11,972	12,857
Special concession liabilities	24	2,430	2,320
TOTAL I EQUITY AND CONCESSION ACCOUNTS		25,543	53,756
Provisions for risks	25	1,913	2,904
Provisions related to nuclear generation (back-end of the nuclear cycle, plant decommissioning and last cores)	26	43,382	46,442
Provisions for decommissioning of non-nuclear facilities	27	987	770
Provisions for employee benefits	28	12,092	11,867
Provisions for other expenses	29	1,691	1,424
Provisions for expenses		58,152	60,503
TOTAL II PROVISIONS		60,065	63,407
Financial liabilities	30-31	92,513	57,498
Advances and progress payments received	30	8,164	7,499
Operating, investment and other liabilities	30	54,219	40,315
Cash instruments	30	4,434	4,239
Deferred income	30	2,949	3,075
TOTAL III LIABILITIES	30	162,279	112,626
Unrealised foreign exchange gains (IV)	32	575	260
TOTAL EQUITY AND LIABILITIES (I + II + III + IV)		248,462	230,049

Cash flow statement

(in millions of euros)

	Notes	2022	2021
Operating activities			
Profit/(loss) before income tax		(30,795)	2,867
Depreciation, amortisation and provisions		8,005	6,414
Capital (gains)/losses		5	(683)
Financial income and expenses		(1,620)	(1,401)
Changes in working capital ⁽¹⁾		6,366	3,128
Net cash flow from operations		(18,039)	10,325
Net financial expenses, including dividends received ⁽²⁾		1,945	1,154
Income taxes paid		(179)	(1,954)
Net cash flow from operating activities	(A)	(16,273)	9,525
Investing activities			
Investments in property, plant and equipment and intangible assets		(6,105)	(5,726)
Proceeds from sale of property, plant and equipment and intangible assets		12	11
Changes in financial assets ⁽³⁾		(19,089)	(5,438)
Net cash flow used in investing activities	(B)	(25,182)	(11,153)
Financing activities			
Issuance of borrowings and underwriting agreements ⁽⁴⁾		51,074	7,952
Repayment of borrowings and underwriting agreements ⁽⁴⁾		(20,673)	(5,918)
Dividends paid	22	(72)	(84)
Increase in equity ⁽⁵⁾	22	3,251	-
Issuance and redemption of perpetual subordinated bonds, net of expenses	23	1,000	1,240
Security deposits	31	3,600	-
Funding contributions received for assets operated under concessions		6	5
Investment subsidies received ⁽⁶⁾	22	62	14
Net cash flow from financing activities	(C)	38,248	3,209
Net increase/(decrease) in cash and cash equivalent	(A)+(B)+(C)	(3,207)	1,581
CASH AND CASH EQUIVALENTS – OPENING BALANCE ⁽⁸⁾	20	1,561	(256)
Effect of currency fluctuations		132	(80)
Financial income on cash and cash equivalents		48	35
Other ⁽⁷⁾		-	281
CASH AND CASH EQUIVALENTS – CLOSING BALANCE ⁽⁸⁾	20	(1,466)	1,561

(1) Changes in working capital in 2022 are principally explained by the €5,780 million excess CSPE compensation for EDF, which led to recognition of a CSPE liability at 31 December 2022 amounting to €6,074 million (see note 30 (4)).

(2) The variation in this item is notably explained by the higher level of dividends received in 2022 compared to 2021 (see note 11).

(3) Changes in financial assets are principally explained by the higher value of the bond portfolio (see note 19) and the increase in loans to subsidiaries (see note 16).

(4) In 2022, EDF transferred bonds under repurchase agreements for the amount of €23,986 million and made corresponding repayments of €(16,417) million. These operations are presented in the lines reporting issuance and repayment of borrowings.

Apart from these repurchase operations, the change in 2022 in "Issuance of borrowings and underwriting agreements" and "Repayment of borrowings and underwriting agreements" was an increase of €20,798 million, notably explained by bilateral credit lines concluded during the year for a total of €15.4 billion (including US\$2.2 billion and ¥38 billion) (see note 2.2.2, note 2.2.5 and note 2.2.6) and new credit lines granted to EDF by the European Investment Bank (EIB) with nominal value of €800 million (see note 2.2.3). The change in 2022 also includes €2,757 million corresponding to issues of negotiable debt instruments, net of redemptions (see note 31 (3)).

(5) This concerns the capital increase of 7 April 2022, maintaining the shareholders' preferential subscription rights, which led to a €249 million increase in the share capital and a €2,899 million issue premium, net of expenses; and the "ERO 2022" capital increase reserved for employees of 25 July 2022, with elimination of preferential subscription rights, which led to a €9 million increase in the share capital and an issue premium of €94 million.

(6) In December 2022, a €50 million subsidy was granted by the French State under the "France 2030" plan, after due notification and authorisation from the European Commission. EDF received €45 million of this subsidy during the year.

(7) Other items at 31 December 2021 amounted to €281 million and concerned the reclassification at 1 January 2021 of debit balances relating to margin calls on derivatives, which were previously netted with credit balances to report the overall net position in the balance sheet. In the cash flow statement, credit balances relating to margin calls on derivatives are presented in the "Net cash flow from financing activities".

(8) "Cash and cash equivalents – opening balance" and "Cash and cash equivalents – closing balance" do not include investment funds or negotiable debt instruments maturing in more than three months. Details of the variation in cash and cash equivalents are presented in note 20.

Notes to the financial statements

Électricité de France SA (EDF), the parent company of the EDF group, is a French *société anonyme* governed by French law and registered in France (22-30 avenue de Wagram, 75008 Paris), operating in electricity generation and electricity and gas supply. EDF also covers all the business activities of the Island Energy Systems (SEI) for Corsica and France's overseas departments.

EDF's financial statements at 31 December 2022 were prepared under the responsibility of the Board of Directors and approved by the Directors at the Board meeting held on 16 February 2023. They will become final after approval at the General Shareholders' Meeting to be held on 14 June 2023.

Note 1 Accounting principles and methods

1.1 Accounting standards

EDF's financial statements are prepared in accordance with the accounting principles and methods defined in regulation 2014-03 of 5 June 2014 issued by the ANC (Autorité des normes comptables, France's Accounting Standards Authority) concerning the current French national chart of accounts. They also comply with the November 2021 update to ANC Recommendation 2013-02 of 7 November 2013 regarding measurement and recognition rules for retirement commitments and benefits.

The accounting and valuation methods applied are identical to those used in the financial statements for the year ended 31 December 2021 and incorporate changes resulting from the interest rate benchmark reform which has been applicable since 1 January 2021. The principal interest rates concerned that are used by EDF are the Eonia, the Libor USD and the Libor GBP.

This reform is applied prospectively, with no impact on profit and loss, keeping the hedging relationships for the instruments concerned. Its effects are mainly operational (renegotiation of contracts, fallback provisions, information system upgrades). The interest rate replacements already applied are described in note 1.1 to the 2021 financial statements.

When EDF adhered to the ISDA Fallback protocol in November 2021, the Libor GBP was replaced by the Sonia for all the derivatives concerned from 1 January 2022.

The replacement operations for the USD Libor will take place in line with the end date for its publication, i.e. by 30 June 2023.

1.2 Management judgments and estimates

The preparation of the financial statements requires the use of judgments, best estimates and assumptions in determining the value of assets and liabilities, income and expenses recorded for the period, considering positive and negative contingencies existing at year-end. The figures in EDF's future financial statements could differ significantly from current estimates due to changes in these assumptions or economic conditions.

In a context characterised by volatility on the financial and energy markets, the parameters used to prepare estimates are based on macro-economic assumptions appropriate to the very long-term cycle of EDF's assets.

Concerning the impacts of the war in Ukraine, EDF has very limited direct exposure in Russia and Ukraine. Its dependency on Russian uranium imports is low in view of its existing stocks and diversified, long-term supply contracts. EDF has no long-term gas contract with any Russian company, and no exposure with respect to businesses or banks that are currently affected by international sanctions. The Moscow office has been closed.

However, the war has had significant indirect effects on the Company's financial statements, through the rise in market prices and volatility, supply chain tensions, contributing to inflation (for equipment, components, etc.), and its impact on the financial markets (particularly affecting the value of dedicated assets).

The principal operations for which EDF uses estimates and judgments are the following:

1.2.1 Depreciation period of nuclear power plants

In the specific case of the depreciation period of its French nuclear power plants, EDF's industrial strategy is to continue operation beyond 40 years, in optimum conditions as regards safety and efficiency.

EDF has therefore been making preparations for several years to extend the operation period, and making the necessary investments under its *Grand Carénage* industrial refurbishment programme which was approved in principle by the Board of Directors in January 2015.

The depreciation period of 900MW-series power plants was extended from 40 years to 50 years in 2016 (except for Fessenheim where both reactors were permanently shut down in the first half of 2020) since all the technical, economic and governance conditions were fulfilled.

On 23 February 2021, the Nuclear Safety Authority (Autorité de sûreté nucléaire - ASN) issued a resolution on the conditions for continued operation of EDF's 900MW reactors beyond their fourth 10-year inspection. The ASN considered that "the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth 10-year inspection". This resolution ended the "generic" phase of the review, which concerned the studies and modifications of facilities ordinary to all the 900MW reactors, which all have a similar design model.

After the pilot reactor Tricastin 1 in December 2019 and Bugey 2, Bugey 4 and Tricastin 2 in 2021, six more reactors reached the milestone of 40 years of operation in 2022, and were restarted after a successful fourth 10-year inspection: Dampierre 1, Gravelines 1, Bugey 5, Tricastin 3, Gravelines 3 and Dampierre 2. The fourth 10-year inspection of Blayais 1 began in August 2022 and was in progress at 31 December 2022.

In 2021, the technical, economic and governance conditions for extending the depreciation period of 1300MW-series plants were fulfilled, and their depreciation period was extended from 40 to 50 years.

The depreciation period of the 1450MW-series units (the four reactors at Chooz and Civaux), which are much more recent, currently remains at 40 years as the conditions for extension are not yet fulfilled.

These depreciation periods take into account the date of recoupling with the network after the most recent 10-year inspection.

1.2.2 Nuclear provisions

The measurement of provisions for the back-end of the nuclear cycle, decommissioning and last cores is sensitive to assumptions concerning technical processes, costs, inflation rates, long-term discount rates, the depreciation period of plants currently in operation and disbursement schedules.

These parameters are therefore re-estimated at each closing date to ensure that the amounts accrued correspond to the best estimate of the costs eventually to be borne by EDF.

EDF considers that the assumptions used at 31 December 2022 are appropriate and justified. However, any future change in assumptions could have a significant impact on EDF's financial statements (see note 26).

The main assumptions and sensitivity analyses relating to nuclear provisions are presented in note 26.5.

The calculation of provisions incorporates a level of risks and unknowns as appropriate to the operations concerned, together with uncertainty factors such as:

- changes in the regulations, particularly on safety, security and environmental protection, and financing of long-term nuclear expenses;
- changes in the regulatory decommissioning process and the time necessary for issuance of administrative authorisations;
- future methods for storing long-lived radioactive waste and provision of storage facilities by the French agency for radioactive waste management ANDRA (Agence nationale pour la gestion des déchets radioactifs);
- changes in the contractual terms for spent fuel management and more generally the outlook for Orano's long-term industrial strategy in line with French energy policy, the operating performance of its installations, and the level of associated costs and investments;
- changes in certain financial parameters such as discount rates and/or inflation rates;
- the useful life of nuclear facilities (calculation of decommissioning provisions for nuclear plants in operation is based on the depreciation period of the assets concerned, i.e. 50 years for 900MW-series and 1300MW-series power plants and 40 years for 1450MW-series power plants).

Note 2 Significant events and transactions

2.1 Nuclear developments

2.1.1 Flamanville 3 EPR

Developments in 2021

The fuel assemblies required for the first fuel load continued to arrive during the first half of the year, and the entire first core is now stored in the Flamanville 3 reactor building pool.

The process of repairing the penetration welds on the main secondary circuit using remote-controlled robots was approved by the ASN on 19 March 2021, several weeks behind the expected date, and work began on the eight welds that were not compliant with the break preclusion principle. All eight were repaired in 2021, then subjected to stress-relieving heat treatment. Demonstration of the qualification of the stress-relieving heat treatment for repairs of VVP (steam discharge pipework circuit) penetration welds was validated by the ASN, which issued authorisation for its use in late 2021. Furthermore, four ARE (steam generator water supply circuit) penetration welds also required repair, and qualification of the repair process is under way at the ASN. This process is an adaptation of the process used for VVP penetration weld repairs.

For the non-penetration welds located on the main secondary circuit that had quality deviations (this concerns 45 VVP welds and 32 ARE welds), the ASN issued approval in April 2021 for the repair of a third batch of 6 welds. In the 3 batches authorised to date, 12 weld upgrades have been completed. In April the ASN gave approval for the related regulatory checks, which are currently in process.

In total, a hundred welds (penetration and non-penetration) on the main secondary circuit were concerned by repairs to the VVP and ARE pipework. The final stage of repair for most of these welds will be an optimised stress-relieving heat treatment, prior to the final verification. Repairing these welds remained one of the key challenges on the Flamanville 3 critical pathway.

On 2 March 2021 EDF declared a significant event to the ASN, concerning incomplete application of the 2006 design standards when installing three nozzles on the main primary circuit (these nozzles connect auxiliary circuits to the primary circuit). At the request of the ASN, three scenarios were examined by the Group's engineering teams. A file was sent to the ASN on 21 June 2021, stating that EDF's chosen solution was to install a "containment collar", and asking the ASN for its

1.2.3 Pensions and other long-term and post-employment benefit obligations

The value of pensions and other long-term and post-employment benefit obligations is based on actuarial valuations that are sensitive to all the actuarial assumptions used, particularly concerning discount rates, inflation rates and wage increase rates.

The principal actuarial assumptions used to calculate these post-employment and long-term benefits at 31 December 2022 are presented in note 28.4. These assumptions are updated annually. EDF considers the actuarial assumptions used at 31 December 2022 appropriate and well-founded, but future changes in these assumptions could have a significant effect on the amount of the obligations and on EDF's net income.

1.2.4 Energy supplied but not yet measured and billed

As explained in note 3, the quantities of energy supplied but not yet measured and billed are calculated at the reporting date based on consumption statistic models and selling price estimates. Determination of the unbilled portion of sales revenues at the year-end is sensitive to the assumptions used to prepare these statistics and estimates.

position on this solution, so that all the design and procurement activities could be launched by the end of 2021. In a letter of 8 October 2021 the ASN indicated that it had no objections to this solution in principle. Nonetheless the design file for the containment collar will be examined by the French Radiation Protection and Nuclear Safety Institute IRSN (Institut de radioprotection et de sûreté nucléaire).

After corrosion was observed on pressuriser valves at the EPR at Olkiluoto (Finland), EDF carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. The material used for certain components of the pilot control valves was changed accordingly. Several corrosion stress tests were conducted to select the best material. The ASN was regularly informed of the technical choices, and made no objection to this strategy. The ASN and the IRSN also continued their examination of the operation and reliability of the pressuriser valves. EDF is due to respond to the IRSN's most recent questions so that it can finalise examination of the valve design.

As the work advanced, new technical matters emerged that could increase the completion cost and the risk of deferred timelines. In view of the progress made on operations and preparations for start-up, on 12 January 2022 EDF adjusted the schedule for the Flamanville 3 project. The fuel loading date was deferred from late 2022 to the second quarter of 2023, and the estimated completion cost revised from €12.4 billion to €12.7 billion (in 2015 euros, excluding interim interest). The project has no remaining margin in its schedule or completion cost.

Before loading the fuel into the reactor vessel and carrying out the overall start-up tests, several operations remained to be carried out, mainly:

- completion of the weld repairs on the main secondary circuit;
- a new series of qualification tests of the installation before loading the fuel into the reactor;
- incorporation of experience gained from the technical issue handled at Taishan reactor 1;
- finishing work on the installation, and remittal of all the documents required for operation.

Developments in 2022

The main progress on the Flamanville 3 project in 2022 concerned:

- continuation of weld repairs on the main secondary circuit (see below);
- completion of full pool testing;

- completion of the last functional tests of the open reactor vessel;
- closure of the vessel head after the reactor vessel had been drained and cleaned, and testing the control rod drives.

As announced in January 2022, inspections of the Taishan 1 reactor's fuel assemblies following the technical issue encountered during its second operating cycle showed mechanical wear on certain assembly components. This kind of wear has already been observed in several reactors of the French nuclear fleet. For the future commissioning of Flamanville 3, a solution has been examined with the ASN.

EDF's proposed strategy for the Flamanville EPR (supply of around sixty reinforced fuel assemblies) was presented to the High Committee for Transparency and Information on Nuclear Safety (Haut Comité pour la transparence et l'information sur la sécurité nucléaire, HCTISN) on 7 June 2022.

In January 2023, the IRSN issued a favourable opinion of EDF's proposed strategy, and the ASN will finalise its examination by the end of the first quarter of 2023.

Repair work to the main secondary circuit welds continued during the first half of the year. 122 welds are concerned (36 penetration welds and 86 non-penetration welds).

At 31 December 2022, 56% had been repaired, 65% had been approved for stress-relieving heat treatment, and 32% were completed and valid after stress-relieving heat treatment. Work is totally finished on the welds on the reactor containment building, which were the most complex cases, and they have been declared valid.

Concerning the SIS (Safety injection system)/CHR (Containment heat removal) filtration sumps, EDF proposed a new filtration system which has been trialled and produced results considered satisfactory by the IRSN. Following these trials, in September 2022 EDF replaced the existing filters with finer filters. EDF also decided to reduce the quantities of potential debris that is known to clog up filters. The work to reduce potential debris is practically complete, and should be finished by the end of the first quarter of 2023.

After corrosion was observed on pressuriser valves at the Olkiluoto EPR (Finland), EDF and Framatome carried out equipment checks and also detected traces of corrosion on the Flamanville EPR's valves. EDF and Framatome decided to respond to this finding by changing the material used for certain components of the pilot control valves. Several corrosion stress tests were conducted to select the best material. The components have been made and will be installed in the reactor building in early 2023. The ASN is continuing its examination of the operation and reliability of the pressuriser valves.

On 16 December 2022, EDF adjusted the schedule for the Flamanville 3 project: the nuclear fuel loading is now scheduled for the 1st quarter of 2024 ⁽¹⁾. The estimated cost to completion has been raised from €12.7 billion to €13.2 billion ⁽²⁾.

This schedule update is mainly due to supplementary studies that were needed to establish a new process for the stress-relieving heat treatment ⁽³⁾ (SHRT) of some welds that have been upgraded in the last two years, which are located close to sensitive equipment for the nuclear plant's operation.

After the nuclear fuel loading, the start-up operations will continue, notably including inspections of all the reactor safety systems, equipment testing and qualification all the way through the temperature and pressure increases of the nuclear steam supply system, and then during the reactor ramping up. At 25% of nominal power, the reactor will be connected to the national electricity grid.

The last few months have seen further achievements in the pre-operation phase of the Flamanville EPR:

- the complex work of upgrading the main secondary circuit penetration welds is complete, and all the welds have been deemed compliant with the break preclusion concept. These first of their kind operations were achieved using remotely operated equipment and required more than twelve months of analyses and qualification prior to implementation at Flamanville;
- system performance testing of electrical equipment and fuel loading operations has been completed and they have been declared compliant with requirements.

2.1.2 Grand Carénage programme

Since 2014 EDF has been implementing its *Grand Carénage* industrial refurbishment programme for the French nuclear fleet, designed to enhance reactor safety and extend their operating lifetimes significantly beyond 40 years. The most recent estimate of the programme's cost for the period 2014-2025, established in late 2021, is €50.2 billion in current euros. This cost factors in the third 10-year inspections for the Group's 1300MW reactors, a significant portion of the safety improvements undertaken following lessons learned from the Fukushima incident, including construction and operation of 56 emergency diesel generators, creation of auxiliary feedwater pumps at each nuclear plant in operation, and performance of the fourth 10-year inspections of the Group's 900MW reactors.

To continue the investments necessary to operate the Group's nuclear fleet in complete safety significantly beyond 40 years, on 31 March 2022 EDF's Board of Directors validated a new roadmap for the *Grand Carénage* programme running from 2022 to 2028. The cost estimate for this new period is €33 billion in current euros, or an annual expenditure of €4.7 billion. The extended programme will enable the Group to conduct studies and the fourth 10-year inspections of the 1300MW series, conduct preliminary studies for operation of the 900MW reactors beyond 50 years, in accordance with the multi-year energy programme adopted by France in April 2020, and complete the still substantial maintenance and renovation work on major components, so that power plants can remain in operation for more than 50 years. The broader scope of the programme also covers new safety requirements resulting from the generic opinion of France's Nuclear Safety Authority (ASN) on the fourth 10-year inspections of the 900MW reactors, building on experience from the review with the ASN of the fourth 10-year inspections for 900MW and 1300MW reactors.

The third 10-year inspections of 1300MW reactors are entering their final phase (the last 5 are scheduled for 2023 and 2024). In the 900MW series, ten fourth 10-year inspections have been successfully completed and one is in progress (at Blayais 1). For the 1450MW series, the final second 10-year inspection has been launched at Civaux 2.

Examination with the ASN of the generic phase of the fourth 10-year inspections of the 1300MW series began in 2021 and is continuing. Examination with the ASN of procedures for the 30-year milestone of the 1450MW series, and inspection of the first reactor is expected for 2029.

Additionally, major investments have been made following the lessons of Fukushima: 56 emergency diesel generators have been constructed and put into operation, and every power plant has a permanent or provisional auxiliary feedwater system. Major components (including steam generators and main unit transformers) have also been replaced at many production units.

2.1.3 Stress corrosion

In late 2021, during preventive maintenance checks on reactor 1 at the Civaux nuclear power plant, scheduled as part of its ten-year inspection, defects were detected close to welds on the pipes of the safety injection system (SIS) circuit. Preventive checks were then carried out on the Civaux 2, Chooz 1 and Chooz 2 reactors, which also belong to the N4 series, and similar defects were identified. Preventive maintenance checks conducted during the ten-year inspection of reactor 1 at the Penly nuclear power plant also found similar defects on the SIS circuit.

Through expert assessments and analyses conducted during 2022, EDF identified the reactors where the SIS circuit pipes are the most susceptible to stress corrosion. They are the 16 most recent reactors: the four N4 reactors, and twelve P4 1300MW reactors.

(1) See EDF's press release of 16 December 2022.

(2) In 2015 euros and excluding interim interest.

(3) Stress-relieving heat treatment (SRHT) is a process carried out after welding to relieve residual welding stresses and achieve the right mechanical characteristics for the welded part.

In its press release of 27 July 2022, the ASN declared its position reached on 26 July 2022 regarding EDF's proposed inspection strategy for the stress corrosion affecting its reactors. The ASN considered EDF's strategy appropriate given the knowledge learned about this phenomenon, and the related safety issues.

Of the 16 reactors identified as the most susceptible to stress corrosion, 10 were treated in 2022 or are currently being treated. All these reactors will have been treated by the end of 2023:

- for the N4 reactors, operations have been completed at Civaux 1, Civaux 2, and Chooz 2, and are being finalised at Chooz 1;
- for the P'4 1300MW reactors currently offline: repairs of two SIS circuit welds are in progress at Cattenom 1, and repairs of four SIS pipes began in 2022 and are continuing at Cattenom 3. EDF has decided to proceed with preventive replacement of all the pipes on the SIS and shutdown reactor cooling circuits at all P'4 1300MW reactors by the end of 2023. This strategy means that repairs can be carried out under an industrial approach, which leads to more efficient scheduling.

Discussions continued with the ASN about the treatment programme for stress corrosion.

Given the outages for inspections and repairs, in 2022 EDF regularly released information about adjustments to nuclear output estimates. As stated in the press release of 3 November 2022, all this information finally led EDF to revise its nuclear power output for 2022 downwards, to a range of 275-285 TWh (see note 7 (2)). The final volume was 279TWh, down by 81.7TWh or 23% from 2021.

2.1.4 Signature of an exclusive agreement to acquire part of GE Steam Power's nuclear activities

On 4 November 2022, GE and EDF signed a final agreement related to EDF's acquisition of GE Steam Power's nuclear activities. These activities include the manufacturing of conventional island equipment for new nuclear power plants, including the Arabelle steam turbine as well as maintenance and upgrade activities for existing nuclear power plants in all regions other than the Americas. The transaction also includes steam turbine technology for first and second-generation European pressurised reactors (EPR and EPR 2) and small modular reactors (SMR).

This agreement is the next milestone in the process that began with the exclusive agreement signed on 10 February 2022.

This acquisition will enable the EDF group to strengthen the conventional island technologies and skills, which are essential for the durability of the existing nuclear fleet and future projects.

The transaction is expected to close in the second half of 2023 and is subject to customary closing conditions including regulatory approvals.

2.2 Financing operations

2.2.1 EDF capital increase

On 7 April 2022, EDF carried out a cash capital increase, maintaining the shareholders' preferential subscription rights.

This capital increase totalled €3,164 million gross (including the issue premium) and led to the issuance of 498,257,960 new shares with a unit issue price of €6.35, recognised in the financial statements as follows:

- a €249 million increase to the share capital;
- a €2,915 million gross increase to the issue premium.

Issuance expenses were recognised as a deduction from the issue premium.

The French State, as undertaken, subscribed €2.7 billion or approximately 83.88% of this capital increase and holds 83.88% of the Company's share capital following completion of this capital increase.

2.2.2 Agreements for bank credit facilities of €10.25 billion and USD 2.2 billion

In March 2022 EDF concluded bilateral credit lines for a total €10.25 billion and US\$2.2 billion. These lines mature in 3 years and do not carry an early repayment penalty.

These facilities were concluded with 12 banks.

This operation increased the Group's financial flexibility for future years.

All these credit lines were used in the first half of the year (see note 31 (2)). The credit lines in euros were drawn in March and April: they mature in March 2025 and bear interest at 3-month Euribor. The USD credit lines were drawn in April and May 2022: they mature in March or April 2025 and bear interest based on the SOFR CMP LOOKBACK (-5BD) (a compounded in arrears SOFR with a 5 business day observation shift).

2.2.3 Signature of an €800 million loan contract between EDF and the European investment bank (EIB)

EDF and the EIB signed an €800 million loan contract to partly finance investments by EDF's subsidiary Enedis, an independently managed power grid operator, for the connection of decentralised renewable energy production facilities and electric vehicle charging stations in mainland France over the period 2022-2024.

This operation is reflected at 31 December 2022 in the grant of credit lines to EDF totalling €800 million (see note 31 (2)), fully drawn by Enedis.

2.2.4 Senior multi-tranche bond issue, including a green tranche, for a nominal amount of €3 billion

On 5 October 2022 EDF launched a senior bond issue in 3 tranches for a nominal amount of €3 billion (see note 31 (1)):

- a €750 million bond, with 4-year maturity and a 3.875% fixed coupon;
- a €1 billion bond, with 7-year maturity and a 4.375% fixed coupon;
- a €1.25 billion Green Bond, with 12-year maturity and a 4.75% fixed coupon.

An amount equal to the net proceeds of the Green Bond will be used to finance and/or refinance all or part of the electricity distribution investments defined in EDF's Green Financing Framework published in July 2022.

Settlement and delivery took place on 12 October 2022, and the bonds were admitted to trading on the regulated market of Euronext Paris at that date.

2.2.5 Signature of a €1 billion financing agreement dedicated to the maintenance of existing French power plants

On 18 November 2022 EDF and Crédit Agricole CIB announced that they had signed a €1 billion bilateral green loan for the maintenance of existing French power plants.

This operation by EDF and Crédit Agricole CIB is the first transaction in which the funds will be entirely dedicated to investments made for EDF's nuclear activities, which makes it a world first in the energy transition. This loan will contribute to the *Grand Carénage* programme to enhance safety and extend the operating lifetime of French nuclear reactors beyond 40 years.

French nuclear power plants produce very low-carbon electricity (4gCO₂ equivalent per kWh over the life cycle according to a study ⁽¹⁾ published by EDF in 2022 and reviewed by independent experts).

The EDF group is the world's leading producer of electricity with no direct CO₂ emissions (source: ENERDATA ⁽²⁾). The Group made a commitment as early as 2018 to contribute to attaining net-zero by 2050, and has set itself greenhouse gas reduction targets for 2030 including a milestone in 2023, covering both its direct emissions (scope 1) and its indirect emissions (scopes 2 and 3). These targets were approved as part of a "Well Below 2°C" trajectory by the Science Based Targets initiative.

This green loan transaction complies with EDF's July 2022 Green Financing Framework which was independently reviewed by CICERO Shades of Green. It also complies with the best practices on the Green Loan market (the Green Loan Principles published by the Loan Syndications and Trading Association).

In addition to the significant benefits for the fight against climate change, this agreement underlines the Crédit Agricole group's interest in EDF projects that have substantial economic impacts in local areas of France.

This loan was fully drawn at 31 December 2022 (see note 31 (2)).

2.2.6 Agreements for €2.1 billion of additional banking facilities

On 28 November 2022 EDF signed bilateral term loan agreements for a total of €2.1 billion ⁽³⁾ (see note 31 (2)).

These facilities have 3-year maturity and do not carry an early repayment penalty.

They were concluded with a group of 6 banks, and were drawn in December 2022.

This operation, like the €1 billion green loan concluded with Crédit Agricole CIB which was fully drawn at 31 October 2022, also increases the EDF group's financial flexibility for future years.

2.2.7 Issue of hybrid notes for a nominal amount of €1 billion and intention to exercise an option to redeem outstanding USD hybrid notes

On 30 November 2022, EDF launched a Euro-denominated 1 billion hybrid note offering, with a 7.5% coupon and a 6-year first call date (see note 23).

EDF can redeem the hybrid note for cash at any time during the 90 days before the first interest reset date, which is expected to be in six years, and on every coupon payment date thereafter. Although the proposed hybrid notes are perpetual, they can be redeemed at any time for reasons of a withholding tax, tax deductibility, tax gross-up, rating methodology, accounting, or clean-up call event, or through the exercise of the make-whole call. The amount of the new issue was calibrated so that EDF's aggregate outstanding nominal amount of hybrid capital will not decrease by more than 10% after redemption of the USD Hybrid Notes ⁽⁴⁾. EDF has thus reaffirmed its commitment to raising financing through hybrid bonds as a permanent component of its capital structure.

On 29 January 2023 EDF exercised its option to redeem all of the USD Hybrid Notes admitted to trading on the regulated market of the Luxembourg Stock Exchange (see note 23).

2.2.8 "ERO 2022" employee shareholding plan via a capital increase reserved for members of the Group savings plan and EDF's international group savings plan

On 11 May 2022 EDF's Board of Directors decided on the principle of an employee shareholding operation.

The subscription price for the shares was fixed on 28 June 2022. It included a discount of 30% on the reference price based on the volume-weighted average price of EDF shares traded on Euronext Paris for the twenty trading days preceding the day when the price was determined.

The operation led to a €9 million increase in the share capital and an issue premium of €94 million for EDF, with 18,100,741 new EDF shares issued on 25 July 2022 (see note 22.1).

A corresponding personnel expense of €11 million was recognised for the cost of the matching employer contribution.

2.2.9 Simplified public tender offer

On 4 October 2022 the French State, the majority shareholder of EDF ("the Company") holding, alone or in concert, 83.69% of the capital and 89.24% of the theoretical voting rights in the Company, filed a draft Simplified Tender Offer (STO) with the Autorité des marchés financiers (AMF), covering all the shares and the bonds convertible into new shares or exchangeable for existing shares in EDF that it did not yet hold.

In accordance with Articles 233-1 and following of the AMF's general regulations, the Offer was made under the simplified procedure and was not to be reopened following publication of its result.

On 27 October 2022, based on the work and recommendations of an *ad hoc* internal committee and the conclusions of consulting firm Finexsi, designated as independent appraiser, EDF's Board of Directors issued a favourable opinion of the Offer, supplying its reasons.

On 22 November 2022, the AMF approved the Offer initiated by the French State, offering EDF shareholders and holders of EDF's OCEANE bonds €12.00 per share and €15.52 per OCEANE bond for all shares and bonds tendered to the Offer, which opened on 24 November 2022.

Also, in accordance with the terms and conditions of the OCEANE bonds, it was specified that the opening of the Offer after approval by the AMF would lead to adjustment of the EDF share allocation ratio during the adjustment period in the event of a tender offer (see note 22.3).

On 7 December 2022, the AMF extended the duration of the Tender Offer, without setting a new closing date, following legal action for annulment of the AMF's approval of the Offer brought before the Paris Court of Appeal on 2 December 2022 by minority shareholders of the EDF group, together with a request to suspend execution of the Offer.

In a public announcement of 20 January 2023, the Ministry of the Economy stated that the French State had exceeded the threshold of 90% of the capital and theoretical voting rights of EDF on 19 January 2023.

On 25 January 2023, the AMF announced that the Offer would be temporarily closed on 3 February 2023, subject to reopening in accordance with the French government's undertakings to the plaintiffs in the legal action, until the Court of Appeal issues its ruling on the merits of the case, which will be on 2 May 2023 at the latest.

Despite exceeding the 90% threshold, the French government has promised not to proceed to the compulsory squeeze-out until the Court rules on the validity of the AMF's approval of the Offer.

On 3 February 2023, the AMF provisionally closed the Offer.

If the Court of Appeal confirms the AMF's approval, the Offer will be reopened for 10 days and the State will proceed to the compulsory squeeze-out. However, if the Court cancels or amends the AMF's approval, the government has undertaken to return the securities purchased under the STO to any former shareholders and/or OCEANE bondholders who so request. Also, if the price is raised in a new STO, the government has undertaken to pay a price supplement to the former shareholders and/or OCEANE bondholders who do not request the return of their securities.

After the provisional closing of the offer, on 8 February 2023 the AMF published the result of the Simplified Tender Offer for the equity securities of EDF. Following the Offer and pending the decision of the Court of Appeal referred to above, the French State holds 3,725,111,882 EDF shares or 95.82% of the Company's capital and at least 96.53% of the voting rights, and 218,616,300 OCEANE bonds or 99.96% of the outstanding OCEANES.

(1) The study can be consulted here: <https://www.edf.fr/groupe-edf/produire-une-energie-respectueuse-du-climat/energie-nucleaire/notre-vision/analyse-cycle-de-vie-du-kwh-nucleaire-ded>

(2) Source: ENERDATA, 2021.

(3) Partly issued in yen.

(4) The US\$3 billion Reset Perpetual Subordinated Notes of which US\$2,097,614,000 is currently outstanding.

The bondholders have been informed of the result of the Simplified Tender Offer for the shares and bonds of EDF. Consequently, in accordance with section 2.6.3 referring to the terms of Public offerings, the adjustment period in the event of a tender offer will expire on 1 March 2023, i.e. 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 shares per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer.

Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 shares per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

Income statement

Note 3 Sales

Accounting principles and methods

Sales essentially comprise income from energy sales (to final customers and as part of trading activities) and sales of services. EDF's energy sales revenues include delivery services through the energy distribution network purchased from the subsidiary Enedis and invoiced to end-customers.

Sales are recognised when delivery of goods has taken place or the service has been completed.

The quantities of energy delivered to EDF customers but not yet measured and billed at the end of the period are calculated based on the quantities used by the sites of the EDF balance-responsible entity less the quantities billed, after losses measured by a statistical method presented to the Commission de régulation de l'énergie (CRE), the French Energy Regulation Commission. These quantities are valued using an average price determined by reference to energy invoiced in the previous month.

Sales of goods and services not completed at the balance sheet date are valued by reference to the stage of completion at that date.

Sales of energy to EDF Trading, the EDF group's trading company, are recorded at their contractually stipulated amount.

Capacity mechanism

French law 2010-1488 of 7 December 2010 on the new organisation of the electricity market introduced an obligation in France to contribute to guaranteeing power supply security from 1 January 2017.

A capacity mechanism was therefore set up in France to ensure secure power supplies during peak periods.

Operators of electricity generation plants and load-shedding operators must have their capacities certified by RTE, and commit to a forecast level of availability for a given year of delivery. In return, they are awarded capacity certificates.

Meanwhile, electricity suppliers and purchasers of power to compensate for network losses (obligated actors) must have capacity certificates equivalent to consumption by their customers in peak periods. Suppliers pass on the

cost of the capacity mechanism to final customers through their sale prices.

The system is completed by registers for trading of capacities between actors. Capacity auctions are held several times a year.

EDF is concerned by both aspects of this system, as an operator of electricity plants and as an electricity supplier.

The operations are recorded as follows:

- sales of certificates are recognised in income when the auctions or over-the-counter sales take place;
- the cost of the capacity mechanism passed on to final customers through regulated sales tariffs and market-price offers is recognised in sales revenues as and when the electricity is delivered. In addition, the ARENH price is considered to have included a capacity value since January 2017 when the capacity mechanism took effect, as the terms of transfer for the capacity guarantees associated with the ARENH scheme were defined by the CRE;
- stocks of certificates are stated either at their certification value (i.e. cost of certification by RTE) or at their purchase value on the markets;
- decreases in the stock of certificates are valued at the weighted average unit cost. The timing of recognition depends on the actor:
 - > operators of installations: when the auction sales take place,
 - > obligated actors: over the 5-month peak period (January to March, November and December).
- for operators of installations, if the effective capacity is lower than the certified capacity, a liability (accrued expenses or provision) is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation (rebalancing or settlement mechanism);
- for obligated actors, if there is a shortfall in the stocks of capacity certificates, a provision is recorded equivalent to the best estimate of the expense necessary to extinguish the obligation;
- at the closing date, if the realisable value of the stock of capacity certificates is lower than its net book value, impairment is recognised.

3.1 Regulatory changes in France

Regulated electricity sales tariffs in France – “Blue” tariff

In accordance with Article L. 337-4 of the French Energy Code, regulated electricity sales tariffs are set by the Ministers for Energy and the Economy following proposals by the French Energy Regulatory Commission (Commission de régulation de l'énergie or CRE).

France's Council of State ruled in decisions of 18 May and 3 October 2018 that the principle of regulated electricity sales tariffs is compatible with European Union law when such tariffs serve the general economic interest objective of guaranteeing consumers an electricity price that is more stable than market prices.

In accordance with European Directive 2019/944 of 5 June 2019 on ordinary rules for the internal market for electricity, the French Energy and Climate law of 8 November 2019 authorised continuation of regulated sales tariffs, but they are reserved for residential or business consumers with a subscribed power level of up to 36kVA, provided they have fewer than 10 employees and their annual sales, income or balance sheet total is below €2 million.

Tariff changes

In accordance with Article L. 337-4 of the French Energy Code, the CRE is responsible for sending the Ministers for the Economy and Energy its reasoned proposals for regulated sales tariffs for electricity. If no objections are made within three months, the proposals are deemed to have been approved.

In a decision of 8 July 2021, in view of changes in the TURPE tariff from 1 August 2021 and in application of the Energy Code, the CRE proposed an increase of 0.48% including taxes (1.08% excluding taxes) in the “blue” tariffs for residential customers and 0.38% including taxes (0.84% excluding taxes) in the “blue” tariffs for non-residential customers. The CRE proposed that this change should apply from 1 August 2021.

In 2022, in view of the high increases in electricity market prices, France introduced a “tariff cap” limiting the rise in regulated sales tariffs to a maximum 4% (including taxes) at 1 February 2022 for residential customers compared to the tariffs in force at 1 August 2021. This tariff cap is founded on 2 articles of the Finance Law for 2022 adopted on 30 December 2021:

- under Article 29, a reduction in the TICFE tax (or CSPE) has applied since 1 February 2022 for all customers (residential and business customers, on regulated-tariff or market-price contracts), although a legal minimum level must be maintained (€1/MWh for residential and small business customers). This reduction applies to quantities of energy delivered until 31 January 2023. The new TICFE tariffs have been set by decree;
- under Article 181, if the CRE, despite the reduction in the TICFE, proposes an increase in regulated sales tariffs for residential customers that exceeds 4% (including taxes) compared to the tariffs in force at 31 December 2021, as a dispensation from the Energy Code the French government may object to the proposal and through a joint decision by the Ministers for the Economy and Energy set the regulated sales tariffs,

and tariffs for sales to the local distribution companies, at a lower level. If this happens, the law provides for a subsequent catch-up adjustment of regulated sales tariffs in 2023, to be smoothed over twelve months, to cover the loss of income for EDF in 2022. The same article also introduces a mechanism to compensate for losses borne by local electricity distribution companies on regulated-tariff offers and electricity suppliers on market-price offers.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. The principal measures were extension of the regulated tariff increase cap of 4% (including taxes) to non-residential customers who are still eligible for the regulated tariff in mainland France and non-interconnected zones.

In a decision of 18 January 2022, the CRE proposed an increase of 35.4% including taxes (44.5% excluding taxes) in the “blue” tariffs for residential customers and 35.9% including taxes (44.7% excluding taxes) in the “blue” tariffs for non-residential customers from 1 February 2022. This proposal, which did not take account of the decree of 11 March 2022 defining the terms for EDF making 20TWH of electricity available to ARENH-eligible suppliers between 1 April 2022 and 31 December 2022 (as detailed below), was driven primarily by the significant rise in prices on the energy market. If it had taken account of the maximum decrease in the TICFE confirmed by decree 2022-84 of 28 January 2022, this proposal would have been for a 20% increase (including taxes) in the “blue” tariffs for residential customers and a 20.9% increase (including taxes) in the “blue” tariffs for non-residential customers. In accordance with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the “blue” tariffs for residential customers at 4% including taxes (24.3% excluding taxes) and the increase in the “blue” tariffs for non-residential customers at 4% including taxes (23.6% excluding taxes) through tariff orders of 28 January 2022, published in the *Journal officiel* of 30 January 2022 and implemented from 1 February 2022.

In a decision of 7 July 2022, the CRE proposed an increase of 3.92% including taxes (4.10% excluding taxes) in the “blue” tariffs for residential customers and 3.56% including taxes (3.73% excluding taxes) in the “blue” tariffs for non-residential customers, to apply from 1 August 2022, principally reflecting the increase in the TURPE distribution tariff from 1 August 2022.

In application of Article 181 of the Finance Law for 2022 and France's tariff cap, the Ministers' decision of 28 July 2022, published in the *Journal officiel* of 31 July 2022, rejected the changes proposed by the CRE, and the regulated tariffs consequently remained unchanged at 1 August 2022.

The Finance Law for 2023, adopted on 30 December 2022, modified the Finance Law for 2022 to extend the tariff cap to all customers eligible for regulated sales tariffs in 2022, and to compensate local distribution companies for their regulated-tariff offerings and suppliers for their market-rate offerings for residential and non-residential customers eligible for regulated tariffs, via the compensation for public service charges (CSPE).

The comparability of sales between periods is thus affected by the tariff changes introduced since 1 January 2021, presented in the table below:

Date of the CRE proposal	Increase in “blue” residential customer tariffs (incl. taxes/excl. taxes)	Increase in “blue” non-residential customer tariffs (incl. taxes/excl. taxes)	Date of the tariff decision	Date of application
14/01/2021	1.6% / 1.93%	2.61% / 3.23%	28/01/2021	01/02/2021
08/07/2021	0.48% / 1.08%	0.38% / 0.84%	29/07/2021	01/08/2021
18/01/2022	4.00% / 24.3%	4.00% / 23.6%	28/01/2022	01/02/2022
07/07/2022	No change	No change	28/07/2022	01/08/2022
19/01/2023	15.00% / 20.00%	15.00% / 19.9%	31/01/2023	01/02/2023

For 2023, the French government decided to prolong the tariff cap, limiting the increase in regulated electricity sales tariffs to 15% (including taxes) above prices at 31 December 2022, for all categories of eligible consumers.

Article 181 of the Finance Law for 2023, adopted on 30 December 2022, thus stipulates that if the reasoned proposals for regulated sales tariffs presented by the CRE lead to tariffs defined under Article R. 337-18 of the same code that are more than 15% higher than the tariffs applicable at 31 December 2022, the Ministers for the Economy, Energy and the Budget may object to the CRE's proposals and by joint decision set a lower level accounting for 95% of the tariff applied for customers' consumption, in order to serve the objective of price stability.

In such an event, the law defines a mechanism to compensate EDF and the local distribution companies for the loss of income on their regulated-tariff offerings, and to compensate all suppliers for the loss of income on market-price offerings for residential and non-residential customers eligible for regulated sales tariffs, via the compensation for public service charges (CSPE). EDF therefore recognised a receivable of €1,571 million in 2022 (see notes 4 and 30).

In a decision of 19 January 2023, the CRE proposed an increase of 99.36% including taxes (108.91% excluding taxes) in the “blue” tariffs for residential customers and 97.94% including taxes (106.88% excluding taxes) in the “blue” tariffs for non-residential customers from 1 February 2023.

This proposed increase was primarily justified by:

- the exceptionally high prices on the wholesale markets for delivery in 2023, which have been at record levels for more than a year;
- the outstanding consequences of the tariff cap applied in 2022, to reflect the ultimate reality of the costs involved in the “cost stacking” including the effects of the additional 20TWh of ARENH supplies.

In line with the tariff cap, this proposal was rejected by the Ministers for the Economy and Energy, who set the increase in the “blue” tariffs for residential and non-residential customers at 15% including taxes (20% and 19.9% respectively excluding taxes) through tariff orders of 30 January 2023, published in the *Journal officiel* of 31 January 2023 and implemented from 1 February 2023.

“TURPE” Network access tariffs

TURPE 6 Distribution tariffs

The CRE issued two decisions of 21 January 2021 (published in France’s *Journal Officiel* 0096 of 23 April 2021) on the TURPE 6 Transmission (high voltage) and TURPE 6 Distribution (medium voltage – low voltage), after the Higher Energy Council (Conseil supérieur de l’énergie) gave its approval. These tariffs apply from 1 August 2021 for a period of approximately 4 years.

For distribution expenses, in its tariff decision 2021-13 of 21 January 2021, the CRE set the margin on assets at 2.5% and the additional return on regulated equity at 2.3%. The average tariff increase was +0.91% at 1 August 2021. In decision 2022-158 of 9 June 2022, the CRE set the increase in the average TURPE Distribution tariff from 1 August 2022 at +2.26%.

For transmission expenses, in its tariff decision 2021-12 of 21 January 2021, the CRE set a nominal pre-tax weighted average cost of capital (WACC) of 4.6% for the return on RTE’s regulated asset base. The average tariff increase was +1.09% at 1 August 2021. In decision 2022-157 of 9 June 2022, the CRE set the change in the average TURPE Transmission tariff from 1 August 2022 at -0.01%.

In its decision 2022-317 of 1 December 2022, the CRE adapted the price regulation framework to make the TURPE 6 (high voltage) and TURPE 6 (medium voltage – low voltage) tariffs incorporate the impact of wholesale electricity prices on the business of RTE and Enedis, particularly by refocusing certain incentives on purchase volumes and losses, rather than on prices.

Supplier commissioning

In application of the CRE’s decision of 18 January 2018, energy suppliers receive remuneration from distribution network operators for the service of managing single-contract customers on their behalf.

The commissioning principle is identical for all suppliers selling single-contract market-price offers. Only regulated electricity tariffs have given rise to slightly lower commissions (€4.50 instead of €6.80 per point of delivery until 1 August 2019), with progressive reduction of this difference to zero by 1 August 2022.

For remuneration of past customer management charges (prior to 1 January 2018), the CRE’s decision set an amount it considered as a cap that can be passed on through the TURPE tariff.

Law 2017-1839 of 30 December 2017 introduced a measure intended to rule out the possibility of suppliers receiving remuneration from network managers for past customer management services.

Electricity Equalisation Fund

The TURPE tariff for the medium and low-voltage network is identical for every electricity network operator. It is determined on the basis of forecast expenses to be borne by Enedis, provided they correspond to an efficient network operator, and forecasts of the number of consumers connected to Enedis’ networks, their consumption, and the power level subscribed.

As this tariff cannot always cover the specific needs of certain service zones, the Electricity Equalisation Fund (FPE) exists to compensate for disparities in network operating conditions. The Energy Code requires electricity distribution costs resulting from public network operation to be shared between public distribution network operators. There are two equalisation mechanisms: one based on fixed amounts, the other set by the CRE based on analysis of the network operators’ accounts. The calculation method for the fixed-rate allocation mechanism is defined by decree and ministerial order. At EDF, this concerns the Island Energy Systems (SEI).

In a decision of 13 July 2022, the CRE set the final amount of the allocation from the Electricity Equalisation Fund to SEI, based on analysis of its accounts, at €158.1 million for 2022.

Capacity mechanism

The French capacity mechanism took effect on 1 January 2017. It was introduced by France’s Energy Code to contribute to guaranteeing a secure power supply in France.

As a result of the capacity mechanism review clause, in 2021 RTE published a report on the mechanism’s first few years of operation and performance. On the basis of this report, on 29 November 2021 RTE submitted rule change proposals to the CRE for its opinion. In decision 2021-370 of 16 December 2021, the CRE issued a favourable opinion of these proposals and of changes to certain parameters for delivery years 2023 and 2024 (the contribution by interconnections, the extreme temperature vector and the safety coefficient). The CRE considered that the proposed changes will simplify the capacity mechanism for all actors, and improve visibility for capacity market participants. The new rules were approved by decision of the Ministry for the Ecological Transition on 21 December 2021. They set the opening date for trading of capacity guarantees for delivery years 2023 and 2024 at 1 March 2022.

Another consultation phase concerning structural changes to the French capacity mechanism has been in progress since April 2022. The future mechanism could be introduced from delivery year 2026, subject to approval by the European Commission after the necessary examination period.

For the delivery years shown below the mean market prices resulting from capacity auctions ahead of the delivery year were as follows:

Delivery year	2017	2018	2019	2020	2021	2022
Price (in €/kW)	10.0	9.3	17.4	19.5	31.2	26.2

The delivery year 2023 was opened to auction in 2022, and six auctions have been held since then. These capacity auctions resulted in the following prices: €42.4/kW in March; €42.5/kW in April; €41.9/kW in June; €41.9/kW in September; €45.0/kW in October; €60.0/kW in December.

Four auctions were also held in 2022 for the delivery year 2024, with the following results: €20/kW in April and June, €34.1/kW in October, and €23.1/kW in December.

ARENH

The ARENH (*Accès régulé à l’énergie nucléaire historique*) scheme for regulated access to historic nuclear power, set up in 2011 and due to end on 31 December 2025, allows alternative suppliers to purchase electricity from EDF to supply their final customers, after signing a framework agreement, at a regulated price for set quantities determined under the provisions of the French Energy Code. This scheme is also open to network operators to cover their energy losses.

The ARENH price, determined by the Ministers for Energy and the Economy following a proposal by the CRE, has been fixed at €42/MWh since January 2012. This includes delivery of the electricity and has incorporated the associated capacity guarantees since 2017.

The maximum total ARENH volume that can be sold by law to suppliers who apply to the scheme to cover the needs of their final customers is set by ministerial order and cannot exceed a legal ceiling. Until 31 December 2019, the ceiling was 100TWh per year. It was then raised to 150TWh by the Energy and Climate law of 8 November 2019.

The “MUPPA” law of 16 August 2022 law introducing urgent measures to protect purchasing power reduced this legal ceiling to 120TWh. The MUPPA law also set a minimum ARENH price of €49.50/MWh, although its application is conditional on prior approval by the European Commission.

On 13 January 2022 the French government announced further exceptional measures to limit the rise in electricity tariffs for consumers in 2022. These measures included EDF making an additional ARENH volume of 20TWh available to eligible suppliers over the period 1 April to 31 December 2022, at the price of €46.20/MWh.

The terms for application of this measure were laid down in a decree of 11 March 2022 and four ministerial orders. Eligible suppliers wishing to benefit from these additional volumes at the price of €46.20/MWh during the period 1 April to 31 December 2022 were required by the decree to sell EDF an equivalent volume to the volume sold to them by EDF under the ARENH scheme, at the price of €256.98/MWh (the average wholesale market price between 2 and 23 December 2021 for baseload electricity supplies in

* Loi portant mesures d’urgence pour la protection du pouvoir d’achat.

mainland France in 2022). To allocate the additional volumes between suppliers, the CRE applied the same method as for the delivery period that began on 1 January 2022. In practice, the CRE gave notice of 19.5TWh of additional ARENH volumes allocated.

Applying the procedure set out in its decision 2022-98 of 31 March 2022, the CRE set up a mechanism to monitor and control the methods used by eligible suppliers to pass on the effect of the reduced sourcing cost (resulting from allocation of additional volumes at the price of €46.20/MWh) through their customer invoicing. In accordance with the above CRE decision, EDF was obliged to replicate the terms imposed on alternative suppliers in its own market-price contracts.

This measure thus had two main effects for EDF:

(i) it was obliged to purchase the additional 19.5TWh of electricity from eligible suppliers at the price of €256.98/MWh (€5.011 billion), and concurrently sell them equivalent volumes of electricity at the price of €46.20/MWh (€900 million), giving a net cost (including the cost of capacity guarantees) of €4.1 billion for the period 1 April 2022 to 31 December 2022; and

(ii) the sale prices to customers on both regulated-tariff and market-price contracts were lower, due to the increased ARENH portion in relation to the market-price portion in the cost stacking system used to calculate regulated tariffs and market-price offers. This measure had a limited incremental impact in 2022 on regulated-tariff contracts because of application of the tariff cap described above, which already limited increases in the regulated electricity tariffs, but it also limits the difference between the frozen tariff and the tariff that would have applied in the absence of the tariff cap in 2022.

In its press release of 13 January 2022, EDF announced that it would take all appropriate measures to protect its interests in view of the decree of 11 March 2022 and the four orders making up the rest of this measure.

As the overall measure generated significant prejudice for the Company, EDF made a request to the State in May 2022 for withdrawal of the decree of 11 March 2022 and the associated orders. The State did not reply within 2 months, indicating an implicit rejection, and on 9 August 2022 EDF filed an appeal against the decree and orders before the Council of State, on the grounds that the State had exceeded its powers.

In parallel, EDF sent the Prime Minister a preliminary claim for compensation for the prejudice resulting from introduction of this government measure, estimated at €8.34 billion. The State did not reply within 2 months, indicating an implicit rejection, and on 27 October 2022 EDF filed a claim before the Paris Administrative court for full reparation by the State for the prejudices borne as a result of the government measure.

The purpose of this claim before the Paris Administrative Court is to obtain compensation from the State for the prejudices borne by EDF as a direct result of introduction of the Measure. The total amount of these prejudices is estimated at €8.34 billion, the principal causes being:

- the cost of the operation through which EDF purchased volumes of electricity (at the price of €256.98/MWh) which it then sold on to alternative suppliers (at the price of €46.20/MWh), and the associated capacity guarantees in application of the Measure;
- the direct and certain effects of the Measure on the level of regulated electricity sales tariffs (EDF being France's principal supplier of regulated-

tariff electricity) due to the calculation methods for these tariffs defined in the French Energy Code;

- the direct and certain effects of the Measure's repercussions on the prices of EDF's market-price contracts in application of the CRE's decision of 31 March 2022 setting out the terms for passing on the effects of the Measure to customers through power supply contracts.

On 3 February 2023, the Council of State rejected EDF's appeal filed on 9 August 2022. The proceedings relating to EDF's claim before the Paris Administrative court for full reparation from the State for the prejudices borne by EDF as a result of the Measure are continuing.

Regarding ARENH allocations for 2022, in decision 2022-287 of 10 November 2022, as required by the Energy Code (Article R. 336-14 of the Energy Code modified by decree 2022-1380 of 29 October 2022), the CRE set out the method for allocating ARENH volumes if applications exceed the maximum total volume defined for 2023. In view of the current exceptional crisis in the electricity market, it also introduced reinforced checks and special rules for accepting the ARENH volumes applied for by suppliers.

The CRE stated that EDF-controlled subsidiaries' applications taking the total volume above the limit would be fully curtailed (this does not apply to network operators) and they could enter into contracts with the parent company that replicate the ARENH scheme and terms of supply, particularly the curtailment rate for alternative suppliers.

During 2022, the CRE notified EDF that ARENH deliveries to three alternative suppliers had ceased due to their court-ordered liquidation or suspension of their governmental licence to purchase electricity. 21.9MWh of volumes in the May 2022 ARENH session were not delivered by EDF due to (i) defaulting suppliers being placed in liquidation and (ii) non-implementation of the procedure to transfer their ARENH entitlements to the suppliers of last resort, and the CRE reallocated all these volumes to the November session.

ARENH applications during the November 2022 session for delivery in 2023 totalled 148.87TWh (excluding applications from EDF subsidiaries and network operators). The CRE scaled down certain applications (-0.56TWh in total), bringing the total application volumes validated by the CRE to 148.30TWh, and curtailed each supplier's application, within a total limit of 100TWh. Further volumes were also sold by EDF to its subsidiaries through contracts that replicate the ARENH scheme, and to compensate for network electricity losses (26.6TWh).

Regarding the possibility of a transition to new regulations governing EDF's nuclear power plants, as announced in the draft multi-year energy programme (PPE) published on 25 January 2019, in January 2020 the French government launched a call for contributions regarding the fundamental findings driving the plan to reform the economic regulations for existing nuclear facilities, and its construction and operating principles. The proposed new regulations would replace the ARENH scheme. Like many other actors in the sector, the EDF group participated in this consultation, which ended on 17 March 2020.

France's Minister for the Ecological and Inclusive Transition and Minister of the Economy and Finance then commissioned the CRE to carry out an assessment of the costs borne by the nuclear operator, and to determine fair remuneration for its nuclear activities under the government's potential future regulations for existing nuclear facilities. There have been no significant developments in the terms and conditions of these potential new regulations since 2021.

3.2 Sales breakdown

Sales are comprised of:

<i>(in millions of euros)</i>	2022	2021
Sales of energy*	83,628	50,390
electricity	55,023	42,906
gas	28,605	7,484
Sales of services and other	3,501	2,611
SALES	87,129	53,001

* Including a share of delivery costs for sales of electricity and gas.

The increase in electricity sales is principally explained by higher sales to final customers, and the purchase obligation system.

The rise in sales to final customers (€5.2 billion) is mainly attributable to price effects on sales at regulated tariffs and market price contracts, including the effect of the exceptional regulatory measures taken in France for 2022:

- for regulated-tariff sales, the price effect on the variation results from indexing of tariffs from 1 February 2021 (+1.93% on "blue" tariffs for residential customers and +3.23% on "blue" tariffs for non-residential customers), 1 August 2021 (+1.08% on "blue" tariffs for residential customers and +0.84% on "blue" tariffs for non-residential customers), and 1 February 2022 (+24.3% on "blue" tariffs for residential customers and +23.6% on "blue" tariffs for non-residential customers), which limited the increase to 4% (including taxes) due to the reduction in the TICFE tax;
- for market-price contracts, the favourable price effects due to rising market prices were reduced by €(1,805) million due to replication of additional ARENH allocations in these contracts.

This price effect is substantially greater than the negative volume effect caused by the weather and lower consumption, observed particularly at the end of the year.

Resales of electricity covered by purchase obligations rose significantly by €4.8 billion, due to a favourable volume effect reflecting a notable increase in spot prices.

There was a significant downturn in the volume of electricity sales on the market via EDF Trading as a result of the notable decline in nuclear power output due to the stress corrosion phenomenon, but as these sales took place at very high prices, the variation from 2021 was ultimately moderate. Sales revenues also include the sales of 19.5TWh of additional ARENH allocations for €0.9 billion (the purchase cost, included in "fuel and energy purchases", was €5 billion).

The increase in gas sales principally reflects higher volumes sold to EDF Trading as the market price rises continued and were amplified in 2022. Sales to final customers were up by €1.1 billion due to rising prices, and to a lesser extent the increase in sales volumes.

Note 4 Operating subsidies

<i>(in millions of euros)</i>	2022	2021
OPERATING SUBSIDIES RECEIVED	883	5,554

Operating subsidies mainly comprise the subsidy received or receivable by EDF in respect of the compensation for 2022 public energy service charges, reflected in the financial statements through recognition of income of €808 million in 2022 (€5,472 million in 2021). The public service charges to be covered for purchase obligations decreased substantially, and were negative in 2022 because market

prices were very high, generally much higher than EDF's purchase obligation costs. However, the public service charges to be covered in 2022 include an amount of €1,571 million in compensation for the lower sales revenues resulting from limits on the sale prices to final customers introduced by the authorities through tariff caps for electricity and gas (see note 3.1).

Compensation for public energy charges (CSPE)

Mechanism

The compensation mechanism for public energy service charges (compensation des *Charges de Service Public de l'Énergie*) resulted from a reform introduced by France's amended finance law for 2015, published in the *Journal officiel* on 30 December 2015. Under the legislative and regulatory framework, since 2016, public energy service charges (electricity and gas) were to be compensated. Compensation initially came from two State budget items, a special "energy transition" item and a "public energy service" item, but since 1 January 2021 public energy service charges have been compensated entirely through the general budget.

In compensation for the 2022 charges, France's initial finance law for 2022 introduced a €8.4 billion "public energy service" item in the general budget, to cover additional costs incurred on support contracts (purchase obligations and additional remuneration) for renewable energies and biogas, expenses associated with the electricity and gas tariff caps (see note 3.1) solidarity charges borne by gas and electricity suppliers, costs associated with support for non-renewable energy production (essentially cogeneration), and the cost of applying the standard national tariffs to zones that are not connected to France's mainland network.

Income generated by the domestic tax on the final consumption of electricity (TICFE), also named the Compensation for Public Electricity Charges (CSPE) on customer invoices, the Compensation for Public Electricity Charges (CSPE)

goes directly into the general budget. The TICFE/CSPE tax is collected directly from final consumers of electricity in the form of an additional levy on the electricity sale price (collected by the suppliers), or directly from electricity producers that produce electricity for their own uses.

The level of this tax was set in 2016 at a full rate of €22.5/MWh, and eight reduced rates ranging from €12/MWh to €0.5/MWh depending on criteria of electro-intensiveness, business category and the risk of carbon leakage from installations (the risk of industries relocating to countries where greenhouse gas emissions are higher due to their electricity mix). It remained at that level until the end of 2021. France's electricity tariff cap then effectively reduced the tax to its minimum level of €1/MWh for residential customers and €0.5/MWh for business customers.

In accordance with decree 2016-158 of 18 February 2016 concerning compensation for public service energy charges, unusually, the CRE published two decisions in 2022: the first (2022-202) on 13 July and the second (2022-272) on 3 November, both setting out a forecast of EDF's public service charges for 2023, a revised forecast of charges for 2022, and the actual charges recorded for 2021. The CRE was obliged to update its July 2022 forecasts in November due to significant changes in key parameters.

Closure of Fessenheim nuclear power plant

In accordance with the application for termination of operations and the declaration of the permanent shutdown of both reactors at Fessenheim nuclear power plant sent by EDF to the Minister for the Ecological and

Inclusive Transition and to the ASN on 30 September 2019, EDF shut down reactor 1 on 22 February 2020 and reactor 2 on 30 June 2020.

On 27 September 2019, due to the cap on nuclear power output set by the "energy transition for green growth" law of 17 August 2015, the French State and EDF signed a protocol agreement whereby the State will compensate EDF for the early closure of Fessenheim.

The compensation paid under the terms of this protocol comprises:

- Initial instalments to compensate for expenses incurred after the closure of the plant (end-of-operations expenditure, taxes on basic nuclear facilities, dismantling costs and staff redeployment costs), which will be paid over a 4-year period following the closure. An amount of €370 million was received on 14 December 2020.

This compensation is recognised as income in profit and loss as and when the associated costs are incurred.

- Subsequent payments corresponding to the lost income that would have been generated by future power generation up until 2041, based on Fessenheim's previous output figures and calculated "ex post" on the basis of nuclear power sale prices, particularly observed market prices. There is no reason to recognise such income in the financial statements at

this stage.

Since its decoupling from the network, the Fessenheim plant has entered a post-operating phase that will last approximately five years. During that period, units 1 and 2 will continue to be operated and maintained as "defueled core" and "evacuated fuel" reactors. This will require a series of technical and administrative operations. A significant milestone was reached on 18 October 2021 when the last two packages of spent fuel were dispatched from Fessenheim unit 1 to the Orano site at La Hague. The dismantling decree for Fessenheim is expected to be issued in 2026.

The post-operating expenses and income for these two reactors at 31 December 2022 mainly comprise:

- expenses of €98 million (salaries and social security charges for labour at the site amounting to €48 million, purchases of goods and services amounting to €47 million, taxes other than income taxes, mainly payroll taxes, energy taxes and local taxes, amounting to €4 million);
- the compensation defined in the protocol for expenses that will be incurred after the closure, amounting to €46 million, recognised as an operating subsidy in the income statement under the methods explained above.

Note 5 Provisions and impairment

(in millions of euros)

	Notes	2022	2021
Reversals of provisions for risks	25	1,262	628
Increases to provisions for risks	25	(81)	(159)
Net provisions for risks ⁽¹⁾		1,181	469
Pensions and similar obligations	28	809	748
Spent fuel management	26	849	1,282
Long-term radioactive waste management	26	204	227
Decommissioning of nuclear power plants and last cores	26	201	186
Decommissioning of thermal and hydropower plants	27	53	46
Other provisions for expenses ⁽²⁾	29	2,803	202
Reversals of provisions for expenses		4,919	2,691
Pensions and similar obligations	28	(835)	(915)
Spent fuel management	26	(417)	(1,185)
Long-term radioactive waste management	26	(128)	(126)
Decommissioning of nuclear power plants and last cores	26	(273)	(262)
Decommissioning of thermal and hydropower plants	27	(214)	(21)
Other provisions for expenses ⁽²⁾	29	(3,573)	(245)
Increases to provisions for expenses		(5,440)	(2,754)
Net provisions for expenses		(521)	(63)
Reversals of impairment		310	330
Increases to impairment		(296)	(231)
Net impairment		14	99
Provisions and impairment		674	505
<i>total reversals</i>		<i>6,491</i>	<i>3,649</i>
<i>total increases</i>		<i>(5,817)</i>	<i>(3,144)</i>

(1) Increases and reversals of provisions for risks at 31 december 2022 mainly concern energy supply contracts.

(2) At 30 June 2022, other provisions for expenses included an operating provision of €2,749 million for the cost in the second half-year of 2022 of the additional 19.5TWh ARENH allocation introduced by the decree of 11 March 2022 and its implementing orders (see note 3.1). These placed EDF under concurrent purchase and sale obligations for fixed volumes and prices over the period April to December 2022: it was required to sell 19.5TWh of ARENH electricity to eligible suppliers at the price of €46.20/MWh and to purchase 19.5TWh from the same suppliers at the price of €256.98/MWh, in coordination with the Caisse des dépôts et consignation and RTE, under the supervision of the CRE. This provision was used entirely during the second half-year as and when the sales and purchases took place.

Note 6 Other operating income and expenses and transfers of charges

<i>(in millions of euros)</i>	2022	2021
Other operating income	3,460	1,024
Transfers of charges	92	76
Other operating income and transfers of charges	3,552	1,100
Other operating expenses	(2,661)	(2,480)
TOTAL OPERATING INCOME AND EXPENSES AND TRANSFERS OF CHARGES	891	(1,380)

Other operating expenses amount to €(2,661) million in 2022 (€(2,480) million in 2021) and notably include costs relating to Energy Savings Certificates used or consumed over the year, losses on non-recoverable receivables, royalties on software, the net book value of assets demolished or scrapped, royalties relating to hydropower concessions and additional remuneration paid to producers of renewable energies.

This additional remuneration was introduced by France's law on the Energy Transition for green growth. It is a support mechanism intended to guarantee reasonable remuneration for producers who sell their energy directly on the markets, by compensating for the differential between the revenues from those sales and a reference amount. Conversely, when these revenues are higher than the reference amount, the producer must repay the differential received. This mechanism complements the purchase obligation system.

From the fourth quarter of 2021 and over the whole year 2022, producers of renewable energies benefited from rising prices, and the additional remuneration mechanism became inverted and resulted in negative additional remuneration, repayable by the producers to EDF. This development was amplified by implementation of Article 38 of the amended Finance Law for 2022, which modified the limit set in certain contracts on the amounts due by producers. As of 1 January 2022, when the contractual reference tariff is higher than a threshold fixed at €44.78/MWh, producers must repay the full differential between the market-price sales revenues and revenues calculated at the contractual reference tariff. This situation explains €2,361 million of the increase in "Other operating income and transfers of charges" observed in 2022.

Energy savings certificates

Accounting principles and methods

France's energy savings certificates scheme was introduced by the Law of 13 July 2005. Suppliers of energy (electricity, gas, heat, cold, domestic fuel oil and fuel for vehicles) with sales above a certain level became subject to energy savings obligations, initially for a three-year period.

To meet this obligation, three sources are available to EDF: supporting consumers in their energy efficiency operations, funding State-approved energy savings certificate schemes, and purchasing certificates on the secondary market.

EDF accounts for Energy Savings Certificates in compliance with Articles 616-1 to 616-24 of ANC regulation 2014-03 on France's national chart of accounts. As its Energy Savings Certificates are held in order to meet the requirements of the regulations on energy savings, the Company applies the "Energy Savings" model defined by ANC regulation 2014-03.

Certificates obtained or receivable are recorded in inventories at production or acquisition cost, and are valued under the FIFO (first in first out) method.

At the year-end, only the net position is presented in the financial statements:

- an asset is recognised (in work-in-progress and other inventories) if the energy savings achieved are greater than the energy savings obligations. This inventory corresponds to the certificates purchased, obtained or receivable that cover future energy savings obligations. It is consumed as and when energy sales are completed that generate energy savings obligations; or
- a liability (provision for other expenses) is recognised if the energy savings achieved are lower than the energy savings obligations. The liability corresponds to the cost of action yet to be taken to cover the obligations associated with energy sales completed. It is subsequently extinguished by making energy savings expenditures that enable the Company to obtain certificates, or by purchasing certificates.

Regulatory mechanism

The fourth period of France's energy savings certificates scheme ended on 31 December 2021. Despite the substantially higher energy savings targets,

the EDF group met its obligation and had a stock for the start of the fifth period.

Decree 2021-712 on the fifth period of the energy savings certificates scheme (2022-2025) was published in the *Journal officiel* of 5 June 2021. The decree made the scheme more effective (for example by significantly reducing special measures and bringing calculations closer to the real savings), increased funding for very vulnerable households (higher obligations intended to benefit households in situations of energy poverty, restriction of the scope to very vulnerable households, an increase in the penalties in this category to €20/MWh) and encouraged development of carbon-free energies:

- the overall obligation was increased by 17.2% to 2,500TWh for this period (obligations intended to benefit households in situations of energy poverty: +37% to 730TWh, "standard" obligations: +11% to 1,770TWh);
- the Energy Savings Certificate coefficient (MWh to be produced per MWh of energy sold) was reduced by 10.2% for electricity and increased by 51.8% for gas;
- for electricity and gas, the threshold below which no energy savings certificates are required is being progressively reduced from the initial 400GWh/year to 300GWh/year in 2022, 200GWh/year in 2023 and 100GWh/year in 2024 and subsequent years.

However, given the low level of market prices observed in the first few months of the fifth period of the energy savings certificate scheme (the first half of 2022), the number of new energy savings projects decreased significantly. To launch a new dynamic, the DGEC decided to revise the scheme obligations upwards for the fifth period, through decree 2022-1368 of 27 October 2022.

This new decree officially raised the obligations for the fifth period (2022-2025) as follows:

- "Standard" obligation: 1970TWh vs 1770TWh initially, and +200TWh for the period 2023-2025;
- "Energy poverty" obligation: 1130TWh vs 730TWh initially, and +400TWh for the period 2023-2025.

The obligation for the fifth period of the energy savings certificate scheme (2022-2025) is thus significantly higher than in the fourth period (2018-2021) (raised from 2133TWh to 3100TWh).

Note 7 Purchases and other external expenses

(in millions of euros)	2022	2021
Fuel purchases used ⁽¹⁾	9,059	4,422
Energy purchases ⁽²⁾	78,202	21,752
electricity	52,443	16,025
gas	24,868	5,113
Services and other purchases used ⁽³⁾	18,819	17,354
PURCHASES AND OTHER EXTERNAL EXPENSES	106,080	43,528

(1) Fuel purchases used include costs relating to raw materials for energy generation (nuclear fuels, fissile materials and gas, and coal and fuel oil in very small proportions), and purchases of services related to the nuclear fuel cycle. The increase in this item principally results from the higher purchase cost of gas consumed for electricity generation by CCG (Combined Cycle Gas) facilities.

Fuel purchases used also include greenhouse gas emission rights used (see note 17):

- At 31 December 2022, the volume of emissions was 6 million tonnes (6 million tonnes in 2021),
- In 2022 EDF surrendered 6 million tonnes in respect of emissions generated in 2021 (5 million tonnes were surrendered in 2021 in respect of emissions generated in 2020).

(2) Energy purchases include purchases made through the purchase obligation mechanism.

The increase in electricity purchases is principally explained by higher purchase volumes induced by the lower nuclear power output (see note 2.1.3) in a high market price environment. Purchases resulting from the additional 19.5TWh ARENH allocation (see note 3.1) also amounted to €5,011 million in 2022.

Gas purchases increased due to the combined effect of a significant rise in both prices and the volumes purchased. The observed increase mostly concerns purchases on the international markets and to a lesser extent on the domestic market. As these purchases were largely consumed during the year, the increase in gas stocks was moderate, at €189 million in net value (see note 17 (1)).

(3) Service purchases primarily include distribution network access fees invoiced by the subsidiary Enedis. Excluding delivery, service purchases increased by €1,672 million between 2021 and 2022, and in 2022 they include €617 million of costs relating to repair work on the main secondary circuit welds in the Flamanville 3 EPR (compared to €548 million in 2021) (see note 15 (3)).

Note 8 Taxes other than income taxes

Details of taxes other than income taxes are as follows:

(in millions of euros)	2022	2021
Taxes on salaries and wages	180	172
Energy-related taxes	1,123	1,180
Local Economic Contribution*	41	313
Property taxes	305	288
Other taxes	325	301
TOTAL TAXES OTHER THAN INCOME TAXES	1,974	2,254

* The decrease in the Local Economic Contribution results from the lower level of value added in 2022 due to an increase in energy purchases (see note 7) in a context of declining nuclear power output and the cost of purchasing 19.5TWh of electricity for the ARENH scheme (see note 3.1).

Inframarginal price cap on electricity production

On 6 October 2022 the European Union adopted a regulation for harmonised action to address the energy price crisis. Among other measures, this regulation sets targets for reducing energy consumption during the winter of 2023, and introduces state aid for businesses and households, funded by a windfall tax on the fossil fuel sectors, and an inframarginal price cap on electricity production.

This inframarginal price cap is a compulsory tax measure requiring electricity producers to pay to the State all revenues above a threshold expressed in €/MWh. Under the EU regulation, this cap is applicable from 1 December 2022 to 30 June 2023 with a threshold of €180/MWh, but many EU member states have

decided to lengthen the application period and set different thresholds, well below the EU level, for different generation technologies.

In France, a 90% tax applies to inframarginal rents during three periods: July - November 2022, December 2022-June 2023, and July - December 2023. Any deficit in one period may be carried over to the next.

Separate inframarginal rent thresholds (in €/MWh) are set for each electricity generation technology (8 different categories), principally €90/MWh for nuclear power and €80-€140/MWh for hydropower (depending on the power of each plant).

EDF's inframarginal rent was substantially negative for the first price cap period in 2022, and in December 2022 in the second period, in line with the purchases made on high-price markets due to the significant decrease in nuclear power output (-81.7TWh). Consequently, no tax on inframarginal rents is payable for electricity production in 2022.

Note 9 Personnel expenses

<i>(in millions of euros)</i>	2022	2021
Salaries and wages	3,981	3,720
Social contributions	2,634	2,687
TOTAL PERSONNEL EXPENSES	6,615	6,407

Personnel expenses include the general pay rise measures introduced in 2022 in an exceptionally inflationary economy. They also include €41 million of exceptional costs (€39 million in 2021) relating to repair work on the main secondary circuit welds in the Flamanville 3 EPR (see note 15 (3)).

The average workforce comprises:

	2022			2021
	Executives	Non executives	Total	Total
IEG status	28,656	28,458	57,114	57,696
Other	847	3,646	4,493	4,339
AVERAGE WORKFORCE	29,503	32,104	61,607	62,035

Average workforce numbers are reported on a full-time equivalent basis.

Note 10 Depreciation and amortisation

<i>(in millions of euros)</i>	2022	2021
Amortisation of intangible assets	391	332
Depreciation on property, plant and equipment:		
• owned by EDF	3,744	3,687
• operated under concessions*	328	318
Total depreciation and amortisation on fixed assets	4,463	4,337
Other depreciation and amortisation	27	26
TOTAL DEPRECIATION AND AMORTISATION	4,490	4,363

* Increases to this depreciation concern the Island Energy Systems public electricity distribution concessions, and hydropower concessions.

Note 11 Financial result

(in millions of euros)	2022	2021
Income from investments ⁽¹⁾	2,429	1,957
Income from other securities and receivables related to fixed assets	876	905
Interest and similar income and expenses	(1,512)	(1,264)
• Expenses on long-term financial liabilities after hedging	(1,740)	(1,624)
• Other	228	360
Foreign exchange result	(173)	(196)
Gains and losses on sales of marketable securities	(104)	(239)
Increases/Decreases in provisions and transfers of charges:	(4,785)	(2,628)
• Discount expense on employee benefits	(419)	(292)
• Discount expense on nuclear provisions ⁽²⁾	813	(2,090)
• Provision on investment securities in dedicated assets ⁽³⁾	(1,661)	(104)
• Impairment of marketable securities ⁽³⁾	(710)	(16)
• Provision on investment securities ⁽⁴⁾	(2,812)	3
• Provision for foreign exchange losses ⁽⁵⁾	(312)	(233)
• Reversals from provisions, impairment and transfers of charges	222	167
FINANCIAL RESULT	(3,269)	(1,465)

(1) The change in dividends received principally concerns:

- Enedis (€907 million in 2022 and €540 million in 2021);
- Dertgaz (€163 million in 2022 and €2 million in 2021);
- Manostock (€109 million in 2022 and €30 million in 2021);
- CTE (€179 million in 2022 and €130 million in 2021);
- Framatome (€61 million in 2022 and €37 million in 2021);
- EDF PEI (€100 million in 2022 and €88 million in 2021);
- EDF Immo (€73 million in 2022 and €63 million in 2021);
- EDF Nam Theun Holding (€42 million in 2022 and €36 million in 2021);
- EDEV (€49 million in 2022 and €87 million in 2021);
- C3 (the holding company which carries EDF Investissements Groupe) (€98 million in 2022 and €183 million in 2021);
- EDF Holding SAS (the holding company which carries EDF Trading) (€445 million in 2022 and €603 million in 2021).

(2) The positive discount effect on nuclear provisions in 2022 is explained by a 50bp increase in the real discount rate in 2022, after a 10bp decrease in 2021. It amounts to a net €813 million, principally comprising the €(1,830) million cost of unwinding the discount, and the positive €2,548 million effects of the change in the real discount rate in 2022, which were recorded in the income statement for provisions not backed by assets (see note 26 (1)).

At 31 December 2021, the €(1,474) million cost of unwinding the discount on nuclear provisions was complemented by an unfavourable effect of €(617) million relating to discount rates.

(3) The change is due to very unfavourable financial market trends compared to 2021.

(4) At 31 December 2022, impairment of €2,650 million was recognised in respect of the investment held in EDF International (see note 16.1 (4)).

(5) See note 25 (1).

Note 12 Exceptional result

At 31 December 2022, the exceptional result is a net €536 million. The main items were the following:

- net gains of €296 million on sales of investment securities included in dedicated assets, undertaken in the course of operational portfolio management;
- net reversals of €56 million from excess tax depreciation;
- a reversal of €135 million from provisions for ongoing tax litigation, including €69 million for amounts disbursed by EDF in 2022 in connection with the outcome of the existing dispute concerning the tax-deductibility of certain long-term liabilities for the financial years 2012-2013 and the period 2016-2019. The corresponding expense is recognised as an income tax expense (see note 13.2). The Company lodged a further appeal before the Council of State, which was deemed admissible in late 2022. EDF is now waiting for a hearing date to be set.

At 31 December 2021, the exceptional result was a net €1,765 million. The main items were the following:

- net gains of €1,070 million on sales of investment securities included in dedicated assets, undertaken in the course of operational portfolio management;

- income of €501 million corresponding to the settlement indemnity under the agreement signed by AREVA and EDF on 29 June 2021;
- a reversal of €459 million from provisions for ongoing tax litigation. This followed the initial establishment of the €(538) million provision at 31 December 2020 after a Council of State decision of 11 December 2020 concerning the tax-deductibility of certain long-term liabilities. On 17 June 2021 the Court dealing with the matter found against the Company and cancelled the first-instance judgements that had been in its favour. In execution of this decision, EDF paid €374 million in July 2021 for the years 2008 to 2010, having already paid €85 million in June 2021 for the years 2014 and 2015. €459 million of the provision was thus reversed and the corresponding expense was recognised as a tax expense. At 30 June 2021, the provision thus amounted to €79 million and concerned the financial years 2012-2013 and the period 2016-2021. At 31 December 2021, it amounted to €69 million due to re-estimation of the risk for 2021;
- increases to provisions for expenses relating to ongoing Competition Authority (ADLC) litigation proceedings (see note 29.1 (1));
- net reversals of €30 million from excess tax depreciation.

Note 13 Income taxes

13.1 Tax group

Since 1 January 1988, EDF and certain subsidiaries have formed a group subject to the tax consolidation system existing under French tax legislation (Articles 223A to 223U of the French Tax Code). This tax group comprises 289 subsidiaries in 2022, including Enedis, EDF International, EDF Renewables and Dalkia.

13.2 Income tax payable

Under Article 223A of the French Tax Code, EDF, as the head of the tax group, is the sole entity responsible for payment of income taxes and additional related contributions.

The tax consolidation agreement between the members of the tax group stipulates that the arrangement must be neutral in effect. In application of this principle, each subsidiary pays the consolidating company a contribution to group income tax equivalent to the tax it would have paid had it been taxed separately.

The tax consolidation agreement between EDF and the subsidiaries included in the tax group requires EDF to reimburse loss-making subsidiaries for the tax saving generated by their losses, as and when the entities concerned make taxable profits, in compliance with the standard rules for use of taxable losses.

EDF, as head of the tax group, recorded income tax income of €147 million for 2022 (after an income tax expense of €1,410 million for 2021).

This income breaks down as follows:

- tax income of €8,552 million relating to the negative taxable income for 2022, including €41 million of tax credits;
- a tax expense of €554 million on the exceptional result, which includes €69 million relating to tax litigation as described in note 12, and an amount of €297 million for a tax adjustment upheld by a ruling of 29 August 2022 by Montreuil Administrative Court (see note 29.2);
- a tax expense of €7,851 million corresponding to adjustments resulting from the tax consolidation.

13.3 Deferred taxes

Deferred taxes are not recognised in EDF's parent company financial statements. Deferred taxes result from differences between the accounting bases and tax bases of items. They generally arise as a result of timing differences:

- deferred tax assets reflect expenses which will be tax-deductible in future years or losses carried forward which will reduce taxable income in the future;
- deferred tax liabilities reflect either advance tax deduction of future accounting expenses or accounting revenues that will be taxable in future years and will increase taxable income in the future.

EDF, as head of the tax group, includes tax losses generated at group level in its deferred tax positions.

Changes in the basis for deferred taxes are as follows:

(in millions of euros)	31/12/2022	31/12/2021	Variation
1. Timing differences generating a deferred tax asset			
• Non-deductible provisions ⁽¹⁾	(17,551)	(15,469)	(2,082)
• Financial instruments and unrealised exchange gains	(1,881)	(5,656)	3,775
• Other	(428)	(457)	29
Total deferred tax assets subject to the standard rate	(19,860)	(21,582)	1,722
2. Timing differences generating a deferred tax liability			
• Financial instruments and unrealised exchange losses	4,682	2,450	2,232
• Other	2,889	2,723	166
Total deferred tax liabilities subject to the standard rate	7,572	5,173	2,398
• Capital gains not yet taxed	-	-	-
• Provisions for losses taxable at 15%	(39)	(11)	(28)
Total deferred tax assets subject to the reduced rate	(39)	(11)	(28)
BASIS FOR DEFERRED TAXES	(12,328)	(16,420)	4,092
Future tax receivable at standard rate ⁽²⁾	11,030	4,237	6,793
Future tax receivable at reduced rate	6	2	4

(1) Mainly concerning post-employment benefits for personnel, and unrealised tax savings resulting from the future deductibility of expenses whose deductibility is provisionally being challenged in ongoing tax litigations.

(2) Incorporating the future tax saving resulting from the tax group's loss for 2022.

Balance sheet

Note 14 Intangible assets

Accounting principles and methods

Research and development expenses

Research expenses are recognised as expenses in the financial period incurred.

Development costs that meet the requirements for capitalisation laid down in Article 211-5 of the French national chart of accounts are included in intangible assets and amortised on a straight-line basis over their foreseeable useful life.

Other intangible assets

Other intangible assets mainly consist of software and storage capacity reservations.

Royalties paid for SaaS (Software as a Service) are generally charged to expenses as the services are provided. To qualify as intangible assets, expenses on SaaS contracts must confer a right of control to the user in addition to access to the software for a fixed period.

Intangible assets other than research and development expenses are amortised on a straight-line basis over their useful lives regardless of whether they are generated in-house or purchased.

Details of the net values of intangible assets are shown below:

(in millions of euros)	Cumulative amounts at 31/12/2021	Increases	Decreases	Cumulative amounts at 31/12/2022
Software	2,768	479	60	3,187
Other	298	7	-	305
Intangible assets in progress*	1,370	728	494	1,604
Gross values	4,436	1,214	554	5,096
Software	(1,680)	(377)	(58)	(1,999)
Other	(154)	(14)	-	(168)
Amortisation and impairment	(1,834)	(391)	(58)	(2,167)
NET VALUES	2,602	823	496	2,929

* At 31 December 2022, intangible assets in progress notably include studies for the EPR 2 and SMR (Small Modular Reactor) projects, amounting respectively to €980 million and €141 million (€707 million and €69 million in 2021).

Principal projects in progress and investments during the year

New nuclear reactors in France: the EPR 2 project

The EPR 2 project concerns a new pressurised water nuclear reactor that meets the objectives for third-generation reactor safety, aiming to incorporate design, construction and commissioning experience acquired from EPR reactors and the nuclear reactors currently in operation.

On 16 July 2019, the ASN issued an opinion that the safety levels of EDF's key design options for its EPR 2 were satisfactory. It stated that "the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory".

The EPR 2 will also offer superior operating performance in terms of power (1650MW compared to 1450MW for the most powerful current reactor), output, availability and manoeuvrability.

The draft PPE published on 25 January 2019 by the Ministry for the Ecological and Inclusive Transition stated that the Government, together with the nuclear industry, would conduct a programme of work by mid-2021 to examine the questions of the cost of new nuclear energy production and its advantages and disadvantages in relation to other low-carbon generation methods, the possible financing models, the project management modalities for new reactor projects and public consultation, and matters relating to the management of waste generated by the potential new nuclear fleet, and that based on this information and depending on developments in the energy situation, the Government would make a decision regarding the suitability of launching a renewal programme for nuclear installations.

While awaiting a decision about the EPR 2, EDF was authorised by its Board of Directors on 16 December 2020 to continue the project until the end of 2022, with a cost budget of around €1 billion.

In 2021, EDF, working with the French authorities, finalised its contribution to the government-supervised work programme: formal provision of feedback from construction of the first EPRs, and demonstration of the French nuclear sector's ability to handle an industrial programme to build 3 pairs of reactors (using an adjusted EPR model incorporating experience from the earliest EPR projects in France and internationally).

The analysis conducted covered justification of the need, an action plan to mobilise actors in the nuclear sector, estimation of anticipated costs, analysis of the possible options for the programme's leadership and funding (and their consequences as regards regulation and changes in the legal framework), pre-identification of certain potential sites, consideration of questions relating to management of the waste produced by a new nuclear fleet and action to be taken, including interaction with the European Commission and public consultation.

In the summer of 2021, the DGEC audited the parts of this analysis relating to the programme and validated the methods used to estimate the schedule and costs.

The French President declared in a speech in November 2021 that France would restart a nuclear programme and build new reactors on French soil. On 10 February 2022 during a visit to Belfort in eastern France, he announced the launch of a programme to construct 6 EPR 2 reactors by 2035, and begin studies for an additional 8 EPR 2 reactors by 2050. He also observed that it was necessary to aim to have the first new reactor commissioned by 2035, and said that these new EPR 2 units will be built and operated by EDF.

No investment decision yet has been made. An appropriate funding and regulation plan for this programme is currently in preparation, and an updated completion cost for the project is expected in the summer of 2023.

Until a decision is made on the EPR 2, EDF was authorised by its Board of Directors on 31 March 2022 to continue development work until the end of 2023, and given a budget extension of approximately €0.6 billion.

NUWARD, France's Small Modular Reactor (SMR) project

Regarding Small Modular Reactors (SMRs), development of the NUWARD™ continued in 2022. NUWARD™ is a third-generation model pressurised water plant consisting of two 170MW units, designed to be built in large numbers and widely exported. Its main target is as a replacement for fossil-fired plants in the next few decades. Sales will be backed up by a model plant in France, due to start construction by 2030.

The design of the NUWARD™ SMR is being preassessed by the ASN in collaboration with the Czech and Finnish safety authorities SUJB and STUK. The aim of this assessment is to accelerate the granting of international licences for SMRs while also giving a new impetus to regulatory harmonisation.

In December 2022, EDF and Fortum signed a cooperation agreement for joint exploration of development opportunities for SMRs and large nuclear reactors in Finland and Sweden.

In late 2022 the EDF group set up a dedicated subsidiary to lead the next part of the NUWARD™ project, the basic design phase, which will start in early 2023 and should be completed by the end of 2026. This subsidiary, named Nuward, is fully-owned by the Group. It will continue to receive engineering support from EDF, the CEA, TechnicAtome, Naval Group, Framatome and Tractebel.

A €50 million subsidy granted under the "France 2030" plan was awarded by the French State in December 2022 (see note 22 (2)) after due notification and authorisation from the European Commission. In his speech at Belfort on 10 February 2022, the French President had announced additional State support of €500 million for the NUWARD™ project.

Note 15 Property, plant and equipment

Accounting principles and methods

EDF's property, plant and equipment is reported under two balance sheet headings, as appropriate to the business and contractual circumstances of the assets' use:

- property, plant and equipment owned by EDF, essentially nuclear generation facilities;
- property, plant and equipment operated under concessions.

Initial measurement

Property, plant and equipment is recorded at acquisition or production cost:

- the cost of facilities developed in-house includes all labour and materials costs, and all other production costs attributable to the construction of the asset;
- the cost of property, plant and equipment also includes the initial estimate of decommissioning costs. These assets are associated with the provisions recorded to cover decommissioning obligations. At the date of commissioning, property, plant and equipment is measured and recorded in the same way as the corresponding provision (see note 26);
- decommissioning costs for nuclear generation installations also include last core costs (see note 26).

When some of the decommissioning costs for a plant are to be borne by a partner, the expected reimbursement is recognised as accrued income in the assets. The difference between the provision and the accrued income is recorded in Property, plant and equipment, and subsequent payments by the partner are deducted from the accrued income.

EDF capitalises safety expenses incurred as a result of legal and regulatory obligations sanctioning non-compliance by an administrative ban from operation.

Strategic safety spare parts for generation facilities are treated as property, plant and equipment, and depreciated over the residual useful life of the installations.

The costs of operations that are necessary for generation assets to remain in service, and are undertaken at the time of scheduled shutdowns, particularly during major inspections, are capitalised and amortised over a period corresponding to the time elapsing between two inspections.

When a part of an asset has a different useful life from the overall asset's useful life, it is identified as an asset component and depreciated over a specific period.

Borrowing costs attributable to the financing of an asset incurred during the construction period are recognised as expenses.

Depreciation

Items of property, plant and equipment are depreciated on a straight-line basis over their useful life, defined as the period during which the Company expects to draw future economic benefits from their use.

The expected useful lives for the main facilities are as follows:

- hydroelectric dams: 75 years;
- electromechanical equipment used in hydropower plants: 50 years;

- fossil-fired power plants (mainly CCGT-Combined Cycle Gas Turbine plants): 25 to 45 years;
- nuclear generation facilities: 40 to 50 years;
- distribution installations (lines, substations): 20 to 45 years.

For concession assets, the depreciation periods take account of the duration of the concession agreement.

Concession agreements

EDF is the operator for two types of concessions:

- public electricity distribution concessions in which the grantors are local authorities (municipalities or syndicated municipalities);
- hydropower concessions granted by the French State.

The accounting treatment of concessions is based on the 1975 accounting guide for concession operator firms, as there are no specific instructions in the French national chart of accounts.

Public electricity distribution concession

EDF is the concession operator for the island public distribution networks located in Corsica and France's overseas departments, under concession agreements based on standard concession rules approved by the public authorities. Concession agreements signed since 2018 follow the concession model negotiated in 2017 with the National Federation of Licensing Authorities (Fédération Nationale des Collectivités Concédantes et Régies - FNCCR) and France Urbaine, while other concessions follow the concession model signed with the FNCCR in 1992 (and updated in 2007).

Concession assets are reported in the balance sheet assets as property, plant and equipment operated under concessions, regardless of their initial financing, at acquisition cost or their estimated value at the transfer date when supplied by the grantor. An offsetting liability is recognised for any assets supplied for nil consideration by concession grantors.

Hydropower concessions

Hydropower concessions follow standard rules approved by decree.

For concessions granted before 1999, hydropower concession assets consist solely of hydropower generation equipment (dams, pipes, turbines, etc.), while for more recent concessions, they also include hydropower generation equipment and switching facilities (alternators, etc.).

Assets used in these concessions are recorded under "Property, plant and equipment operated under concessions" at acquisition cost and depreciated over their useful life.

Additional depreciation is also booked in the balance sheet liabilities for assets operated under concessions (see note 24).

Most concessions that expired before 2012 were initially for 75 years and were renewed for terms of 30 to 50 years. However, the French government has not yet renewed 28 concessions that have expired. Since their expiry these concessions have thus been in the "rolling extension" situation defined by the law, which stipulates that at the expiry date of a concession, if no new concession has been established "the concession is extended on the existing terms until such time as a new concession is granted", so as to ensure continuity of operations in the meantime (Article L. 521-16 par. 3 of the French Energy Code).

When a concession is operated in these circumstances, a fee based on the "rolling extension" profits has been payable since 2019. This fee amounts to 40% of the normative earnings of the concession as defined by Article R. 523-5 of the French Energy Code, less corporate income tax.

Long-term asset impairment

At each reporting date, EDF assesses whether there is an indication that an asset could have significantly lost value. If so, an impairment test is carried out as follows:

- EDF measures any long-term asset impairment by comparing the carrying value of these assets, combined into groups where necessary, and their recoverable amount, usually determined using the discounted future net cash flow method. When this recoverable amount is lower than the value in the balance sheet, an amount equivalent to the difference is written off under Depreciation and impairment;
- the discount rates used are based on the weighted average cost of capital (WACC) for each asset or group of assets concerned;
- future cash flows are calculated on the basis of the best available information at the valuation date:
 - > for the first few years, the flows correspond to the Medium-Term Plan (MTP). Over the MTP horizon, energy and commodity prices are determined based on available forward prices, taking hedges into consideration,
 - > beyond the MTP horizon, cash flows are estimated based on long-term assumptions prepared for each country and each energy, in a scenario development process that is updated annually. Medium and long-term

electricity prices are constructed analytically by assembling blocks of assumptions concerning factors such as economic growth, commodity prices (oil, gas, coal) and CO₂ prices, demand for electricity, interconnections, and developments in the energy mix (rise of renewable energies, installed nuclear capacity, etc.), combined with fundamental models of supply-demand balance. EDF compares each principal component of assumption with analyses by external bodies (for example, for commodities and CO₂, which are primary influences on electricity prices, EDF compares its own scenarios with scenarios developed by organisations such as the IEA, IHS, Wood Mackenzie or Aurora, bearing in mind that each of these analysts itself proposes a cone of scenarios corresponding to different macro-economic environments),

- > income from capacity market mechanisms is also taken into consideration in valuing generation assets.

These calculations may be significantly influenced by several variables:

- changes in discount rates;
- changes in market prices for energy and commodities and tariff regulations;
- changes in demand and EDF's market shares, and the attrition rate on customer portfolios;
- the useful life of facilities, or the duration of concession agreements where relevant;
- the growth rates used beyond the medium-term plans and where relevant the terminal values taken into consideration.

Details of the net values of property, plant and equipment are shown below:

(in millions of euros)	Cumulative amounts at 31/12/2021	Increases	Decreases	Cumulative amounts at 31/12/2022
Land, buildings and land improvements	12,348	287	64	12,571
Nuclear power plants	65,898	3,246	1,459	67,685
Machinery and plant other than networks	13,471	267	168	13,570
EDF-owned networks	1,155	39	2	1,192
Other tangible assets	1,803	126	96	1,833
Property, plant and equipment owned by EDF	94,675	3,965	1,789	96,851
Land, buildings and land improvements	10,845	124	22	10,947
Machinery and plant other than networks	1,866	91	20	1,937
Concession networks	3,297	217	25	3,489
Other tangible assets	21	-	-	21
Property, plant and equipment operated under concessions ⁽¹⁾	16,029	432	67	16,394
Property, plant and equipment in progress ⁽²⁾	20,872	5,685	4,445	22,112
Gross values ⁽³⁾	131,576	10,082	6,301	135,357
Land, buildings and land improvements	(8,075)	(298)	(55)	(8,318)
Nuclear power plants ⁽⁴⁾	(44,139)	(4,616)	(1,470)	(47,285)
Machinery and plant other than networks	(9,690)	(483)	(163)	(10,010)
EDF-owned networks	(593)	(34)	(2)	(625)
Other tangible assets	(1,217)	(137)	(93)	(1,261)
Property, plant and equipment owned by EDF	(63,714)	(5,568)	(1,783)	(67,499)
Land, buildings and land improvements	(6,822)	(155)	(20)	(6,957)
Machinery and plant other than networks	(1,118)	(38)	(13)	(1,143)
Concession networks	(1,392)	(96)	(22)	(1,466)
Other tangible assets	(11)	-	-	(11)
Property, plant and equipment operated under concessions	(9,343)	(289)	(55)	(9,577)
Property, plant and equipment in progress	(89)	(3)	(60)	(32)
Depreciation and impairment	(73,146)	(5,860)	(1,898)	(77,108)
NET VALUES	58,430	4,222	4,403	58,249

(1) Property, plant and equipment operated under concessions concern the Island Energy Systems public electricity distribution concessions, and hydropower concessions.

(2) Investments during the year mainly concern equipment for existing power plants under the Grand Carénage programme (for replacement of major components, particularly steam generators, and work done in connection with the 10-year and regular inspections), and construction of the EPR plant (Flamanville 3). At 31 December 2022, capitalised costs associated with the stress corrosion phenomenon amount to €376 million (see note 2.1.3).

(3) The capitalised value of the Flamanville 3 EPR project in the financial statements at 31 December 2022 is €12,464 million (€12,155 million in assets in progress and €309 million in assets commissioned). In addition to the construction cost, this amount includes an inventory of spare parts and capitalised amounts totalling €635 million for related projects (notably the initial comprehensive inspection and North Area development), and €902 million of pre-operating expenses and other tangible assets related to the Flamanville project, giving a total accumulated construction cost at historical value of €10,927 million. Accumulated depreciation and amortisation recognised at 31 December 2022 in respect of assets in operation amounts to €112 million.

On 16 December 2022, EDF announced an adjustment to the schedule for the Flamanville 3 project, and the estimated cost to completion was raised from €12.7 billion to €13.2 billion in 2015 euros, excluding interim interest.

The additional costs relating to work for repairs to the main secondary circuit welds at the Flamanville 3 EPR are abnormal costs that cannot be included in the production cost of an asset. They are recorded in operating expenses and amount to €658 million in 2022, comprising €617 million of services and other purchases used (see note 7 (3)) and €41 million of personnel expenses (see note 9). The cumulative total of these costs is €1.7 billion. The additional exceptional costs induced by the readjustment announced on 16 December 2022, principally relating to stress-relieving heat treatment on the repaired welds, will also be recognised in operating expenses.

(4) The increase in depreciation and impairment of nuclear power plants in 2022 is explained by the effects of changes in the real discount rate at 31 December 2022 on impairment of related and underlying assets in the case of provisions backed by assets (see note 26).

Depreciation period of nuclear power plants in France

As stated in note 1.2.1, the depreciation period of nuclear power plants currently in operation in France, i.e. thirty-two 900MW reactors, twenty 1300MW reactors and four 1450MW reactors, is 50 years for 900MW-series plants (since 1 January 2016) and 1300MW-series plants (since 1 January 2021), and 40 years for N4-series plants which do not yet fulfil the conditions for a longer depreciation period.

Under France's multi-year energy programme (PPE, standing for *Programmation Pluriannuelle de l'Énergie*) for the period 2019-2028, adopted in April 2020, twelve French nuclear reactors are to be shut down by 2035. As this includes the shutdowns of two 900MW reactors in 2027 and 2028 ahead of their fifth 10-year inspection, an early shutdown scenario for two 900MW reactors has been adopted. Its effects on nuclear provisions and depreciation in EDF's financial statements are not significant.

Depreciation period of coal-fired plants in France

In view of France's Energy and Climate law of 8 November 2019, the end of the depreciation period for the Cordemais coal-fired plant was brought forward to 2026, with a view to the plant continuing to operate as part of the Ecocombust project, after conversion to biomass. On 8 July 2021, EDF announced that it had decided to terminate the Ecocombust project, since the conditions for its continuation were not fulfilled. The Cordemais plant will remain in operation until 2024, perhaps even 2026, to meet the requirements of the electricity system as defined by RTE, in compliance with the Energy and Climate law which allows the plant to be used at full capacity for a maximum of about 750 hours a year. Decrees 2022-123 of February 2022 and 2022-1233 of September 2022 took the exceptional step of raising the limit for greenhouse gas emissions by fossil-fired electricity generating installations, removing the cap on operation hours for 2022

and 2023 due to risks of pressure on the electricity system. The end of the depreciation period is currently unchanged at 2026, and the depreciation schedule takes account of the new operating rules.

Impairment tests on assets

Due to the integrated management and interdependence of the different generation facilities that make up EDF's fleet (nuclear, thermal and hydropower plants), independently of their maximum technical capacities, EDF considers the entire fleet as a single CGU. This CGU includes the Flamanville 3 plant, with net book value of €12,464 million (see note 15 (3)).

The recoverable value of the generation fleet is estimated by discounting future cash flows by the usual methodology, described in the accounting policies for long-term asset impairment, over the assets' useful life, using an after-tax WACC of 6.3% at 31 December 2022 (120bp higher than the 5.1% at 31 December 2021). For nuclear assets, EDF's benchmark model assumes an operating lifetime of 50 years for 900MW and 1,300MW-series plants and 40 years for N4-series plants, based on the depreciation period applicable at 31 December 2022, although it is EDF's strategy to keep plants in operation well beyond 50 years. The impairment test also incorporates the latest forecasts for Flamanville 3 (which has a planned operating lifetime of 60 years), with an adjusted schedule and cost (see note 15 (3)).

For the period 2023-2025, the key assumptions concerning price and regulation take account of forward prices (significantly higher over this horizon than at the 2021 year-end) and hedges already contractualised, an ARENH volume of 100TWh and price of €42/MWh, a tariff cap for final consumers that will be funded by the French State budget in accordance with the current Finance Law (and therefore no loss of cash flow for EDF) and the best estimate of the inframarginal rent cap, considering the negative rents for 2022 (see note 8). These assumptions are consistent with the 2023 budget approved by the Board of Directors.

From 2026, when the ARENH scheme ends, since to date there is no regulation of the existing nuclear power fleet, the reference impairment test framework applies an assumption of full market exposure in constructing tariffs and prices.

As a result of medium and long-term price analyses, in the context of a gradual recovery in nuclear power generation starting from a range of 300-330TWh for 2023, the impairment test indicates substantially higher headroom than in 2021 (even before the effect of measures associated with the exceptional additional ARENH allocation and the impacts of the drop in nuclear power output in 2022), although the increase is mitigated by the higher WACC. The test shows that the recoverable value is well above the net book value.

The key assumptions in the test still concern:

- the useful life of nuclear assets;
- the long-term market price scenario (after the end of the ARENH scheme) and to a lesser degree the changes in forward prices over the medium-term horizon;
- the volume of nuclear power output;
- the discount rate; and
- to a lesser extent, changes in costs and investments, and the assumed capacity revenue.

These key assumptions were subjected to individual and combined sensitivity analyses (a 50bp increase in the WACC; a 10TWh per year decrease in nuclear power output across the whole period; a 5% increase in investments or operating expenses across the whole period; a decline in capacity prices; and post-2026 market prices 10% below the reference scenario price for a sustained period) and the results did not call into question the existence of a positive difference between the book value and the recoverable value. An additional sensitivity test was also conducted using a less favourable income scenario over the 2024-2025 horizon, particularly considering potential unfavourable regulatory measures which could lead to a significant decrease in the test headroom, all other things being equal.

Note 16 Financial assets

Accounting principles and methods

Investments

Investments are carried at acquisition cost.

Gains and losses on sales of investments are valued using the FIFO (first in first out) method.

Transfer duties, fees and commissions and legal fees related to acquisitions of investments are included in the cost of acquisition of the asset.

Expenses of this type relating to other shares are included in expenses. Tax-regulated amortisation of acquisition costs is recorded in an excess depreciation account.

When the book value of investments is higher than their value in use, impairment is recorded equivalent to the difference.

For investments in companies consolidated by the EDF group, value in use is principally determined by reference to the entity's equity value consolidated in the Group's financial statements. It also takes other factors into consideration where relevant, such as information gathered during impairment tests conducted by the Group.

Investment securities

EDF holds investment securities comprising financial assets intended to finance operations at the end of the nuclear cycle, for which provisions have been accrued. These assets are managed separately from other financial

assets and investments in view of their specific objective, and consist of bonds, equities, collective investment funds and "reserved" funds.

Other investments also include treasury shares that cover obligations relating to debt instruments providing access to the Company's capital, acquired under a liquidity contract with an investment services company or through an external growth operation or capital reduction.

Shares are recorded at acquisition cost. Transfer duties, professional fees, commissions, legal expenses and purchasing costs are all charged to expenses, applying the option used for other investments.

Investment securities (shares and bonds) are recorded at acquisition cost. If the carrying amount of a security is lower than the acquisition cost, the unrealised capital loss is fully covered by a provision without being netted against potential gains on other securities. The carrying amount of listed securities is assessed individually, taking the stock market price into account. For unlisted securities, the carrying amount is also assessed individually, mainly by reference to the growth prospects of the companies concerned.

Other financial assets

EDF grants short-term loans in foreign currencies to its subsidiaries for the purposes of the Group's activities.

In order to reduce exposure to foreign exchange risks, EDF mainly finances these loans by short-term commercial paper issues in foreign currencies and in Euros, together with the use of currency hedging derivatives. Capitalised receivables are stated at nominal value. Impairment is recognised when the market value falls below the book value.

16.1 Changes in financial assets

<i>(in millions of euros)</i>	Cumulative amounts at 31/12/2022	Cumulative amounts at 31/12/2021
Investments ⁽¹⁾	61,474	60,923
Receivables related to investments	51	51
Investment securities ⁽²⁾	25,215	25,201
Other investments	94	202
Loans to subsidiaries and other financial assets ⁽³⁾	34,207	23,829
Total financial assets, gross	121,041	110,206
Impairment of investments and related receivables ⁽⁴⁾	(3,521)	(709)
Impairment of investment securities ⁽⁵⁾	(2,084)	(404)
Total impairment	(5,605)	(1,113)
TOTAL FINANCIAL ASSETS, NET	115,436	109,093

(1) The increase in investments essentially corresponds to a new investment of €351 million by EDF Invest for a capital increase by C87 (a company that holds a fibre optics network in Denmark) and a €156 million subscription to the capital increase by C88 (a company that holds an investment in data centres in the United States).

(2) Changes in investment securities correspond mainly to acquisitions and sales of dedicated assets over the period, which generate net gains that are reinvested in the dedicated asset portfolio (see note 12).

(3) Loans to subsidiaries at 31 December 2022 total €34,162 million, principally concerning €15,690 million for EDF International in connection with funding for the HPC project in England, €5,120 million for EDF Trading, €4,364 million for EDF Renewables, €3,980 million for Enedis, €2,146 million for EDF Energy and €2,045 million for Dalkia.

(4) Following a review of the value in use of investments carried in EDF's balance sheet assets at 31 December 2022, impairment was recorded, notably €2,650 million on the investment in EDF International (see note 11 (4)). As the holding company for most of the EDF group's international investments, the value in use of the shares in EDF International is based on the contributions by various subsidiaries and subgroups to the Group's consolidated equity, taking account of the positive margins shown by impairment tests of the various cash-generating units.

The deterioration in 2022 in the value in use of the investment in EDF International essentially results from a substantial downturn in the realisable value of EDF Energy in the United Kingdom, mostly attributable to the very significant increase in the discount rate, and to a lesser extent to the revised completion cost for the HPC project, announced in May 2022.

(5) The change in this item is mainly due to less favourable developments on the financial markets in 2022 than 2021, leading to recognition of impairment on investment securities and other investments during the year (see note 11 (3)).

16.2 Subsidiaries and investments of at least 50% of capital

(in millions of euros)	Gross book value of shares owned at 31/12/2022	Impairment recorded at 31/12/2022	Net book value of shares owned at 31/12/2022	% capital owned	Equity 2021	Net income 2021	Dividends received in 2022	Sales 2021
Subsidiaries								
EDF International ⁽¹⁾	25,930	2,650	23,280	100	16,154	(804)	-	1
C3 ⁽²⁾	11,196	-	11,196	100	11,447	103	98	-
EDEV ⁽³⁾	6,891	-	6,891	100	6	51	49	nm
CTE ⁽⁴⁾	2,705	-	2,705	50.1	5,294	264	179	-
EDF Holding SAS ⁽⁵⁾	1,950	-	1,950	100	2,590	445	445	-
EDF Immo ⁽⁶⁾	1,361	-	1,361	100	1,497	77	73	-
EDF Nam Theun Holding ⁽⁷⁾	437	-	437	100	427	36	42	-
Other holding companies ⁽⁸⁾	4,406	428	3,978	100	3,499	145	412	-
Holding companies	54,876	3,078	51,798				1,298	
France								
Enedis	2,700	-	2,700	100	6,312	1,196	907	15,637
Framatome	2,014	-	2,014	75.5	2,682	111	61	2,127
Dalkia	967	140	827	99.9	484	59	35	2,470
EDF Production Électrique Insulaire SAS	561	-	561	100	1,176	159	100	989
Edvance	12	-	12	80	6	(23)	-	583
Centrale Électrique Rhénane de Gambenheim	3	-	3	50	9	-	-	9
Other countries								
Eosson	14	14	-	50	140	-	-	-
Rheinkraftwerk Iffezheim (RKL)	3	-	3	50	89	3	-	16
Forces Motrices du Chatelôt	nm	-	-	50	8	nm	nm	4
Industrial and commercial companies	6,274	154	6,120				1,103	
Other entities (GIE EIFER)	130	125	5				-	
TOTAL SUBSIDIARIES	61,280	3,357	57,923				2,401	

nm: not material (less than €500,000).

(1) EDF International makes and manages investments in entities operating in the energy sector outside France, principally: EDF Energy, Edison, Luminus, EDF Gas Deutschland, EDF China Holding Ltd, EDF Norte Fluminense, and EDF Inc. EDF Energy carries the nuclear development projects in England, including HPC and Sizewell C (see note 10.6, Assets in progress, to the consolidated financial statements at 31 December 2022).

(2) Among other investments, C3 holds 100% of EDF Investissements Groupe, a subsidiary in charge of medium and long-term financing for operations outside France.

(3) EDF Développement Environnement is a holding company for subsidiaries and investments contributing to development of the Group's areas of business in France, including energy efficiency and renovation (IZI solutions, IZI solutions Renov, IZI confort, EDF ENR, Sowee), electric mobility (IZIVIA), nuclear plant decommissioning and management of radioactive waste (Cyclife, Orano DS), energy generation from renewable sources (EDF Renewables, Hydrostadium), local energy management (Agregio, e2m), and other activities, including Électricité de Strasbourg.

(4) CTE holds 100% of RTE.

(5) EDF Holding SAS holds EDF Trading, which provides optimisation and risk management services, and an interface with wholesale markets.

(6) EDF Immo holds 100% of Gérance Générale Foncière and Sofilo, as well as other investments.

(7) EDF Nam Theun Holding holds an investment in Nam Theun 2 Power Co.

(8) Other investments with individual values of less than €400 million.

16.3 Subsidiaries and investments under 50% of capital

(in millions of euros)	Gross book value of shares owned at 31/12/2022	Impairment recorded at 31/12/2022	Net book value of shares owned at 31/12/2022	% capital owned	Equity 2021	Net income 2021	Dividends received in 2022
TOTAL SUBSIDIARIES	61,280	3,357	57,923	-	-	-	2,401
Investments							
Companies in which EDF has an interest of between 10% and 50%							
Trimet France	130	108	22	35	338	62	13
Dalkia Investissements	63	56	7	50	16	1	1
TOTAL	193	164	29				14
Companies in which EDF has an interest of less than 10%							
Force Motrice de Mauvoisin	1	-	1	9.8	121	4	nm
TOTAL	1	-	1				-
TOTAL INVESTMENTS	194	164	30				14
TOTAL SUBSIDIARIES AND INVESTMENTS, GROSS	61,474	3,521	57,953				2,415

nm: not material (less than €500,000).

16.4 Relations with subsidiaries

(in millions of euros)	EDF's receivables ⁽¹⁾		EDF's liabilities ⁽¹⁾		Financial expenses	Financial income (excluding dividends)
	Loans	Operating receivables	Net liabilities included in current account	Operating liabilities		
Company						
Atmea	162					20
CTE		539		498		
Framatome		149		581		
EDF Energy	2,146	156		81		51
EDF Renewables	4,364	58				49
EDF International	15,690					301
EDF Trading	5,120	5,200		8,517		73
Edison						2
Enedis	3,980	90		1,795		21
Dalkia France	2,045	81		258		54
Groupe PEI	492			126		12
Citelum						2
Luminus	80					2
Edvance	19	66		77		
Current accounts ⁽²⁾				2,500		
Investment agreement for subsidiaries' liquidities			3,718		(63)	
Group cash management agreement with subsidiaries ⁽³⁾			13,338		(63)	
Tax consolidation agreement				1,563		

(1) Receivables and payables of more than €50 million.

(2) Including €887 million concerning Enedis, €615 million concerning Sofilo, €553 million concerning PEI and €271 million concerning EDF Immo.

(3) Including €5,186 million concerning C3, €2,374 million concerning EDF Energy, €1,624 million concerning EDF Trading, and €1,149 million concerning EDF Holding SAS.

16.5 Investment securities portfolio

(in millions of euros)	At start of year			At year-end		
	Gross book value	Net book value	Fair value	Gross book value	Net book value	Fair value
VALUE OF INVESTMENT SECURITIES	25,201	24,944	29,741	25,215	23,297	25,495

The net value of the investment securities portfolio at 31 December 2022 comprises €23,297 million of dedicated assets (see note 26.6.5).

16.6 Treasury shares

A share repurchase programme was authorised by the General Shareholders' Meeting of 6 May 2021 for a duration of 18 months, within the limit of 10% of the total number of shares making up the Company's capital. This programme was implemented in 2021 for market-making purposes through the liquidity contract.

(in millions of euros)	31/12/2021	Increase	Decrease	31/12/2022
Gross value	14	-	(7)	7
Impairment	(2)	-	2	-
TREASURY SHARES, NET	12	-	(5)	7

At 31 December 2022, a total 888,511 treasury shares are included in "Investment securities" at the net value of €7 million.

16.7 Financial loans and receivables related to investments

This item consists mainly of loans to subsidiaries:

(in millions of euros)	Liquidity			Gross value at 31/12/2022	Gross value at 31/12/2021
	< 1 year ⁽¹⁾	1-5 years ⁽²⁾	> 5 years ⁽³⁾		
Receivables related to investments	2	-	49	51	51
Loans to subsidiaries and other financial assets ⁽⁴⁾	18,458	9,924	5,825	34,207	23,829
FINANCIAL LOANS AND RECEIVABLES RELATED TO INVESTMENTS	18,460	9,924	5,874	34,258	23,880

(1) Including €9.94 billion concerning EDF International, €5.1 billion concerning EDF Trading and €1.05 billion concerning EDF Renewables, corresponding to maturities of drawings on credit lines.

(2) Including €5.66 billion concerning EDF International and €2.3 billion concerning EDF Renewables, corresponding to maturities of drawings on credit lines, and €1 billion to Enedis corresponding to maturities of loans and drawings on credit lines.

(3) Including €2.36 billion concerning Enedis, corresponding to maturities of loans and drawings on credit lines, €1.5 billion concerning EDF Energy corresponding to maturities of loans, and €1 billion concerning EDF Renewables, corresponding to maturities of drawings on credit lines.

(4) The changes are principally explained by loans to subsidiaries in 2022: €2.6 billion to EDF International, €2.2 billion to EDF Trading, €2 billion to Enedis, €2 billion to EDF Energy and €1.5 billion to EDF Renewables.

Note 17 Inventories and work-in-progress

Accounting principles and methods

The initial cost of inventories includes all direct material costs (including the effect of hedging), labour costs and a share of indirect production costs.

Inventory consumption is generally valued under the weighted average unit cost method. Consumption of greenhouse gas emission rights and Energy Savings Certificates is valued under the FIFO (first in first out) method.

Inventories are carried at the lower of historical cost or net realisable value.

Nuclear fuel and materials

Inventory accounts include:

- nuclear materials, whatever their form during the fuel fabrication cycle;
- fuel components in the warehouse or in the reactor.

The stated value of nuclear fuel and materials and work-in-progress is determined based on direct processing costs including materials, labour and subcontracted services (fluorination, enrichment, fabrication).

In application of the concept of "loaded fuel" as defined in the ministerial order of 21 March 2007, the cost of inventories for fuel loaded in the reactors but not yet irradiated includes expenses for spent fuel management

and long-term radioactive waste management. The corresponding amounts are taken into account in the relevant provisions.

Nuclear fuel consumption is determined by component (natural uranium, fluorination, enrichment, fuel assembly fabrication) as a proportion of the expected output when the fuel is loaded in the reactor. These quantities are valued by applying the weighted average cost of inventories to each component. Inventories are periodically corrected in view of forecast spent quantities based on neutronic measurements and physical inventories.

Other operating inventories

Other operating inventories comprise:

- fossil fuels required for operation of fossil-fired power plants;
- operating materials and equipment such as spare parts supplied under a maintenance programme (excluding capitalised strategic safety spare parts);
- greenhouse gas emission rights and Energy Savings Certificates acquired for the generation cycle (see note 6);
- gas stocks, valued at weighted average cost, including direct and indirect purchase costs, especially transport costs;

- certificates issued under capacity mechanisms (capacity guarantees in France) (see note 3.1).

Impairment of spare parts depends mainly on the turnover of these parts.

Greenhouse gas emission rights

EU Directive 2003/87/EC set up a greenhouse gas emission quota system for the European Union (the EU-ETS).

This system, which applies in all EU countries, sets an annual cap on emissions. Businesses (including EDF) receive or buy emission quotas below that limit, then the following year surrender to the European Commission a number of greenhouse gas emission rights corresponding to their Scope 1 emissions for the year elapsed, such as direct greenhouse gas emissions from production of the goods sold (e.g. electricity, heat, steel, paper, etc.). Fines are payable if there is a shortfall (€100 per tonne of CO₂ not covered by quotas, and an obligation to cover these amounts by quota the following year).

The cap is being progressively reduced in order to bring down the total emissions in Europe.

The legislative framework of the EU-ETS for the fourth trading period (2021-2030) has been tightened up to achieve the emission reduction targets set in the 2030 Climate and Energy framework, and the EU's contribution to the Paris Climate Agreement adopted in 2015 (which set a general target of a 40% cut in emissions compared to 1990 levels for the whole EU)*. One key step was accelerating annual quota reductions to 43 million tonnes per year (2.2% below the allocations for 2010).

The European Commission also presented a package of proposals on 14 July 2021 entitled "Fit for 55", intended to bring the European Union closer to the augmented target of cutting CO₂ emissions by at least 55% (compared to 1990 levels) by 2030. The European "trilogue negotiation", finalised in December 2022, raised the initial targets set by the European Commission in its legislative proposals in July 2021. The quotas for the

sectors concerned by the ETS will be reduced by 62% (compared to 2005) by 2030.

EDF applies the accounting methods for greenhouse gas emission rights stipulated in ANC regulation 2012-03 of 4 October 2012, incorporated into Articles 615-1 to 615-22 of ANC regulation 2014-03.

The accounting treatment of emission rights depends on the holding intention.

Emission rights held to comply with regulatory requirements on greenhouse gas emissions (the "Generation" model) are included in inventories at acquisition cost, and the FIFO (first in first out) method is applied. A write-down is recorded when the generation cost of the electricity that includes the cost of the rights is higher than the present value of that electricity. At year-end, a "net presentation" principle is applied as follows:

- an asset is recognised in raw materials inventories if the quantities of greenhouse gas emissions are lower than the number of emission rights held in the portfolio. This corresponds to the rights available to cover future greenhouse gas emissions;
- a tax liability is recorded in the opposite situation, equivalent to the rights still needed to cover emissions already produced, valued at the contractualised acquisition price for forward purchases deliverable before surrender, and at market value for the balance.

The net reporting principle assumes that the emission rights held in the portfolio will be the rights used to offset emissions produced. However, there is a limit to the fungibility of rights at EDF, as there are no transfers of rights between the island and mainland activities. This can lead to concurrent recognition of an asset and a liability.

* The current EU ETS allocations trajectory does not yet include changes to be made in application of the Fit for 55 package.

The book value of inventories by category is as follows:

(in millions of euros)	31/12/2022			31/12/2021		
	Gross value	Provisions	Net value	Gross value	Provisions	Net value
Nuclear fuel	8,929	(24)	8,905	8,471	(39)	8,432
Other raw materials	351	-	351	126	-	126
Other supplies ⁽¹⁾	2,833	(294)	2,539	2,000	(250)	1,750
Work-in-progress and other inventories ⁽²⁾	1,038	-	1,038	645	-	645
TOTAL INVENTORIES	13,151	(318)	12,833	11,242	(289)	10,953

(1) The increase in "Other supplies" is mainly explained by an increase in capacity certificates. Work-in-progress for gas inventories rose by a net amount of €189 million (see note 7 (2)).

(2) The increase in "Work-in-progress and other inventories" is mainly attributable to an increase in the stock of Energy Savings Certificates at 31 December 2022.

Note 18 Other current assets and cash

Accounting principles and methods

Trade receivables are initially stated at nominal value.

They also include the value of unbilled receivables for energy already supplied.

A write-down is recorded when, based on the probability of recovery assessed according to the type of receivable, the recoverable amount of receivables falls below their book value. Depending on the nature of the receivable, the risk associated with doubtful receivables is assessed individually or by reference to provision matrices based on credit loss histories. EDF does not bear the risks of non-payment for the delivery portion of these receivables, which is borne by Enedis.

The table below shows a breakdown of other current assets and cash by maturity:

(in millions of euros)	Liquidity			Gross value at 31/12/2022	Gross value at 31/12/2021
	< 1 year	1-5 years	> 5 years		
Advances and progress payments on orders	419	89	219	727	719
• Trade receivables:					
Amounts billed	2,689	-	-	2,689	2,532
Unbilled receivables ⁽¹⁾	18,676	-	-	18,676	16,816
• Other operating receivables ⁽²⁾	5,290	57	241	5,588	4,850
Total operating receivables	26,655	57	241	26,953	24,198
Cash instruments ⁽³⁾	3,305	297	1	3,603	2,529
Cash and cash equivalents	6,810	-	-	6,810	8,397
Prepaid expenses	398	267	424	1,089	1,015
TOTAL CURRENT ASSETS	37,587	710	885	39,182	36,858

(1) This item mainly concerns receivables for energy supplied and not billed, which remained stable compared to 2021. The increase in 2022 mostly relates to receivables on EDF Trading (electricity and gas) in a context of significant price rises.

(2) Including €2,698 million of receivables on the State related to taxes other than income taxes in 2022 (€3,464 million in 2021).

(3) This corresponds to unrealised gains on foreign exchange instruments, and on all debit balances relating to EDF's margin calls on derivatives and transfers of securities to its banking partners under repurchase agreements (€108 million in 2022, €36 million in 2021).

Note 19 Marketable securities

Accounting principles and methods

Marketable securities are initially recorded as assets at acquisition cost, and restated at the lower of historical cost or present value at year-end.

For listed securities, the present value is equal to the year-end stock market price. For unlisted securities, the market value is the probable trading value taking the Company's growth prospects into consideration.

Provisions are recorded to fully cover any unrealised losses, without netting against unrecorded unrealised gains.

Gains and losses on sales of marketable securities are valued using the FIFO (first in first out) method.

Details of marketable securities are as follows:

(in millions of euros)	31/12/2022	31/12/2021	Variation
Investment funds	1,115	2,598	(1,483)
Short-term negotiable debt instruments in Euros and foreign currencies ⁽¹⁾	-	50	(50)
Shares received as guarantees	-	408	(408)
Bonds ⁽²⁾	17,236	7,500	9,736
Accrued interest and other marketable securities	96	49	47
Total gross value	18,447	10,605	7,842
Provisions	(730)	(20)	(710)
TOTAL NET VALUE	17,717	10,585	7,132

(1) The portion allocated to dedicated assets was nil at 31 December 2022 (€50 million at 31 December 2021) (see note 26.6.5).

(2) The increase in the bond portfolio results from purchases following the arrangement of bank loans which have been partly invested in public and private bonds offering positive returns, well above those offered by monetary investments (investment funds and short-term negotiable debt instruments). Holding bonds provides access to liquidities through repurchase agreement.

Note 20 Variation in cash and cash equivalents reported in the cash flow statement

<i>(in millions of euros)</i>	31/12/2022	31/12/2021	Variation
Marketable securities	18,447	10,605	7,842
Cash and cash equivalents	6,918 ⁽¹⁾	8,433 ⁽¹⁾	(1,515)
Sub-total in balance sheet assets	25,365	19,038	6,327
Euro investment funds	(1,115)	(2,598)	1,483
Negotiable debt instruments (Euro) maturing after 3 months	-	(50)	50
Negotiable debt instruments (non Euro) maturing after 3 months	-	-	-
Shares received as guarantees	-	(408)	408
Bonds	(17,236)	(7,500)	(9,736)
Treasury shares	-	-	-
Accrued interest	(96)	(49)	(47)
Marketable securities included in financial assets in the cash flow statement	(18,447)	(10,605)	(7,842)
Cash advances to subsidiaries (cash pooling agreements) included in "other operating receivables" in the balance sheet	-	-	-
Cash advances from subsidiaries (cash pooling agreements) included in "other operating liabilities" in the balance sheet	(8,384)	(6,872)	(1,512)
Cash and cash equivalents, closing balance in the cash flow statement*	(1,466)	1,561	(3,027)
Elimination of the effect of currency fluctuations			(132)
Elimination of net financial income on cash and cash equivalents and other items			(48)
NET VARIATION IN CASH AND CASH EQUIVALENTS IN THE CASH FLOW STATEMENT*			(3,207)

* See the Cash flow statement

(1) Including €108 million corresponding to all debit balances relating to margin calls on derivatives at 31 December 2022, compared to €36 million at 31 December 2021 (see note 18 (3)).

As of 2018, the cash positions of all subsidiaries in the cash flow statement are classified by reference to criteria of autonomy.

An entity is considered non-autonomous when it is a holding company, generates the majority of its sales with EDF group entities, or does not have the status of employer.

The main subsidiaries classified as non-autonomous are C2, C3, EDF Holding and EDF International, and the main subsidiaries classified as autonomous are Enedis, PEI, Sofilo and GGF.

In the cash flow statement, the cash positions of autonomous subsidiaries are presented as a deduction from Cash and cash equivalents. The cash positions of non-autonomous subsidiaries are included in the components of the changes in working capital.

Note 21 Unrealised foreign exchange losses

Accounting principles and methods

Foreign currency receivables and payables are translated into Euros at the year-end exchange rates. The resulting translation differences are recorded in the balance sheet under "Unrealised foreign exchange gains" and "Unrealised foreign exchange losses". Provisions are recorded to cover all unrealised exchange losses on foreign currency borrowings not hedged for exchange risks. Unrealised gains are not recognised in the income statement.

Unrealised gains and losses on currency derivatives classified as hedging instruments are recorded in the balance sheet in the revaluation surplus accounts, and netted with the unrealised foreign exchange gains and losses booked in respect of the hedged items, in compliance with ANC regulation 2015-05 of 2 July 2015 on forward financial instruments and hedging operations. Realised gains and losses on hedging derivatives are recognised in the income statement symmetrically to gains and losses on the hedged item.

Foreign exchange gains and losses on trade receivables and payables are recorded in operating income and expenses.

Unrealised foreign exchange losses at 31 December 2022 amount to €1,906 million, principally reflecting:

- unrealised losses caused by currency movements (essentially in the US dollar and the pound sterling) amounting to €1,637 million at 31 December 2022 (€1,043 million at 31 December 2021) on liabilities and receivables in foreign currencies, and currency hedging instruments;
- the balance at 31 December 2022 of realised gains and losses on the settlement of hedging instruments with the subsidiary EDF International,

amounting to €266 million (€281 million at 31 December 2021). In accordance with France's national chart of accounts, in application of the symmetry principle set out in Article 628-11, the net result (€311 million in 2019, no equivalent in 2020, 2021 or 2022) is recognised in unrealised foreign exchange losses and transferred to expenses over the residual life of the hedged item, symmetrically to the accounting treatment of gains and losses on the hedged item. A €15 million expense was accordingly recognised in the 2022 financial result (€15 million in 2021).

Note 22 Changes in equity

(in millions of euros)	Capital	Reserves and premiums	Retained earnings and interim dividends	Profit or loss for the financial year	Investment subsidies	Tax-regulated provisions	Total equity
At 31 December 2020	1,550	20,316	9,121	222	160	5,786	37,155
Allocation of 2020 net income	-	-	222	(222)	-	-	-
2021 profit	-	-	-	1,457	-	-	1,457
Capital increase of 7 June 2021	29	587	-	-	-	-	616
Dividend distribution	-	-	(651)	-	-	-	(651)
Capital increase of 2 December 2021	40	859	-	-	-	-	899
Interim dividend for 2021	-	-	(947)	-	-	-	(947)
Other changes ⁽¹⁾	-	10	42	-	7	(9)	50
At 31 December 2021	1,619	21,772	7,787	1,457	167	5,777	38,579
Allocation of 2021 net income	-	7	1,450	(1,457)	-	-	-
2022 profit	-	-	-	(30,648)	-	-	(30,648)
Capital increase of 13 June 2022	66	913	-	-	-	-	979
Dividend distribution	-	-	(1,050)	-	-	-	(1,050)
Capital increase of 07 April 2022	249	2,899	-	-	-	-	3,148
Capital increase of 25 July 2022	9	94	-	-	-	-	103
Capital increase of 7 December 2022	1	9	-	-	-	-	10
Dividend distribution	-	-	-	-	-	-	-
Other changes ⁽²⁾	-	4	-	-	51	(35)	20
AT 31 DECEMBER 2022	1,944	25,698	8,187	(30,648)	218	5,742	11,141

(1) "Other changes" include a €42 million adjustment to provisions for post-employment benefits relating to prior years, resulting from a change in the benefit attribution method for retirement gratuity commitments (see note 1.1 to the 2021 financial statements).

(2) Investment subsidies include a €50 million French government subsidy for the SMR (Small Modular Reactors) project, of which €45 million was received during the year.

22.1 Share capital

At 31 December 2022, EDF's share capital amounts to €1,943,859,210 comprising 3,887,718,420 fully subscribed and paid-up shares with nominal value of €0.50, owned 89.01% by the French State, 9.38% by the public (institutional and private investors) and 1.59% by current and retired Group employees, with 0.02% held by EDF as treasury shares. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the Offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2.2.9). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANEs. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations *Énergie en actions* and *Association pour la défense des actionnaires minoritaires* seeking annulment of the AMF's approval of the Offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

On 7 April 2022, the capital increase maintaining shareholders' preferential subscription rights led to a €249 million increase in the share capital and an issue premium of €2,899 million net of expenses, following issuance of 498,257,960 new shares.

In June 2022, the payment of part of the remaining dividend for 2021 in the form of a scrip dividend led to a €66 million increase in the share capital and an issue premium of €913 million following issuance of 131,545,635 new shares.

On 25 July 2022, the "ERO 2022" capital increase reserved for employees, with elimination of preferential subscription rights, led to a €9 million increase in the share capital and an issue premium of €94 million, following issuance of 18,100,741 new shares (see note 2.2.8).

In December 2022, conversion of OCEANE bonds resulted in a €0.57 million increase in the share capital, following issuance of 1,137,336 new EDF shares (see note 2.2.3).

Under Article L. 111-67 of the French Energy Code, the French State must hold more than 70% of the capital of EDF at all times.

22.2 Dividends

At the General Shareholders' Meeting of 12 May 2022 it was decided to distribute an ordinary dividend of €0.58 per share in respect of 2021, offering shareholders the choice of payment in cash or shares (scrip option).

In application of Article 24 of the Company's articles of association, shareholders who have held their shares continuously for at least 2 years at the year-end and still hold them at the dividend distribution date benefit from a 10% bonus on their dividends. The number of shares carrying an entitlement to the bonus dividend cannot exceed 0.5% of the Company's capital per shareholder. The bonus dividend amounted to €0.638 per share.

The French government opted for the scrip dividend for 2021.

The amount of the cash dividend paid to shareholders who did not opt for the scrip dividend for 2021 amounted to €72 million.

No interim dividend was paid for 2022.

22.3 Bonds convertible into new shares and/or exchangeable for existing shares (OCEANEs)

On 8 September 2020, EDF made an issuance of Green Bonds convertible into new shares and/or exchangeable for existing shares (*OCEANEs Vertes*) with the nominal amount of €2,400 million and an issue value of €2,569 million (see note 2.4.1 to the 2020 EDF financial statements).

In accordance with the terms of the OCEANE bonds, a consequence of the Simplified Tender Offer initiated by the French government (see note 2.2.9) was that if the offer was declared compliant by the AMF, the opening of the Offer would lead to temporary adjustment of the EDF share allocation ratio for conversion of the bonds during the defined Tender Offer Adjustment Period.

The bondholders were thus formally notified on 23 November 2022 that the new share allocation ratio (NRAA - *nouveau ratio d'attribution d'actions*) would be 1.289 EDF shares for one OCEANE bond from 24 November 2022.

At 31 December 2022, 882,340 OCEANE bonds had been converted into new shares (during the period 24 November - 31 December 2022), giving rise to creation of 1,137,336 shares.

These operations increased the share capital by €0.57 million since exchange for new shares was the only option. They generated a bond/share conversion premium of €9.08 million (see note 22.1).

For information, the French government acquired 127,147,355 bonds (OCEANEs) through this Simplified Tender Offer, with the result that it held 214,979,011 OCEANE bonds or 98.30% of the total portfolio of OCEANEs at 31 December 2022.

On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023 (see notes 2.2.9 and 22.1). Consequently, in accordance with paragraph 2.6.3 (public offerings) of the terms of the offer, the share allocation ratio adjustment period in the event of a tender offer will expire on 1 March 2023, i.e. 15 business days after the AMF's publication of the result of the Offer. After the adjustment period in the event of a tender offer, the share allocation ratio will be adjusted to 1.124 shares per OCEANE bond, the same as the share allocation ratio that applied before the adjustment period in the event of a tender offer. Due to the French government's undertakings pending the Paris Court of Appeal ruling on the action seeking annulment of the AMF's approval of the Offer, if the Court confirms the AMF's approval and the Offer is reopened, the share allocation ratio will be adjusted again, to 1.289 shares per OCEANE bond, respecting a new adjustment period in the event of a tender offer, on terms that will be announced by EDF.

Note 23 Additional equity

Accounting principles and methods

Perpetual subordinated bonds issued by EDF in Euros and other currencies are recorded in compliance with the French Chartered accountants' body Ordre des experts comptables opinion 28 of July 1994, taking their specific characteristics into consideration.

As a result, they are classified as additional equity, since redemption is exclusively controlled by EDF.

Issuance expenses and issue premiums on perpetual subordinated bonds are recognised in deferred charges in the balance sheet and amortised over the duration of the relevant tranche, on a pro rata basis.

The annual interest expense on these bonds is recorded as a financial expense in the income statement.

These perpetual subordinated bonds are reclassified from Additional equity to Financial liabilities when the intent to exercise a redemption option in the short term is announced.

Additional equity at 31 December 2022 amounts to a net €11,972 million and consists of:

- perpetual subordinated bonds issued by EDF in January 2013 and January 2014, valued at €2,653 million and €3,243 million respectively, net of redemptions;
- perpetual subordinated bonds issued by EDF in September 2018, valued at €1,250 million;
- perpetual subordinated bonds issued by EDF in November 2019, valued at €498 million;
- perpetual subordinated bonds issued by EDF in September 2020, valued at €2,086 million;
- perpetual subordinated bonds issued by EDF in June 2021, valued at €1,242 million;

- perpetual subordinated bonds issued by EDF in November 2022, valued at €1,000 million (see note 2.2.7).

This net amount includes the effects of foreign currency variations, redemption premiums and the related amortisation.

Payments to bearers of perpetual subordinated bonds amounted to €569 million in 2022 (€578 million in 2021). This expense is recorded in "Expenses on long-term financial liabilities after hedging".

On 29 January 2023 EDF exercised its option to redeem all the perpetual subordinated bonds issued in January 2013, totalling USD 2,098 million. EDF consequently reclassified an amount of €1,966 million from Additional equity to Financial liabilities at 31 December 2022, considering the redemption as certain (see note 2.2.7 and note 31 (4)).

Perpetual subordinated bonds (in millions of currency units):

Issue date*	Nominal amount net of redemptions	Currency	Redemption option	Coupon
01/2013	1,250	EUR	12 years	5.38%
01/2013	1,250	GBP	13 years	6.00%
01/2014	1,500	USD	10 years	5.63%
01/2014	1,000	EUR	12 years	5.00%
01/2014	750	GBP	15 years	5.88%
09/2018	1,250	EUR	6 years	4.00%
11/2019	500	EUR	8 years	3.00%
09/2020	850	EUR	6.5 years	2.88%
09/2020	1,250	EUR	10 years	3.38%
06/2021	1,250	EUR	7 years	2.63%
12/2022	1,000	EUR	6 YEARS	7.50%

* Date funds were received.

Note 24 Special concession liabilities

Accounting principles and methods

These liabilities relate to public electricity distribution concessions for the Island Energy Systems (SEI), and hydropower concessions.

Special public electricity distribution concession liabilities

These liabilities represent the contractual obligations specific to the concession rules for public electricity distribution concessions in France, and comprise the following:

- the concession-granting authority's rights in existing assets (its right to recover all the concession assets), consisting of the value in kind of the facilities (the net book value of assets operated under concessions), less any as yet unamortised financing provided by the operator;
- the concession-granting authority's rights in assets to be replaced (the operator's obligations relating to assets due for replacement). These non-financial liabilities comprise:
 - > depreciation recorded on the portion of assets considered to be financed by the concession-granting authority,
 - > the provision for replacement, exclusively for assets due for replacement before the end of the concession. This is accrued over the asset's useful life, based on the difference between the asset's replacement value for identical capacity and functions, and the original value. The replacement value is adjusted at each year-end based on indexes from official publications, and the impact of the adjustment is spread over the residual useful life of the assets concerned. This provision is included in provisions for expenses.

When assets are replaced, the depreciation recorded on the portion of assets considered to be financed by the concession-granting authority, and the provision for replacement established for the relevant asset, are cancelled and transferred to rights in existing assets. Any excess provision is taken to income.

During the concession, the grantor's rights in assets to be replaced are thus transferred upon the asset's replacement to become the grantor's rights in existing assets, with no outflow of cash to the benefit of the grantor.

Special hydropower concession liabilities

These liabilities comprise:

- the value of assets remitted for nil consideration and contributions received;
- differences arising from revaluations in accordance with French legislation for fixed assets commissioned before 1 January 1959 and before 1 January 1977;
- additional depreciation to industrial depreciation for facilities that are to be returned for nil consideration at the end of the concession but whose useful life extends beyond the concession term.

Following the changes made to the accounting treatment of hydropower concessions at 1 January 2009, the 1959 revaluation reserve is transferred to equity when the assets concerned are retired.

The net revaluation reserve generated by the 1976 revaluation is taken to income over the residual useful life of the assets concerned.

The value of assets remitted for nil consideration and contributions received is transferred to the income statement over the assets' useful lives.

Details of special concession liabilities are as follows:

(in millions of euros)	31/12/2022	31/12/2021
Value in kind of assets	106	107
Revaluation difference	733	758
Additional depreciation	431	377
Rights in hydropower concession assets	1,270	1,242
Value in kind of assets	2,131	2,008
Unamortised financing by the operator	(1,354)	(1,306)
Amortisation of grantor financing	376	370
Contributions received for concessionary plant assets under construction	7	6
Rights in public distribution concession assets*	1,160	1,078
TOTAL SPECIAL CONCESSION LIABILITIES	2,430	2,320

* Special public distribution concession liabilities concern the Island Energy Systems (SEI) public electricity distribution concessions.

Note 25 Provisions for risks

Accounting principles and methods

EDF recognises provisions when it has a present obligation (legal or constructive) arising from a past event, an outflow of resources will probably be required to settle the obligation, and the obligation amount can be estimated reliably.

If it is anticipated that all or part of the expenses covered by a provision will be reimbursed, the reimbursement is recognised under receivables if and only if EDF is virtually certain of receiving it.

Provisions are determined based on the Company's expectation of the cost necessary to settle the obligation. Estimates are based on management data from the information system, assumptions adopted by the Company, and if necessary experience of similar transactions or operations, based on independent expert reports or contractor quotes. The various assumptions are reviewed for each closing of the accounts.

Other provisions notably concern:

- losses relating to multi-year agreements for the purchase or sale of energy and services:
 - losses on energy purchase agreements are measured by comparing the contractual purchase cost with the forecast market price,

> losses on energy sale agreements are measured by comparing the estimated income under the contractual terms with the cost of the energy to be supplied,

> losses on gas-related service agreements are measured by comparing the costs of fulfilling contracts with the resulting economic benefits, based on market and sales assumptions;

- unrealised foreign exchange losses;
- risks relating to subsidiaries and affiliates;
- tax risks;
- litigation;
- decommissioning costs for fossil-fired and hydropower plants;
- costs of replacing assets operated under public electricity distribution concessions;
- provisions related to environmental schemes (see notes 6 and 17).

In extremely rare cases, specific litigation covered by a provision may be unmentioned in the notes to the financial statements if such disclosure could cause serious prejudice to the Company.

Changes in provisions for risks are as follows:

(in millions of euros)	31/12/2021	Increases		Decreases			31/12/2022
		Operating ⁽³⁾	Financial	Utilisations ⁽³⁾	Reversals ⁽³⁾	Financial	
Provisions for unrealised exchange losses ⁽¹⁾	745	-	683	-	-	(371)	1,057
Provisions for losses on contracts ⁽²⁾	1,840	-	(122)	(224)	(1,006)	-	488
Provisions for other risks	319	81	-	(27)	(5)	-	368
PROVISIONS FOR RISKS	2,904	81	561	(251)	(1,011)	(371)	1,913

(1) Provisions for unrealised exchange losses amount to €1,057 million at 31 December 2022 and principally concern the hybrid notes (€301 million) and other borrowings after hedging (€288 million). The €312 million change in these provisions is included in the financial result (see note 11 (5)).

(2) Net reversals from provisions for losses on contracts, amounting to €1,352 million, principally concern long-term agreements for purchases of LNG and regasification service contracts.

(3) See note 5.

Note 26 Provisions related to nuclear generation: back-end of the nuclear cycle, plant decommissioning and last cores

Accounting principles and methods

Decommissioning provisions for power plants in operation are associated with fixed assets.

The discount effect generated at each closing to reflect the passage of time is recorded in financial expenses.

Changes in provisions resulting from a change in discount rates, a change in the disbursement schedule or a change in cost estimate are recorded:

- as an increase or decrease in the corresponding assets, up to the net book value, if the provision was initially covered by balance sheet assets;
- in the income statement in all other cases.

Provisions related to nuclear generation mainly cover the following:

- back-end nuclear cycle expenses: provisions for spent fuel management, for waste removal and conditioning (where relevant), and for long-term radioactive waste management are established in accordance with the obligations and final contributions specific to France;
- costs for decommissioning power plants;
- costs relating to fuel in the reactor when the reactor is shut down (provisions for last cores). These correspond to the cost of the fuel stock in the reactor that is not totally spent at the time of the final reactor shutdown and cannot be reused due to technical and regulatory constraints, the cost of processing for that fuel, and the cost of removal and storage of the resulting waste.

Obligations can vary noticeably depending on each country's legislation and regulations, and the technologies and industrial scenarios involved.

The provisions established by EDF for the nuclear generation fleet principally result from the Law of 28 June 2006 on long-term management of radioactive materials and waste, and the associated implementing provisions concerning secure financing of nuclear expenses.

In compliance with the accounting principles described above:

- EDF books provisions to cover all obligations related to the nuclear facilities it operates;

- EDF also holds dedicated assets for secure financing of long-term obligations (see note 26.6).

The calculation of provisions incorporates a level of risks and uncertainties as appropriate to the operations concerned. It also includes uncertainty factors as described in note 1.2.2.

Details of changes in provisions for the back-end of the nuclear cycle, decommissioning and last cores are as follows:

(in millions of euros)	31/12/2021	Increases		Decreases		Other changes ⁽²⁾	31/12/2022
		Operating	Financial ⁽¹⁾	Utilisations	Reversals		
Provisions for spent fuel management	11,819	417	51	(849)	-	(59)	11,379
• amount unrelated to the operating cycle	1,726	23	(85)	(41)	-	(16)	1,607
• amount outside the scope of the Law of 28 June 2006*	1,136	44	56	(41)	-	-	1,195
Provisions for long-term radioactive waste management	14,233	128	(1,308)	(204)	-	(374)	12,475
Provisions for the back-end of the nuclear cycle	26,052	545	(1,257)	(1,053)	-	(433)	23,854
Provisions for the back-end of the nuclear cycle within the scope of the Law of 28 June 2006*	24,916	501	(1,313)	(1,012)	-	(433)	22,659
Provisions for the back-end of the nuclear cycle outside the scope of the Law of 28 June 2006*	1,136	44	56	(41)	-	-	1,195
Provisions for nuclear plant decommissioning	17,730	273	340	(201)	-	(1,048)	17,094
Provisions for last cores	2,660	-	104	-	-	(330)	2,434
Provisions for decommissioning and last cores	20,390	273	444	(201)	-	(1,378)	19,528
TOTAL PROVISIONS RELATED TO NUCLEAR GENERATION	46,442	818	(813)	(1,254)	-	(1,811)	43,382
Provisions for the back-end of the nuclear cycle within the scope of the Law of 28 June 2006*	45,306	774	(869)	(1,213)	-	(1,811)	42,187
Provisions for the back-end of the nuclear cycle outside the scope of the Law of 28 June 2006*	1,136	44	56	(41)	-	-	1,195

* Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations (see below)

(1) The discount effect principally comprises the €1,830 million cost of unwinding the discount, and the €(2,548) million effects of the change in the real discount rate in 2022 for provisions not backed by assets, which were recorded in the income statement (cost of unwinding the discount) (see note 11 (2));

(2) "Other movements" notably include the €(2,061) million effects of the change in the real discount rate at 31 December 2022 for provisions backed by assets. The change in 2021 in EDF's provisions related to nuclear generation was mainly explained by the extension of the depreciation period of 1300MW-series power plants, which had an impact of €(1,016) million at 1 January 2021 (see note 2.1.1 to the 2021 financial statements), distributed as follows: €(916) million on provisions for decommissioning, €(214) million on provisions for last cores, and €114 million on provisions for long-term radioactive waste management.

Concerning non-EDF installations:

- EDF, COGEMA (now Orano Recyclage) and the French Atomic Energy Commission (Commissariat à l'énergie atomique or CEA) signed an agreement in December 2004 which transferred the management and financing of final shutdown, decommissioning and waste recovery and reconditioning for the UP1 reprocessing facility at Marcoule to the CEA. In return, EDF paid the CEA a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs;
- EDF, AREVA and AREVA NC (now Orano Recyclage) signed two agreements in December 2008 and July 2010 defining the legal and financial terms for the transfer to AREVA NC of EDF's contractual obligations regarding its financial contribution to the dismantling of La Hague installations and the recovery and conditioning of waste. In application of those agreements, EDF paid Orano Recyclage a one-time financial contribution covering its full share of the cost of outstanding operations, while remaining the owner of its final waste and bearing only the transport and storage costs.

26.1 Provisions for spent fuel management

EDF's currently adopted strategy with regards to the fuel cycle, in agreement with the French State, is to process spent fuel, to recycle the separated plutonium in the form of MOX fuel (Mixed OXide of plutonium and uranium) and to recycle the reprocessed uranium.

The quantities processed by Orano Recyclage at the request of EDF, totalling approximately 1,100 tonnes per year, are determined based on the quantity of recyclable plutonium in the reactors that are authorised to load MOX fuel (currently, 24 authorised reactors).

Consequently, provisions for spent fuel management (€11,379 million) mainly cover the following services to be provided by Orano Recyclage:

- removal of spent fuel from EDF's generation centres, and its reception and interim storage;
- processing, including conditioning and storage of recyclable matter.

The processing expenses included in these provisions concern spent fuel that can be recycled in existing facilities, including the portion in reactors but not yet irradiated.

Expenses are measured based on forecast physical flows at the year-end, with reference to the contracts with Orano Recyclage which define the terms of the framework agreement for the period 2008-2040. The most recent contract, signed on 5 February 2016, covers the period 2016-2023. These contracts contain price indexes that are revised annually.

Negotiations are currently in process with Orano Recyclage, notably concerning the current amendment for the period 2016-2023. At 31 December 2021, EDF adjusted its provisions for spent fuel management using its best estimate of the costs to be incurred under this amendment, which are currently in negotiation, considering progress in the discussions with Orano. An additional provision of €267 million was recognised to cover the increase in EDF's processing costs associated with the various Orano projects, notably in view of changes concerning the new fission product concentrators. In 2022, some of these costs were defined in letters of agreement relating to the 2016-2023 amendment, while others are still in negotiation. Negotiations also took place in 2022 for an amendment to cover the period 2024-2026, to be continued in 2023, and a corresponding provision for contingencies and losses was recognised at 31 December 2022 (see note 29.1).

Furthermore, the provisions for spent fuel management incorporate specific provisions for the interim storage of spent fuel, which is a key issue for the back-end of the nuclear cycle because usage forecasts for Orano's interim storage facilities at La Hague for spent fuel from EDF's generation fleet suggest that the pools at La Hague could be saturated by 2030. To prevent saturation, the long-term storage capacity for spent fuel is to be increased by construction of a centralised fuel storage pool under EDF's supervision. Commissioning of the new pool is scheduled for 2034 and it will be operated by EDF. The following measures will also be taken to address storage needs.

For the period until the centralised storage pool is built, studies of transitional solutions were launched by Orano in 2019 in association with EDF and the Nuclear Safety Authority (Autorité de sûreté nucléaire - ASN). The preferred solution is densification of the existing pools at Orano's La Hague. A supplementary solution would be to use a dry storage facility for plutonium (MOX) fuel and reprocessed uranium (RepU). The need for interim storage is accentuated by production issues at Orano's Melox plant, which are affecting the pace of processing in the short and medium term: the lower level of recycling has caused an increase in the quantities requiring storage in the medium term.

In 2022, studies of the transitional solutions continued, notably on densification of the existing pools at Orano's La Hague site with the submission in December 2022 to the ASN of the application file for a notable modification. Development studies regarding this solution are expected to continue until the end of 2024.

The provisions for spent fuel management also cover long-term storage of spent fuel that cannot currently be recycled in industrial facilities that already exist or are under construction: plutonium fuel (spent MOX fuel) or uranium fuel derived from processing (spent RepU), and fuel from Creys-Malville and Brennilis until fourth-generation reactors become available. Dedicated assets are held in association with these provisions, which is unrelated to the operating cycle as defined by the law of 2006 (see note 26.6). The provision is founded on a scenario assuming construction of a centralised storage pool at La Hague, to be managed by EDF as nuclear operator. This project was presented during the public debate on the National Plan for Managing Radioactive Matter and Waste (PNGMDR) in 2019-2020, and was subject to a specific public consultation organised by France's National Public Debate Commission (CNDP) that began on 22 November 2021 and ended on 8 July 2022. On 7 October 2022 EDF published a document on the

The provisions for long-term radioactive waste management break down as follows:

lessons of the consultation and the Company's responses, entitled "*Enseignements de la concertation préalable et suites données par EDF*". EDF plans to set up a formal structure for continuous exchanges and dialogue, under the supervision of guarantors appointed by the CNDP. EDF has also stated that at this stage, it is moving ahead with the project, and preparing to file the application for authorisation to create the installation by the end of 2023, with a view to a public inquiry being held in 2025.

In total, provisions for specific storage solutions for spent fuel amount to €257 million for the cost of densification of Orano's pools at La Hague, and €1,607 million for interim storage of spent MOX fuel and spent RepU, first at La Hague then in the centralised storage pool (these fuels cannot be recycled in existing facilities or facilities currently under construction).

Finally, in 2018, the Board of Directors approved resumption of reprocessed uranium recycling, which had been suspended in 2013 pending availability of a new industrial schema. The corresponding contracts were signed with the respective suppliers in the second quarter of 2018. The first assemblies are being made at the Framatome plant in Romans-sur-Isère and will be loaded in 2023 into a 900MW reactor that is already authorised. Subject to completion of technical modifications and issuance of the necessary authorisations by the safety authority, other 900MW reactors and certain 1300MW reactors will be loaded with assemblies based on reprocessed uranium by 2027. Since 2021, the provision for storage of uranium for reprocessing included in the provisions for spent fuel management (€410 million) has been based on a 50-year operating lifetime for nuclear plants for the series concerned, following the extension of the depreciation period of 1300MW-series plants from 40 to 50 years.

26.2 Provisions for long-term radioactive waste management

Provisions for long-term radioactive waste management concern the following future expenses:

- interim storage, removal and storage of radioactive waste packages resulting from spent fuel processing;
- direct storage, after long-term interim storage where relevant, of spent fuel that cannot be recycled in existing installations: specifically plutonium (MOX) fuel or uranium fuel derived from processing, and fuel from Creys-Malville and Brennilis;
- characterisation, processing, conditioning and interim storage of radioactive waste resulting from decommissioning and certain operating waste, and removal and final storage of this radioactive waste;
- EDF's share of the costs of studies, construction, operation and maintenance, shutdown and surveillance of existing and future storage centres.

The volumes of waste concerned by provisions include existing packages of waste and all waste to be conditioned, resulting in particular from plant decommissioning or spent fuel processing at La Hague (comprising all fuel in reactors at 31 December, irradiated or otherwise). These volumes are regularly reviewed, in keeping with the data declared for the purposes of the national waste inventory undertaken by ANDRA.

(in millions of euros)	Storage center	31/12/2022	31/12/2021
Very low-level and low and medium-level waste	Very low-level waste: CIREs - Morvilliers (ANDRA)	2,958	3,093
	Low and medium-level waste: CSA - Soulaines (ANDRA)		
Long-lived low-level waste	Project under examination: Soulaines (ANDRA)	363	394
Long-lived medium and high-level waste	Geological storage centre (Cigéo project)/ ICEDA conditioning and interim storage facility	9,154	10,746
PROVISIONS FOR LONG-TERM RADIOACTIVE WASTE MANAGEMENT		12,475	14,233

Very low-level and low and medium-level waste

Basis for estimation

Very low-level waste and low and medium-level waste come from nuclear facilities in operation or in the process of being decommissioned:

- very low-level waste mainly comes from nuclear plant decommissioning, and generally takes the form of metals (large components, piping, support structures, etc.) or rubble (concrete, earth, etc.). This type of waste is stored at surface level at the Morvilliers storage centre managed by ANDRA, commissioned in 2003;
- low and medium-level waste (gloves, filters, resins, materials, etc.) is stored at surface level at the Soulaïnes storage centre managed by ANDRA, commissioned in 1992.

The cost of removing, processing and storing short-lived waste (very low-level and low and medium-level) is assessed on the basis of:

- current contracts with transporters, and ANDRA for operation of the existing storage centres;
- the costs of the plant run by the subsidiary Cyclife France (the Centraco site at Marcoule, commissioned in 1999) for processing some of this waste that can be melted prior to storage in the ANDRA's centres;
- an estimate of the cost of a centralised facility for interim storage, segmentation and conditioning of major components such as steam generators.

For the management of very low-level waste, the regulations (decrees by the Ministry for the Ecological Transition) governing recycling of very low-level metallic waste in France were published in the *Journal officiel* of 15 February 2022. EDF is thus continuing with the development of a segmentation and fusing facility to process and recycle the very low-level metallic waste resulting from decommissioning of nuclear plants. This project, called Technocentre, is led by EDF in collaboration with Orano, with a target commissioning date of 2031. In line with France's 5th National Plan for Managing Radioactive Matter and Waste, a roadmap setting out the objectives and timetable for the Technocentre project is due to be released in early 2023.

Developments in 2021

In 2021, in addition to changing the technical assumptions underlying provisions so as to reflect the impacts of extending the depreciation period for 1300MW-series plants (the modified timing of waste production from decommissioning results in an increase in decommissioning waste to be sent to storage in some years and industrial solutions will be required to smooth the waste dispatch flows), the industrial scenario for management of decommissioning waste prior to storage was optimised by introducing prior processing to reduce the volumes stored. This had no significant impact on provisions.

Developments in 2022

In 2022, the annual review incorporated the most recent assumptions regarding management of this waste. This had no significant impact on provisions.

Long-lived low-level waste

Long-lived low-level waste belonging to EDF essentially consists of graphite waste from the ongoing decommissioning of the former UNGG (natural uranium graphite gas-cooled) nuclear plants.

As this waste has a long lifetime but is lower-level than long-lived medium and high-level waste, specific subsurface storage requirements apply under the French Law of 28 June 2006.

Following the initial geological investigations, in July 2015 ANDRA remitted a report on a proposed storage centre for long-lived low-level waste on a site located in the Soulaïnes region (Aube) in France. This report was submitted to the ASN for its opinion. Uncertainties remain about the site's capacity to accommodate all of the waste included in the baseline inventory of the long-lived low-level waste storage facility.

Further studies were planned under the 2016-2018 period of the National Plan for the Management of Radioactive Materials and Waste (PNGMDR), concerning both the feasibility of this storage centre and the search for additional waste management solutions. The ASN's opinion on management of this waste, issued on 6 August 2020, and the 5th PNGMDR (decree 2022-1547 and the

implementation decision were published in the *Journal officiel* of 10 December 2022) have set ANDRA the deadline of 2023 to produce a file presenting the technical and safety options selected for storage of long-lived low-level waste at the Vendeuvre-Soulaïnes site.

Long-lived medium and high-level waste

Long-lived medium and high-level waste essentially comes from processing of spent fuel, and to a lesser extent waste resulting from nuclear plant decommissioning (metallic components that have been inside the reactor).

The Cigéo project for an industrial geological storage centre

The French Law of 28 June 2006 requires reversible storage in deep geological layers for long-lived medium and high-level waste.

On 15 January 2016 the Ministry of Ecology, Sustainable Development and Energy issued a ministerial order setting the target cost for the Cigéo storage project at €25 billion under 2011 year-end economic conditions. The cost as defined constitutes an objective to be met by ANDRA, in compliance with safety standards set by the ASN, working in close cooperation with the operators of nuclear installations.

The provisions for storage of long-lived medium and high-level waste, totalling €8,381 million (including preliminary interim storage of radioactive waste resulting from spent fuel processing, removal to the storage site, direct storage of spent fuel that cannot be recycled in existing installations), are based on the cost objective for storage, taking account of producers' shares that depend on the volumes and characteristics of the waste.

In application of this ministerial order, the cost of the Cigéo project will be regularly updated, at least at each key milestone in the course of the project's development (authorisation to create the facility, commissioning, end of the "pilot industrial phase", safety reviews) in accordance with the opinion of the ASN.

This project has seen the following developments since 2016:

- 2016: In April 2016, ANDRA sent the ASN a safety option report (DOS), and the law of 11 July 2016 clarified the concept of reversibility;
 - 2018: In January 2018, the ASN issued its opinion on the DOS. It considered that the Cigéo project had reached satisfactory overall technological maturity at that stage. This opinion included a requirement for examination of alternatives to the proposal to store bituminous waste at Cigéo with no processing;
 - 2019: In September 2019, a group of experts appointed by the DGEC to draw up a report on current bituminous waste management concluded that various options were feasible (storage or neutralisation) but stressed the importance of continuing the studies in order to identify the most appropriate option. A quadripartite research programme involving producers and ANDRA is still examining this question;
 - 2020: A detailed design review by a group of independent experts, organised at the request of the DGEC, reported its conclusions. While issuing a generally favourable opinion for ANDRA's submission, the experts made a certain number of recommendations for finalisation of the detailed design studies and the application for authorisation to create the centre, calling for closer involvement of EDF, Orano and the CEA on these matters;
- Also in 2020, the French Finance Law for 2021, published in the *Journal officiel* of 30 December 2020, included a change to the tax treatment of this project (based on storage tax instead of the standard tax regime). At the 2022 year-end, the associated measures still remain to be defined and bounded by the Government to prevent any related cost increase for the Cigéo project;
- 2021: After its filing by ANDRA in August 2020, its examination by the government departments and a public inquiry from 15 September to 23 October 2021, the application for a *déclaration d'utilité publique* (DUP) officially recognising the public utility of the Cigéo storage centre received a favourable opinion from the inquiry commissioners on 20 December 2021;
 - 2022: On 8 July 2022, the DUP decree was published.

The delivery horizon for the first waste packages was also clarified. It should begin between 2035 and 2040 according to the ANDRA report of October 2022 summarising the consultations on the pilot industrial phase and governance of the Cigéo project, whereas at the end of 2021, producers were working on the hypothesis that the first waste packages would be received in 2031. Consequently, the provision has been updated to reflect this deferred reception date for the first packages, with no significant impact.

On 16 January 2023, ANDRA filed its application for authorisation to create Cigéo with the Ministry for the Energy Transition. This step marks the start of a new phase: examination of the project by the ASN, after which the project could be authorised and construction could begin. Based on ANDRA's latest schedule, the decree authorising creation is now expected for 2027 (instead of 2025 as previously).

ICEDA

The provision established for long-lived medium and high-level waste also includes €773 million to cover the conditioning and interim storage of long-lived

medium-level waste, principally at the ICEDA conditioning and storage facility (*installation de conditionnement et d'entreposage des déchets activés*).

This facility, constructed at the Bugey power plant, received its first waste packages in September 2020 after the ASN authorised its commissioning on 28 July 2020. The ASN's decision approving and governing the conditioning of long-lived medium-level waste into packages at the ICEDA facility was formally received on 19 July 2021. At the end of 2021 the first waste packages were sealed, in compliance with the authorisations granted and the commissioning schedule. Two waste packaging campaigns were completed in 2022, as expected.

26.3 Provisions for nuclear plant decommissioning

EDF bears full technical and financial responsibility for decommissioning of the basic nuclear facilities (*installations nucléaires de base*, INB) it operates. The final shutdown and decommissioning process is governed by legal provisions and regulations set out in Articles L. 593-20 to L. 593-25 and R. 593-65 to R. 593-74 of the Environment Code. It involves the following operations for each INB:

- a definitive shutdown declaration, to be made at least two years prior to the planned shutdown date;
- since the Energy Transition Law of 17 August 2015, the final shutdown of the INB, which takes place during its operating phase, is considered separately from its dismantling, as a significant modification of lesser importance (simply requiring a declaration by the operator to the Minister and the ASN);
- a dismantling plan compiled by the operator and sent to the minister in charge of nuclear safety, which after examination by the authorities and a public inquiry, leads to a decree prescribing dismantling that authorises the start of dismantling operations;
- key-stage progress reviews submitted for the ASN's approval, with a safety file specific to the dismantling operations to be performed;
- an internal control process concerning significant modifications introduced by the operator in the case of operations that must be declared to or approved by the ASN;
- finally, once these operations are complete, declassification of the facility, which removes it from the scope of the laws governing basic nuclear facilities.

The decommissioning scenario adopted by EDF complies with France's Environment Code, which requires as short a period as possible to elapse between final shutdown and dismantling in economically acceptable conditions and in compliance with the principles laid down in Article L. 1333-1 of the Public Health Code (radioprotection) and section II of Article L. 110-1 of the Environment Code (protection of the environment). The intended end-state is industrial use: the sites will be restored to their original condition and will be reusable for industrial purposes.

The ongoing dismantling operations concern plants that were constructed and operated before the nuclear fleet currently in operation, known as "first-generation" plants, the Superphenix plant, and the Irradiated Materials Workshop in Chinon. These operations cover four different technologies: a heavy water reactor (Brennilis), a sodium-cooled fast-neutron reactor (the Superphenix at Creys-Malville), natural uranium graphite gas-cooled (UNGG) reactors (at Chinon, Saint Laurent and Bugey) and a pressurised water reactor (PWR, at Chooz). For the Fessenheim PWR plant, the dismantling application is currently under examination by the ASN, and the operations completed concern the pre-dismantling phase.

Each of these operations is a first for EDF, and apart from the PWR, they concern reactor technologies for which there is little or no international experience. They therefore require development of new methods and technologies that are riskier than technologies for which feedback already exists. Decommissioning of the PWR is benefiting from past experience (essentially in the US and limited). The Chooz plant also has the specificity of being located in a cave: this means it is also a unique operation, generating experience that is not immediately transposable and involves specific challenges.

Based on the ongoing decommissioning operations at permanently shut-down plants (particularly the experience gained from the Chooz PWR), the studies conducted for the Summary Preliminary Plan for the two 900MW reactors at Fessenheim, and the preparatory work for dismantling of Fessenheim, it was possible at the end of 2021 to establish a detailed reference estimate of future decommissioning costs for the nuclear fleet currently in operation ("second-generation" plants). However, neither EDF nor any other operator has yet begun a decommissioning programme on a scale comparable to the current PWR fleet, and as a result the estimates include both opportunities and risks, especially associated with the scale effect.

The decommissioning provisions cover future decommissioning expenses as described above (excluding the cost of removing waste from the site and storing it, which is covered by the provisions for long-term radioactive waste management).

Details of changes in provisions for nuclear plant decommissioning are as follows:

(in millions of euros)	31/12/2021	Increases		Decreases		Other movements ⁽³⁾	31/12/2022
		Operating ⁽¹⁾	Financial ⁽²⁾	Utilisations ⁽¹⁾	Reversals		
Provisions for decommissioning nuclear plants in operation	12,680	-	500	(7)	-	(1,048)	12,125
Provisions for decommissioning permanently shut-down nuclear plants	5,050	273	(160)	(194)	-	-	4,969
TOTAL PROVISIONS FOR NUCLEAR PLANT DECOMMISSIONING	17,730	273	340	(201)	-	(1,048)	17,094

(1) Decreases correspond to decommissioning expenses borne in 2022. Increases essentially correspond to changes in cost estimates during the year, as described below, for provisions not backed by assets.

(2) Cost of unwinding the discount and effects of changes in the net discount rate for provisions not backed by assets.

(3) Other movements in provisions for decommissioning nuclear plants in operation principally include the effects of the change in real discount rates at 31 December 2022, and revised cost estimates for provisions backed by assets.

For nuclear power plants currently in operation (PWR pressurized water reactor plants with 900MW, 1300MW and N4 reactors)

History of the calculation of provisions and the 2014-2015 Audit commissioned by the DGEC

Until 2013, provisions were estimated based on a 1991 study by the French Ministry of Trade and Industry, which set an estimated benchmark cost for decommissioning expressed in €/MW, confirming the assumptions defined in 1979 by the PEON commission. These estimates were confirmed from 2009 by a detailed study of decommissioning costs conducted by EDF at the representative site of Dampierre (four 900MW units), and the results of that study were corroborated by an intercomparison with the study carried out by consultants La Guardia, based mainly on the Maine Yankee reactor in the United States.

In 2014 the Dampierre study was reviewed by EDF to make sure that the previous calculations were still valid in view of recent developments and experience, both internationally and internally, which called the past estimates into question. For this review, the decommissioning provisions for plants in operation were based on costs resulting from the Dampierre study, in order to incorporate the Company's best estimates and experience from inside and outside France. This change of estimate had no significant impact on the level of provisions at 31 December 2014.

Between June 2014 and July 2015, an audit of decommissioning costs for EDF's nuclear fleet currently in operation was conducted by specialised consulting firms, at the request of the French Department for Energy and Climate (Direction générale de l'énergie et du climat or DGEC). On 15 January 2016 the DGEC published a summary of the audit report. It stated that although estimating the cost of decommissioning nuclear reactors is a demanding exercise due to relatively limited past experience, the prospects of changes in techniques and the distant timing of the expenditure, overall, the audit confirmed EDF's estimate of decommissioning costs for its nuclear fleet currently in operation. The DGEC also made a number of recommendations to EDF following this audit.

Revision in 2016 and current basis for estimation

In 2016, EDF revised the decommissioning estimate, in order to incorporate the recommendations resulting from the audit commissioned by the DGEC, and past experience gained from dismantling operations for first-generation reactors (particularly Chooz A).

A detailed analytical approach was used to revise this estimate, identifying all costs for the engineering, construction work, operation and waste processing involved in future decommissioning of reactors currently in operation. This led to figures based on detailed timetables for plant decommissioning. The approach adopted provided a more thorough assessment of costs specific to the first-of-their-kind units, estimated for each series based on transposition coefficients applied to the baseline costs for the initial 900MW unit, and the series and mutualisation effects, as these costs and effects are inherent to the fleet's size and configuration.

The natures of the principal series and mutualisation effects used to arrive at the estimate are explained below.

Series effects (effects of work at a first-of-a-kind site on the following sites of the same series) are mainly of two types:

- first, in a fleet using the same technology, many studies do not need to be repeated each time;
- second, in a fleet using the same technology, robots and tooling can be largely reused from one site to another.

Mutualisation effects (effects between units on the same site, whether in operation or being decommissioned) are of several different types:

- some of them relate to the fact that several reactors may share ordinary buildings and facilities on the same site, and these buildings and facilities will not have to be dismantled twice;
- certain costs are not higher when two or four reactors are dismantled on the same site. This is usually the case for surveillance costs, ordinary equipment, and the cost of maintaining safe operating conditions on the site.

Due to mutualisation effects, dismantling a pair of reactors on the same site costs less than dismantling two standalone reactors on two different sites. In France, unlike other countries, there are no single reactors but sites with two or four, and in one case six reactors.

Series and mutualisation effects reduce the estimated decommissioning cost by 10% and 7% respectively compared to an estimate for a PWR fleet that ignores these effects. Series and mutualisation effects vary depending on the series: they are greater when there are more units in a series (series effect) and more units on a site (mutualisation effect), leading to a combined effect (series and mutualisation effect) of over 17% for the 900MW series.

In particular, series and mutualisation effects explain why it is not appropriate simply to compare the average dismantling cost per reactor between the French fleet and other countries' nuclear fleets.

Conversely, the estimates only marginally reflect changes in productivity and the learning effect. The DGEC-ordered external audit of the decommissioning cost for the fleet currently in operation considered that this approach resulted in a prudent estimation method.

For reasons of prudence, the estimate also includes an assessment of risks and uncertainties as follows:

- incorporation of uncertainties relating to each "elementary" block of costs, series effects, mutualisation effects, transposition coefficients and fleet expenses;
- incorporation of risks, corresponding to the completion risks (which are identifiable and quantifiable, but only contingent). An initial register of risks on the Fessenheim project was drawn up in 2021 based on the ongoing studies, and detailed assessment of these risks is continuing for one first-of-a-kind 900MW reactor on the Fessenheim site that has no specificities. Until the results are released, the financial impact of the risks and opportunities is included via a flat-rate increase.

The above method for assessing risks and uncertainties led to an overall margin of some 16.3% for the whole fleet (21% for the reference estimate for the first-of-a-kind 900MW reactor).

Since its in-depth revision in 2016 this cost estimate has been reviewed annually. The reviews have led to non-significant annual adjustments.

EDF also confirms its analyses through an international intercomparison, taking care to identify and characterise a number of factors that could distort direct comparisons, for example differences in the scope concerned by the cost estimate, or national and regulatory contexts.

Developments in 2021

In 2021, to take account of the impacts of the longer depreciation period for 1300MW-series plants (see note 26), the sequence of operations for dispatching waste resulting from decommissioning was adapted to reflect the increase in decommissioning waste to be sent for interim storage in certain years.

Additionally, the reference estimate of decommissioning costs for the first 900MW units was updated following preliminary studies conducted in preparation for the decommissioning of Fessenheim, and experience gained at the beginning of the pre-dismantling phase. This update also incorporated optimisation of the industrial scenario for management of decommissioning waste before storage, involving prior processing to reduce the volumes stored. Extrapolation of these elements to the whole PWR fleet had a limited impact on the provisions for decommissioning nuclear plants in operation: they were increased by €149 million via adjustment to balance sheet assets.

Developments in 2022

The annual review of the estimate did not lead to any significant impact on provisions.

Based on the estimates of the different types of cost, the cost to completion (in 2022 euros) for decommissioning of the two 900MW units of Fessenheim amounts to approximately €1.0 billion, giving an average of €0.45 billion per 900MW unit, compared to an average cost of €0.38 billion per unit for the entire PWR fleet, including the series and mutualisation effects described above.

For permanently shut-down nuclear power plants

Decommissioning of shut-down reactors involves pilot operations corresponding to four different technologies, each with clear specificities: a PWR reactor at Chooz A located in a cave, UNGG (natural uranium graphite gas-cooled) reactors at Bugey, Saint-Laurent and Chinon, a heavy water reactor at Brennilis, a sodium-cooled fast neutron reactor at Creys-Malville, and the first-of-a-kind second-generation PWR reactor at Fessenheim.

Basis for estimation

The decommissioning costs are based on estimates that take account of accumulated industrial experience, unforeseeable and regulatory developments, and the latest available figures. They have been reviewed annually since 2015.

The industrial scenario for dismantling of the UNGG reactors was reviewed in depth in late 2015, leading in particular to a switch from “underwater” to “in-air” dismantling, which involves:

- an essentially remote-controlled dismantling process;
- qualification of tools and the remote operation platform on an “industrial demonstrator” which was inaugurated in 2022;
- dismantling of the initial first-of-a-kind reactor (Chinon A2), and putting the 5 other reactors into a safe storage configuration.

Under this new strategy, dismantling operations for the reactor caissons should be completed between 2063 and 2093, depending on the reactors.

Updating the industrial decommissioning scenario for first-generation power plants, particularly UNGG plants, led to a €590 million increase in the provision at 31 December 2015.

From 2016 to 2020

The amendment made in 2015 to the industrial scenario for dismantling of the UNGG reactors was presented to the ASN’s commissioners on 29 March 2016, and examined by the ASN until 2019. It was reviewed by international experts, examined by the IRSN, and was the subject of three hearings before the ASN’s commissioners, before the ASN issued two decisions dated 3 March 2020. These decisions and the discussions prior to their adoption by the ASN showed that there was convergence on most major technical questions: the dismantling technique (“in-air”), the usefulness of setting up an industrial demonstrator to develop the tools required for these complex operations, the timetable for dismantling the Chinon A2 reactor, and the need to gain experience from operations on a first reactor.

Regarding the timetable of operations, in draft decisions issued for public consultation in 2019, the ASN asked for this work to be brought forward compared to EDF’s proposed schedule, so that dismantling operations on the five reactors after Chinon A2 would begin “no later than 31 December 2055”.

In view of this request for a shorter timescale, the nuclear provisions were increased in 2019 by a total €108 million: €77 million for decommissioning provisions for permanently shut-down nuclear power plants and €31 million for provisions for long-term radioactive waste management (for long-lived low-level waste, very low-level and low and medium-level waste).

The ASN’s decisions concerning dismantling of UNGG reactors were published in March 2020 and did not contradict the principles of the draft decisions of 2019. Consequently, the nuclear provisions for decommissioning of UNGG plants were not subjected to any particular re-estimation in 2020, and reflect the best estimate of the industrial and technical scenario.

Developments in 2021

In 2021, the annual review of the cost estimates for decommissioning of permanently shut-down plants led to a €77 million increase in provisions due to revision of the industrial decommissioning strategy for Chooz A. That strategy was switched to a full continuous decommissioning scenario, dropping the period of cave runoff water surveillance between the end of installation dismantling and the start of final dismantling and decontamination work, as the quality of the water means this is no longer necessary. Also, the cost estimate for decommissioning of the APEC Fuel Storage Workshop at Creys-Malville – a facility operated by EDF with the principal activity of storing fuel from the Superphénix reactor – was updated based on Summary Preliminary Plan studies conducted in 2020-2021, leading to a €61 million increase in provisions.

Finally, in accordance with its powers under Article 594-4 of the Environment Code, in June 2020 the DGEC commissioned an external audit of the estimated cost of dismantling operations for EDF’s permanently shut-down nuclear facilities (UNG G plants and management of its long-lived low-level waste, Superphenix and Brennilis), conducted by a consortium of specialist firms. This audit took place from December 2020 to July 2021, and the audit report was posted on the Ministry for the Ecological Transition website in November 2021. Its conclusions (confirming the ASN’s observations during its inspection of complex project management, the conclusions of which were released in the first quarter of 2021) highlight “an organization with a structural focus on execution of dismantling projects”, an “annual estimation and revision process [that] is robust, and provides good traceability for the assumptions used and the original data”, and “a long-term industrial approach to overcome the small number of technological challenges that remain”. Finally, the report states that apart from a non-significant correction (taken into account in the 2021 provisions), “the provisions are coherent with the basic scenarios of the projects and cover the full scope of expenses for the scope audited”, and of “adequate sizing” through testing the scale of EDF’s expenses and provisions.

Developments in 2022

In 2022, following the recommendations made by the DGEC-commissioned audit to confirm scheduling risk assessments and the uncertainty levels concerning estimates, an analytical methodology for assessment of scheduling risks and uncertainties (applied to most of the decommissioning projects currently in process) and an additional level of uncertainty for estimates “based on expert assessment” (used in provisions for decommissioning and long-term radioactive waste management) were introduced. This led to an increase of €116 million to decommissioning provisions for permanently shut-down nuclear plants.

The provision for decommissioning of Chooz A was also increased by €37 million to take account of confirmed experience, regarding unforeseen events and delays observed during the dismantling of the reactor vessel (slower segmentation, and unavailability of the bridge crane). As a result of this experience, the vessel dismantling work has been prolonged by 18 months, and a risk of a further 14-month delay on the overall timetable has been identified.

For UNGG plants, the annual review of cost estimates took into consideration delays in obtaining the dismantling decrees (which are now expected in late 2026 rather than late 2025 as previously). This did not have a significant impact on the provisions.

Over a short-term horizon, the provisions take into account expectations that the rises in certain commodity, energy and transport prices will exceed forecast inflation, particularly given the types of purchases relating to decommissioning expenses. This had an impact of €33 million on provisions for decommissioning of permanently shut-down nuclear plants.

At 31 December 2022, the gross amounts estimated under year-end economic conditions (amounts still to be spent) and the present value of those amounts are as follows, presented by type of reactor technology:

<i>(in millions of euros)</i>	Costs based on year-end economic conditions	Amounts in provisions at present value
Pressurised water reactor - PWR - Chooz A	331	289
Pressurised water reactor - PWR – Fessenheim*	911	740
Natural uranium graphite gas-cooled reactors – UNGG - Bugey, Saint-Laurent, Chinon	5,771	2,948
Heavy water reactor - Brennilis	374	321
Sodium-cooled fast neutron reactor – Superphenix at Creys Malville	559	492

* Excluding interim storage and processing of steam generators.

Provisions for decommissioning of permanently shut-down nuclear plants also cover dismantling costs for related facilities such as the APEC Fuel Storage Workshop at Creys-Malville and the BCOT Operational Hot Unit at Tricastin.

Compared to decommissioning costs for the PWR technology, the cost at completion (all costs both settled and remaining) for decommissioning of the other reactors is higher, to different extents depending on their specific characteristics:

- costs are around twice as high for Brennilis (completion cost of approximately €0.96 billion for one reactor) due to its compactness, the fact that the core is encased in concrete and thus difficult to access, the absence of a fuel pool, which complicates remote-controlled segmentation, and the presence of zircaloy (a fire hazard), meaning that segmentation work takes longer and must be more closely supervised;
- costs are around twice as high for UNGG reactors (completion cost of approximately €7 billion for six reactors), because they require removal of 20 times more material than a PWR due to their size, and contain graphite which is hard to access and requires special handling such that specific remote-controlled equipment must be developed;
- costs are around four times as high for Superphenix (completion cost of approximately €1.9 billion for one reactor), due to processing of sodium for which elimination is very sensitive, and the size of the facilities, especially the reactor (with a vessel 20 times bigger than the vessel of a 1300MW PWR).

The following progress has been made on permanently shut-down plants:

- Chooz A: the reactor was shut down in 1991 and nuclear dismantling began in 2007 after the dismantling decree was issued. The final stage of dismantling began in 2016 and involves segmentation, conditioning and removal of reactor vessel internals, followed by dismantling of the vessel itself. These operations should be completed by December 2025. Under the new full continuous decommissioning scenario adopted in 2021, this plant is expected to be declassified by late 2035;
- Fessenheim: the two pressurised water reactors were shut down definitively on 22 February 2020 and 30 June 2020 respectively, in accordance with the law and before the end of their technical operating lifetime. The dismantling plan was sent to the ASN in September 2019 together with the declaration of the permanent shutdown of this INB. The studies conducted in 2019 and 2020 focused on preparing the dismantling plan, which was sent to the ASN on 2 December 2020. In early 2022, the *Mission de la sûreté nucléaire et de la radioprotection* (MSNR) and the ASN formally acknowledged reception of an expanded version of this plan. The dismantling decree for the Fessenheim installations is now expected to be issued in early 2026, and its issuance will mark the start of the dismantling phase. At the end of 2022, the pre-dismantling operations (full defuelling of reactors 1 and 2, treatment and removal of boron as planned, total chemical decontamination of the primary circuit of reactor 1 and connected circuits, etc.) were in line with the provisional schedule. Total decontamination of reactor 2 was deferred to early 2023, without affecting the critical path;
- UNGG reactors: these six reactors were shut down between 1973 and 1994 and received their dismantling decrees between 2008 and 2010 (except for Chinon A1 and A2). Defuelling and circuit draining have been completed for all these reactors, and dismantling operations are in process for the conventional and nuclear buildings in the periphery of the "reactor caissons". Following the ASN's decision of 2020, applications for dismantling permits were submitted for all these reactors in December 2022, to obtain new decrees allowing continuation of dismantling operations under an "in-air" strategy (these are

expected for the end of 2026 at the earliest). Opening of the top part of the first UNGG reactor caisson – Chinon A2 – is expected in 2034: the initial extractions of vessel internals and graphite blocks are due to start in 2041 and last 14 years. In parallel, the other UNGG sites are finalising work to put the sites into a safe storage configuration (by 2037). A safe storage configuration state means that 80% of surfaces have been dismantled and the reactor caissons are safe while awaiting the full benefit of experience on dismantling the caisson of the Chinon A2 first-of-a-kind unit. Opening of subsequent caissons is scheduled to begin from 2056;

- Superphenix: this plant was shut down in 1998 and received its dismantling decree in 2006. The following key stages have been completed: defuelling, dismantling of the turbine hall, drainage of the circuits, processing and elimination of the sodium used for cooling in all circuits, filling the reactor vessel, opening and extracting the vessel caps, and the start of dismantling of the core vessel cap (which weighs several hundred tonnes). The next stages are dismantling the vessel internals (due to be completed in 2026), electromechanical dismantling in the reactor building, then decontamination (the plant is expected to be declassified in 2034);
- Brennilis: this plant was shut down in 1985 and received a partial dismantling decree in 2011 allowing dismantling of all installations peripheral to the "reactor block". The following key stages have been completed: defuelling, dismantling of the machine room, the fuel building, auxiliary buildings, heat exchangers and the effluent treatment station. The next stages are examination of the application for full dismantling authorisation, with a view to obtaining a dismantling decree in 2023 that would enable EDF to dismantle the reactor block (the end of these operations is currently forecast at 2040). Following a public inquiry held from 15 November 2021 to 2 February 2022, the inquiry commissioner issued an unreservedly favourable opinion on 2 March 2022.

26.4 Provisions for last cores

These provisions cover the future expenses resulting from scrapping fuel that will only be partially irradiated when the reactor is shut down. They are estimated based on:

- the cost of the loss on fuel in the reactor that is not totally spent at the time of final reactor shutdown and cannot be reused due to technical and regulatory constraints ("front-end" expenses);
- the cost of fuel processing, and waste removal and storage operations ("back-end" expenses). These costs are estimated in a similar way to provisions for spent fuel management and long-term radioactive waste management.

These unavoidable costs are components of the cost of nuclear reactor shutdown and decommissioning. As such, they are fully covered by provisions from the commissioning date and an asset associated with the provision is recognised. In a decision of 11 December 2020, France's Council of State challenged the tax-deductibility of the consequences of immediate recognition of a provision for dismantling of the last core ("front-end" last core expenses) (see note 12).

In 2020 after the Fessenheim plant was definitively shut down, €99 million of the provision for last cores, concerning the two reactors at Fessenheim, was reversed with a corresponding reduction in the inventories of non-irradiated fuel in the reactor at the time of the shutdown, and in parallel, provisions for spent fuel management and long-term radioactive waste management were recognised for the cost of processing this fuel and storage of the waste that will result.

In 2021, apart from the effects of extending the depreciation period for 1300MW-series plants at 1 January 2021 (see note 2.1.1 to the 2021 financial statements), there were few changes in provisions for last cores.

In 2022, provisions for last cores were adjusted after experience with core management at Fessenheim and its optimisation was finalised. The main consequence was an update to the masses of unused heavy metals included in the calculation of the last core provisions for the entire fleet, resulting in a €(145) million decrease in provisions.

26.5 Discount rate, inflation and sensitivity analyses

26.5.1 Calculation of the discount rate and inflation rate

The methodologies used to determine the discount rate changed as follows from 31 December 2020:

The discount rate is based on an interest rate curve, which comprises a sovereign yield curve constructed on year-end market data for liquid horizons (OAT bond 0-20 year curve) and then converging, using an interpolation curve, towards the very long-term rate UFR (Ultimate Forward Rate) - with yields that become close to the UFR after 50 years – plus a spread curve for corporate bonds rated A to BBB. Based on the disbursement outflows expected to meet nuclear obligations, a single equivalent discount rate is deduced by applying the discount rates from the interest rate curve constructed in this way to each flow as appropriate to its maturity. This single discount rate is then applied to the forecast disbursement schedules for the costs of the obligations, to determine the provisions.

The UFR was defined by the European Insurance and Occupational Pensions Authority (EIOPA) for very long-term insurance liabilities that will involve disbursements beyond market horizons. The UFR calculated for 2022 is 3.43%. This is used in the calculation methodology, in compliance with the decision by the French authorities, which in the ministerial order of 1 July 2020 amending the order of 21 March 2007 on secure financing of nuclear expenses (see below) changed the formula of the regulatory ceiling for the discount rate, such that it now refers to the UFR instead of the arithmetic 48-month average of the TEC 30-year rate. The UFR is considered more relevant for nuclear provisions in view of the very long-term maturities. The sovereign yield curve at 31 December 2022 indicates rates in a range of [2.7%;3.3%] ([-0.6%;0.6%] in 2021) for outflows between 0 and 20 years, [3.3%;3.4%] [0.6%;3.1%] in 2021) for outflows between 20 and 50 years, and a rate moving towards 3.43% (3.46% in 2021) for outflows after 50 years.

This calculation methodology for the discount rate provides the best assessment of the time value of money with regard to nuclear provisions, which are characterised by very long-term disbursement outflows, well beyond market horizons. This assessment is largely achieved through:

- use of an interest rate curve based on observed year-end market data with liquid horizons, converging over nonliquid horizons towards a very long-term rate with no cycle effect, *i.e.* yield data for all the maturities associated with nuclear provisions;

- use of a very long-term rate (calculated UFR) produced by an independent body and now adopted by the French authorities in setting the formula for the regulatory ceiling, to take account of long trends in yield movements, in coherence with the distant disbursement horizon;
- reference to bond spreads for corporate bonds rated A to BBB, in order to construct a robust spread curve since there are few AA-rated bonds, particularly on long maturities, whereas most "Investment Grade" bonds are BBB-rated and the great majority of them have longer maturities.

The inflation assumption is based on an inflation curve constructed by reference to inflation-indexed market products and economic forecasts, in long-term coherence with the inflation assumption underlying the UFR (2%).

The discount rate determined is thus 4.8% at 31 December 2022 (3.7% at 31 December 2021), assuming inflation of 2.3% (1.7% at 31 December 2021), *i.e.* a real discount rate of 2.5% at 31 December 2022 (2.0% at 31 December 2021).

The increase in the discount rate reflects the observed increase in OAT bond rates and the broader corporate bond spreads since 31 December 2021, notably driven by changes in the ECB's monetary policy and a riskier economic environment.

The increase in the inflation rate assumption reflects the higher inflation forecasts in France since that date, particularly for 2023, and the forecast breakeven inflation rate beyond that horizon in the current context of geopolitical and economic crisis. A 2% long-term inflation rate is still used in line with the ECB's target level, and consistent with the inflation assumption underlying the UFR.

Furthermore, cost estimates were adjusted to 2022 year-end economic conditions, with a total impact of €215 million on provisions for decommissioning, spent fuel management and waste management, since actual inflation rates exceeded initial inflation forecasts.

26.5.2 Regulatory discount rate limit

The discount rate must comply with two regulatory limits. Under the decree of 1 July 2020 on secure financing for nuclear expenses (which codified and updated the initial decree of 23 February 2007 as part of the Environment Code) and the ministerial order of 1 July 2020 on secure financing for nuclear expenses (which amended the initial ministerial order of 21 March 2007), it must be lower than:

- a regulatory maximum, expressed in real value, *i.e.* net of inflation; this value is equal to the unrounded value representative of expectations concerning the real long-term interest rate, as used for the calculation of the Ultimate Forward Rate (the real UFR) applicable at the date concerned published by the European Insurance and Occupational Pensions Authority (EIOPA), plus 150 base points. This maximum is applicable from 2024. Until 2024, the maximum is the weighted average of 2.3% and the above calculation. The weighting applied to the 2.3% rate is set at 50% for 2020, 25% for 2021, 12.5% for 2022 and 6.25% for 2023; and
- the expected rate of return on assets covering the liability (dedicated assets).

The maximum discount rate calculated by reference to the UFR in application of the order that took effect on 1 July 2020 is 2.85% at 31 December 2022 (2.80% at 31 December 2021).

The real discount rate used in the financial statements at 31 December 2022, calculated by the method presented above, is 2.5%.

26.5.3 Analyses of sensitivity to macro-economic assumptions

Sensitivity to assumptions concerning costs, inflation rate, long-term discount rate, and disbursement schedules can be estimated through comparison of the gross amount estimated under year-end economic conditions with the present value of the amount.

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	31/12/2022		31/12/2021	
	Costs based on year-end economic conditions	Amounts in provisions at present value	Costs based on year-end economic conditions	Amounts in provisions at present value
Spent fuel management	16,194	10,184	16,121	10,683
Amount unrelated to the operating cycle	3,417	1,607	3,282	1,726
Long-term radioactive waste management	36,996	12,475	36,779	14,233
Back-end nuclear cycle expenses	53,190	22,659	52,900	24,916
Decommissioning of nuclear plants in operation	21,381	12,125	20,479	12,680
Decommissioning of shut-down nuclear plants	8,219	4,969	7,718	5,050
Last cores	4,189	2,434	4,349	2,660
Decommissioning and last core expenses	33,789	19,528	32,546	20,390
PROVISIONS RELATED TO NUCLEAR GENERATION WITHIN THE SCOPE OF THE LAW OF 28 JUNE 2006 *		42,187		45,306

* Scope of application of the law of 28 June 2006 on the sustainable management of radioactive materials and waste and its application decrees concerning secure financing of nuclear expenses. The provisions that do not fall within the scope of this law are provisions for the back-end of the nuclear cycle concerning non-EDF installations.

The cumulative disbursements of nuclear expenses (based on gross values at year-end economic conditions) are distributed as follows:

Provisions related to nuclear generation within the scope of the Law of 28 June 2006 (in millions of euros)	2022		
	Costs based on year-end economic conditions		
	Disbursement expected within 10 years	Disbursement expected after 10 years*	Total
Spent fuel management	7,892	8,302	16,194
Amount unrelated to the operating cycle	534	2,883	3,417
Long-term radioactive waste management	5,422	31,574	36,996
Back-end nuclear cycle expenses	13,314	39,876	53,190
Decommissioning of nuclear plants in operation	499	20,882	21,381
Decommissioning of shut-down nuclear plants	3,093	5,126	8,219
Last cores	499	3,690	4,189
Decommissioning and last core expenses	4,091	29,698	33,789

* Over a 20-year and 50-year horizon, 22% and 42% respectively of cumulative disbursements (at year-end economic conditions) will concern long-term radioactive waste management provisions, and 36% and 96% respectively will concern decommissioning provisions.

For additional information, the table below shows the estimated impact of a +/-20 base point variation in the discount rate on the present value of provisions for the back-end of the nuclear cycle, decommissioning of nuclear plants and last cores:

(in millions of euros)	Amounts in provisions at present value 31/12/2022	Sensitivity to discount rate			
		Balance sheet provision		Pre-tax net income	
		+0.20%	-0.20%	+0.20%	-0.20%
Back-end nuclear cycle expenses					
• spent fuel management	11,379	(200)	213	170	(182)
• long-term radioactive waste management	12,475	(684)	769	541	(614)
Decommissioning and last core expenses					
• decommissioning of nuclear plants in operation	12,125	(518)	544	-	-
• decommissioning of shut-down nuclear plants	4,969	(155)	165	154	(165)
• last cores	2,434	(85)	90	-	-
TOTAL	43,382	(1,642)	1,781	865	(961)
<i>Amount covered by dedicated assets</i>	<i>31,649</i>	<i>(1,460)</i>	<i>1,591</i>	<i>764</i>	<i>(853)</i>

The impact of a +/-10 base point variation in discount rates on the present value of provisions for the back-end of the nuclear cycle, decommissioning and last cores is estimated at €(837)/894 million, including €444/(490) million on the pre-tax net income.

26.6 Dedicated assets

26.6.1 Regulations

Articles L. 594-1 and following of France's Environment Code and their implementing regulations require assets (dedicated assets) to be set aside for secure financing of nuclear plant decommissioning expenses and long-term storage expenses for radioactive waste. These regulations govern the way dedicated assets are built up, and the management and governance of the funds themselves. Dedicated assets are clearly identified and managed separately from the Company's other financial assets and investments. They are also subject to specific monitoring and control by the Board of Directors and the administrative authorities.

The law requires the realisable value of dedicated assets to be higher than the value of the provisions corresponding to the present value of the long-term nuclear expenses defined in France's Environment Code.

The Decree of 1 July 2020 codified the regulatory obligations concerning dedicated assets in Articles D5 94-1 and following of the Environment Code, complemented by the ministerial order of 21 March 2007 amended by the order of 1 July 2020. These documents define the list of eligible assets, which is largely based on France's Insurance Code and mainly includes unlisted assets. In particular, they authorise allocation to dedicated assets of the shares of CTE, which has held 100% of the capital of RTE since 31 December 2017 (see note 26.6.2 below).

EDF received ministerial authorisation on 31 May 2018 to increase the portion of unlisted assets in its dedicated assets from 10% to 15% subject to conditions (this does not apply to the shares of CTE or real estate assets).

Since the decree of 1 July 2020, EDF is no longer obliged to add to dedicated assets when the coverage rate of obligations, determined by the ratio of the assets' realisable value to the amount of the provisions concerned, is above 100%, and withdrawals from assets are not authorised unless that rate is above 120%. The decree also increased the maximum period for allocating funds to dedicated assets in the event of undercoverage, subject to authorisation by the administrative authority, to 5 years (instead of 3 years previously).

26.6.2 Strategic allocation and composition of dedicated assets

Given the regulations governing dedicated assets, they form a highly specific category of assets.

Dedicated assets are structured and managed according to a strategic allocation defined by the Board of Directors and reported to the administrative authorities. The strategic allocation is designed to meet the overall objective of long-term coverage of obligations, and determines the structure and management of the portfolio as a whole. It takes into account regulatory constraints concerning the nature and liquidity of the dedicated assets, the financial outlook for the equity and bond markets, and the diversifying contribution of unlisted assets.

Several changes have been made to this strategic allocation in order to pursue the diversification into unlisted assets, particularly in 2010 when the shares in RTE (now held via CTE) were allocated to dedicated assets, and in 2013 when an unlisted asset portfolio (consisting of infrastructures, real estate and debt or equity funds) was set up. This portfolio is managed by EDF's "EDF Invest" Division.

On 29 June 2018 the Board of Directors validated the principle of strategic allocation for dedicated assets:

- yield assets (target of 30% of dedicated assets), consisting of infrastructure assets, including the shares of CTE, and real estate property;
- growth assets (target of 40% of dedicated assets), consisting of equity funds investing in listed or unlisted equities;
- fixed-income assets (target of 30% of dedicated assets), consisting of listed bonds or listed bond funds, unlisted debt funds, receivables and cash.

These targets should be reached gradually by 2025.

26.6.3 Growth assets and fixed-income assets

Certain growth and fixed-income assets take the form of bonds held directly by EDF. Others consist of specialised collective investment funds on leading international markets and French general-purpose investment funds (FIVGs), managed by independent asset management companies. They take the form of open-end funds and "reserved" funds located in France, established for the Company.

The listed equity funds consist of international equities (mainly in North America but also in Europe, Asia-Pacific and emerging countries). Listed bonds and listed bond funds consist of sovereign and corporate bonds.

These investments are structured and managed in line with the strategic allocation, which takes into consideration international stock market cycles, for which the statistical inversion generally observed between equity market cycles and bond market cycles – as well as between geographical areas – has led the Company to define a long-term investment policy with appropriate allocation between growth assets and fixed-income assets.

Growth assets also include a small portion of funds invested in unlisted equities, and fixed-income assets also include a small portion of funds invested in unlisted debt. These funds are mainly managed by EDF Invest (see note 26.6.2).

In the course of operational asset monitoring, the Group applies long-term, specific management rules defined and supervised by its governance bodies (maximum investment ratios, volatility analyses and assessment of individual fund manager quality).

26.6.4 Yield assets

The yield assets managed by EDF Invest consist of assets related to investments in infrastructures and real estate, made either directly by EDF Invest or by investment funds under delegated management arrangements.

Through unlisted investment funds, EDF Invest also manages growth assets and fixed-income assets (see note 26.6.2).

At 31 December 2022, the assets managed by EDF Invest represent a total realisable value of €9,540 million, including €8,772 million of yield assets. Yield assets particularly include:

50.1% of EDF's shares in CTE, amounting to €3,791 million at 31 December 2022 (€3,343 million at 31 December 2021);

EDF's investments in Teréga, Energy Assets Group, Porterbrook, Autostrade per l'Italia, Q-Park, Aéroports de la Côte d'Azur, Madrileña Red de Gas (MRG), Géosel, Norlys Fiber, Databank, Nam Theun Power Company, in companies that own wind and solar power plants (in the United States, Canada, and the United Kingdom) and in companies that own real estate assets (Central Sicaf, Ecowest, Korian & Partenaires Immobilier, Issy Shift, 92 France).

26.6.5 Valuation of dedicated assets

Dedicated assets are classified in the balance sheet according to their accounting nature: investments, investment securities, and marketable securities.

Details of the portfolio at 31 December 2022 are as follows:

(in millions of euros)	Notes	31/12/2022		31/12/2021	
		Net book value	Realisable value	Net book value	Realisable value
Yield assets		7,314	8,772	6,822	7,908
CTE (holding company for 100% of the shares in RTE) ⁽¹⁾	16.2	2,705	3,791	2,705	3,343
Investments other than CTE	16.2	4,155	4,536	3,839	4,330
Unlisted funds (EDF Invest) ⁽²⁾	16.5	433	424	278	235
Cash instruments (Derivatives)	18 & 30	21	21	-	-
Growth assets		9,990	12,251	10,776	15,320
Equities - shares in investment funds	16.5	9,480	11,625	10,345	14,815
Unlisted equity funds (EDF Invest) ⁽²⁾	16.5	505	553	436	519
Cash instruments (Derivatives)	18 & 30	5	73	(5)	(14)
Fixed-income assets		12,886	12,881	13,956	14,226
Bonds	16.5	11,263	11,264	12,683	12,957
Marketable securities - negotiable debt instruments	19	-	-	50	50
Unlisted debt funds (EDF Invest) ⁽²⁾	16.5	204	215	191	199
Cash portfolio	16.5	1,412	1,414	1,016	1,016
Cash instruments (Derivatives)	18 & 30	7	(12)	16	4
TOTAL DEDICATED ASSETS ⁽³⁾		30,190	33,904	31,554	37,454

(1) EDF's investment of 50.1% of CTE, the company that holds 100% of the shares in RTE. The realisable value of CTE presented in the above table has been determined by an independent assessor, in the same way as for EDF Invest's other assets.

(2) All EDF Invest funds are to be considered together, as their net book value totals €1,142 million (€905 million at 31 December 2021) for a realisable value of €1,192 million (€953 million at 31 December 2021).

(3) Limiting the value of certain investments in compliance with Article 16 of Decree 2007-243 concerning calculation of the regulatory realisable value of dedicated assets has no effect at 31 December 2022 or 2021.

Net book value and fair value include unmaturred accrued interest.

26.6.6 Coverage of long-term nuclear obligations

At 31 December 2022, by the regulatory calculations provisions are 107.1% covered by dedicated assets. The potential regulatory caps on the realisable value of certain investments set in the Environment Code were not applicable at 31 December 2022. At 31 January 2023, nuclear provisions (as measured at

31 December 2022) were 109.7% covered by dedicated assets, in line with the noticeable positive developments on the financial markets in January 2023.

At 31 December 2021, by the regulatory calculations provisions were 109.3% covered by dedicated assets. Again, the regulatory caps were not applicable.

The long-term nuclear obligations concerned by the regulations for dedicated assets related to nuclear generation are included in EDF's financial statements at the following values:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
Provisions for spent fuel management – portion unrelated to the operating cycle as defined in the regulations	1,607	1,726
Provisions for long-term radioactive waste management	12,475	14,233
Provisions for nuclear plant decommissioning	17,094	17,730
Provisions for last cores – portion for future costs of long-term radioactive waste management	473	587
PRESENT COST OF LONG-TERM NUCLEAR OBLIGATIONS	31,649	34,276

26.6.7 Changes in dedicated assets in 2022

As the coverage of provisions by dedicated assets was above 100% at 31 December 2021 (109.3%), EDF had no obligation to add to the dedicated asset portfolio in 2022, and no allocation was made during the year (in 2021, there was also no such obligation and no allocation to dedicated assets was made).

In 2022, the markets were affected by strong inflationary pressure and the realisation by the central banks and the markets that bold measures, particularly interest rate rises, would be necessary to prevent de-anchoring of inflation expectations. The issue was exacerbated by the war in Ukraine and the disruption it caused to energy supplies for Europe. This situation initially affected bond instruments, which ended the year on a record low with -18.5% on government bonds (FTSE EMU Government Bond Index (EGBI)). Credit instruments also suffered significantly (the FTSE EuroBIG Corporate index fell by -14.5%) under the double effect of higher interest rates and wider spreads. However, despite the partial currency hedge set up by the Group, the rise of the dollar limited the decline in the Euro value of assets expressed in dollars. The equity markets declined, but for the

time being have only echoed the rise in real interest rates, apparently without responding to the risk to profits in a depressed economic environment. The markets seem to be counting on the central banks to succeed in containing inflation without creation a recession, and this situation will need to be closely monitored in 2023.

In 2022, EDF Invest continued to extend its portfolio of unlisted assets, purchasing minority stakes in telecoms infrastructures (Norlys Fiber, a fibre optics network in Denmark), digital infrastructures (DataBank, a group of data centres in the United States), and shares in diversified unlisted investment funds. EDF Invest also sold its entire interest in Thyssengas (a gas network in Germany) and part of its stake in the Transport Stockage Hydrocarbures/Géosol group (salt cavern oil storage in France) and 50% of the MiRose wind farms in the US.

At 31 December 2022, dedicated assets registered an overall performance of €(667) million, comprising €(963) million in financial result and €296 million in exceptional result. This is principally explained by dividends and interest received (€917 million), increases to provisions on bonds and investment funds due notably to unfavourable market trends (€(1,810) million), and gains on sales of investment securities (€296 million).

Note 27 Other provisions for decommissioning

Other provisions for decommissioning principally concern fossil-fired power plants.

The costs of decommissioning fossil-fired power plants are calculated using regularly updated studies based on estimated future costs, measured by reference to the charges recorded on past operations and the most recent estimates for plants still in operation.

The increase over the year is mainly explained by a re-estimation of decommissioning costs incorporating the latest experience gained from recent operations.

Note 28 Provisions for employee benefits

Accounting principles and methods

In accordance with the statutory regulations for companies in France's electricity and gas sector (IEG), EDF's employees are entitled to post-employment benefits (pension plans, retirement indemnities, etc.) and other long-term benefits (e.g. long-service awards).

Calculation and recognition of employee benefit obligations

EDF recognises post-employment benefits granted to personnel as provisions.

Obligations under defined-benefit plans are calculated by the projected unit credit method, which determines the present value of entitlements earned by employees at year-end to post-employment benefits and long-term benefits, taking into consideration the prospects for wage increases and the country's specific economic conditions.

Post-employment benefit obligations are mainly valued using the following methods and assumptions:

- retirement age, determined on the basis of the applicable rules for each plan, and the requirements to qualify for a full pension;
- career-end salary levels, with reference to employee seniority, projected salary levels at the time of retirement based on the expected effects of career advancement, and estimated trends in pension levels;
- forecast numbers of pensioners, determined based on employee turnover rates and mortality data;
- reversion pensions where relevant, taking into account both the life expectancy of the employee and his/her spouse and the marriage rate for IEG sector employees;
- a discount rate that depends on the duration of the obligations, determined at the year-end date by reference to the market yield on high-quality corporate bonds or the rate on government bonds whose duration is coherent with EDF's commitments to employees.

The amount of the provision takes into account the present value of the fund assets that cover these benefits, which is deducted from the benefit obligations.

Any actuarial gain or loss on post-employment benefit obligations in excess of 10% (the "corridor") of the obligations or fund assets, whichever is the highest, is recognised in the income statement progressively over the average residual working life of the Company's employees.

For other long-term benefits, actuarial gains and losses and the full past service cost are directly included in the provision, without application of the "corridor" rule.

The net expense booked during the year for employee benefit obligations includes:

- the current service cost, corresponding to additional benefit entitlements earned during the year;
- the net interest expense, corresponding to interest on obligations net of the expected return on fund assets;
- the income or expense corresponding to the actuarial gains and losses on long-term benefits and amortisation of actuarial gains or losses on post-employment benefits;
- the past service cost, including the income or expense related to amendments or settlements of benefit plans or introduction of new plans.

Post-employment benefit obligations

Since the financing reform for the IEG sector system took effect on 1 January 2005, the CNIEG (Caisse nationale des IEG, the sector's specific pension body) has managed not only the special IEG pension system, but also the industrial accident, invalidity and death insurance system for the sector.

The CNIEG is a social security body governed by private law, formed by the Law of 9 August 2004. It has legal entity status and reports to the French

government, operating under the joint supervision of France's ministers for the Budget, Social Security and Energy.

Under the funding arrangements introduced by the Law, EDF establishes pension provisions to cover entitlements not funded by France's standard systems (CNAV, AGIRC-ARRCO), to which the IEG system is affiliated, or by the CTA (*contribution tarifaire d'acheminement*) levy on gas and electricity transmission and distribution services.

As a result of the system affiliation mechanism, any change (whether favourable or unfavourable to employees) in the standard French pension system that is not passed on to the IEG pension system is likely to cause a variation in the amount of the provisions recorded by EDF to cover its obligations.

The benefit obligations covered by pension provisions include:

- specific benefits of employees in the deregulated or competitive activities;
- specific benefits earned by employees from 1 January 2005 for the regulated activities (island public electricity distribution) (benefits earned before that date are financed by the CTA levy).

CNIEG management expenses payable by EDF for the administration and payment of retired employees' pensions are also included.

In addition to pensions, other benefits are granted to IEG status former employees (not currently in active service), as detailed below:

- benefits in kind (energy): Article 28 of the IEG national statutes entitles such employees and current employees to benefits in kind in the form of supplies of electricity or gas at preferential prices. The obligation for supplies of energy to employees of EDF and Engie corresponds to the probable present value of kWh to be supplied to beneficiaries or their dependants during their retirement, valued on the basis of the unit cost (which mainly depends on the marginal production cost, the cost of delivery, and taxes). It also includes the payment made under the energy exchange agreement with Engie;
- retirement gratuities: these are paid upon retirement to employees due to receive the statutory old-age pension, or to their dependants if the employee dies before reaching retirement. These obligations are almost totally covered by an insurance policy;
- bereavement benefit: this is paid out upon the death of an inactive or disabled employee, in order to provide financial assistance for the expenses incurred at such a time (Article 26-§5 of the National Statutes). It is paid to the deceased's principal dependants (statutory indemnity equal to three months' pension, subject to a ceiling) or to a third party that has paid funeral costs (discretionary indemnity equal to the costs incurred);
- bonus pre-retirement paid leave: all employees eligible to benefit immediately from the statutory old-age pension and aged at least 55 at their retirement date are entitled to 18 days of bonus paid leave during the last twelve months of their employment;
- other benefits include help with the cost of studies, time banking for pre-retirement leave, and pensions for personnel sent on secondment to companies not covered by the IEG system.

Other long-term benefit obligations

These benefits concern employees currently in service, and include:

- annuities following incapacity, invalidity, industrial accident or work-related illness. Like their counterparts in the general national system, IEG employees are entitled to financial support in the event of industrial accident or work-related illness, and invalidity and incapacity annuities and benefits. The obligation is measured as the probable present value of future benefits payable to current beneficiaries, including any possible reversions;
- long-service awards;
- specific benefits for employees who have been in contact with asbestos.

Changes in provisions for employee benefits were as follows:

(in millions of euros)	31/12/2021	Increases		Decreases		31/12/2022
		Operating ^{(1) (4)}	Financial ⁽³⁾	Operating ^{(2) (4)}	Financial ⁽⁵⁾	
Provisions for post-employment benefits	10,794	788	405	(600)	(220)	11,167
Provisions for long-term benefits	1,073	47	14	(209)	-	925
PROVISIONS FOR EMPLOYEE BENEFITS	11,867	835	419	(809)	(220)	12,092

(1) Including a past service cost of €574 million, amortisation of actuarial losses amounting to €259 million, and unvested benefits of €2 million.

(2) Including €(658) million for employers' contributions and €(151) million for actuarial gains.

(3) See note 11.

(4) See note 5.

(5) For the expected return on fund assets.

Details of changes in the provisions:

(in millions of euros)	Obligations	Fund assets	Obligations net of fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Balance at 31/12/2021	32,225	(13,148)	19,076	(11)	(7,198)	11,867
Net expense for 2022	993	(220)	773	2	108	883
Change in unrecognised actuarial gains and losses	(8,414)	3,733	(4,681)	-	4,681	-
Contributions to funds	-	-	-	-	-	-
Benefits paid	(1,090)	432	(658)	-	-	(658)
BALANCE AT 31/12/2022	23,713	(9,203)	14,510	(9)	(2,409)	12,092

Actuarial gains and losses on obligations amount to €(8,414) million for 2022, reflecting:

- the €(15,192) million change in the discount rate;
- the €4,517 million change in the inflation rate;
- the €(95) million change in demographic assumptions;
- the €1,632 million impact of pay rise measures decided in 2022 for application from 2023;

- the €724 million change in experience adjustments, principally due to changes in assumptions about the social security ceiling and revaluation of CNAV and AGIRC-ARRCO pensions, and the impact of pay rise measures applied during 2022.

Actuarial gains and losses on fund assets totalled €3,733 million for 2022, in an environment of falling bond and equity markets.

Post-employment and long-term employee benefit expenses:

(in millions of euros)	31/12/2022	31/12/2021
Past service cost	574	581
Interest expense (discount effect) ⁽¹⁾	419	292
Expected return on fund assets	(220)	(166)
Amortisation of unrecognised actuarial gains and losses - post-employment benefits	197	221
Change in actuarial gains and losses - long-term benefits	(89)	81
Effect of plan curtailment or settlement	-	-
Past service cost - vested benefits	-	-
Past service cost - unvested benefits	2	8
NET EXPENSES FOR POST-EMPLOYMENT BENEFITS AND LONG-TERM BENEFITS	883	1,017
including:		
Operating expenses ⁽²⁾	684	891
Financial expenses	199	126

(1) The interest expenses (discount effect) of €419 million are €127 million higher than at 31 December 2021, as a result of the increase in the discount rate between 1 January 2021 (1.3%) and 1 January 2022 (3.9%).

(2) In 2022, this amount corresponds to increases of €835 million to operating provisions, net of reversals for actuarial gains and losses (€151 million).

28.1 Provisions for post-employment benefits

Details of these provisions are shown below:

(in millions of euros)	31/12/2021	Increases		Decreases		31/12/2022
		Operating	Financial	Operating	Financial	
Pensions	7,162	438	308	(453)	(213)	7,242
CNIEG expenses	460	11	7	(12)	-	466
Benefits in kind (energy)	2,355	233	67	(109)	-	2,546
Retirement gratuities	66	37	8	(4)	(7)	100
Other benefits	751	69	15	(22)	-	813
PROVISIONS FOR POST-EMPLOYMENT BENEFITS	10,794	788	405	(600)	(220)	11,167

(in millions of euros)	Obligations	Fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Pensions	17,832	(8,812)	-	(1,778)	7,242
CNIEG expenses	339	-	-	127	466
Benefits in kind (energy)	3,310	-	-	(764)	2,546
Retirement gratuities	503	(377)	-	(26)	100
Other benefits	805	(14)	(9)	32	813
PROVISIONS FOR POST-EMPLOYMENT BENEFITS AT 31/12/2022	22,789	(9,203)	(9)	(2,410)	11,167

(in millions of euros)	Obligations	Fund assets	Unrecognised past service cost	Unrecognised actuarial gains and losses	Provision in the balance sheet
Pensions	23,779	(12,606)	-	(4,011)	7,162
CNIEG expenses	501	-	-	(41)	460
Benefits in kind (energy)	5,067	-	-	(2,712)	2,355
Retirement gratuities	602	(527)	-	(8)	66
Other benefits	1,203	(15)	(11)	(426)	751
PROVISIONS FOR POST-EMPLOYMENT BENEFITS AT 31/12/2021	31,152	(13,148)	(11)	(7,198)	10,794

28.2 Provisions for other long-term benefits for current employees

The amount of obligations for other long-term benefits awarded to current employees is identical to the corresponding balance sheet provisions. Details are as follows:

(in millions of euros)	31/12/2021	Increases		Decreases	31/12/2022
		Operating	Financial	Operating	
Annuities following work-related accident and illness	914	38	12	(167)	797
Long service awards	138	9	2	(38)	111
Other	21	-	-	(4)	17
PROVISIONS FOR OTHER LONG-TERM BENEFITS FOR CURRENT EMPLOYEES	1,073	47	14	(209)	925

28.3 Fund assets

Fund assets, managed under an asset/liability model, amount to €9,203 million at 31 December 2022 (€13,148 million at 31 December 2021) and concern the coverage of retirement gratuities and the specific benefits of the special pension system.

The value of fund assets declined during the year, mainly as a result of less favourable trends on the financial markets.

Investments under the contracts concerned break down as follows:

<i>(in millions of euros)</i>	31/12/2022	31/12/2021
TOTAL FUND ASSETS	9,203	13,148
Assets funding special pension benefits	8,812	12,606
<i>(in %)</i>		
Equities	33%	32%
Monetary bonds	65%	67%
Real estate assets	2%	1%
Assets funding retirement gratuities	377	527
<i>(in %)</i>		
Equities	31%	33%
Monetary bonds	69%	67%
Assets funding other benefits	14	15

28.4 Actuarial assumptions

The main actuarial assumptions used for provisions for post-employment benefits and long-term employee benefits under the IEG system are summarised below:

- the discount rate is 3.90% at 31 December 2022 (1.30% at 31 December 2021);
- the inflation rate is estimated at 2.30% at 31 December 2022 (1.70% at 31 December 2021);
- the average residual period of employment is 19.23 years;
- the staff turnover rate is considered non-significant;
- the "tarif agent" (special energy price for EDF employees) includes changes in taxes based on that tariff;
- the expected return on fund assets covering past specific benefits under the special pension system is 1.72% for 2022 (1.29% for 2021);
- the expected return on fund assets covering retirement gratuities is 1.45% for 2022 (1.06% for 2021).

The discount rate used for employee benefit obligations is determined by applying the yield rate on high-quality corporate bonds of appropriate duration to maturities corresponding to the future disbursements resulting from these obligations. For longer durations, the calculation also takes into consideration data from a wider

selection of corporate bonds adjusted for comparability with the high-quality bonds, given the smaller panel of bonds with these durations since 2017.

Changes in the economic and market parameters used led EDF to set the discount rate at 3.90% at 31 December 2022 (1.30% at 31 December 2021). The increase in the discount rate essentially relates to the increase in risk-free rates observed at the end of 2022.

The inflation assumption is based on an inflation curve constructed from economic forecasts and inflation-indexed market products.

As a result of changes in the economic and market parameters, the assumed average inflation rate used as the EDF group's benchmark for Euro zone countries is 2.30% at 31 December 2022 (1.70% at 31 December 2021).

The obligations are based on wage increase assumptions that are differentiated by age group and employee category, with an average annual rise of 3.7% including inflation for a projected full career.

The pay rise agreements signed in 2022 have been taken into consideration in calculating the obligations. For 2024 and subsequent years, the wage laws referred to for these calculations are based on average wage increases observed in recent years (adjusted for non-recurring effects).

The mortality table used to calculate obligations is based on the INSEE 2013-2070 generation table (produced by the French statistics office), corrected for differences in mortality between the general French population and the population covered by the IEG regime.

Note 29 Provisions for other expenses and contingent liabilities

29.1 Provisions for other expenses

(in millions of euros)	31/12/2021	Increases		Decreases		Other	31/12/2022
		Operating	Utilisations	Reversals			
Provisions for:							
• personnel expenses	36	29	(23)	(2)	-		40
• replacement of assets operated under concessions	281	14	(0)	(4)	(13)		278
• other expenses*	1,107	3,558*	(3,277)*	(15)	-		1,373
PROVISIONS FOR OTHER EXPENSES	1,424	3,601	(3,300)	(21)	(13)		1,691

* Provisions for other expenses include a specific provision of €2,749 million recognised at 30 June 2022 for the cost in the second half-year of 2022 of the additional 19.5TWh ARENH allocation introduced by the decree of 11 March 2022 and its implementing orders. This provision was used entirely during the second half-year as and when the sales and purchases took place (see note 5 (2)).

At 31 December 2022, a provision for expenses was also recognised in connection with ongoing negotiations for a significant contract (see note 26.1).

At 31 December 2021, other provisions for other expenses include a provision related to proceedings before the French Competition Authority (ADLC) (see note 12). On 22 February 2022, in a settlement procedure, the ADLC fined the EDF group €300 million for abuse of its dominant position. The provision was reversed when the expense, which was disbursed in July 2022, was recognised (see note 29.2).

29.2 Contingent liabilities

Accounting principles and methods

A contingent liability is:

- a potential obligation arising from past events, which will only be confirmed by the occurrence (or non-occurrence) of one or more uncertain future events that are not completely within the entity's control, or
- a present obligation arising from past events that is not recognised in the financial statements because an outflow of resources representing economic benefits is unlikely to be necessary to extinguish the obligation, or because the amount of the obligation cannot be measured reliably.

The principal contingent liabilities at 31 December 2022 are the following:

Tax inspections

The French tax authorities questioned the tax-deductibility of certain long-term nuclear provisions for the years 2012 to 2019. In a ruling of 29 August 2022, Montreuil Administrative Court validated EDF's position for one of the contested provisions, but upheld the tax adjustment for the other.

In execution of this decision, the Company paid €297 million (see note 13.2) and filed an appeal against the unfavourable part of the ruling.

ARENH dispute - Force majeure

In the crisis caused by the Covid-19 pandemic, some suppliers applied to the President of the Paris Commercial Court in 2020 for an emergency order suspending ARENH deliveries either totally, or partially, equivalent to the decline in electricity consumption by their customer portfolio during the crisis, citing the *force majeure* clause contained in the master ARENH agreement signed with EDF.

On 20, 26 and 27 May 2020, after summary proceedings the Paris Commercial Court issued provisional rulings on the applications for suspension of ARENH contracts made by four alternative suppliers (TotalEnergies, Gazel, Alpiq and Vattenfall). The urgent application judge ruled that *force majeure* was established, and ordered the suspension of deliveries for three of the applicants (TotalEnergies, Gazel, and Alpiq). EDF appealed against this ruling. On 28 July 2020, the Paris Court of Appeal upheld these Commercial Court decisions. On 24 September 2020 EDF filed an appeal before the Court of Cassation which was rejected on 11 May 2022.

Meanwhile, as a precautionary measure to protect its rights, on 2 June 2020 EDF notified the energy suppliers Alpiq, Gazel and TotalEnergies of the termination of

their ARENH contracts. By an order of 1 July 2020, the President of the Paris Commercial Court declared this termination null and void. EDF appealed against that decision. On 19 November 2020, the Paris Court of Appeal overturned the Commercial Court's order and stated that there were no grounds for summary proceedings, thus restoring the effects of the termination.

Further summary proceedings were initiated in late September 2020 by Ohm Energie, seeking a suspension of payments due for ARENH volumes, claiming that deliveries had been continued illegally by EDF since it had requested suspension of ARENH deliveries from April to June 2020 due to *force majeure*. On 23 October 2020 the Paris Commercial Court rejected all of Ohm Energie's claims.

In parallel, seven cases concerning the substance of the matter have been brought by alternative suppliers, claiming compensation from EDF for the prejudice caused by its allegedly unlawful refusal to apply the *force majeure* clause. The suppliers concerned are Hydroption, Vattenfall, Priméo Energie Grands Comptes and Priméo Energie Solutions, Arcelor Mittal Energy, Plüm Energy et Entreprises et Collectivités, TotalEnergies and Ekwateur.

On 13 April 2021, the Paris Commercial Court issued a first judgement on the merits in the Hydroption case, ordering EDF to pay the claimant €5.88 million in damages. The court considered that the conditions for *force majeure* were fulfilled and concluded that in continuing its ARENH deliveries against Hydroption's wishes EDF had committed a breach of contract for which it could be held liable. On 15 October 2021, the Paris Court of Appeal overturned the Commercial Court's judgement insofar as it considered EDF liable and ordered it to pay damages to Hydroption, considering that the exemption clause of *force majeure* was not established, and that EDF was not obliged to satisfy a request for suspension of the contract. On 2 December 2021, the Toulon Commercial Court placed Hydroption SAS in liquidation. The liquidator filed an appeal before the Court of Cassation on 19 January 2022, and the proceedings are still ongoing.

On 30 November 2021 the Paris Commercial Court issued two more judgements on the merits in the cases brought by TotalEnergies and Ekwateur, ordering EDF to pay damages of €53.93 million to TotalEnergies and €1.77 million to Ekwateur. EDF has appealed against these two judgments, and the proceedings are still ongoing.

On 6 December 2022, the Paris Commercial Court issued two further judgements on the merits in the cases brought by Priméo Energie Grands Comptes and Priméo Energie Solutions, ordering EDF to pay these two companies damages of €1.73 million and €2.36 million respectively. EDF has appealed against these two judgments, and the proceedings are still ongoing.

The other cases on the merits are still ongoing.

Investigations by France's Competition Authority (ADLC)

At 31 December 2021 France's Competition Authority (the ADLC) was investigating the EDF group in relation to four separate matters (the Engie complaint, the referral concerning heat networks, the Plüm complaint, the Xélan complaint), which are described in the notes to the consolidated financial statements at 31 December 2021.

There were significant developments in the first half of 2022 in the investigation that followed a complaint filed by Engie on 19 June 2017 relating to EDF's commercial practices regarding retail electricity and gas sales, and specifically the circumstances in which EDF gave electricity suppliers, upon request, access to its file of customers paying the regulated "Green" and "Yellow" tariffs from the end of 2015, when these tariffs were about to be discontinued. Documents collected during search and seizure operations in November 2016 were used in the Engie proceedings. On 27 May 2021 EDF, Dalkia, Dalkia Smart Building, Citelum and Cham were notified of the ADLC's objections concerning the markets for retail electricity and gas supply, multi-technique management/maintenance and energy optimisation services, and energy control measures leading to issuance of energy savings certificates.

On 22 February 2022, the ADLC fined the EDF group €300 million for dominant position abuse practices that allegedly enabled it to maintain its market shares in the electricity supply sector and strengthen its position in the associated gas supply and energy services markets. EDF benefited from the settlement procedure in this case and made two commitments: firstly, to make its file of customers on the "blue" regulated tariff available to alternative electricity suppliers upon request, and secondly, to separate the telephone subscription process for existing and prospective "blue" tariff customers from the process for existing and prospective

customers on market-price contracts. A related provision was recognised at 31 December 2021. It was reversed when the expense, which was disbursed in July 2022, was recognised (see note 29.1).

In the investigation following an ex-officio referral to the ADLC on 4 November 2019 concerning the formation of a partnership for heat network operations, EDF, Dalkia, Électricité de Strasbourg, ES Services Energétiques and EDEV received initial notification of the ADLC's objections on 3 May 2021, and an additional notification of objections on 8 July 2022. These notifications were the first step in a procedure that allows both sides to present their arguments. On 15 February 2023 the Rapporteur of the ADLC sent EDF her report in response to the observations made by the parties. The parties now have two months to make their observations on this report. The procedure will continue in 2023 and there is no indication as yet of the final outcome.

There were no significant developments in the other two ADLC investigations.

Finally, in a decision of 18 January 2022 the ADLC dismissed a complaint and application for interim measures made against EDF by ANODE (the national association of retail energy operators). This complaint concerned EDF's refusal to provide access to the database of non-residential customers concerned by discontinuation of the "blue" regulated sales tariffs, who were switched automatically to a follow-on market-price contract at 31 December 2020. However, the ADLC considered that ANODE's arguments were not backed up by sufficient evidence proving the existence of the alleged practices. ANODE filed an appeal against this decision on 1 March 2022 before the Paris Court of Appeal and in parallel, EDF made a declaration of voluntary intervention on 30 March 2022. The Court of Appeal ruled on 3 November 2022 that EDF's declaration of voluntary intervention was inadmissible, considering that the ADLC should not have informed EDF of its decision to dismiss ANODE's complaint. On 30 November 2022 EDF filed an appeal against this inadmissibility ruling. The appeal proceedings concerning the merits of the ADLC's decision of 18 January 2022 are still ongoing.

Labour litigation

EDF is a party in a number of labour lawsuits. EDF considers that none of these lawsuits, individually, is likely to have a significant impact on its financial results or financial position. However, because they relate to situations that could concern a large number of EDF's employees, any increase in such litigations could have a potentially negative impact on EDF's financial position.

Additionally, EDF regularly undergoes inspections by social security bodies such as URSSAF, some of which are currently in process.

Note 30 Liabilities

(in millions of euros)	Maturity			Gross value at 31/12/2022	Gross value at 31/12/2021
	< 1 year	1-5 years	> 5 years		
Liabilities					
Bonds	2,000	11,725	34,489	48,214	47,572
Borrowings from financial institutions	350	15,875	1,450	17,675	1,391
Other borrowings	19,953	6	1	19,960	6,812
Other financial liabilities:					
• advances on consumption	-	5	22	27	26
• other	6,237	400	-	6,637	1,697
Financial liabilities (see note 31)	28,540	28,011	35,962	92,513	57,498
Advances and progress payments received ⁽¹⁾	8,164	-	-	8,164	7,499
Trade payables and related accounts ⁽²⁾	16,690	-	53	16,743	10,996
Tax and social security liabilities ⁽³⁾	6,697	-	-	6,697	8,630
Liabilities related to fixed assets and related accounts	2,244	-	-	2,244	2,070
Other liabilities ⁽⁴⁾	25,374	4	3,157	28,535	18,619
Operating, investment and other liabilities	51,005	4	3,210	54,219	40,315
Cash instruments ⁽⁵⁾	2,739	889	806	4,434	4,239
Deferred income ⁽⁶⁾	533	926	1,490	2,949	3,075
TOTAL LIABILITIES	90,981	29,830	41,468	162,279	112,626

(1) Advances and progress payments received principally include monthly standing order payments by EDF's residential and business customers, amounting to €7,423 million at 31 December 2022 (€7,071 million at 31 December 2021).

(2) The increase in 2022 mainly concerns liabilities payable to EDF Trading, in a context of rising prices.

(3) At 31 December 2022, this item includes an amount of €60 million for the TICFE-CSPE to be collected on energy delivered but not yet billed (€1,457 million at 31 December 2021). The difference is explained by the decrease in the TICFE-CSPE rate applied since 1 February 2022 for all consumers on regulated-tariff and market-price contracts, as part of the French government's tariff cap measures (see note 3.1).

(4) Mainly the amount of current accounts, underwriting and cash pooling agreements with subsidiaries. At 31 December 2022, other liabilities also include a liability of €6,074 million relating to the CSPE compensation for public energy service charges, compared to €294 million at 31 December 2021.

(5) Cash instruments notably include unrealised losses on foreign exchange instruments, and all credit balances for EDF's margin calls on derivatives and transfers of securities under repurchase agreements with banking partners (€1,734 million at 31 December 2022, compared to €2,691 million at 31 December 2021).

(6) Deferred income at 31 December 2022 comprises the partner advances made to EDF under nuclear plant financing plans and the associated long-term contracts, amounting to €1,777 million (€1,746 million in 2021).

Deferred income on long-term contracts also includes the advance paid to EDF in 2010 under the agreement with the Exeltium consortium. This advance is transferred to the income statement progressively on a straight-line basis over the term of the contract.

Deferred income also includes the initial payment under the Fessenheim compensation protocol received on 14 December 2020, which is recognised as income in profit and loss as and when the expenses are incurred.

EDF's public service charges

The amount of expenses to be compensated to EDF for 2022 is €808 million, compared to €5,472 million for 2021. Public service charges to be covered in connection with purchase obligations decreased significantly and became negative in 2022 because of very high market prices, which were generally well above the purchase obligation cost for EDF. However, the public service charges to be covered in 2022 include an amount of €1,571 million to cover the sales revenue shortfall caused by the cap on sale prices to final customers introduced by the French authorities through the electricity and gas tariff caps (see note 3.1).

The amounts received in 2022 out of the State's General Budget totalled €6,602 million (this includes a payment of €141 million for forecast 2022 expenses relating to the gas tariff cap).

This compensation received from the State in 2022 was defined in the Finance Law for 2022 based on 2021 market prices, and was thus ultimately much higher than the public service charges to be covered for 2022.

At 31 December 2022, EDF therefore recognised an operating liability of €6,074 million payable to the State (€294 million at 31 December 2021).

The compensation mechanism for public energy service charges in France is presented in note 4.

Note 31 Financial liabilities

Accounting principles and methods

Bond redemption premiums and any issue premiums are amortised in equal portions prorated to the duration of the bond (straight-line method), regardless of the redemption pattern, applying the option allowed by Article 212-10 of the French national chart of accounts.

For the specific case of the OCEANE bond issue of September 2020, EDF decided to apply the "two separate operations" method for recognition of the issue premium, and the accrued interest method for amortisation, as allowed by Article 212-10 of the national chart of accounts.

Commissions and external costs paid by EDF upon issuance of borrowings and included in "Deferred charges" are spread on a straight-line basis over the term of the related instruments.

(in millions of euros)	Balance at 31/12/2021	New borrowings	Repayments	Translation adjustments (realised and unrealised)	Other	Balance at 31/12/2022
Bonds (in Euros)	3,232	-	(350)	-	-	2,882
Bonds (non-Euro)	11,028	-	-	541	-	11,569
Euro-Medium Term Notes (EMTN) (in Euros)	18,183	3,000	(2,010)	-	-	19,173
Euro-Medium Term Notes (EMTN) (non-Euro)	15,129	-	(464)	(75)	-	14,590
Bonds ⁽¹⁾	47,572	3,000	(2,824)	466	-	48,214
Long-term loans (in Euros)	1,391	13,900	(149)	-	-	15,142
Long-term loans (non-Euro)	-	2,300	-	33	-	2,333
Short-term loans (in Euros)	-	200	-	-	-	200
Borrowings from financial institutions ⁽²⁾	1,391	16,400	(149)	33	-	17,675
Negotiable debt instruments (in Euros)	4,462	5,136	-	-	-	9,598
Negotiable debt instruments (non-Euro)	645	452	-	(9)	-	1,088
Contractual financial borrowings	1,705	23,989	(16,417)	(3)	-	9,274
Other borrowings ⁽³⁾	6,812	29,577	(16,417)	(12)	-	19,960
Total borrowings	55,775	48,977	(19,390)	487	-	85,849
Advances on consumption	26	-	-	-	1	27
Miscellaneous advances	785	3,667	(298)	409	1,149	5,712 ⁽⁴⁾
Bank overdrafts	91	-	-	-	(54)	37
Deferred bank debits	8	-	-	-	10	18
Interest payable	813	-	-	-	57	870
Other financial liabilities	1,697	3,667	(298)	409	1,162	6,637
TOTAL FINANCIAL LIABILITIES	57,498	52,644	(19,688)	896	1,163	92,513

(1) The increase in bonds results from the issue of multi-tranche senior bonds, including one Green Bond tranche, in the total amount of €3,000 million (see note 2.2.4), partly offset by bond redemptions of €(2,824) million and a foreign exchange effect of €466 million.

(2) Borrowings from financial institutions include drawings totalling €10.25 billion and USD 2.2 billion (equivalent to €2 billion) on the bilateral credit lines concluded during the first half of 2022 (see note 2.2.2), and €3.1 billion on credit lines concluded during the second half of 2022 (see notes 2.2.5 and 2.2.6). They also include drawings on EIB credit lines granted to EDF (see note 2.2.3), which were then transferred to Enedis, with a nominal value of less than €800 million.

(3) The change in other borrowings principally comprises €5,579 million resulting from issuance of negotiable debt instruments (€2,822 million in 2021), and €7,569 million from transfers of bonds to several banks under repurchase agreements, which gave rise to a cash receipt.

(4) This amount mainly includes €1,966 million (USD 2,098 million relating to the redemption option exercised by EDF on 29 January 2023 for the 2013 bond issue) reclassified by EDF from "Additional equity" to "Financial liabilities" since the redemption is considered certain (see note 2.2.7 and note 23). It also includes an amount of €3.6 billion of security deposits received as guarantees by EDF which are required to complete transactions on the purchase obligation market.

31.1 Breakdown of loans by currency, before and after hedging instruments

(in millions of euros)	Debt structure in balance sheet				Impact of hedging instruments		Debt structure in balance sheet after hedging			
	Non-Euro	In Euros	% non-Euro	% of debt	Non-Euro	In Euros	Non-Euro	In Euros	% non-Euro	% of debt
TOTAL I - EUROS		55,993		65		22,572		78,565	100	92
CHF	550	559	2	1	(550)	(559)	-	-	-	-
GBP	6,985	7,875	26	9	(2,600)	(2,931)	4,385	4,944	68	6
HKD	2,416	291	1	-	(2,416)	(291)	-	-	-	-
JPY	213,569	1,521	5	2	(175,000)	(1,244)	38,569	277	4	-
NOK	1,000	95	-	-	(1,000)	(95)	-	-	-	-
USD	20,815	19,515	66	23	(18,615)	(17,452)	2,200	2,063	28	2
TOTAL II - NON-EURO CURRENCIES		29,856	100	35		(22,572)		7,284	100	8
TOTAL I+II		85,849		100		-		85,849		100

The nominal value of hedging instruments included in off-balance sheet commitments (see note 33.1) has no effect on loans presented in the balance sheet.

31.2 Breakdown of loans by type of interest rate before and after hedging

(in millions of euros)	Debt structure in balance sheet			Impact of hedging instruments	Debt structure in balance sheet after hedging		
	Total	%	%		Total	%	%
		31/12/2022	31/12/2021			31/12/2022	31/12/2021
Long-term borrowings and EMTN	49,950			(21,932)	28,018		
Short-term borrowings	13,338				13,338		
Borrowings at fixed rate	63,288	74	99	(21,932)	41,356	49	70
Long-term borrowings and EMTN	15,739			21,932	37,671		
Short-term borrowings	6,822				6,822		
Borrowings at floating rate	22,561	26	1	21,932	44,493	51	30
TOTAL	85,849	100	100	-	85,849	100	100

Note 32 Unrealised foreign exchange gains

Unrealised foreign exchange gains at 31 December 2022 amount to €575 million (€260 million at 31 December 2021), of which €128 million concern a bond in pounds sterling that is entirely hedged by cross-currency swaps and €301 million concern bonds in US dollars that are entirely hedged by cross-currency swaps.

Other information

Note 33 Financial instruments

Accounting principles and methods

Derivatives

EDF uses derivatives in order to minimise the impact of foreign exchange risks and interest rate risks.

These derivatives comprise interest rate and currency derivatives such as futures, forwards, swaps and options traded on the over-the-counter market.

The application at 1 January 2017 of ANC regulation 2015-05 concerning forward financial instruments and hedging operations led to recognition of unrealised gains on the foreign exchange optimisation portfolio, and the unrealised gain or loss on currency derivatives classified as hedging instruments, in the balance sheet in the revaluation surplus accounts created by the regulation. These accounts are netted with the unrealised foreign exchange gains or losses booked in respect of the hedged items.

Hedging derivatives correct the foreign exchange result or interest income on the corresponding asset or liability. If the foreign exchange risk is fully

hedged, no provision is recorded. If it is only partly hedged, a provision is recorded for the entire unhedged portion of the unrealised loss.

For other instruments, when there is no hedging relationship, a provision is recorded for unrealised losses and unrealised gains are not recognised.

Instruments in the portfolio at the year-end are included in off-balance sheet commitments at the nominal value of the contracts.

Commodity contracts

Forward financial instruments on commodities are traded for hedging purposes. Gains and losses on these operations are included in sales or in the cost of energy purchases, symmetrically to the hedged items, in accordance with ANC regulation 2015-05 concerning forward financial instruments and hedging operations, which has been applicable since 1 January 2017.

Instruments in the portfolio at the year-end are included in off-balance sheet commitments at the quantities to be delivered or received under the contracts.

33.1 Off-balance sheet commitments related to currency, interest rate and commodity derivatives

EDF uses financial instruments to limit the impact of foreign exchange rate risks and interest rate risks.

(in millions of euros)	31/12/2022		31/12/2021	
	To be received (notional)	To be given (notional)	To be received (notional)	To be given (notional)
1 - Interest rate transactions				
Short-term interest rate swaps				
EUR	-	-	-	-
Long-term interest rate swaps				
EUR	16,196	16,196	9,323	9,323
USD	4,335	4,335	3,576	3,576
GBP	3,794	3,794	4,481	4,481
Sub-total	24,325	24,325	17,380	17,380
2 - Exchange rate transactions				
Forward transactions and forex options				
EUR	47,257	42,586	41,265	33,057
CAD	168	391	136	374
USD	28,772	27,583	23,312	25,286
GBP	11,990	16,577	9,354	14,199
CHF	255	557	142	404
ILS	757	757	440	554
PLN	206	250	213	253
JPY	388	851	123	741
CNY	1,095	1,095	1,075	797
MXN	128	128	105	105
Other currencies	534	644	249	347
Long-term currency swaps				
EUR	3,785	36,262	3,821	35,196
JPY	1,244	57	1,051	61
USD	18,143	1,891	17,118	1,812
GBP	17,298	2,208	17,505	2,334
CHF	559	-	532	-
ILS	77	77	90	90
PLN	10	24	12	21
NOK	95	-	100	-
HKD	291	-	274	-
Sub-total	133,052	131,938	116,917	115,631
3-Securitisation swaps	-	-	-	-
4-Operations on marketable securities	-	-	-	-
Purchases and sales of stock options				
TOTAL FINANCIAL OFF-BALANCE SHEET COMMITMENTS	157,377	156,263	134,297	133,011
5-Commodity swaps				
Oil products (in thousands of barrels)	5,392	5,392	7,168	7,168
Coal (in millions of tonnes)	-	0	-	-
Electricity products (in TWh)	15	11	-	-

The amounts shown in the above table are the nominal values of contracts originally in euros or translated into euros using 2022 year-end exchange rates (regardless of whether they are classified as hedges). For commodities, the amounts shown are the nominal hedged volume in the relevant unit of measurement.

33.2 Impacts of financial instrument transactions on net income

(in millions of euros)	2022	2021
Instruments not classified as hedges		
Interest rate instruments*	252	130
Forex instruments	(607)	511
Instruments classified as hedges		
Interest rate instruments	730	739
Forex instruments	(95)	(82)

* Including interest on swaps.

33.3 Fair value of derivative financial instruments

The fair value of currency and interest rate swaps was calculated by discounting future cash flows using year-end market exchange and interest rates, over the remaining term of the contracts (market value includes accrued interest).

The book value of derivatives presented at nominal value in off-balance sheet commitments includes accrued interest, equalisation payments and premiums paid or received, plus translation adjustments, which are already booked in EDF's accounts. The difference between the resulting book value and market value of these instruments is the unrealised gain or loss.

The market value of derivative financial instruments presented at nominal value in off-balance sheet commitments at 31 December 2022 as calculated by EDF is as follows:

(in millions of euros)	Book value	Fair value
Interest rate hedges		
Interest rate swaps	85	283
Exchange rate hedges		
Forward exchange transactions, currency swaps and forex options	(242)	86
Cross Currency Swaps	1,143	1,822
Commodity hedges		
Oil products	-	(15)
Coal	-	1
Electricity products	-	4,877
TOTAL	986	7,054

Note 34 Other off-balance sheet commitments and operations

At 31 December 2022, off-balance sheet commitments related to operations, financing and investments (other than electricity supply commitments and partnership agreements) comprise the following:

(in millions of euros)	Maturity				31/12/2022	31/12/2021
	< 1 year	1-5 years	5-10 years	> 10 years		
Off-balance sheet commitments given	25,752	22,863	9,782	11,086	69,483	55,729
Operating commitments	15,758	15,630	9,521	8,697	49,606	41,850
• Fuel and energy purchase commitments	10,811	11,781	8,978	6,975	38,545	33,436
• Other operating commitments	4,947	3,849	543	1,722	11,061	8,414
Investment commitments	2,722	3,394	253	32	6,401	6,503
Financing commitments	7,272	3,839	8	2,357	13,476	7,376
Off-balance sheet commitments received	3,934	11,882	256	307	16,379	15,157
Operating commitments	1,260	749	256	307	2,572	2,645
Investment commitments	40	39	-	-	79	73
Financing commitments	2,634	11,094	-	-	13,728	12,439

34.1 Commitments given

In almost all cases, commitments given are reciprocal, and the third parties concerned are under an obligation to supply EDF with assets or services related to operating, investing and financing transactions.

(in millions of euros)	Maturity				31/12/2022	31/12/2021
	< 1 year	1-5 years	5-10 years	> 10 years		
Electricity purchases and related services	8,686	5,496	3,837	5,675	23,694	18,792
Nuclear fuel purchases	2,125	6,285	5,141	1,300	14,851	14,644
FUEL AND ENERGY PURCHASE COMMITMENTS	10,811	11,781	8,978	6,975	38,545	33,436

Electricity purchases and related services

Electricity purchase commitments mainly concern:

- Island Energy Systems (SEI), which have given commitments to purchase electricity generated from bagasse and coal, and electricity generated by the plants of EDF's subsidiary PEI;
- hedging contracts: these are forward purchases, for which the volumes and prices are set in contracts with EDF Trading.

In addition to the obligations reported above and under Article 10 of the Law of 10 February 2000, in mainland France EDF is obliged to purchase, at the producer's request and subject to compliance with certain technical features, the power produced by co-generation plants and renewable energy generation units (wind turbines, small hydro-electric plants, photovoltaic power, etc.).

The additional costs generated by this obligation are compensated, after validation by the CRE, by the CSPE. These purchase obligations total 50TWh for 2022 (54TWh in 2021), including 6TWh for co-generation (7TWh in 2021), 22TWh for wind power (25TWh in 2021), 13TWh for photovoltaic power (11TWh in 2021) and 3TWh for hydropower (4TWh in 2021).

Nuclear fuel purchases

Commitments for purchases of nuclear fuel arise from supply contracts for the nuclear plants intended to cover EDF's needs for uranium and fluorination, enrichment and fuel assembly fabrication services.

34.1.2 Other operating commitments

These are commitments undertaken by EDF when it signs orders relating to operations or contracts in progress, related guarantees, and commitments as lessee under irrevocable operating leases principally for premises, equipment and vehicles. The corresponding rents are subject to renegotiation at intervals defined in the contracts.

34.1.3 Investment commitments

Investment commitments essentially comprise commitments for acquisitions of property, plant and equipment.

34.1.4 Financing commitments

These are financing commitments made by EDF to its subsidiaries. The increase in these commitments principally concerns EDF Trading (€2,841 million comprising €1,441 million to finance margin calls on the energy market and €1,400 million to finance purchase obligations) and EDF International (€870 million for the financing of the HPC project).

34.1.1 Fuel and energy purchase commitments

In the course of its ordinary generation and supply activities, EDF has entered into long-term contracts for purchases of electricity, other energies and commodities and nuclear fuel, for periods of up to 20 years.

At 31 December 2022, these commitments mature as follows:

34.2 Commitments received

34.2.1 Operating commitments

These commitments mainly comprise:

- operating lease commitments received as lessor;
- operating guarantees received;
- operating sale commitments, essentially concerning engineering services for the HPC project;
- personnel secondment commitments for Edvance.

34.2.2 Financing commitments

These commitments correspond to the total value of credit lines available to EDF from various banks.

34.3 Other types of commitment

34.3.1 Electricity supply commitments

In the course of its business, EDF has signed long-term electricity sale contracts, principally:

- long-term contracts with a number of European electricity operators, for a specific plant or for a defined group of plants in the French nuclear generation fleet, corresponding to installed power capacity of 3.5GW;
- in execution of France's "NOME" Law on organisation of the French electricity market, EDF has a commitment to sell some of the energy generated by its existing nuclear power plants to other suppliers on the French market, until 31 December 2025. This has concerned a maximum volume of 150TWh each year since 1 January 2020 (see note 3.1).

34.3.2 Gas purchases and related services

Gas purchase commitments are given by EDF in connection with its expanding gas supply business.

Gas purchases for supply, delivery and storage are mostly undertaken through long-term contracts and forward purchases from EDF Trading.

In 2020, EDF signed a 5-year purchase contract for 3 billion m³ of gas per year from Norway.

In 2014, EDF signed a contract for LNG imports from the United States, for an annual supply of 0.7 million tonnes of LNG (1 billion m³ of natural gas per year) over a 20-year period starting from May 2020.

In 2020 EDF also signed a 20-year purchase contract for LNG from the United States (1 million tonnes per year, i.e. 1.4 billion m³ of natural gas). Deliveries under this contract are due to begin in 2026.

Under the contract with the Dunkerque LNG methane terminal, EDF also benefits from approximately 61% of the terminal's regasification capacities until 2037, in return for payment of an annual premium of approximately €150 million. A provision for onerous contracts has been recorded in connection with this contract since 2018.

Note 35 Related parties

35.1 Relations with the french state and state-owned entities

35.1.1 Relations with the french state

The French State holds 89.01% of the capital of EDF at 31 December 2022, and is thus entitled in the same way as any majority shareholder to control decisions that require approval by the shareholders. On 8 February 2023, the AMF published the result of the French government's simplified tender offer for the equity securities of EDF, after the offer closed on 3 February 2023. Following completion of the offer, the French State will own 95.82% of the share capital with at least 96.53% of voting rights, and 99.96% of the outstanding OCEANE bonds (see note 2.2.9). This fulfils the conditions for proceeding to a compulsory squeeze-out for EDF shares and OCEANES. As indicated in an AMF notice of 25 January 2023, while awaiting the Paris Court of Appeal's ruling on the action brought by the employee shareholding fund Actions EDF and the shareholders' associations *Énergie en actions* and *Association pour la défense des actionnaires minoritaires* seeking annulment of the AMF's approval of the offer, the French government has made an undertaking that it will not proceed with the compulsory squeeze-out until the Court of Appeal has issued its decision on the merits of the case.

In accordance with the legislation applicable to all companies having the French State as their majority shareholder, EDF is subject to certain inspection procedures, in particular economic and financial inspections by the State, audits by the French Court of Auditors (Cour des comptes) or Parliament, and verifications by the French General Finance Inspectorate (Inspection générale des finances).

The public service contract between the French State and EDF was signed on 24 October 2005. This contract is intended to form the framework for public service missions assigned to EDF by the lawmaker for an unlimited period. The Law of 9 August 2004 does not stipulate the duration of the contract.

35.1.2 Relations with ENGIE

Concerning the ordinary service of LPG distribution and supply in the cities of Ajaccio and Bastia in Corsica, Engie informed EDF in October 2020 that it was considering terminating its LPG activities in Corsica.

Article 96 of France's Finance Law for 2022 allows the State to bear part of the costs associated with conversion of the LPG networks to electricity or renewable energies, for a maximum period of twenty years to be set by official order.

This measure currently has no impact for EDF. Ultimately, the prospect of ending LPG distribution operations and converting uses to electricity will need investments to reinforce the electricity distribution networks.

Engie has made a formal demand to the cities of Bastia and Ajaccio to notify attribution of concessions by 31 July 2023 at the latest, otherwise it will terminate its LPG operations in Corsica.

35.1.3 Relations with public sector entities

EDF's relations with public sector entities mainly concern Orano.

Transactions concern:

- the front-end of the nuclear fuel cycle (uranium supplies, conversion and enrichment services);
- the back-end of the nuclear fuel cycle (transportation, storage, processing and recycling services for spent fuel).

Front-end of the cycle

Several important agreements exist between EDF and Orano:

- for supplies of natural uranium: Orano Mining contracts;
- for fluorination and enrichment of natural uranium into uranium 235: an Orano Chimie-Enrichissement contract (formerly Orano cycle contract).

Back-end of the cycle

Relations between EDF and Orano Recyclage (formerly Orano Cycle) concerning transportation, processing and recycling of spent fuels are described in note 26.

Note 36 Management compensation

The Company's key management and governance personnel are the Chairman and CEO and the directors. In application of the law, directors representing the employees receive no remuneration for their services.

The total gross compensation (salaries and all types of benefits, excluding employer contributions) paid by the Company to its key management and governance personnel in 2022 and 2021 was as follows:

(in Euros)	2022	2021
Jean-Bernard LEVY, Chairman and CEO ⁽¹⁾	407,333	453,660
Luc REMONT, Chairman and CEO ⁽²⁾	47,727	n.a
Directors ⁽³⁾	437,367 ⁽⁴⁾	436,934 ⁽⁵⁾

(1) At its meeting of 17 February 2022 the Board of Directors decided to keep the gross fixed annual compensation of its Chairman and Chief Executive Officer Jean-Bernard Lévy at €450,000 for 2022, the same as in 2021. He also received benefits in kind in the form of a company car.

(2) At its meeting of 18 November 2022 the Board of Directors decided, subject to the appointment of Luc Rémont as EDF's Chairman and CEO by decree of the French President, which occurred on 23 November 2022, to set his gross fixed annual compensation at €450,000 for 2022, prorated from the time of his appointment as EDF's Chairman and CEO by decree. Luc Rémont also receives benefits in kind in the form of a company car.

(3) The General Shareholders' Meeting of 12 May 2022 approved the Board of Directors' proposal to set the annual budget for directors' fees at €440,000 for 2022, the same as the 2021 directors' fee budget approved at the General Shareholders' Meeting of 6 May 2021.

(4) This amount includes directors' fees paid in 2022 to directors whose terms of office ended during 2021 or 2022, amounting to a total €109,140.

(5) This amount includes directors' fees paid in 2021 to directors whose terms of office ended during 2021, amounting to a total €35,505.

Note 37 Subsequent events

Apart from the bond issue reported below and the events mentioned in notes 2.2.9, 3.1, 22.1, 22.3, 29.2 and 35.1.1, no event has arisen subsequent to the year-end.

37.1 Multi-tranche senior bond issue for a nominal amount of €2 billion and £950 million

On 19 January 2023, EDF launched a senior bond issue in 4 tranches for a nominal amount of €2 billion and £950 million, comprising:

- a €1 billion bond with 9-year maturity and a 4.25% fixed coupon;
- a €1 billion bond with 20-year maturity and a 4.625% fixed coupon;
- a £450 million bond with 12-year maturity and a 5.5% fixed coupon;
- a £500 million bond with 30-year maturity and a 5.625% fixed coupon.

Settlement and delivery took place on 25 January 2023, and the bonds were admitted to trading on the regulated market of Euronext Paris at that date.

6.4 Statutory auditors' report on the financial statements

For the year ended December 31, 2022

This is a translation into English of the statutory auditors' report on the financial statements of the Company issued in French and it is provided solely for the convenience of English-speaking users.

This statutory auditors' report includes information required by European regulation and French law, such as information about the appointment of the statutory auditors or verification of the management report and other documents provided to shareholders.

To the General Meeting of Electricité de France,

Opinion

In compliance with the engagement entrusted to us by your General Meeting, we have audited the accompanying financial statements of Électricité de France S.A. (« EDF » or the

« Company ») for the year ended December 31, 2022.

In our opinion, the financial statements give a true and fair view of the assets and liabilities and of the financial position of the Company as at December 31, 2022 and of the results of its operations for the year then ended in accordance with French accounting principles.

The audit opinion expressed above is consistent with our report to the Audit Committee.

Basis for Opinion

Audit Framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under those standards are further described in the *Statutory Auditors' Responsibilities for the Audit of the Financial Statements* section of our report.

Independence

We conducted our audit engagement in compliance with independence requirements of the French Commercial Code (*Code de Commerce*) and the French Code of Ethics (*Code de Déontologie*) for statutory auditors for the period from January 1, 2022 to the date of our report and specifically we did not provide any prohibited non-audit services referred to in Article 5(1) of Regulation (EU) No 537/2014.

Justification of Assessments – Key Audit Matters

In accordance with the requirements of Articles L.823-9 and R.823-7 of the French Commercial Code (*Code de Commerce*) relating to the justification of our assessments, we inform you of the key audit matters relating to risks of material misstatement that, in our professional judgment, were of most significance in our audit of the financial statements of the current period, as well as how we addressed those risks.

These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on specific items of the financial statements.

Valuation of provisions related to nuclear generation in France – back-end of the nuclear cycle, plant decommissioning and last cores – and dedicated assets

Notes 1.2.2, 16 and 26 to the financial statements

Key Audit Matter

As at December 31, 2022, the provisions recorded to cover obligations relating to nuclear power plants for which EDF is the operator in France total €43,382 million, including €23,854 million with respect to the back-end of the nuclear cycle (management of spent fuel and radioactive waste) and €19,528 million with respect to the decommissioning of nuclear power plants and last cores.

The valuation of these provisions depends on the regulatory context is described in Note 26 to the financial statements. It requires defining technical and financial assumptions and using complex calculation models.

They are updated and the assumptions taken into consideration in the models are reviewed at least once a year. The selected assumptions reflect management's best estimate at the reporting date of the impacts of the applicable regulation, the implementation of decommissioning, spent fuel management and storage processes or changes in the main financial parameters, inflation and discounting. More specifically in 2022, they reflect the impacts of (i) the increase in the real discount rate, (ii) the adjustment to 2022 year-end economic conditions in connection with real inflation. In addition, as every year, variations in the provisions include the effects of increasing volumes of spent fuels to be reprocessed and specific revisions of planning and decommissioning cost estimates.

Furthermore, the Company is required to allocate so-called "dedicated" assets to secure financing of certain categories of nuclear provisions in France. The realizable value of these assets should allow the Company's commitments relating to the decommissioning of nuclear power plants and long-term storage of radioactive waste in France to be covered (Note 26.6). The realizable value of these dedicated assets, impacted by the decrease in financial markets, for an amount of €33,904 million (or a net carrying amount of €30,190 million) as of December 31, 2022, was determined based on the fair value of diversified equity and bonds investments, and the equity value of a non-listed assets portfolio managed by the division EDF Invest. These dedicated assets are classified as

Responses

We have analyzed the measures for recognizing provisions related to nuclear generation in France and gained an understanding of the industrial scenarios for decommissioning nuclear power plants and the technical solutions adopted in terms of management of spent fuel and radioactive waste. We have assessed the compliance of the methods for determining the provisions with regard to applicable accounting, legal and regulatory measures.

We have verified the calculation models used by the Company and assessed the assumptions adopted in terms of cost, forecast cash outflows and financial parameters (discount and inflation rates).

Our work also consisted in verifying the type of costs used to determine provisions and assessing the reconciliation of forecast costs and forecast cash outflows with industrial scenarios as well as the available studies and quotes, based on the current year change in assumptions.

We have also assessed the appropriateness of:

- margins for uncertainties and risks included in the provisions, to take into account the degree of control over decommissioning techniques and the management of spent fuel and radioactive waste.
- the series and mutualisation effects adopted in the quotes for decommissioning nuclear power plants in operation, including the studies carried out to prepare the dismantling of Fessenheim, for which the nominal cost represents €21,381 million to economic conditions at the end of the period, for a provision of €12,125 million in discounted value (Note 26.5.3).

Concerning the inflation and discount rates and their calculation methods adopted by management described in note 26.5, we have verified their compliance with applicable accounting standards and regulatory measures, since 2020. We have reconciled the data used for this purpose with available market data or internal expertise-based documentation.

growth assets, fixed-income assets and yield assets and ought to be compliant with the chart of responsible investor implemented in 2020.

We considered the valuation of provisions related to nuclear generation and dedicated assets to be a key audit matter due to:

- the sensitivity of the assumptions on which the valuation of these provisions is based, notably in terms of assumptions considered for decommissioning, spent fuel reprocessing, storage, costs, uncertainties and aleas, inflation and long-term discount rates, as well as the depreciation periods of nuclear power plants in operation, and forecast cash outflows; the modification of these parameters can lead to a material revision in the provisioned amounts;
- the negative impacts on the financial position of the Company (cash earmarked to increase the amount of dedicated assets) in the event of an increase in nuclear provisions in France, a change in the realizable values of dedicated assets or changes in the coverage rate of nuclear provisions for dedicated assets,

it being specified that the valuation of provisions covers and includes uncertainties related to the fact that certain scenarios and technical solutions have never been implemented.

Specific Verifications

We have also performed, in accordance with professional standards applicable in France, the specific verifications required by laws and regulations.

Information given in the management report and in the other documents with respect to the financial position and the financial statements provided to the Shareholders

We have no matters to report as to the fair presentation and the consistency with the financial statements of the information given in the management report of the Board of Directors, and in the other documents with respect to the financial position and the financial statements provided to Shareholders.

We attest the fair presentation and the consistency with the financial statements of the information relating to payment deadlines mentioned in Article D.441-6 of the French Commercial Code (*Code de commerce*).

Information relating to corporate governance

We attest that the section of the Management report devoted to corporate governance sets out the information required by Articles L.225-37-4, L.22-10-10 and L.22-10-9 of the French Commercial Code.

Concerning the information given in accordance with the requirements of Article L.22-10-9 of the French Commercial Code (*Code de commerce*) relating to remunerations and benefits received by or awarded to the directors and any other commitments made in their favour, we have verified its consistency with the financial statements, or with the underlying information used to prepare these financial statements and, where applicable, with the information obtained by your company from controlling and controlled companies included in the scope of consolidation. Based on these procedures, we attest the accuracy and fair presentation of this information.

With respect to the information relating to items that your company considered likely to have an impact in the event of a public takeover bid or exchange offer, provided pursuant to Article L.22-10-11 of the French Commercial Code, we have agreed this information to the source documents communicated to us. Based on these procedures, we have no observations to make on this information.

Other information

In accordance with French law, we have verified that the required information concerning the identity of the shareholders and holders of the voting rights has been properly disclosed in the management report.

Report on Other Legal and Regulatory Requirements

Format of presentation of the financial statements intended to be included in the annual financial report

We have also verified, in accordance with the professional standard applicable in France relating to the procedures performed by the statutory auditor relating to the annual and consolidated financial statements presented in the European single electronic format, that the presentation of the financial statements intended to be included in the annual financial report mentioned in Article L.451-1-2, I of the French Monetary and Financial Code (*code monétaire et financier*), prepared under the responsibility of the Chief Executive Officer, complies with the single electronic format defined in the European Delegated Regulation N° 2019/815 of 17 December 2018.

Concerning the securing of financing for certain of these provisions through dedicated assets, we have reconciled the realizable value of the dedicated assets in the portfolio at the reporting date with the available certificate of depository statements, and available external data and valuations. We have also assessed the accounting treatment and their valuation, in particular the compliance with the accounting standard of the impairment model described in the accounting principles and methods in the note 16.

Finally, we have verified the appropriateness of the disclosures given in the Notes for the provisions related to nuclear generation in France and the dedicated assets, notably regarding the sensitivity of the valuation of provisions to changes in macro-economic and technical assumptions (Note 26.5.3).

Based on the work we have performed, we conclude that the presentation of the financial statements intended to be included in the annual financial report complies, in all material respects, with the European single electronic format.

We have no responsibility to verify that the financial statements that will ultimately be included by your company in the annual financial report filed with the AMF are in agreement with those on which we have performed our work.

Appointment of the Statutory Auditors

We were appointed as statutory auditors of Electricité de France S.A. by the General meeting of

June 6, 2005 for KPMG S.A. and the by decision of the Board of Directors of April 25, 2002 for Deloitte & Associés.

As at December 31, 2022, KPMG S.A. was in the 18th year of total uninterrupted engagement and Deloitte & Associés was in the 21th year of total uninterrupted engagement, which for both 18 years since securities of the Company were admitted to trading on a regulated market.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with French accounting principles and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless it is expected to liquidate the Company or to cease operations.

The Audit Committee is responsible for monitoring the financial reporting process and the effectiveness of internal control and risks management systems and where applicable, its internal audit, regarding the accounting and financial reporting procedures.

The financial statements were approved by the Board of Directors.

Statutory Auditors' Responsibilities for the Audit of the Financial Statements

Objectives and audit approach

Our role is to issue a report on the financial statements. Our objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As specified in Article L. 823-10-1 of the French Commercial Code (*Code de commerce*), our statutory audit does not include assurance on the viability of the Company or the quality of management of the affairs of the Company.

As part of an audit conducted in accordance with professional standards applicable in France, the statutory auditor exercises professional judgment throughout the audit and furthermore:

- Identifies and assesses the risks of material misstatement of the financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence considered to be sufficient and appropriate to provide a basis for his opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control.
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management in the financial statements.
- Assesses the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of his audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the statutory auditor concludes that a material uncertainty exists, there is a requirement to draw attention in the

audit report to the related disclosures in the financial statements or, if such disclosures are not provided or inadequate, to modify the opinion expressed therein.

- Evaluates the overall presentation of the financial statements and assesses whether these statements represent the underlying transactions and events in a manner that achieves fair presentation.

Report to the Audit Committee

We submit to the Audit Committee a report which includes in particular a description of the scope of the audit and the audit program implemented, as well as the results of our audit. We also report, if any, significant deficiencies in internal control regarding the accounting and financial reporting procedures that we have identified.

Our report to the Audit Committee includes the risks of material misstatement that, in our professional judgment, were of most significance in the audit of the financial statements of the current period and which are therefore the key audit matters, that we are required to describe in this report.

We also provide the Audit Committee with the declaration provided for in Article 6 of Regulation (EU) N° 537/2014, confirming our independence within the meaning of the rules applicable in France such as they are set in particular by Articles L.822-10 to L.822-14 of the French Commercial Code (*code de commerce*) and in the French Code of Ethics (*code de déontologie*) for statutory auditors. Where appropriate, we discuss with the Audit Committee the risks that may reasonably be thought to bear on our independence, and the related safeguards.

Paris La Défense, February 16, 2023

The Statutory Auditors

French original signed by

KPMG S.A.

Marie Guillemot

Michel Piette

Deloitte & Associés

Damien Leurent

Christophe Patrier

6.5 Dividend policy

6.5.1 Dividends and interim dividends paid in the last three fiscal years

The amount of dividends and interim dividends paid in the last three fiscal years was as follows:

Fiscal year	Number of shares	Dividend per share (in euros)	Total dividends paid ⁽¹⁾ (in euros)	Dividend payment date
2019	3,050,969,626	0.15 ⁽²⁾	456,888,323.70 ⁽²⁾	17/12/2019
2020	3,099,923,579	0.21 ⁽³⁾	652,259,998.76 ⁽⁴⁾	07/06/2021
2021	3,736,934,708	0.58 ⁽⁵⁾	1,997,314,793.63 ⁽⁶⁾	13/06/2022

(1) After deduction of treasury shares.

(2) The 2019 interim dividend of €456,888,323.70, paid on 17 December 2019, comprised €429,635,913.60 in new shares, €27,252,346.20 in cash and a balancing payment of €63.90.

(3) i.e. €0.231 in 2020 for shares benefiting from the increased dividend.

(4) The remaining €652,259,998.76 of the dividend for 2020, paid on 7 June 2021, comprised €616,146,887.12 in new shares and €36,113,111.64 in cash.

(5) i.e. €0.638 in 2021 for shares benefiting from the increased dividend.

(6) Of which €947,074,231.20 in interim dividends paid on 2 December 2021 for that year comprising €898,992,407.92 in new shares, €48,081,668.10 in cash and a balancing payment of €155.18. The remaining €1,050,240,562.43 of the dividend for 2021, paid on 13 June 2022, comprised €978,699,524.40 in new shares, €71,540,908.35 in cash and a balancing payment of €129.68.

The General Meeting of Shareholders of 12 May 2022 did not vote to distribute an interim dividend for fiscal year 2022.

The Board of Directors, at its meeting of 16 February 2023, decided to propose to the General Meeting of Shareholders, which will be called to approve the financial statements for the fiscal year ending 31 December 2022 and which will be held on 14 June 2023, that no dividend be paid for the fiscal year ending 31 December 2022.

6.5.2 Dividend policy, increased dividend

The dividend policy formulated by the Board of Directors takes the Group's investment needs, the economic context and any other relevant factor into account.

In accordance with the amendment to the articles of association passed by the Shareholders' Meeting of 24 May 2011, the first increased dividend was paid in 2014 for the previous year. Shareholders holding their shares in registered form for at least two years are entitled to a increased dividend. The number of shares eligible

for the 10% increased dividend may not exceed 0.5% of the share capital for a single shareholder.

On 21 November 2014, the Shareholders' Meeting amended the articles of association to the effect of authorising it to approve the payment of any dividend, interim dividend, reserves or premium that is distributed or any reduction in capital, through delivery of the Company's assets, including financial securities.

6.5.3 Unclaimed dividends

Dividends not claimed within five years of their payment date lapse in favour of the French State.

6.6 Other items

6.6.1 Table of results for the last five fiscal years

	2022	2021	2020	2019	2018
Capital at year end					
Share capital (<i>in millions of euros</i>)	1,944	1,619	1,550	1,552	1,505
Capital contributions (<i>in millions of euros</i>)					
Number of ordinary shares in existence	3,887,718,420	3,238,676,748	3,099,923,579	3,103,621,086	3,010,267,676
Number of priority dividend shares (with no voting rights) in existence					
Maximum number of future shares to be created by conversion of bonds by exercise of subscription rights					
Operating results for the year (<i>in millions of euros</i>)					
Sales excluding taxes	87,129	53,001	44,315	46,155	44,874
Income before tax, employee profit-sharing, depreciation, amortisation and provisions	(22,745)	9,177	8,051	7,639	7,925
Income tax	(147) ⁽²⁾	1,410	(406) ⁽²⁾	605	(756) ⁽²⁾
Employee profit-sharing for the year					
Income after tax, employee profit-sharing, depreciation, amortisation and provisions	(30,648)	1,457	222	1,593	1,591
Dividends		1,997 ⁽¹⁾	652		934 ⁽¹⁾
Interim dividends		947		457	451
Earnings per share (<i>euros/share</i>)					
Income after tax and employee profit-sharing but before depreciation, amortisation and provisions	(5.81)	2.40	2.73	2.27	2.88
Income after tax, employee profit-sharing, depreciation, amortisation and provisions	(7.88)	0.45	0.07	0.51	0.53
Dividend per share		0.58 ⁽¹⁾ ⁽⁵⁾	0.21 ⁽⁴⁾		0.31 ⁽¹⁾ ⁽³⁾
Interim dividend per share		0.30	0	0.15	0.15
Employees					
Average number of employees over the year	61,607	62,035	62,462	63,530	64,927
Total payroll expense for the year (<i>in millions of euros</i>)	3,981	3,720	3,694	3,654	3,711
Amounts paid for employee fringe benefits for the year (social security, Company benefit schemes, etc.) (<i>in millions of euros</i>)	2,634	2,687	2,745	2,799	2,854

(1) Including interim dividends paid out.

(2) Amount corresponding to a tax income.

(3) i.e. €0.341 per share bearing a loyalty dividend.

(4) i.e. €0.231 per share bearing a loyalty dividend.

(5) i.e. €0.638 per share bearing a loyalty dividend.

6.6.2 Significant change in the financial or trading position

Significant events occurring between the last day of the 2022 fiscal year and the date of the filing of this Universal Registration Document are mentioned in note 23 of the appendix to the consolidated financial statements of the year ended 31 December 2022 for events which occurred before 16 February 2023, when the Board of Directors approved the financial statements and, for events which occurred after 16 February 2023, in section 5.2 "Subsequent events" of this Universal Registration Document.

6.6.3 Informations on invoice settlement times (account payable and receivable required by Article L. 441-6-1 of the French Commercial Code)

Within the framework of the LME Act as amended by Act no. 2015-990 promoting growth, activity and equal economic opportunities, EDF publishes the amounts, including VAT, of debts and receivables due at the end of the fiscal year. These amounts are broken down by tranche of overdue payments and posted respectively to the amount including VAT of purchases and sales for the fiscal year.

(in millions of euros)	Article D. 441 I.-1° : overdue invoices which have been received but not paid at the closing date of the fiscal year						Article D. 441 I.-2° : overdue invoices which have been issued but non paid at the closing date of the fiscal year					
	0 day	1 - 30 days	31 - 60 days	61 - 90 days	91 days and more	Total (1 day and more)	0 day	1 - 30 days	31 - 60 days	61 - 90 days	91 days and more	Total (1 day and more)
(A) Period overdue												
Number of invoices	125,102					4,360	3,892,244					8,660,891
Total amount of invoices (including VAT)	5,742	34	7	2	8	51	1,463	387	92	55	692	1,226
% of the total amount of purchases of the year	4.5	0	0	0	0	0						
% of total amount of sales of the year (including VAT)							1.5	0.4	0.1	0.1	0.7	1.3
(B) Invoices excluded from (A) relating to payables and receivables in dispute or unrecognised												
Number of invoices excluded						0						0
Total amount of invoices excluded						0						0
(C) Reference payment terms applied (contractual or statutory – Article L. 441-6 or Article L. 443-1 of the French Commercial Code)												
Payment terms used for calculating periods overdue	Legal and contractual deadlines						Legal deadlines					

6.6.4 Information on existing branches – as required by Article L. 231-1 of the French Commercial Code

At 31 December 2022, the Group had 220 secondary establishments registered with the French Trade and Companies Registers stated in the Company's "K-bis" document, and operated on French territory through several thousand different offices which do not fulfil the independent management criterion to qualify as a branch.

EDF's branches ⁽¹⁾ outside mainland France are listed below:

- Saint-Barthélemy;
- Saint-Pierre-et-Miquelon;
- Saint Martin;
- Saint-Denis de la Réunion;
- Cayenne;
- Pointe à Pitre;
- United Arab Emirates: Abu Dhabi and Dubai;
- Bahrain;
- Benin;
- Cambodia;
- China; Taishan;
- South Africa;
- Cape Verde;
- Qatar;
- New Caledonia;
- Togo.

(1) In fiscal terms, this is a list of permanent establishments located outside France.

6.7 Information relating to the allocation of funds raised through Green Bonds issued by EDF

Since 2013, the Group has conducted six Green Bond issues for a total of around €10 billion in order to support its development in renewable energies.

After two bond issues chiefly intended to finance the building of new wind and solar power projects by its subsidiary EDF Renewables (€1.4 billion in November 2013 and \$1.25 billion in October 2015), the Group expanded its Green Bond Framework to finance investments in the renovation and modernisation of its hydropower assets in mainland France. The new Framework was first applied to a €1.75 billion issue in October 2016 and then to a JPY26 billion issue in two tranches in January 2017. The Group further extended the scope of its Green Bond Framework in early 2020 by opening it up to international hydropower assets, energy efficiency projects and biodiversity conservation projects. In this context, the Group issued Green Bonds for an amount of €2.4 billion in September 2020, and new Green Bonds for an amount of €1.85 billion in November 2021⁽¹⁾. The Group expanded the scope of its Framework in July 2022, renaming it the Green Financing Framework to include any type of financing product in addition to bonds. This Framework is compatible with the European taxonomy, including the Nuclear Delegated Act which came into force in July 2022. The scope of investments has also been extended to electricity distribution projects and nuclear generation projects. Against this background, EDF carried out a bond issue of €1.25 billion in October 2022.

The commitments made by EDF in the context of these two bond issues follow the four Green Bond Principles⁽²⁾ guiding (i) the use of proceeds, (ii) existing processes for evaluating and selecting Eligible Projects, (iii) the management of proceeds, and (iv) reporting procedures. A detailed description of these investments can be found in the EDF Green Bond Framework of January 2020 available on the Sustainable Finance page of the Company's website.

This section provides a summary of these commitments and how EDF has fulfilled them as at the end of 2022.

Use of proceeds

EDF has committed itself to allocate the proceeds from its Green Bonds programme to finance new investments in renewable energy projects. Projects eligible for Green Bond financing as per the Green Bond Framework (the "Eligible Projects") are:

- the construction or acquisition of a portfolio of renewable energy power generation projects including wind, solar, hydro, storage, biomass and geothermal projects;
- investments in existing hydroelectric facilities, including renovation and heavy maintenance; modernisation and automation; and development of existing facilities (including power increases);
- energy efficiency projects, including projects to reduce energy consumption, modernise lighting, heating and cooling network projects and projects involving the creation of charging stations for electric vehicles;
- biodiversity preservation projects, such as actions to mitigate the impact of EDF's activities on biodiversity, site restoration or re-naturalisation and research and development;

- electricity distribution projects including investments in the distribution grid connected to the European system, connections of renewable energy production facilities, infrastructure supporting the electrification of transport (including electric vehicle charging stations) and smart meters;
- nuclear generation projects: investments in new construction projects and existing works, including research and development, demonstration and deployment of innovative reactors that generate energy from nuclear processes with minimal fuel cycle waste, projects authorised by the competent authorities for no later than 2045 for the construction and safe operation of power plants and for the extension of the life of existing reactors.

The Green Bond Framework provides that the funds may finance projects which would not have benefited from financing through a Green Bond within 3 years before the issue of the Green Bond (look-back clause). Similarly, the funds can be used to acquire a portfolio of renewable energy projects.

Assessment and selection of financed eligible projects

Each Eligible Project to be funded is assessed against the environmental and social eligibility criteria⁽³⁾ ("E&S criteria") specified in Appendix 1 of the Green Bond Framework. This assessment is based on five elements, including (1) compliance with ethical, transparent and sustainable human resources criteria; (2) monitoring of the project's environmental impact; (3) promotion of occupational health and safety; (4) responsible supplier relations; (5) a commitment to organise a consultation process for each new project; and (6) compliance with the taxonomy criteria.

Only projects meeting the E&S criteria qualify for Green Bond financing.

Compliance with these criteria is certified by Deloitte (auditor) in accordance with the requirements of the Green Bond Framework. On this basis, the Finance Departments of the Group entities in question designate the Eligible Projects that are financed.

Management of proceeds

Proceeds raised are managed according to a strict ring-fencing principle in order to ensure that their use is exclusively and effectively reserved for financing Eligible Projects.

Once received by EDF's Finance and Investment Department, proceeds from each bond issue are invested and tracked in a dedicated sub-portfolio of treasury assets until allocated to Eligible Projects. Proceeds are invested in priority in treasury assets identified as Socially Responsible Investments (SRI).

The Finance Divisions of the corresponding entities notify EDF's Treasury Division, on an ongoing basis or at regular intervals, of the proceeds needed to cover investments related to the selected projects. Based on this information, the Treasury Division adjusts the amounts available in the dedicated treasury asset sub-portfolios.

(1) EDF issued a €1.75 billion Green Bond on 29 November 2021, which was tapped up by €100 million on 6 December 2021.

(2) The Green Bond Principles, updated in June 2018, are voluntary guidelines for issuance of Green Bonds. They recommend transparency and disclosure and promote integrity to support development of the Green Bond market. For more information, see <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles>.

(3) The E&S criteria for each project type are presented in the appendix to the EDF Green Bond Framework of September 2016 and January 2020.

Reporting

Effective use of proceeds

All the proceeds raised in November 2013 under the first Green Bond issued by EDF for €1.4 billion were allocated by June 2015. All the proceeds raised in October 2015 under the second Green Bond issued for US\$1.25 billion were allocated by the end of 2017. All the proceeds raised in October 2016 under the third Green Bond issued for €1.75 billion were allocated by the end of 2019. All the proceeds raised in January 2017 under the fourth Green Bond issued for ¥26 billion were allocated by mid-2020. All the proceeds raised under the fifth Green Bond issued in September 2020 for €2.4 billion were allocated by the end of 2021.

All the proceeds raised in November 2021 in the amount of €1.75 billion under the sixth Green Bond issued by EDF, increased by €100 million in the context of a tap-up in December 2021, which generated net proceeds of €1.8 billion, were allocated to Eligible Projects or invested in a dedicated cash portfolio.

All the proceeds raised in October 2022 in the amount of €1.25 billion under the seventh Green Bond issued by EDF were allocated to electricity distribution projects.

Allocation of proceeds as at 31 December 2022:	Nominal value at issuance	Funds allocated as at 31/12/2022	Funds allocated to Eligible Projects	Number of Green Bond funded projects	Share of investment financed via Green Bonds proceeds
Green Bond no. 1 – November 2013	€1.4 billion	€1.4 billion	Of which renewable capacities €1.4 billion	13 ⁽¹⁾	59%
Green Bond no. 2 – October 2015	\$1.25 billion	\$1.25 billion	Of which renewable capacities \$1.25 billion	7 ^{(1) (2)}	58%
Green Bond no. 3 – October 2016	€1.75 billion	€1.75 billion	Of which renewable capacities: €1,248 million	10 ^{(2) (3)}	54%
			Of which hydroelectric projects: €502 million	600 transactions	100%
Green Bond no. 4 – January 2017	¥26,000 million	¥26,000 million	Of which renewable capacities: ¥14,021 million	7 ⁽³⁾	15%
			Of which hydroelectric projects: ¥11,979 million	207 transactions	87% ⁽⁴⁾
Green Bond no. 5 – September 2020	€2.4 billion	€2.6 billion ⁽⁶⁾	Of which renewable capacities: €2,421 million (including €1,461 million in look back)	32 projects ⁽³⁾ +3 portfolio redemptions	78%
			Of which hydroelectric projects: €110 million	153 transactions ⁽⁵⁾	100%
			Including biodiversity projects developed by EDF Hydro: €28 million (including €16 million in look back)	39 projects	100%
Green Bond no. 6 – November 2021	€1.85 billion	€1.139 billion	Of which renewable capacities: €1 billion	4	60%
			Of which hydroelectric projects: €189 million	272	98%
			Including biodiversity projects: €23 million	14	
Green Bond no. 7 – October 2022	€1.25 billion	€1.25 billion	Of which electricity distribution projects €1.25 billion (in look back)	Projects as detailed in the table below	100%

(1) Including the Roosevelt Project, financed by Green Bonds 1 and 2.

(2) Including the Red Pine Project, financed by Green Bonds 2 and 3.

(3) Including the Milligan and Las Majadas Projects, financed by Green Bonds 3, 4 and 5 and the Big Beau Solar Project financed in part by the sustainable securities loan transaction. A REPO green evergreen contract was signed on 1 October 2021 with BNP for €50,000,000. This green contract was set up to finance the portion of EDF EN FUNDING's "Big Beau" Project that is surplus to the proceeds of Issue 5. It will be refinanced by Green Bond 6.

(4) Share of total investments financed by EDF, including half of the investment in the Romanche-Gavet Project.

(5) Including 31 transactions already partly financed by a previous Green Bond.

(6) The issue premium of Green Bond no. 5 enabled EDF to receive a total amount of €2,559 million.

At 31 December 2022, the following Eligible Projects had been chosen by EDF Renewables for financing under the Green Bonds issued in November 2013 (GB1), October 2015 (GB2) October 2016 (GB3), January 2017 (GB4), September 2020 (GB5) and November 2021 (GB6):

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
CID Solar	PV Solar, 27MW	US (California)	In service	GB1
Cottonwood	PV Solar, 33MW	US (California)	In service	GB1
Catalan wind farm	Onshore wind, 96MW	France (Pyrénées-Orientales)	In service	GB1
Heartland	Biogas, 20MW	US (Colorado)	In service	GB1
Hereford	Onshore wind, 200MW	US (Texas)	In service	GB1
La Mitis	Onshore wind, 25MW	Canada (Quebec)	In service	GB1
Le Granit	Onshore wind, 25MW	Canada (Quebec)	In service	GB1
Longhorn North	Onshore wind, 200MW	US (Texas)	In service	GB1
Pilot Hill	Onshore wind, 175MW	US (Illinois)	In service	GB1
Rivière du Moulin	Onshore wind, 350MW	Canada (Quebec)	In service	GB1
Spinning Spur 2	Onshore wind, 161MW	US (Texas)	In service	GB1
Spinning Spur 3	Onshore wind, 194MW	US (Texas)	In service	GB1
Roosevelt	Onshore wind, 250MW	US (New Mexico)	In service	GB1 and GB2
Great Western	Onshore wind, 225MW	US (Oklahoma)	In service	GB2
Kelly Creek	Onshore wind, 184MW	US (Illinois)	In service	GB2
Salt Fork	Onshore wind, 174MW	US (Texas)	In service	GB2
Slate Creek	Onshore wind, 150MW	US (Texas)	In service	GB2
Tyler Bluff	Onshore wind, 126MW	US (Texas)	In service	GB2
Red Pine	Onshore wind, 200MW	US (Minnesota)	In service	GB2 and GB3
Bluemex Power 1	PV Solar, 120MW	Mexico (Sonora)	In service	GB3
Copenhagen Wind Farm	Onshore wind, 80MW	US (New York)	In service	GB3
Nicolas Riou	Onshore wind, 112MW	Canada (Quebec)	In service	GB3
Rock Falls	Onshore wind, 154MW	US (Oklahoma)	In service	GB3
Stoneray Power Partners	Onshore wind, 100MW	US (Minnesota)	In service	GB3
Valentine Solar	PV Solar, 135MW	US (California)	In service	GB3
Glaciers Edge	Onshore wind, 203MW	US (Iowa)	In service	GB3
Milligan	Onshore wind, 300MW	US (Nebraska)	In service	GB3, GB4 and GB5
Las Majadas	Onshore wind, 273MW	US (Texas)	In service	GB3, GB4 and GB5
Maverick 1	PV Solar, 180MW	US (California)	In service	GB5
Maverick 4	PV Solar, 132MW	US (California)	In service	GB5
Desert Harvest	PV Solar, 114MW	US (California)	In service	GB5
Desert Harvest 2	PV Solar, 111MW	US (California)	In service	GB5
Coyote	Onshore wind, 242MW	US (Texas)	In service	GB5
Champagne Picardie	Onshore wind, 73MW	France	In service	GB5 (look back)
Les Taillades	Onshore wind, 27MW	France	In service	GB5 (look back)
Pays d'Anglure	Onshore wind, 22MW	France	In service	GB5 (look back)
Montagne Ardéchoise	Onshore wind, 16MW	France	In service	GB5 (look back)
Blyth	Offshore wind, 42MW	United Kingdom	In service	GB5 (look back)
Mashabai Sadeh	PV Solar, 60MW	Israel	In service	GB5 (look back)
Romney	Onshore wind, 60MW	Canada (Ontario)	In service	GB5 (look back)
Courant-Nachamps	Onshore wind, 21MW	France	In service	GB5 (look back)
Demange	Onshore wind, 20MW	France	In service	GB5 (look back)
Faydunes	Onshore wind, 14MW	France	In service	GB5 (look back)
Joncels Futuren	Onshore wind, 6MW	France	In service	GB5 (look back)
Coteaux	Onshore wind, 38MW	France	In service	GB5 (look back)
Mazurier	Onshore wind, 13MW	France	In service	GB5 (look back)
Mottenberg	Onshore wind, 15MW	France	In service	GB5 (look back)
Espiers	Onshore wind, 18MW	France	In service	GB5 (look back)
Clanlieu	Onshore wind, 13MW	France	In service	GB5 (look back)
Luxel	Solar project portfolio	France	In service	GB5 (look back)
NnG	Offshore wind, 450MW	United Kingdom	In service	GB5 (look back)
Atlantic Offshore	Offshore wind, up to 2.3GW	US (New Jersey)	In service	GB5 (look back)
Gorzycza	Onshore wind, 24MW	Poland	In service	GB5

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
Parnowo	Onshore wind, 12.5MW	Poland	In service	GB5
Ustka	Onshore wind, 28.6MW	Poland	In service	GB5
Roussac	Onshore wind, 16.5MW	France	In service	GB5
Big Beau	Solar power, 166MW	United States	In service	GB5
King Creek 1	Onshore wind, 184.4MW	US (Texas)	In service	GB6
King Creek 2	Onshore wind, 209MW	US (Texas)	In service	GB6
Arrow Canyon	Solar power and storage, 364.8MW	US (Nevada)	In service	GB6
Fox Squirrel	Solar power, 753MW	US (Ohio)	2024	GB6

The Eligible Projects selected by Luminus for financing as at 31 December 2022 as part of the January 2017 Green Bond issue (GB4) and September 2020 (GB5) issue can be broken down as follows:

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
Geel-West	Onshore wind, 11MW	Belgium	In service	GB4
Villers 4	Onshore wind, 45MW	Belgium	In service	GB4
Turnhout	Onshore wind, 12MW	Belgium	In service	GB4
Monsin	Hydropower, 18MW	Belgium	In service	GB4
Tinlot	Onshore wind, 10MW	Belgium	In service	GB5
Lommel	Onshore wind, 17MW	Belgium	In service	GB5

The Eligible Projects selected by EDF ENR for financing as at 31 December 2022 as part of the Green Bond issue in September 2020 (GB5) can be broken down as follows:

Projects	Type and Capacity	Location	Year come into service	Green Bond Financing
ITER	PV shade, 2MW	France	In service	GB5
Bugey RTE	PV shade, 4MW	France	In service	GB5

The Eligible Projects selected by EDF Hydro (excluding biodiversity projects which are detailed below) for financing as at 31 December 2022 as part of the Green Bond issue in October 2016, January 2017 and September 2020 can be broken down as follows:

Projects	Number of operations by type	Capacity in question (in GW)	Amounts (in million of euros)
Renovation and heavy maintenance	586	9.6	342
Modernisation and automation	309	15.9	80
Development of existing structures	33	1.2	277
TOTAL (EXCL. DUPLICATION)	928	17.1	699

The Eligible Projects selected by EDF Hydro (excluding biodiversity projects which are detailed below) for financing as at 31 December 2022 as part of the issue in November 2021 can be broken down as follows:

Projects	Number of operations by type	Capacity in question (in GW)	Amounts (in million of euros)
Renovation and heavy maintenance	249	11.4	164
Modernisation and automation	15	2.3	17
Development of existing structures	8	0.5	8
TOTAL (EXCL. DUPLICATION)	272	11.9	189

Impact of financed Eligible Projects

The tables below show the main impacts associated with the projects that received Green Bond financing:

- for renewable energy power generation and biodiversity conservation projects:
 - > the electricity generation capacity built under each project,
 - > the additional electricity generation expected from each project,
 - > the estimated CO₂ emissions avoided as a result of injecting this additional electricity generation into the electricity; and

- for distribution network projects:
 - > the number of kilometres of lines installed,
 - > the number of charging infrastructure connections,
 - > the number of new meters installed, and
 - > the renewable capacity connected.

Renewable energy electricity generation projects:

These impacts are presented in aggregate: gross data correspond to the aggregate impact of every project that received financing from the Green Bond in question; while the net values correspond to the sum total of the impact of each Eligible Project weighted by the share of project investment amount financed by the Green Bond in question.

		Total capacity of projects financed at 31 December 2022 (in MW)		Expected output (in TWh/year)		Estimated CO ₂ emissions avoided (in Mt/year)	
		Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾	Gross ⁽¹⁾	Net ⁽²⁾
Green Bond no. 1	November 2013	1,529	976	6.0	4.1	2.21	1.55
Green Bond no. 2	October 2015	1,107	815	4.6	3.3	2.53	1.83
Green Bond no. 3	EDF Renewables	1,450	962	5.3	3.5	2.42	1.61
	EDF Hydro	903	903	0.2 ⁽³⁾	0.2 ⁽³⁾	0.01 ⁽³⁾	0.01 ⁽³⁾
Green Bond no. 4	EDF Renewables + Luminus	137	86	0.4	0.26	0.17	0.12
	EDF Hydro + Luminus	142	133	0.1	0.05	0.01	0.01
Green Bond no. 5 – September 2020	EDF Renewables + EDF ENR + Luminus	1,762	1,412	4.7 ⁽⁴⁾	3.6 ⁽⁴⁾	1.86 ⁽⁴⁾	1.35 ⁽⁴⁾
	EDF Hydro	123	123	0.03	0.03	0.001	0.001
Green Bond no. 6	EDF Renewables	1,511	895	3.4	2.3	1.33	0.88
	EDF Hydro	430	422	0.02	0.02	0.001	0.001
TOTAL		9,076	6,727	24.75	17.32	10.54	7.36

(1) Sum of the gross impacts of each project that received Green Bond financing.

(2) Sum of the impacts of each project weighted by the project investment amount financed by the Green Bond in question.

(3) Only related to the expected additional generation resulting from development investments, including half of the expected additional generation of the Romanche-Gavet project.

(4) Not including acquisitions.

Biodiversity conservation projects

The above impacts are established using the methodological principles below:

- generation capacity of financed projects: installed capacity at the end of the construction of each Eligible Project as defined in the project's investment memorandum and updated as appropriate during the construction phase or at project commissioning;
- expected output: generation forecast (the "P50") taken into account when the investment decision of each Eligible Project is made;
- avoided CO₂ emissions: the average emission factor per kWh of the electric system is estimated on the basis of the energy mix of the electric system and

LCA emission factors of each generation technology. The emission factor of the project corresponds to the LCA emission factor of the project's production chain. The energy mixes are those published by the United States Environmental Protection Agency (EPA, eGRID 2018) for large power networks in the United States, Statistics Canada (2019) for the networks and provinces of Canada, and the International Energy Agency (IEA 2019) for other countries. LCA emission factors of each technology correspond to the median values established by the Intergovernmental Panel on Climate Change (IPCC) and published in its fifth assessment report (2014). The detailed methodology is available on request at the EDF group head office. It is important to note that (i) there is no single standard defining a methodology for calculating avoided CO₂ emissions and (ii) the expected output and, therefore avoided, CO₂ emissions are estimated forecast data and not actual data.

Biodiversity

The table below presents the main monitoring indicators associated with biodiversity projects that have received financing through Green Bond financing. All of these projects were supported by EDF Hydro.

Year(s)	Amount financed (in millions of euros)	Category of the Green Bond framework	Project type	Number of projects considered ⁽¹⁾	Indicator	Indicator value
2022	12	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity.	Bringing reserved flows into compliance ⁽²⁾	1	Number of protected wildlife species benefiting from the project	5
			Ecological continuity (sediments, fish, semi-aquatic mammals) ⁽²⁾	4		8
			Voluntary ecological monitoring	1	Number of species inventoried	96
			Management plan (grubbing)	1	Area concerned (ha)	340
		b. Restoration and/or "re-naturalising" of sites	Decommissioning of facilities	2	Number of protected wildlife species benefiting from the project	5
2021	11	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity.	Bringing reserved flows into compliance ⁽²⁾	1	Number of protected wildlife species benefiting from the project	5
			Ecological continuity (sediments, fish, semi-aquatic mammals) ⁽²⁾	7		11
2020	12	a. Projects and/or facilities that integrate the principles of the "avoid-reduce-compensate" approach (mitigation hierarchy) related to the mitigation of the impact of the Group's activities on biodiversity.	Bringing reserved flows into compliance ⁽²⁾	4	Number of protected wildlife species benefiting from the project	6
			Ecological continuity (sediments, fish, semi-aquatic mammals) ⁽²⁾	17		17
			Biodiversity partnerships	7	Number of species targeted by partnerships	20
		b. Restoration and/or "re-naturalising" of sites	Decommissioning of facilities	1	Number of protected wildlife species benefiting from the project	3

Year(s)	Amount financed (in millions of euros)	Category of the Green Bond framework	Project type	Number of projects considered ⁽¹⁾	Indicator	Indicator value
2017 – 2019 (financed by the Look Back)	16	a. Projects and/or facilities that integrate the principles of the “avoid-reduce- compensate” approach (mitigation hierarchy) related to the mitigation of the impact of the Group’s activities on biodiversity.	Bringing reserved flows into compliance ⁽²⁾	7	Number of protected wildlife species benefiting from the project	6
			Ecological continuity (sediments, fish, semi- aquatic mammals) ⁽²⁾	22		16
		b. Restoration and/or “re-naturalising” of sites	Renaturation/ restoration including Ecosystem Services	1	Area concerned (ha)	190
			Decommissioning of facilities	1	Number of protected wildlife species benefiting from the project	3

(1) 19 projects are included in both the look back and 2020 impact reporting.

(2) A project at the Esterre dam has elements of compliance with reserved flows and ecological continuity; it is therefore counted for the calculation of the indicators for these two types of projects.

The impacts presented above are established on the basis of the following methodological principles:

- The **“number of protected wildlife species benefiting from the project”** indicator is established on the basis of the lists of target species of the works attached to their execution files or the watercourse classification decrees, and the analysis of EDF naturalist experts. As these operations mainly concern aquatic environments, only aquatic and semi-aquatic species are counted, although these projects generally benefit a wider range of animal and plant species. If a species benefits several projects, it is counted only once.
- The **“number of species targeted by partnerships”** indicator refers to species named in partnership agreements or activity reports (families of species are therefore not counted). Biodiversity partnerships cover a wide range of activities, from raising awareness to land management or carrying out naturalist inventories or ecological status diagnoses.
- The **“area concerned”** indicator is measured in hectares (ha). It corresponds to the surface area of projects involving the re-naturalisation or restoration of environments.

Electricity distribution projects

		Project sub-category	Impact indicator	Total
Green Bond no. 7 – October 2022	Enedis	Infrastructure for the electrification of transport (including charging stations)	Number of electric vehicle charging infrastructure connections ⁽¹⁾	11,938
		Connections of renewable energy producers	Installed capacity connected to the grid in MW	5,181
			Number of connected installations	100,444
		Investments in the distribution grid connected to the European system	New lines installed in kilometres <i>of which lines buried as part of the climate hazard plan in kilometres</i>	2,950 1,350
		Smart Metering	Number of smart meters installed	5,488,000

(1) They each have one or more charging stations downstream.

Limited Assurance Report from one of the Statutory Auditors on the information related to the allocation, as of December 31, 2022, of funds raised through the green bonds issued on November 25, 2013, October 8, 2015, October 11, 2016, January 26, 2017, September 8, 2020 and November 29, 2021 and the green repo of September 29, 2021

For the year ended December 31, 2022

This is a free translation into English of the Limited Assurance Report from one of the Statutory Auditors on the information related to the allocation, as of December 31, 2022, of funds raised through the green bonds issued on November 25, 2013, October 8, 2015, October 11, 2016, January 26, 2017, September 8, 2020 and November 29, 2021 and the green repo of September 29, 2021 originally issued in French and is provided solely for the convenience of English-speaking readers.

This attestation should be read in conjunction with, and is construed in accordance with, French law and professional standards applicable in France

To the Chairman and Chief Executive Officer,

In our capacity as statutory auditor of Electricité de France S.A. ("the Company"), and in accordance with your request, we have undertaken a limited assurance engagement on the following information ("the Information"):

- the allocation, as of December 31, 2022, of funds raised through the Green Bonds (the "GB Issuances") issued on November 25, 2013 amounting to €1.4 billion (the "GB1 Issuance"), October 8, 2015 amounting to US\$ 1.25 billion (the "GB2 Issuance"), October 11, 2016 amounting to €1.75 billion ("GB3 Issuance"), January 26, 2017 amounting to ¥26 billion ("GB4 Issuance"), September 8, 2020 amounting to €2.4 billion ("GB5 Issuance") and November 29, 2021 amounting to €1.75 billion (the "GB6 Issuance") and (ii) the green repo signed on September 29, 2021 amounting to €50 million (the "Green Repo Issuance", and with the GB Issuances, the "Issuances") contained in the attached document "Information relating to the allocation of funds raised through Green Bonds issued by EDF" (the "Green Bond Report")
- the projects financed by the Issuances and identified as eligible by the Company ("Eligible Projects");

The Information has been prepared in the context of the green bond issuances dated November 25, 2013, October 8, 2015, October 11, 2016, January 26, 2017, September 8, 2020 and November 29, 2021 (the "Green Bond Offerings"), the Green Repo of September 29, 2021 (the "Green Repo Issuance") and the green bonds framework defined by the entity (the "EDF Green Bond Framework").

Our Limited Assurance Conclusion

Based on the procedures we have performed as described under the section "Summary of the work we performed as the basis for our assurance conclusion" and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Information is not prepared, in all material respects, in accordance with the EDF Green Bond Framework used, and the basis of preparation set out in the section "Understanding how EDF has Prepared the Information".

We do not express an assurance conclusion on information in respect of earlier periods not covered by the Green Bond Report or on any other information not included in the Green Bond Report.

We have not reviewed and do not provide any assurance over other individual project information reported.

Understanding how EDF has prepared the Information

The absence of an ordinarily used generally accepted reporting framework or a significant body of established practice on which to draw to evaluate and measure the Information allows for different, but acceptable, measurement techniques that can affect comparability between entities and over time.

Consequently, the Information needs to be read and understood together with the Reporting Framework, whose significant components are available on the Company's internet site.

EDF's Responsibilities

Management of EDF are responsible for:

- Selecting or establishing suitable criteria for preparing the Information;
- Selecting the Eligible Projects regarding the eligible criteria;
- Preparation of the Information in compliance with the Green Bond Report and the EDF Green Bond Framework;
- Designing, implementing and maintaining internal control over information relevant to the preparation of the Information that is free from material misstatement, whether due to fraud or error.

Our Responsibilities

We are responsible for:

- Planning and performing the engagement to obtain limited assurance about whether the Information is free from material misstatement, whether due to fraud or error;
- Forming an independent conclusion, based on the procedures we have performed and the evidence we have obtained; and
- Reporting our conclusion to the Directors of the Company.

As we are engaged to form an independent conclusion on the Information as prepared by management, we are not permitted to be involved in the preparation of the Information as doing so may compromise our independence.

However, we have no responsibility for:

- challenging the eligibility criteria defined in the appendix to the Green Bond Report and, in particular, we give no interpretation on the terms of the Green Bond Report;
- forming an opinion on the effective use of the funds allocated to the Eligible Projects after such funds have been allocated;
- forming an opinion on the appropriateness of the methodology used to determine estimated avoided CO2 emissions.

Professional Standards Applied

We performed a limited assurance engagement in accordance with the professional guidance of the French Institute of Statutory Auditors ("CNCC") applicable to such engagements and the International Standard on Assurance Engagements 3000 (Revised).

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the French Code of Ethics for Statutory Auditors (Code de Déontologie) as well as the provisions set forth in Article L.822-11 of the French Commercial Code (Code de Commerce) and the standards issued by the IESBA (International Ethics Standard Board for Accountants).

In addition, we have implemented a system of quality control including documented policies and procedures regarding compliance with applicable legal and regulatory requirements, the ethical requirements, and the professional guidance of the French Institute of Statutory Auditors ("CNCC") applicable to such engagements.

Our work was carried out by an independent and multidisciplinary team with experience in sustainability and corporate social responsibility.

Summary of the Work we Performed as the Basis for our Assurance Conclusion

We planned and performed our work to address the areas where we identified that a material misstatement of the Information is likely to arise. The procedures we performed were based on our professional judgment. In carrying out our limited assurance engagement on the Information, we:

- verified the appropriate consideration of the four components of the Green Bond Principles of the International Capital Market Association, i.e. (i) the use of funds raised (ii) the existing processes for evaluation and selection of the Eligible Projects (iii) the management of funds raised and (iv) the reporting;
- obtained an understanding of the procedures implemented by the Company for producing the Information contained in the attached document;
- verified the compliance, in all material respects, of the Eligible Projects referred to in the attached document with the eligibility criteria, by performing substantive procedures using sample testing or other selection methods, as defined in the appendix to the Green Bond Report and in the EDF Green Bond Framework

- verified the appropriate segregation of the funds raised from the Issuances and their exclusive allocation to Eligible Projects;
- verified the global allocation of the capital expenditures incurred in relation to the Eligible Projects financed by each of the Issuances;
- performed the necessary reconciliations between this information and the underlying accounting records, and verified that the information agrees with the data used to prepare the consolidated financial statements for the year ended December 31, 2022;

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

This report has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris-La Défense, March 13, 2023

One of the Statutory Auditors

Deloitte & Associés

Christophe Patrier

Limited Assurance Report from one of the Statutory Auditors on the information related to the allocation, as of December 31, 2022, of funds raised through the green bonds issued on October 5, 2022

For the year ended December 31, 2022

This is a free translation into English of the Limited Assurance Report from one of the Statutory Auditors on the information related to the allocation, as of December 31, 2022, of funds raised through the green bonds issued on October 5, 2022 originally issued in French and is provided solely for the convenience of English-speaking readers.

This attestation should be read in conjunction with, and is construed in accordance with, French law and professional standards applicable in France

To the Chairman and Chief Executive Officer,

In our capacity as statutory auditor of Electricité de France S.A. ("the Company"), and in accordance with your request, we have undertaken a limited assurance engagement on the following information ("the Information"):

- the allocation, as of December 31, 2022 of funds raised through the green bonds issued on October 5, 2022 amounting to €1.25 billion, contained in the attached document entitled "*Information relating to the allocation of funds raised through Green Bonds issued by EDF*" (the "Green Bond Report");
- the projects financed by the Issuance and identified as eligible by the Company ("Eligible Projects");

The Information has been prepared in the context of the green bond issuance dated October 5, 2022 (the "Green Bond Offerings") and the green bond framework defined by the entity and updated in 2022 ("EDF Green Bond Framework").

Our Limited Assurance Conclusion

Based on the procedures we have performed as described under the section "Summary of the work we performed as the basis for our assurance conclusion" and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Information is not prepared, in all material respects, in accordance with the EDF Green Bond Framework used, and the basis of preparation set out in the section "Understanding how EDF has Prepared the Information".

We do not express an assurance conclusion on information in respect of earlier periods not covered by the Green Bond Report or on any other information not included in the Green Bond Report.

We have not reviewed and do not provide any assurance over other individual project information reported.

Understanding how EDF has Prepared the Information

The absence of a ordinarily used generally accepted reporting framework or a significant body of established practice on which to draw to evaluate and measure the Information allows for different, but acceptable, measurement techniques that can affect comparability between entities and over time.

Consequently, the Information needs to be read and understood together with the Reporting Framework, whose significant components are available on the Company's internet site.

EDF's Responsibilities

Management of EDF are responsible for:

- Selecting or establishing suitable criteria for preparing the Information;
- Selecting the Eligible Projects regarding the eligible criteria;
- Preparation of the Information in compliance with the Green Bond Offerings and the EDF Green Bond Framework;
- Designing, implementing and maintaining internal control over information relevant to the preparation of the Information that is free from material misstatement, whether due to fraud or error.

Our Responsibilities

We are responsible for:

- Planning and performing the engagement to obtain limited assurance about whether the Information is free from material misstatement, whether due to fraud or error;
- Forming an independent conclusion, based on the procedures we have performed and the evidence we have obtained; and
- Reporting our conclusion to the Directors of EDF.

As we are engaged to form an independent conclusion on the Information as prepared by management, we are not permitted to be involved in the preparation of the Information as doing so may compromise our independence.

However, we have no responsibility for:

- challenging the eligibility criteria defined in the appendix to the Green Bond Report and, in particular, we give no interpretation on the terms of the Green Bond Report;
- forming an opinion on the effective use of the funds allocated to the Eligible Projects after such funds have been allocated;

Professional Standards Applied

We performed a limited assurance engagement in accordance with the professional guidance of the French Institute of Statutory Auditors ("CNCC") applicable to such engagements and the International Standard on Assurance Engagements 3000 (Revised).

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the French Code of Ethics for Statutory Auditors (Code de Déontologie) as well as the provisions set forth in Article L.822-11 of the French Commercial Code (Code de Commerce) and the standards issued by the IESBA (International Ethics Standard Board for Accountants).

In addition, we have implemented a system of quality control including documented policies and procedures regarding compliance with applicable legal and regulatory requirements, the ethical requirements, and the professional guidance of the French Institute of Statutory Auditors ("CNCC") applicable to such engagements.

Our work was carried out by an independent and multidisciplinary team with experience in sustainability and corporate social responsibility.

Summary of the Work we Performed as the Basis for our Assurance Conclusion

We planned and performed our work to address the areas where we identified that a material misstatement of the Information is likely to arise. The procedures we performed were based on our professional judgment. In carrying out our limited assurance engagement on the Information, we:

- verified the appropriate consideration of the four components of the Green Bond Principles of the International Capital Market Association, i.e. (i) the use of funds raised (ii) the existing processes for evaluation and selection of the Eligible Projects (iii) the management of funds raised and (iv) the reporting;

- obtained an understanding of the procedures implemented by the Company for producing the Information contained in the attached document;
- verified the compliance, in all material respects, of the Eligible Projects referred to in the attached document, with the eligibility criteria, by performing substantive procedures using sample testing or other selection methods, as defined in the appendix to the Green Bond Report and in the EDF Green Bond Framework;
- verified the appropriate segregation of the funds raised from the Issuance and their exclusive allocation to Eligible Projects;
- verified the global allocation of the capital expenditures incurred in relation to the Eligible Projects financed by each of the Issuances;
- performed the necessary reconciliations between this information and the underlying accounting records, and verified that the information agrees with the data used to prepare the consolidated financial statements for the year ended December 31, 2022;

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

This report has been prepared within the context described above and may not be used, distributed or referred to for any other purpose.

Paris-La Défense, March 13, 2023

One of the Statutory Auditors

Deloitte & Associés

Christophe Patrier





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7.1 General information about the Company

7.1.1 Company name, address and telephone number of the registered office

The name of the Company is: "Électricité de France". The Company may also be legally designated by the acronym "EDF".

The Company's registered office is at 22-30 Avenue de Wagram in the 8th arrondissement of Paris.

The telephone number is 33(0) 1 40 42 22 22.

7.1.2 Trade and Companies Registry - APE code

The Company is registered with the Paris Trade and Companies Registry under number 552 081 317. Its APE code is 3511Z.

7.1.3 Date of incorporation and term of the Company

EDF was incorporated pursuant to Act no. 46-628 of 8 April 1946 as a French public industrial and commercial establishment (EPIC). It was converted into a French *société anonyme* (public limited company) by the Act of 9 August 2004 and the Application Decree of 17 November 2004.

The Company was incorporated for a term of 99 years as from 19 November 2004, unless the Company is dissolved before such date or unless its term is extended.

7.1.4 Legal form and applicable legislation

Since 20 November 2004, EDF has been a French *société anonyme* (public limited company) with a Board of Directors. It is governed by the laws and regulations applicable to commercial companies, in particular the French Commercial Code, except in the event of specific exceptions stipulated in the French Energy Code or Order no. 2014-948 of 20 August 2014 on the governance and capital transactions of companies with State holdings and by its articles of association.

7.1.5 Disputes

This section describes the main legal proceedings except the one covered in note 17.3 to the consolidated financial statements for the year ended 31 December 2022 (section 6.1) and any material developments in those proceedings that have occurred between the approval of the financial statements and the filing date of this document.

To the knowledge of the Company, there are no administrative, legal or arbitration proceedings (including any pending or threatened proceedings of which the Company is aware) likely to have or having had in the past 12 months a material impact on the financial situation or the profitability of the Company and/or the Group with the exception of those described below and those described in the consolidated financial statements for the year ended 31 December 2022.

AMF investigation

As part of an AMF investigation into financial information provided to the markets since July 2013, the AMF notified EDF of two grievances on 5 April 2019, which EDF challenged. On 28 July 2020, the AMF *Commission des sanctions* (Enforcement Committee) imposed financial penalties of €5 million on EDF for a failure consisting

in the dissemination of false or misleading information in connection with the construction of the Hinkley Point C nuclear power plant in a press release dated 21 October 2013 entitled "Agreement on the Commercial Terms of Contracts for the Hinkley Point C Nuclear Power Plant Project".

In contrast, the Enforcement Committee ruled out any breach of the obligation to disclose as soon as possible inside information relating to EDF's decision to pursue the Hinkley Point C project as part of the full consolidation in the Group's financial statements, which was disclosed to the market on 21 September 2015, thereby exonerating both EDF and its current Chairman and Chief Executive Officer in this respect.

On 5 October 2020, EDF appealed against this decision to the Paris Court of Appeal in respect of the sole complaint against it. Following EDF's appeal, the AMF Chairman also filed a cross-appeal against the Enforcement Committee's decision on 3 December 2020, requesting that the amount of the fine imposed on EDF be raised to €8 million. However, the AMF Chairman's cross-appeal does not challenge the Enforcement Committee's decision to dismiss the second complaint. Consequently, the decision of the Enforcement Commission regarding this issue is now final.

In a ruling dated 30 June 2022, the Paris Court of Appeal (i) overturned the decision of the Enforcement Committee of 28 July 2020, except insofar as it exonerated the Chairman and Chief Executive Officer in office on the date of the proceedings and (ii) dismissed the cross-appeal lodged by the Chairman of the French Financial Markets Authority (AMF).

CRE/REMIT investigation

On 1 December 2016, the CRE (French Energy Regulation Commission) launched an investigation into whether EDF and its subsidiaries EDF Trading Limited and EDFT Markets Limited were guilty of engaging, between 2016 and 2017, in practices that could constitute breaches of the provisions of regulation (EU) no. 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency (REMIT).

In two rulings issued on 25 April 2022, the CRE's Dispute Resolution and Enforcement Committee (CORDIS) fined EDF €500,000 for (i) not publishing information on the unavailability of certain production assets until after the ASN decision, in this case one day late, and (ii) carrying out transactions on the market on the basis of said information before it was published on that day; and fined EDFT €50,000 in respect of an operational error, constituting market manipulation. As no appeals were lodged against them, these rulings have become final.

Furthermore, the Dutch Competition Authority (ACM) responsible for enforcing the REMIT regulation in the Netherlands opened an investigation into the availability of the Sloe power plant (Dutch-based CCGT) on 26 March 2019, and sent EDF and EDFT a notification of objections on 19 November 2020. The ACM definitively closed the investigation against EDF and EDFT in a ruling dated 27 May 2022.

NGOs and associations appealed against administrative authorisations related to the generation plants.

A certain number of authorisations and permits related to the Group's generation plants (ASN, decisions by the Prefecture, decrees, orders, etc.) have been challenged before the courts, mainly by environmental associations.

ADLC investigations

1. Decision of 22 February 2022 of the ADLC condemning EDF

On 22 February 2022, the French Competition Authority ("ADLC") sanctioned the EDF group in the amount of €300 million for dominant position abuse practices that would have enabled it to maintain its market shares in the electricity supply sector and to strengthen its position in the associated gas and energy services supply markets. In this decision, which follows a complaint filed in 2017 by Engie (see note 17.3 to the consolidated financial statements for the year ended 31 December 2022 in section 6.1), the ADLC criticises EDF for having used data from the files of its TRV eligible customers, as well as the commercial infrastructure dedicated to the management of TRV contracts, in order to develop the commercialisation of market offers for gas and energy services.

EDF, which benefited from a settlement procedure in this case, made two commitments: firstly, to make its Blue TRV customer file available to alternative electricity suppliers who requested it, and secondly, to separate the telephone subscription process for Blue TRV customers and prospects from that of customers and prospects with market offers.

2. Appeal to the Paris Court of Appeal against the ADLC's decision of 18 January 2022

As indicated in note 17.3 to the consolidated financial statements for the year ended 31 December 2022 (see section 6.1), the ADLC, in a decision dated 18 January 2022, rejected the complaint and the request for protective measures filed against it by ANODE (National Association of Energy Retailers). This complaint related to EDF's refusal to maintain access to the database of non-residential customers affected by the end of the Blue TRVE and having automatically switched, on 31 December 2020, to a tariff exit contract. However, the ADLC considered that the facts put forward by ANODE were not supported by sufficient evidence to substantiate the existence of the practices complained of. ANODE eventually appealed the Authority's decision on 1 March 2022 and, at the same time, EDF filed a voluntary intervention statement on 30 March 2022. In a decision dated 3 November 2022, the Paris Court of Appeal ruled EDF's voluntary intervention to be inadmissible. On 30 November 2022, EDF filed an appeal with the French Supreme Court (Cour de Cassation) against this ruling of inadmissibility by the Court of Appeal. The substantive appeal proceedings against the ADLC decision of 18 January 2022 is still ongoing.

Arbitrage CGN

In the context of the shareholders' agreement of TNPJVC Guangdong Taishan Nuclear Power Company Limited, whose purpose is the construction, operation, maintenance and management of the Taishan nuclear power plant with a capacity of two times 1,750MW, an arbitration procedure "in interpretation" was initiated in January 2021 by EDF against its partners China General Nuclear Power Co. Ltd, Guangdong Nuclear Power Investments Co. Ltd and Taishan Nuclear Power Industry Investments Co. Ltd. (together CGN), before the Singapore ICC.

The disagreement relates to accounting policy and in particular the duration of the depreciation of the plant, with EDF arguing that the duration should be consistent with the life of the plant, while CGN believes that it should be limited to the duration of TNPJVC.

The award is expected in 2023.

Dispute over the additional 20TWh of electricity made available to alternative suppliers at a price of €46.20/MWh for the period April-December 2022

On 13 January 2022, the French government announced exceptional measures to limit the increase in electricity prices for consumers in 2022. These measures mainly include the provision by EDF to eligible suppliers of an additional 20TWh over the period from 1 April to 31 December 2022 at a price of €46.20/MWh.

The terms of implementation of this measure were specified by a Decree dated 11 March 2022 and by 4 Orders. The decree stipulates that, in order to benefit from these additional volumes for a price of €46.20/MWh, eligible suppliers will have to sell to EDF a volume equivalent to the one granted to them by EDF under this additional allocation, at a price equal to the average of wholesale market quotations recorded between 2 and 23 December 2021 of the calendar base product for electricity delivery in mainland France for the year 2022, i.e. €256.98/MWh.

As this measure considerably impaired the Company, EDF applied for review to the French government in May 2022, requesting that the Decree of 11 March 2022 and the corresponding Orders be rescinded. As the absence of a response from the French government within the two-month period constituted an implicit decision rejecting the application for review, EDF filed an appeal with the French Council of State (Conseil d'État) for misuse of power on 9 August 2022 against the Decree and the corresponding Orders.

At the same time, EDF sent the French Prime Minister a preliminary request for compensation for the losses resulting from the implementation of the governmental measure in question, estimated at €8.34 billion at the end of June 2022. As the absence of a response from the French government within the two-month time limit gave rise to an implicit decision to reject the request for compensation, EDF lodged an appeal for compensation with the Paris Administrative Court on 27 October 2022 to obtain full compensation from the French government for its losses under this scheme.

In a decision handed down on 3 February 2023, the Conseil d'État rejected EDF's appeal. The compensation proceedings initiated by EDF before the Paris Administrative Court to obtain full compensation from the State for the losses suffered by EDF are continuing.

Simplified tender offer ("OPAS") litigation

Associations defending the interests of EDF minority shareholders have initiated several legal proceedings in connection with the simplified tender offer ("OPAS") for EDF shares filed by the French government with the AMF on 4 October 2022 stipulating a price of €12 per share and €15.52 per OCEANE.

On 24 November 2022, the Supervisory Board of the employee's mutual fund ("FCPE Actions EDF") and Énergie En Actions filed an action for speedy resolution on the merits before the Paris Commercial Court seeking the reversal of the resolution of the Board of Directors of EDF of 27 October 2022 which had issued an opinion on the French government's offer; this request was rejected by the Paris Commercial Court on 16 December 2022.

In addition, on 2 December 2022, the same two associations, joined by the Association pour la Défense des Actionnaires Minoritaires (Association for the Defence of Minority Shareholders or "ADAM"), filed an action before the Paris Court of Appeal seeking to overturn the French Financial Markets Authority's compliance decision of 22 November 2022 declaring the French government's offer to be compliant with the applicable legal and regulatory provisions. Pursuant to Article L. 621-30 of the Monetary and Financial Code, the judgment of the Paris Court of Appeal should be rendered within five months of the filing of the appeal, i.e. by early May 2023 at the latest. At the same time, they applied for a stay of execution of the compliance decision, pending the outcome of their appeal to have the decision overturned. On 24 January 2023, FCPE Actions EDF, Énergie en Actions and ADAM withdrew from the stay of execution proceedings following commitments made by the French government ⁽¹⁾.

7.1.6 EDF, a public undertaking with a public service mission

7.1.6.1 EDF as a public undertaking

As an undertaking in which the French State holds a majority share (see section 7.2.9 "By law or statutory provisions preventing a change in control over the Company"), EDF is subject to the provisions of Order no. 2014-948 of 20 August 2014 on the governance and equity transactions of companies with a public shareholding and its application Decree no. 2014-949 of the same date.

In accordance with the legislation that applies to all undertakings of which the French State is a majority shareholder, EDF may have to undergo certain State audit procedures, in particular through an economic and financial evaluation assignment, pursuant to Decree no. 55-733 of 26 May 1955 on State economic and financial evaluation and Decree no. 53-707 of 9 August 1953 on State evaluation of national public undertakings and certain organisations, the purpose of which has an economic or social component.

EDF also has to undergo the audit procedures performed by the French Court of Auditors (Cour des Comptes) and Parliament. Thus, in addition to the control performed by the Statutory Auditors, the Company's accounts and management and, where applicable, those of its directly-held majority subsidiaries, fall under the control of the French General Accounting Office, in accordance with Articles L. 111-4, L. 133-1 and L. 133-2 of the French Code of Financial Jurisdictions.

Lastly, the disposal of EDF shares by the French State, or the dilution of the French State's stake in EDF's capital, is subject to a specific procedure under Order no. 2014-948 of 20 August 2014 on the governance and equity transactions of companies with a public shareholding.

As a buyer, EDF is governed by the French Public Procurement Code.

7.1.6.2 Public service in France

Statutory definition of public service in France

Articles L. 121-1 *et seq.* of the French Energy Code outline the framework for the public electricity sector.

(1) See the press release of 25 January 2023 "Update on the timetable of the simplified public tender offer for the equity securities of EDF".

Public service missions

Articles L. 121-1 *et seq.* of the French Energy Code state that the public electricity service must develop a balanced supply of electricity, develop and operate public electricity networks and supply electricity at regulated sales tariffs.

Balanced development of electricity supply mission

The purpose of developing a balanced supply of electricity, which is defined in Article L. 121-3 of the French Energy Code, is to achieve the objectives defined in the multi-year energy programme (PPE). The PPE was defined by decree, and sets out priority courses of action for the public authorities for the management of all forms of energy in continental metropolitan France. It must be compatible with the greenhouse gas emission reduction targets set in the carbon budget and the low carbon strategy, which are defined by Decree no. 2020-457 of 21 April 2020.

It defines the quantitative objectives for the plan and the maximum indicative budget for the public funds that will be allocated by the French State and its public institutions in order to attain them. It may be broken down by objective and by industry sector.

The France's "Climate and Energy" Act (*loi relative à l'énergie et au climat*) adopted in November 2019 created a programming law on energy and the climate (LPEC) which will set the main objectives of the Multi-year energy programme (PPE) and the National Low Carbon Strategy (SNBC). Accordingly, these three documents will form the French energy and climate strategy. The programming law on energy and the climate (LPEC) should be adopted before 1 July 2023.

Decree no. 2020-456 of 21 April 2020 set the multi-year energy programme for the 2019-2023 and 2024-2028 periods. The Multi-year energy programme 3 (PPE 3) (2024-2033) will have to be compatible with the programming law on energy and the climate (LPEC) and adopted by Decree within twelve months of the Act being adopted.

Pursuant to the law, EDF prepared a Strategic Business Plan (PSE) presenting the actions that the Company commits to implementing to meet the security of supply and electricity generation diversification objectives defined in the first period of the PPE. On 14 October 2020, the PSE was submitted for approval by the Minister for Energy.

The 'Climate and Energy' Act of 8 November 2019 also specifies the procedure concerning the PSE, which will have to cover both periods of the PPE, be made public (with the exception of information relating to business secrecy), and present the accompanying measures put in place for employees as a result of the closure of nuclear or thermal power stations. If the PSE is incompatible with the PPE, the act provides for a formal notice followed, if necessary, by sanctions.

The mission relating to the balanced development of electricity supply also involves guaranteeing supply in areas that are not interconnected to continental metropolitan France (Corsica, and the overseas départements and territories, as well as some islands in Brittany). Corsica, Guadeloupe, French Guiana, Martinique, Mayotte, La Réunion, and Saint-Pierre-et-Miquelon will each have their own specific PPE. Other areas that are not interconnected with the continental metropolitan network, except for Saint Martin and Saint Barthélemy, will be subject to a section appended to the PPE for continental metropolitan France.

As a power producer, EDF, along with the other producers, contributes to the performance of this mission.

Mission to develop and operate public transmission and distribution networks

The mission to develop and operate the public electricity transmission and distribution networks, which is defined in Article L. 121-4 of the French Energy Code, involves ensuring:

- a rational electricity distribution service in France through the public transmission and distribution networks, in a way that is environmentally friendly, the interconnection with neighbouring countries;
- connection and access to the public transmission and distribution networks, under non-discriminatory conditions.

Public network operators are designated by law to carry out this duty: RTE for transport, Enedis and Local Distribution Companies (*Entreprises Locales de*

Distribution, or LDCs) for distribution, EDF in zones that are not interconnected to the continental metropolitan network.

Mission to supply electricity

The public service mission to supply electricity, which is defined in Article L. 121-5 of the French Energy Code, involves ensuring the supply of electricity throughout France to customers who benefit from regulated electricity sales tariffs.

This mission is entrusted to EDF and the LDCs.

The conditions under which customers can benefit from regulated electricity sales tariffs are defined in Articles L. 337-7 *et seq.* of the French Energy Code.

The mission to supply electricity also includes supplying emergency power to customers connected to public networks, if their supplier is unable to supply power or has had its licence withdrawn or suspended. As a transitional measure, until the aforementioned calls for bids provided for the permanent arrangements for emergency supply have been implemented, in November 2021 the French government designated emergency power suppliers on a transitional basis (EDF in the areas served by RTE and Enedis, the LDCs in the areas they serve, with the option of transferring this responsibility to EDF for non-residential customers).

Social cohesion

Article L. 121-5 of the French Energy Code provides that the supply of electricity at regulated tariffs must contribute to social cohesion, in particular through the national equalisation of regulated electricity sale tariffs.

Article L. 115-3 of the French Social Action and Families Code prohibits electricity suppliers from cutting off electricity supplies to the primary residences of individuals or families during the winter period (from 1 November to 31 March) due to unpaid bills, including through contract termination. Electricity suppliers may, nevertheless, in certain cases, reduce the power supplied, except with regard to customers who benefit from "energy vouchers". These vouchers are a special means of payment that allow households that are experiencing financial difficulties to cover part of their energy consumption expenses (electricity, gas, fuel oil, etc.) or their expenditure on improving the energy efficiency of their home.

In its capacity as an electricity supplier, EDF is required to maintain electricity supplies under the conditions laid down by said Article and by Decree no. 2008-780 of 13 August 2008 on the procedure that is applicable in the event of unpaid electricity, gas, heating and water bills.

Public Service Contract

On 24 October 2005, a Public Service Contract was entered into by the French State and EDF pursuant to Article L. 121-46 of the French Energy Code. This contract, which details the commitments made by EDF and the French State and specifies the rules governing the financial remuneration for service commitments, will remain in force until a new contract is signed, as provided for in the contract itself.

EDF's commitments

EDF's public service commitments include:

- the supply of electricity to customers who choose to remain at regulated tariffs;
- power generation, including the implementation of the energy policy and maintaining a secure and environmentally friendly electricity production;
- the obligation to purchase or enter into remuneration supplement contracts concerning electricity generated by installations falling within the scope of the schemes;
- contributing to the safety of the electricity network. In this regard, EDF undertakes to enter into several contracts with RTE, in particular concerning the optimisation of work on production facilities and the availability of the resources required to maintain network balance.

Commitments by network managers

Through the Public Service Contract, Enedis and RTE in their capacity as network managers made commitments concerning the management of the public networks for the transmission and distribution of electricity and the safety of the electricity system. These commitments are financed by the Tariff for Using the Public Electricity transmission and distribution Networks (TURPE).

These commitments concern, above all, network safety, supply quality, third party safety and the preservation of the environment – four areas where customers' and local authorities' expectations are especially high.

7.2 Incorporation documents and articles of association

In this Universal Registration Document, a reference to the articles of association means the Company's articles of association as approved by French Decree no. 2004-1224 of 17 November 2004 adopted under French Act no. 2004-803 of 9 August 2004 relating to the public electricity and gas service and electricity and gas companies (the "9 August 2004 law"), which have subsequently been amended on various occasions.

7.2.1 Corporate purpose

EDF's purpose, both in France and abroad and in compliance with the laws set out in Article 2 of its articles of association, is:

- to ensure the production, transmission, distribution, supply and trading of electrical energy, and the import and export of said energy;
- to carry out the public service missions assigned to EDF by the laws and regulations, in particular by the French Energy Code, and Article L. 2224-31 of the French Local Authorities Code (*Code général des collectivités territoriales*), as well as by concession agreements, and in particular the mission to develop and operate public electricity grids and to supply energy at regulated rates, and to supply back-up power to electricity producers and customers with the aim of compensating for unforeseen supply failures, and to supply electricity to eligible customers who cannot find a supplier, while contributing to the balanced development of electricity supply by reaching the goals defined by the multi-year generation investments programme defined by the Minister for Energy;
- more generally, to engage in any industrial, commercial or service activity, including research and engineering activities, in the field of energy, for all categories of customer;
- to enhance the value of all the personal and real property assets it holds or uses;
- to create, acquire, rent or lease under a business lease, all personal property, real property, businesses and clientele, to lease, install and operate all establishments, businesses and clientele, plants and workshops relating to any one of the aforementioned purposes;
- to obtain, acquire, operate or sell all processes and patents concerning the activities that are related to any of the aforementioned purposes;
- to take part, directly or indirectly, in all transactions that may be connected to any of the aforementioned purposes, by creating new companies or undertakings, by contributing, subscribing for or purchasing equity or ownership interests, stakes, or through mergers, partnerships or in any other way whatsoever; and
- more generally, to engage in all industrial, commercial, financial transactions, whether in personal or real property, that are directly or indirectly connected, in whole or in part, to any similar or related purposes or even to any purposes that may favour or develop the Company's business.

EDF's *raison d'être* would be to: "To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive well-being and economic development".

7.2.2 Fiscal year

Each fiscal year lasts for 12 months, starting on 1 January and ending on 31 December of each year.

7.2.3 Statutory distribution of profits

The distributable profit consists of the net profit for the fiscal year, less prior losses carried forward and the various deductions provided for by the law or the articles of association, plus any retained earnings carried forward.

The Shareholders' Meeting may decide to distribute amounts deducted from the reserves that are freely available to it, but must expressly state the reserve items from which the deductions are made.

After approving the financial statements and confirming the existence of distributable amounts (which include the distributable profit and any amounts deducted from the reserves mentioned above), the Shareholders' Meeting can decide to distribute all or part of such amounts to the shareholders in the form of a dividend, allocate them to reserve items or carry them forward. The Board of Directors may also distribute interim dividends prior to the approval of the financial statements for the fiscal year, under the conditions laid down by law.

The Shareholders' Meeting has the option of granting the shareholders a choice, for all or part of the dividend or interim dividend paid out, between payment in cash and payment in shares. Moreover, the Shareholders' Meeting may decide to pay any dividend, interim dividend, reserve or premium that is distributed or any reduction in capital, through remittance of the Company's assets, including financial securities.

Any shareholder who can prove, at the close of a fiscal year, that he has held registered shares for at least two years and still holds such shares on the date of payment of the dividend declared for the said fiscal year, will be entitled to an increased dividend for the said registered shares, equal to 10% of the dividend paid for the other shares, including in cases where the dividend is paid in shares. The number of shares eligible for the 10% increased dividend may not exceed 0.5% of the share capital at the close of the previous fiscal year, for any one shareholder. The first increased dividend was paid in 2014 for the 2013 fiscal year (see section 6.5.2 "Distribution policy, increased dividend").

The terms governing the payment of distributions decided by the Shareholders' Meeting, and the ex-dividend date of the distributed shares are fixed by the Shareholders' Meeting or, failing this, by the Board of Directors, in accordance with the applicable statutory provisions. If the amount of the non-cash distributions to which a shareholder is entitled does not correspond to a whole number of shares, the said number will be rounded down to the next whole number and a balancing cash payment made to the shareholder or, if requested by the Shareholders' Meeting, rounded up to the next whole number, with the difference being paid in cash by the relevant shareholder.

7.2.4 Rights attached to shares

Each share entitles its holder to a portion of the Company's profit and corporate assets that is proportional to the percentage of the capital that the share represents. Moreover, each share confers a voting right and the right to be represented at Shareholders' Meetings in accordance with legislative, regulatory and bylaw restrictions.

On the filing date of this Universal Registration Document, EDF has only issued a single class of shares.

Ownership of a share automatically entails acceptance of the articles of association and decisions adopted by Shareholders' Meetings.

Pursuant to Article L. 22-10-46 of the French Commercial Code, formerly Article L. 225-123 of the French Commercial Code, all fully paid-up shares that have been registered for at least two years in the name of the same shareholder will automatically entitle their holder to voting rights that are double that of the other shares. These provisions took effect on 3 April 2016. EDF's Board of Directors had decided not to submit an amendment to the articles of association to the Shareholders' Meeting, preventing the application of the double voting right set out in Article L. 225-123 of the French Commercial Code.

Shareholders are only liable for losses within the limit of their contributions.

Whenever it is necessary to hold more than one share in order to exercise any right whatsoever, in the event of an exchange, reverse stock split or allocation of shares, or due to a capital increase or reduction, a merger or any other corporate transaction, owners of single shares or numbers of shares below that required may only exercise such right if they take personal responsibility for consolidating or, if necessary, purchasing or selling the requisite number of shares.

Shareholders can choose to hold shares in registered or bearer form, subject to compliance with the laws and regulations.

Shares may be registered with an intermediary under the conditions provided for in Articles L. 228-1 *et seq.* of the French Commercial Code. Intermediaries must declare their status as intermediaries who hold shares for a third party, under the conditions provided for by the laws and regulations. These provisions are also applicable to the other securities issued by the Company.

Under the conditions provided for by the laws and regulations in force, the Company is entitled to request from the central custodian of financial instruments, at any time and provided that it pays the required consideration, as applicable, the name or corporate name, the nationality, the year of birth or the year of incorporation, and the address of the holders of bearer shares that grant an immediate or deferred right to vote at its own Shareholders' Meetings, as well as the quantity of securities held by each of these shareholders and, where applicable, any restrictions to which the securities may be subject. The Company, in view of the list provided by the aforementioned body, has the right to ask the persons appearing on this list and whom the Company considers could be registered on behalf of third parties for the above information concerning the owners of the shares.

For registered shares that grant immediate or deferred access to the capital, intermediaries that are registered under the conditions provided for in Article L. 228-1 of the French Commercial Code mentioned above, are required, within ten business days as from receipt of the request made by the Company or its agent, which may be made at any time, to disclose the identity of the owners of said securities.

7.2.5 Assignment and transfer of shares

Shares can be traded without restriction, subject to compliance with the provisions of the laws and regulations. They are registered in an account and are passed on by transfer from one account to another.

7.2.6 Changes to the articles of association, the capital and voting rights

All changes to the articles of association, the capital or the voting rights attached to the securities that make up the capital are subject to the requirements of law, as the articles of association contain no specific provisions regarding such matters.

7.2.7 Members and functioning of the Board of Directors

The Board of Directors adopted internal rules of procedure, which are regularly updated, defining the operating procedures of the Board of Directors in addition to applicable legal and regulatory requirements and the provisions of the Company's articles of association.

These procedures are described in section 4.2. "Members and functioning of the Board of Directors".

The Group's internal rules of procedure are accessible on the Group's website ⁽¹⁾.

7.2.8 Shareholder's Meetings

7.2.8.1 Convening notices to meetings

Shareholders' Meetings are convened by the Board of Directors or, alternatively, by the Statutory Auditors or by any person empowered to do so. Meetings are held at the registered office or at any other place stated in the convening notice.

7.2.8.2 Participation in meetings and exercise of voting rights

Shareholders' Meetings may be held by video conference or any telecommunication means that allow shareholders to be identified. The conditions governing the type and use of such means are specified in Articles R. 225-97 to R. 225-99 of the French Commercial Code. In such cases, shareholders who participate in the meeting by such means are deemed to be present for the calculation of the quorum and majority, under the conditions specified by law.

All shareholders can attend Shareholders' Meetings, regardless of the number of shares they own.

Shareholders may choose between one of the following three methods of participation: attending the Shareholders' Meeting in person by requesting an admission card, giving a proxy (power of attorney) to the Chairman of the Shareholders' Meeting or to any individual or legal entity of their choice (Articles L. 225-106 and L. 22-10-39 of the French Commercial Code) or casting their vote remotely (forms which fail to provide a choice as regards a voice are considered as negative votes; votes expressing an abstention will be taken into account for the calculation of the quorum but will not be taken into account for the calculation of the majority).

In accordance with Article R. 22-10-18 of the French Commercial Code, proof of the right to participate in a Shareholders' Meeting is obtained by the registration of the securities in an account in the name of the shareholder or of the intermediary that is registered on the shareholder's behalf (pursuant to paragraph 7 of Article L. 228-1 of the French Commercial Code), on the second working day prior to the meeting, *i.e.* at midnight, Paris time, either in the registered share accounts held by the Company (or its authorised representative), or in the bearer share accounts held by the accredited intermediary.

The registration of the securities in the bearer share accounts held by financial intermediaries is evidenced by a shareholding certificate issued by these intermediaries, where applicable by electronic means under the conditions provided for in Article R. 225-61 of the French Commercial Code, as an appendix to the postal voting form, the voting proxy or admission card request made on behalf of a shareholder or on behalf of a shareholder who is represented by the registered intermediary.

All shareholders may grant a proxy to any individual or legal entity of their choice to be represented at a Shareholders' Meeting. Proxies, as well as any proxy revocations, must be evidenced in writing and notified to the Company. Proxies may be revoked in the same forms as those required for the designation of the proxy holder, including by electronic means if need be. The owners of shares that are properly registered in the name of an intermediary under the conditions provided for in Article L. 228-1 of the French Commercial Code may be represented by a registered intermediary under the conditions provided for in said article.

EDF gives its shareholders the possibility of voting online, prior to the Shareholders' Meeting.

Certain shares may carry double voting rights in accordance with the conditions laid down in Article L. 22-10-46 of the French Commercial Code (see section 7.2.4 "Rights attached to shares").

7.2.8.3 Requests for the inclusion of items or draft resolutions on the agenda and written questions to the Board of Directors

Requests for the inclusion of items or draft resolutions on the Shareholders' Meeting agenda made by shareholders who meet the conditions provided for in Article R. 225-71 of the French Commercial Code must be received by the Company no later than twenty-five day prior to the date of the Shareholders' Meeting, but may not be sent more than 20 calendar days after the publication of the prior meeting notice, in accordance with Article R. 225-73 and Article R. 22-10-22 of the French Commercial Code.

Requests for the inclusion of items on the agenda must be substantiated. The wording of the draft resolutions must accompany requests for the inclusion of such resolutions, and a brief explanation of the reasons may also be given.

On the date of the request, the authors must provide proof of owning or representing the percentage of the capital required by Article R. 225-71 of the French Commercial Code. Requests must be accompanied by proof of entry in an account. Agenda items or draft resolutions that are proposed for inclusion are only reviewed if the authors of the request submit a new certificate proving the registration of the securities in the same accounts on the second day prior to the meeting.

Each shareholder also has the option of sending the Board of Directors written questions of his or her choice. In accordance with Article L. 225-108 of the French Commercial Code, the Board of Directors will answer, or delegates the Chairman and Chief Executive Officer the power to answer, the questions during the meeting, or the answer is deemed to have been given provided that it is published on the Company's website.

(1) www.edf.fr

Written questions must be sent to the Company by registered letter with return receipt or by electronic telecommunication at the latest on the fourth business day prior to the date of the Shareholders' Meeting. In accordance with Article R. 225-84 of the French Commercial Code, these questions must be accompanied by a shareholding certificate to be taken into account.

7.2.8.4 Temporary disposals during meeting periods

In accordance with the provisions of Article L. 22-10-48 of the French Commercial Code, any person, alone or together with other persons, by way of one or more temporary disposals or any transaction that grants the right to or requires the resale or return of said shares to the assignor, who holds a number of shares that represents more than 0.5% of the voting rights in a listed company, must notify the Company and the French Market Authority no later than midnight, Paris time, on the second business day prior to the Shareholders' Meeting, and when the contract that arranges this transaction remains in force on this date, of the total number of shares held on a temporary basis. In addition to the number of shares acquired, this notification must contain the identity of the assignor, the date and the expiration of the contract that organises the transaction and, as applicable, the voting agreement.

If no information is provided to the Company and the French Market Authority, the shares thus acquired are automatically stripped of voting rights for the Shareholders' Meeting concerned and for all Shareholder's Meetings that are held until such shares are resold or returned.

Moreover, the Company representative, a shareholder or the French Market Authority may petition the Commercial Court to order the complete or partial suspension, for a maximum of five years, of the voting rights of any shareholder who fails to provide such information, regardless of whether or not the voting borrowing shareholder has exercised his or her voting rights.

7.2.9 By law or statutory provisions preventing a change in control over the Company

Pursuant to Article L. 111-67 of the French Energy Code and the EDF articles of association, changes in share capital cannot result in the French State's shareholding falling below the statutory 70% threshold.

Certain shares may carry double voting rights in accordance with the conditions laid down in Article L. 22-10-46 of the French Commercial Code (see section 7.2.4 "Rights attached to shares").

With the exception of the foregoing, no other provision specifically aims to prevent or delay the takeover of the Company by a third party.

7.2.10 Threshold crossings

Pursuant to the provisions of the French Commercial Code, any individual or legal entity, acting alone or together with other persons or entities, that acquires a number of shares that represents more than 5%, 10%, 15%, 20%, 25%, 30%, 33.3%, 50%, 66.6%, 90% or 95% of the capital or voting rights must inform the Company, no later than prior to the close of business on the fourth trading day following the day on which the shareholding threshold is exceeded, of the total number of shares or voting rights owned (Article R. 233-1 of the French Commercial Code). Moreover, such individuals or legal entities must also inform the AMF of these acquisitions no later than prior to the close of business on the fourth trading day following the day on which the shareholding threshold is exceeded (Article 223-14 of the AMF general regulation). The AMF publishes threshold crossings that are notified to it.

Since 2012, cash payoff or physically-settled derivatives having a similar economic effect to detention of underlying shares, are taken into account for this calculation of threshold crossing (Article L. 233-9(I) 4 bis of the French Commercial Code). Pursuant to AMF general regulations, holders of these financial instruments must take into account the number of shares that carry this type of agreement and financial instruments for the calculation of their participation in the framework of their reporting obligation, and must precise, when they declare threshold crossing, their intention as to the outcome of this type of agreements and financial instruments.

Within the same timeframes and under the same conditions, this information must also be disclosed when the capital or voting rights fall below the thresholds stated above.

Absent a proper declaration, the shares that exceed the fraction which should have been declared in accordance with the provisions of law mentioned above will be stripped of voting rights for all Shareholders' Meetings that are held during a two-year period following the date on which the effective disclosure is made.

Moreover, the Company's articles of association provide that any individual or legal entity, acting alone or jointly, who acquires or ceases to hold, directly or indirectly, a number of shares that corresponds to 0.5% of the Company's capital or voting rights, or a multiple of said fraction, is required to inform the Company, by registered letter with return receipt, at the latest before the close of business on the fourth trading day following the day on which the shareholding threshold is exceeded, of the total number of shares, voting rights or equity interests held. The Company's articles of association state that the rules for the calculation and assimilation of shareholdings applicable to the statutory thresholds, as well as the obligations to provide information on financial instruments that are not assimilated to shares, apply to the disclosure requirements set out in the articles of association for bylaw thresholds.

Failure to comply with the above provisions is punishable by the loss of voting rights for the shares that exceed the fraction that should have been declared, for all Shareholders' Meetings that are held until the expiration of a two-year period following the date of the effective threshold disclosure provided for above, if the application of this penalty is requested by one or more shareholders who hold at least 1% of the Company's capital. Such requests are recorded in the minutes of Shareholders' Meetings.

7.3 Information regarding capital and share ownership

7.3.1 Amount and changes in share capital

On the filing date of this Universal Registration Document, the details of the Company's share capital are as follows:

<i>Number of shares issued</i>	4,000,933,682
Par value	€0.50 per share
Type of shares issued	ordinary shares
Share capital amount	€2,000,466,841

The share capital issued by the Company has been paid up in full. The Company has not issued or authorised any preference shares.

Pursuant to the law of 9 August 2004, EDF was converted into a *société anonyme* (public limited company) on 20 November 2004 and its capital set at €8,129,000,000, divided into 1,625,800,000 shares with a par value of €5.

The EDF Shareholders' Meeting of 31 August 2005 granted full powers to the EDF Board of Directors with a view to reducing the capital by a maximum amount of €7,316,100,000, *via* a reduction in the par value of shares from €5 to a minimum of €0.50. During its meeting of 27 October 2005, the Board of Directors decided to reduce the share capital by €7,316,100,000, *via* a €4.50 reduction in the par value of shares, which therefore decreased from €5 to €0.50. The share capital was thus reduced to €812,900,000.

During its 18 November 2005 meeting, the Board of Directors used the authority granted to it by the Combined Shareholders' Meeting of 10 October 2005, and approved the increases in the Company's share capital in connection with the Open Price Offering and the Guaranteed Global Placement that were performed when the Group was first listed on the stock market. As a result, the Board of Directors increased the share capital to €906,834,514.

On 20 December 2005, Calyon (now Crédit Agricole – CIB) paid EDF the price that corresponded to the exercise of 8,502,062 warrants that the EDF Board issued to Calyon by decision taken on 18 November 2005. Consequently, the share capital was increased to €911,085,545 divided into 1,822,171,060 ordinary shares.

The payment of dividends in shares on 17 December 2009 resulted in an increase in the share capital of €13,347,786 following the issue of 26,695,572 shares. On 21 January 2010, the share capital was thus increased to €924,433,331 divided into 1,848,866,662 ordinary shares.

On 24 June 2011, the capital was increased to €930,406,055 divided into 1,860,812,110 ordinary shares, *via* the issue of new shares as consideration for the EDF Énergies Nouvelles shares contributed to EDF in exchange for the EDF shares tendered as part of the alternative simplified public purchase or exchange offer involving EDF Énergies Nouvelles shares, which was initiated by EDF ⁽¹⁾. Then, on 28 September 2011, the capital was reduced to €924,433,331 divided into 1,848,866,662 ordinary shares, *via* the cancellation of the shares purchased as part of the share buyback programme with a view to cancellation, in order to offset the dilution caused by the aforementioned offer.

On 29 July 2013, the capital was increased to €930,004,234, divided into 1,860,008,468 ordinary shares. This increase of capital followed the decision of the EDF Shareholders' Meeting of 30 May 2013 to offer each shareholder in the Company the possibility to opt for the payment in new shares of a fraction of the remaining dividend to be distributed for the fiscal year ending 31 December 2012.

The payment of interim dividends in shares on 18 December 2015 resulted in an increase in the capital of €30,065,279.50 following the issue of 60,130,559 shares. Consequently, the share capital was increased from €930,004,234 to €960,069,513.50 divided into 1,920,139,027 ordinary shares.

On 31 October 2016, the capital was increased to €1,054,568,341.50 divided into 2,109,136,683 ordinary shares. This increase of capital followed the decision of the EDF Shareholders' Meeting of 12 May 2016 to offer each shareholder in the Company the possibility to opt for the payment in new shares of the remaining dividend to be distributed for the fiscal year ending 31 December 2016.

The payment of interim dividends in shares on 31 October 2016 resulted in an increase in the capital of €47,942,646 following the issue of 95,885,292 shares.

(1) EDF Énergies Nouvelles, now "EDF Renouvelables".

The capital was thus increased from €1,006,625,695.50 to €1,054,568,341.50, divided into 2,109,136,683 ordinary shares.

At its meeting of 3 March 2017, the Board of Directors, making use of the delegation of authority given by the Combined Shareholders' Meeting of 26 July 2016 in its second resolution, decided to increase the capital with maintenance of the shareholders' preferential subscription right. The capital was increased to €1,370,938,843.50, divided into 2,741,877,687 ordinary shares. Total capital increase, including the issue premium, stood at €4,017,905,375.40 and resulted in the issue of 632,741,004 new shares. It was launched on 6 March 2017 and was completed on 30 March 2017.

On 12 July 2017, the capital was increased to €1,443,677,137, divided into 2,887,354,274 ordinary shares. This increase of capital followed the decision of the EDF Shareholders' Meeting of 18 May 2017 to offer each shareholder in the Company the possibility to opt for the payment in new shares of the remaining dividend to be distributed for the fiscal year ending 31 December 2016.

The payment of interim dividends in shares on 14 December 2017 resulted in an increase in the capital of €398,440,228.20 following the issue of 40,084,530 shares. The capital was thus increased from €1,443,677,137 to €1,463,719,402, divided into 2,927,438,804 ordinary shares.

On 29 June 2018, the capital was increased to €1,505,133,838, divided into 3,010,267,676 ordinary shares. This increase of capital followed the decision of the EDF Shareholders' Meeting of 15 May 2018 to offer each shareholder in the Company the possibility to opt for the payment in new shares of the remaining dividend to be distributed for the fiscal year ending 31 December 2017.

At the Board meeting held on 19 November 2019, the directors decided to distribute an interim dividend of €0.15 per share for the 2019 fiscal year and resolved, in accordance with the terms of the fourth resolution adopted at the Combined Shareholders' Meeting held on 16 May 2019, that it could be paid in new shares issued by the Company.

The payment of interim dividends in shares on 17 December 2019 resulted in an increase in the capital of €429,635,913.60 following the issue of 52,651,460 shares. Consequently, the share capital was increased from €1,525,484,813.00 to €1,551,810,543.00, divided into 3,103,621,086 ordinary shares.

At its meeting on 29 July 2020, the Board of Directors decided to cancel 3,697,507 EDF treasury shares on 30 September 2020 that had previously been allocated to a capital reduction target through the cancellation of shares on 19 December 2019. On that date, the share capital was reduced to €1,549,961,789.50 in par value, divided into 3,099,923,579 shares with a par value of €0.50 each.

On 30 June 2021, the capital was increased to €1,578,916,053.50, divided into 3,157,832,107 ordinary shares. This increase of capital followed the decision of the EDF Shareholders' Meeting of 6 May 2021 to offer each shareholder in the Company the possibility to opt for the payment in new shares of the remaining dividend to be distributed for the fiscal year ending 31 December 2020.

At the Board meeting held on 4 November 2021, the Board of Directors decided to distribute an interim dividend of €0.30 per share for the 2021 fiscal year and resolved, in accordance with the terms of the fourth resolution adopted at the Combined Shareholders' Meeting held on 6 May 2021, that it could be paid in new shares issued by the Company.

The payment of interim dividends in shares on 2 December 2021 resulted in an increase in the capital of €898,992,407.92 following the issue of 80,844,641 shares. Consequently, the share capital was increased from

€1,578,916,053.50 to €1,619,338,374, divided into 3,238,676,748 ordinary shares.

By a decision taken on 17 March 2022, the Chairman and Chief Executive Officer, acting on the basis of a sub-delegation granted by the Board of Directors on the same day, itself making use of the delegation of authority granted to it by the Combined General Meeting of 7 May 2020 under the latter's 22th resolution, decided on a capital increase in cash with retention of the preferential subscription right for a nominal amount of €249,128,980. The capital was increased to €1,868,467,354 divided into 3,736,934,708 ordinary shares.

By a decision taken on 21 June 2022, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 17 February 2022, itself making use of the delegation of authority granted to it by the Combined General Meeting of 12 May 2022 under the latter's fourth resolution, recorded a capital increase for a nominal amount of €65,772,817.50, bringing the capital to €1,934,240,171.50 divided into 3,868,480,343 ordinary shares. This increase of capital followed the decision of the EDF Combined Shareholders' Meeting of 12 May 2022 to offer each shareholder in the Company the possibility to opt for the payment in new shares of the remaining dividend to be distributed for the fiscal year ending 31 December 2021.

By a decision taken on 25 July 2022, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 11 and 18 May 2022, itself making use of the delegation of authority granted to it by the Combined General Meeting of 12 May 2022 under its 22nd resolution, decided on a capital increase in cash with cancellation of the preferential subscription right, reserved for the members of one or more company savings plans set up within the Company or the EDF group consisting of the French or foreign companies and undertakings included in the scope of consolidation of the Company's financial statements in

accordance with the provisions of Article L. 3344-1 of the French Labour Code, for a nominal amount of €9,050,370.50. The capital was increased to €1,943,290,542.00 divided into 3,886,581,084 ordinary shares.

By a decision taken on 16 December 2022, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 6 November 2020, itself making use of the delegation of authority granted to it by the Combined General Meeting of 7 May 2020 under its 24th resolution, recorded a capital increase through the conversion of 882,340 green bonds with an option to convert and/or exchange for new or existing shares of the Company ("Green OCEANes"). The capital was increased by a nominal amount of €568,668 to €1,943,859,210 divided into 3,887,718,420 ordinary shares.

By a decision taken on 27 February 2023, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 6 November 2020, itself making use of the delegation of authority granted to him by the Combined General Meeting of 7 May 2020, in its 24th resolution, recorded a capital increase through the conversion of 201 green bonds with an option to convert and/or exchange for new or existing shares of the Company ("Green OCEANes"). The capital was increased to €1,943,859,339.50 divided into 3,887,718,679 ordinary shares.

By a decision taken on 13 March 2023, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 6 November 2020, itself making use of the delegation of authority granted to him by the Combined General Meeting of 7 May 2020, in its 24th resolution, recorded a capital increase through the conversion of 87,831,655 green bonds with an option to convert and/or exchange for new or existing shares in the Company ("Green OCEANes"). The capital was increased to €2,000,466,841 divided into 4,000,933,682 ordinary shares⁽¹⁾.

7.3.2 Treasury shares and share buyback programme

A share buyback programme initially authorised by the Shareholders' Meeting held on 9 June 2006, has been used by the Board of Directors within a limit of 10% of the Company's share capital and for an initial period of 18 months. This programme was continued for 18 months by the following Shareholders' Meetings held since 2006, including by the Shareholders' Meeting held on 12 May 2022 which approved it.

7.3.2.1 Share buyback programme in force as of the filing date of the Universal Registration Document (programme authorised by the Shareholders' Meeting of 12 May 2022)

After consulting the Board of Directors' report, and in accordance with the provisions of Articles 22-10-62 *et seq.* of the French Commercial Code, Articles L. 241-1 *et seq.* of the General regulation of the AMF, EU regulation n°596/2014 of 16 April 2014 on market abuse, the fourteenth resolution adopted by the Shareholders' Meeting held on 12 May 2022 authorised the Board of Directors to implement a programme to buy back Company shares, capped at a maximum of 10% of the Company's capital.

This resolution immediately terminated the unused portion of the authorisation to purchase Company shares, which was granted by the sixteenth resolution adopted by the Shareholders' Meeting held on 6 May 2021.

The objectives of the buy-back programme are:

- to cancel shares;
- to allow them to be allotted or transferred to employees or former employees of the Company, on the terms and conditions provided for by law, in particular as their share of the Company's profits, or by way of bonus shares or any offers reserved for employees;
- to issue shares in connection with the exercise of rights attached to securities giving access to the capital through redemption, conversion, exchange, presentation of a warrant or otherwise;
- to drive the market in the share through a liquidity contract in accordance with the accepted market practice established by the French Financial Markets Authority;
- to allow them to be delivered following the exercise of rights attached to securities granting access to the Company's capital and to implement all hedging transactions for the obligations of the Company or one of its subsidiaries;

- to allow them to be retained and subsequently delivered in connection with external growth transactions, contributions, mergers or demergers;
- more generally, to carry out any transaction that is or may become authorised under the regulations in force, or falling within the scope of market practice accepted by the French Financial Markets Authority.

The maximum percentage of capital that may be bought back under this programme is 10% of the total number of shares making up the share capital (or 5% for shares acquired with a view to their retention and subsequent delivery in payment or in exchange as part of an external growth transaction), it being noted that whenever shares are bought back to provide liquidity under a liquidity contract, the 10% threshold will be calculated using the number of shares purchased, as reduced by the number of shares resold during the validity period of the authorisation.

Under no circumstances may the Company hold, directly or indirectly, more than 10% of its capital.

These shares may be acquired or transferred, under the conditions and within the limits, in particular in terms of volumes and price, provided for by the laws and regulations in force on the date of the relevant transactions, by any means, such as on the market or over the counter, including *via* block trades (purchases or sales), by the use of derivative financial instruments or notes or securities that grant access to Company shares, or by implementing option strategies, under the conditions stipulated by the market authorities and at such times as determined by the Board of Directors or any person who is acting on the Board's behalf. This authorisation may be used during public takeover bids, within the limits permitted by the applicable regulations.

⁽¹⁾ See the EDF press release of 28 February 2023 "Conversion of 40% of EDF OCEANes due 2024".

The Shareholders' Meeting set at €20 the maximum purchase price per share ⁽¹⁾ and at €2 billion the maximum amount of funds allocated to the implementation of the programme, and granted the Board of Directors full powers, with the right of delegation, to use this authorisation.

The authorisation was granted for a maximum of 18 months as from the Shareholders' Meeting of 12 May 2022, and will therefore end on 12 November 2023, unless the Shareholders' Meeting of 14 June 2023 adopts the new programme described in section 7.3.2.3 "Description of the new share buyback programme to be submitted for approval at the Combined Shareholders' Meeting to be held on 14 June 2023" below.

7.3.2.2 Summary of the Company's trading in its own shares during the 2022 financial year

Number of treasury shares held at 31 December 2022	888,511
Percentage of capital held through treasury shares at 31 December 2022	0.023%
Carrying value of the portfolio at 31 December 2022 ⁽¹⁾ (in euros)	7,320,061.15
Market value of the portfolio at 31 December 2022 ⁽²⁾ (in euros)	10,662,132.00
Number of shares cancelled over the past 24 months	0

(1) Valued at the purchase price.

(2) Based on the closing price at 31 December 2022, i.e. €12.00.

Liquidity contract

Following changes in the regulations on liquidity contracts, a new liquidity contract was entered into with Oddo BHF on 28 March 2019. The liquidity account had assets of €10,120,161 and 738,882 shares as of the date of signature. This contract complies with AMF decision No. 2021-01 of 22 June 2021.

It should be noted that since 13 July 2022 inclusive, the performance of the liquidity contract has been suspended pursuant to AMF decision No. 2021-01 of 22 June 2021 "Renewal of the introduction of liquidity contracts for equity securities under the accepted market practice", whose Article 5 deals with the impact on the proper functioning of the market. This Article stipulates, *inter alia*, that "the performance of the liquidity contract shall be suspended during a public offer or during a pre-offer period up until the closing of the offer, when the Issuer is the initiator of the offer or when the Issuer's securities are targeted by the offer".

Following the announcement by the French Prime Minister of the French government's intention to hold 100% of EDF's capital on 6 July 2022 during her general policy statement, confirmed in a French State press release dated 13 July 2022, the performance of the liquidity contract was accordingly suspended.

Number of shares purchased and sold during the 2022 fiscal year

During the 2022 financial year, EDF acquired 8,431,849 of its own shares and sold 8,717,892 shares under the liquidity contract. The average share purchase price was €8.4179 and the average share sale price was €8.5522.

Portfolio breakdown at 31 December 2022

As at 31 December 2022, the Company held a total of 888,511 treasury shares, all held under the liquidity contract (representing 0.0229% of its share capital).

On this date, EDF's subsidiaries did not hold any shares, either directly or indirectly.

Post-closing transactions

Between 1 January 2023 and 28 February 2023, the Company did not acquire any of its own shares and did not sell any shares. No transactions took place under the liquidity contract.

7.3.2.3 Description of the new share buyback programme to be submitted for approval at the Combined Shareholders' Meeting to be held on 14 June 2023

Pursuant to Article 241-2 *et seq.* of the AMF General regulations and Article L. 451-3 of the French Monetary and Financial Code, and in accordance with EU regulations, the following is a description of the share buyback programme that will be submitted to the Ordinary and Extraordinary Shareholders' Meeting to be held on 14 June 2023 for approval.

Objectives of the new share buyback programme

Under the share buyback programme, shares will be bought back for the following purposes:

- to reduce the capital by cancelling them;
- to allow them to be allotted to employees and former employees of the EDF group, on the terms and conditions provided for by law, in particular as part of any stock options plan, allocation of bonus shares, or any offers reserved for employees;

- to allow them to be delivered when exercising rights attached to securities granting access to the capital by redemption, conversion, exchange, presentation of a warrant or otherwise and to implement all hedging transactions for the obligations of the Company or one of its subsidiaries related to those securities;
- to provide liquidity under a liquidity contract;
- to allow them to be delivered following the exercise of rights attached to options granting access to the Company's capital and to implement all hedging transactions for the obligations of the Company or one of its subsidiaries related to these options;
- to allow them to be retained and subsequently delivered in connection with external growth transactions, contributions, mergers or demergers;
- more generally, to carry out any transaction that is or may become authorised under the regulations in force, or falling within the scope of market practice accepted by the AMF.

(1) The Board of Directors may, however, adjust the aforementioned purchase price if premiums, reserves or profits are capitalised, which results either in an increase in the par value of the shares or the creation and award of bonus shares, and in the event of a stock split or reverse stock split, or any other transaction involving the shareholders' equity, in order to take into account the impact of these operations on share value.

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Duration of the share buyback programme

The share buyback programme may be implemented for a period of 18 months, as of the Shareholders' Meeting of 14 June 2023.

Maximum percentage of capital, maximum number and characteristics of the shares that the Company wishes to buy back and maximum purchase price

The maximum percentage of capital that may be bought back under this programme is 10% of the total number of shares making up the share capital (or

5% for shares acquired with a view to their retention and subsequent delivery in payment or in exchange as part of an external growth transaction), it being noted that whenever shares are bought back to provide liquidity under a liquidity contract, the 10% threshold will be calculated using the number of shares purchased, as reduced by the number of shares resold during the validity period of the authorisation.

Under no circumstances may the Company hold, directly or indirectly, more than 10% of its capital.

The maximum purchase price of shares is €20 per share and the total amount of funds that may be allocated to the implementation of this share buyback programme may not exceed €2 billion.

7.3.3 Capital authorised but not issued

The following table presents a summary of the delegations of authority and authorisations to increase or reduce the share capital that were in force on the filing date of this Universal Registration Document which the Board of Directors was granted by the Combined Shareholders' Meeting of 12 May 2022, and the extent to which they have been used at 31 December 2022:

STATUS OF THE AUTHORISATIONS ADOPTED BY THE COMBINED SHAREHOLDERS' MEETING OF 12 MAY 2022 FOR ADOPTION

Securities concerned/type of issue	Term of the authorisation and expiration	Maximum nominal increase or reduction in capital (in millions of euros)
Delegation of authority to the Board to increase the capital with maintenance of the shareholders' preferential subscription right	26 months 12 July 2024	935 ⁽¹⁾
Capital increase, all securities		
Delegation of authority to the Board to increase the capital, by way of a public offering, with cancellation of the shareholders' preferential subscription right	26 months 12 July 2024	375 ⁽¹⁾
Capital increase, all securities		
Delegation of authority to the Board to make offers for private placements ⁽²⁾ with cancellation of the shareholders' preferential subscription right	26 months 12 July 2024	375 ⁽¹⁾ and 20% of the share capital per year
Capital increase, all securities		
Authorisation for the Board to increase the number of securities to be issued in the event of a capital increase, with or without preferential subscription rights	26 months 12 July 2024	15% the amount of the initial issue ⁽¹⁾
Capital increase, all securities		
Delegation of authority to the Board to increase the capital through the capitalisation of reserves, profits, premiums or otherwise	26 months 12 July 2024	1,000
Delegation of authority to the Board to increase the capital as consideration for a public exchange bid initiated by the Company	26 months 12 July 2024	185 ⁽¹⁾
Delegation of authority to the Board to increase the capital to remunerate in-kind contributions ⁽³⁾	26 months 12 July 2024	10% of the Company's capital up to a maximum of 115 ⁽¹⁾
Delegation of authority to the Board to increase the share capital in favour of members of savings plans with cancellation of preferential subscription rights in favour of the latter ⁽⁴⁾	26 months 12 July 2024	15
Issues reserved for the personnel		
Delegation of authority to the Board to carry out increases of capital reserved for a category of beneficiaries, with cancellation of the shareholders' preferential subscription right	18 months 12 November 2023	10
Authorisation for the Board to reduce the capital by cancelling treasury shares	18 months 12 November 2023	10% of the capital by 24-month periods

(1) The nominal aggregate limit on the share capital increase of €935 million provided for in the fiftieth resolution submitted to the Shareholders' Meeting of 12 May 2022, applies to all capital increases the nominal amount of which will be charged in consequence on this limit, with the exception of capital increases through capitalisation of reserves, premiums, profits or otherwise.

(2) Offers governed by Article L. 411-2 II of the French Monetary and Financial Code, in that they are exclusively intended for persons who provide investment portfolio management services on behalf of third parties or qualified investors or a restricted circle of investors acting on their own behalf.

(3) Article L. 22-10-53 of the French Commercial Code.

(4) By a decision taken on 25 July 2022, the Chairman and Chief Executive Officer, acting on a sub-delegation granted by the Board of Directors on 11 and 18 May 2022, itself making use of the delegation of authority granted to it by the Combined General Meeting of 12 May 2022 under its 22nd resolution, decided on a capital increase in cash with cancellation of the preferential subscription right, reserved for the members of one or more company savings plans set up within the Company or the EDF group consisting of the French or foreign companies and undertakings included in the scope of consolidation of the Company's financial statements in accordance with the provisions of Article L. 3344-1 of the French Labour Code, for a nominal amount of €9,050,370.50. The capital was increased to €1,943,290,542.00 divided into 3,886,581,084 ordinary shares.

STATUS OF THE AUTHORISATIONS TO BE SUBMITTED TO THE COMBINED SHAREHOLDERS' MEETING OF 14 JUNE 2023 FOR ADOPTION

<i>Securities concerned/type of issue</i>	Term of the authorisation and expiration	Maximum nominal increase or reduction in capital (in millions of euros)
Delegation of authority to the Board to carry out increases of capital reserved for a category of beneficiaries, with cancellation of the shareholders' preferential subscription right	18 months 14 December 2024	10
Authorisation for the Board to reduce the capital by cancelling treasury shares	18 months 14 December 2024	10% of the capital by 24-month periods

7.3.4 Other equity securities

On 8 September 2020, EDF launched an issue of senior unsecured Green Bonds convertible into and/or exchangeable for new and/or existing shares (Green OCEANE Bonds) maturing on 14 September 2024. The bonds were offered to the public exclusively to qualified investors, within the meaning of Article 2(e) of EU regulation 2017/1129 of 14 June 2017, in France and outside France, in accordance with the procedure known as "bookbuilding", as developed by professional practice, with the exception of the United States of America, Australia and Japan (as referred to in Article L. 411-2, 1° of the French Monetary and Financial Code), for a maximum par value of approximately €2.4 billion and a gross annual negative return of -1.68%.

On the 14 September, 219,579,139 Green OCEANE Bonds were issued under ISIN code FR0013534518 with a par value of €10.93 and an issue price of €11.70, *i.e.* 107% of the par value. They do not bear interest. The French State subscribed to 87,831,655 bonds in this issue, representing a nominal amount of approximately €960 million, *i.e.* approximately 40% of the issue.

The Company has decided that in the event that the holders of Green OCEANE Bonds exercise the option to convert and/or exchange these bonds into ordinary shares of the Company, the Green OCEANE Bonds will be converted and the Company will issue new ordinary shares. On the date of the issue, the conversion ratio was 1 OCEANE for 1 ordinary share. It may be subject to adjustment in accordance with the terms of the issue agreement (see below).

An amount equal to the net proceeds of the issue will be allocated, directly or indirectly, for the financing and/or refinancing, in whole or in part, of new or existing Eligible Projects, as defined in EDF's Green Bond Framework. Existing eligible projects that may be refinanced through this issue with a maximum three-year retrospective period preceding the year of the bond issue represent approximately €1.5 billion, pursuant to EDF's Green Bond Framework.

This issue may also contribute to the strengthening of the Company's shareholders' equity, in the event that the holders of the OCEANE Green Bonds exercise their conversion option, resulting in the issue of new shares of the Company.

Assuming an issue with a par value of €2,399,999,989.27 represented by 219,579,139 bonds with a par value of €10.93 each, based on the initial conversion ratio, the potential dilution would be approximately 7.1% of the Company's share capital if the right to the allocation of shares were exercised for all Bonds and the Company decided to issue only new shares in the event that the right to the allocation of shares is exercised (see section 6.8 of the 2020 URD presenting the report of the Board of Directors and the Statutory Auditors on the bond issue).

In 2021, as a result of the distribution of a dividend of 0.21 euro per share and in accordance with the provisions of the issue agreement, the conversion/exchange ratio has been increased to 1.018 EDF shares per OCEANE. Subsequently, following the distribution of an interim dividend of €0.30 per share, the conversion/exchange ratio was increased to 1.042 EDF shares per OCEANE, with effect from 2 December 2021.

In 2022, following the capital increase of 7 April 2022, the conversion/exchange ratio was increased to 1.087 EDF shares per OCEANE. Then, at the time of the dividend payment for the year 2021, the conversion/exchange ratio was increased to 1.124 EDF shares per OCEANE as of 13 June 2022. Finally, as a result of the simplified tender offer initiated by the French government on 23 November 2022, the conversion/exchange ratio was increased to 1.289 EDF shares per OCEANE.

As at 31 December 2022, 882,340 OCEANES were converted into new shares over the period from 24 November to 31 December 2022, resulting in the creation of 1,137,336 shares. These transactions increase the share capital by €0.57 million, due to an exclusive payment in new shares, and generate a bond-for-share conversion premium of €9.08 million.

In addition, in the context of the simplified tender offer, and for information purposes, the French government acquired 127,147,355 OCEANES, resulting in a holding of 214,979,011 OCEANES as at 31 December 2022, *i.e.* 98.30% of the total portfolio of OCEANES on the closing date of 31 December 2022.

On 28 February 2023, EDF announced that the French State had requested the conversion of 87,831,655 OCEANES into shares (see section 5.3).

7.3.5 Non-equity securities

On 18 April 1996, EDF set up a programme to issue debt securities in the form of Euro Medium Term Notes (the "EMTN" programme). Since this date, this programme has been regularly renewed.

On 6 October 2016, EDF successfully raised \$2.655 billion from 2 senior bonds subscribed for by twenty or so investors on the Taiwanese market ("Formosa bonds"):

- \$491 million, with a fixed coupon of 4.65% 30-year bond;
- \$2.164 billion, with a fixed coupon of 4.99%, 40-year bond.

On 6 October 2016, EDF also successfully launched a senior multi-currency bond issue of approximately €3 billion in four tranches:

- €1.75 billion, with a fixed coupon of 1% 10-year Green Bond;
- €750 million, with a fixed coupon of 1.875% 20-year bond;

- CHF400 million, with a fixed coupon of 0.3%, 8-year bond;
- CHF150 million, with a fixed coupon of 0.65%, 12-year bond.

This third Green Bond issue, in an amount of €1.75 billion, is the largest tranche of Green Bonds issued to date and means that EDF has already issued the equivalent of more than €4 billion in Green Bonds over a three-year period to support its expansion in the renewable energies field.

On 20 January 2017, EDF successfully raised 137 billion yen, corresponding to approximately €1.1 billion, through 4 senior bonds issued on the Japanese market ("Samurai bonds"):

- JPY107.9 billion, with a fixed coupon of 1.088%, 10-year bond;
- JPY19.6 billion, with a fixed coupon of 1.278% 12-year Green Bond;
- JPY6.4 billion, with a fixed coupon of 1.569% 15-year Green Bond;

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- JPY3.1 billion, with a fixed coupon of 1.870%, 20-year bond, which is the longest bond maturity ever issued on the Samurai market.

With the issue of two green tranches, in a total amount of 26 billion yen to be used to finance its renewable investments, EDF opens the Samurai Green market and thus continues to actively participate in the development of Green Bonds as tools to finance the energy transition.

On 19 September 2018, EDF successfully raised US\$3.75 billion on 3 tranches of senior bonds:

- \$1.8 billion, with a fixed coupon of 4.500%, 10-year bond;
- \$650 million, with a fixed coupon of 4.875%, 20-year bond;
- \$1.3 billion, with a fixed coupon of 5.000%, 30-year bond.

In addition, on 25 September 2018, EDF successfully launched a €1 billion senior bond issue with a 12-year maturity and a fixed coupon of 2%.

On 25 September 2018, EDF launched a €1.25 billion super-subordinated bond issue with a 4% coupon and a redemption option exercisable at EDF's discretion, initially between 4 July 2024 (inclusive) and 4 October 2024 (inclusive). It also launched a contractual cash buyback offer for four existing hybrid bond issues for €1.25 billion. The total amount of EDF hybrid shares remains unchanged following these issue/redemption operations.

On 26 November 2019, EDF launched a €500 million euro-denominated hybrid bond issue with a 3% coupon and a redemption option including a first option for early redemption at the Company's call in December 2027. The Company also launched contractual buyback offers for the following securities:

- perpetual super-subordinated bonds of €1,000 million with a first early redemption date at the Company's call falling on 22 January 2022, with a current outstanding amount of €661.8 million, admitted for trading on Euronext Paris;
- perpetual super-subordinated bonds of US\$3,000 million with a first early redemption date at the Company's call falling on 29 January 2023, with a current outstanding amount of US\$3,000 million admitted for trading on the regulated market of the Luxembourg Stock Exchange.

On 28 November 2019, EDF raised US\$2 billion with a 50-year maturity and a fixed coupon of 4.5% under its EMTN program.

As part of the same programme, on 2 December 2019, EDF raised €1.25 billion with a 30-year maturity and a fixed coupon of 2%. On 12 December 2019, EDF announced the final result of its buyback offer for euro-denominated hybrid bonds and the results of early participation in its buyback offer for US dollar-denominated hybrid bonds.

On 30 December 2019, EDF announced the final result of its buyback offer for US dollar-denominated hybrid bonds. The Company also exercised its option to buy

back on 29 January 2020 all of the perpetual subordinated bonds totalling €1.250 billion, with a current outstanding amount of €338.2 million.

On 8 September 2020, EDF launched two new euro-denominated hybrid bond issues for a total par value of €2.1 billion, consisting of:

- an issue of hybrid perpetual bonds for an amount of €850 million with an initial coupon of 2.875% and a first option for early redemption at the Company's option on 15 December 2026 (the "Hybrid Bonds not redeemable before 6.5 years");
- €1.250 billion open-ended hybrid bond issue with an initial coupon of 3.375% and a first option for early redemption at the Company's option on 15 June 2030 (the "Hybrid Bonds not redeemable before 10 years", together with the Hybrid Bonds not redeemable before 6.5 years, the "Hybrid Bonds").

On 26 May 2021, EDF launched an issue of hybrid perpetual corporate bonds denominated in euros for a total nominal amount of €1.25 billion with an initial coupon of 2.625% and a first early redemption option at EDF's option on 1 June 2028.

On 23 November 2021, EDF launched a senior green bond issue maturing on 29 November 2033 denominated in euros, for a nominal amount of €1.75 billion and with a fixed coupon of 1%.

On 5 October 2022, EDF also launched a senior bond issue in 3 tranches, for a nominal amount of €3 billion consisting of:

- €750 million bond issue with a maturity of 4 years and 3 months and a fixed coupon of 3.875%;
- €1 billion bond issue with a 7-year maturity and a fixed coupon of 4.375%;
- €1.25 billion Green Bond issue with a 12-year maturity and a fixed coupon of 4.75%.

An amount equal to the net proceeds of the Green Bond will be used to finance and/or refinance, in whole or in part, investments in power distribution, as defined in EDF's Green Financing Framework published in July 2022 ⁽¹⁾.

On 30 November 2022, EDF launched a €1 billion issue of undated hybrid bonds denominated in euros, with a 7.5% coupon and a 6-year redemption option at the Company's discretion.

At 31 December 2022, the amount of bonds in the balance sheet was EUR 45,150 million (note 18.3.2.1 "Changes in loans and other financial liabilities" in the consolidated financial statements at 31 December 2022), with note 18.3.2.2 also providing details of the Group's main borrowings, including those relating to EMTNs and other bonds. At 31 December 2022, the amount of perpetual subordinated bonds recognised in equity was €11,722 million (note 14.4.1 "Outstanding perpetual subordinated bonds at 31 December 2022" of the consolidated financial statements at 31 December 2022).

7.3.6 Information on the capital of every member of the Group that is the subject of a conditional or unconditional agreement

Disposal commitments involving securities in subsidiaries are described in note 3.2 to the consolidated financial statements for the fiscal year ended 31 December 2022 and concerning the E&P activities, in particular earn-outs.

With the exception of these commitments to acquire and dispose of securities and any other commitments that are described in chapter 1 ("The Group, its strategy

and activities") of this Universal Registration Document, EDF has not made any promises to purchase or sell that would make it possible to acquire or dispose of, as applicable, all or part of the capital of the Company or of any of its subsidiaries, as defined in Article L. 233-1 of the French Commercial Code.

7.3.7 Pledge of the Company's shares

To the Company's knowledge, none of the Company's ordinary shares that make up its share capital have been pledged.

(1) On www.edf.fr.

7.3.8 Ownership of the Company's capital and voting rights

For the past three fiscal years, EDF's share capital has been owned as follows as at 31 December of each year:

	At 31/12/2022		At 31/12/2021		At 31/12/2020	
	Number of shares	% of capital	Number of shares	% of capital	Number of shares	% of capital
State ⁽¹⁾	3,460,481,557	89.01	2,716,550,741	83.88	2,593,960,583	83.68
Institutional and private investors	364,680,320	9.38	478,277,574	14.77	463,040,491	14.94
Employee shareholdings	61,668,032 ⁽²⁾	1.59	42,673,879 ⁽³⁾	1.32	42,092,505 ⁽⁴⁾	1.36
Treasury shares	888,511	0.02	1,174,554	0.03	830,000	0.02
TOTAL	3,887,718,420	100	3,238,676,748	100	3,099,923,579	100

(1) The French State's shareholding in EDF includes the EDF shares held by Bpifrance.

(2) This number includes 57,796,177 shares (representing 1.49% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF", "EDF Classique" and "EDF ORS" FCPE of the EDF group's savings plan). This number also includes almost 3.872 million shares, representing 0.10% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

(3) This number includes 38,775,926 shares (representing 1.20% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF", "EDF Classique" and "EDF ORS" FCPE of the EDF group's savings plan). This number also includes almost 3.899 million shares, representing 0.12% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

(4) This number includes 38,075,245 shares (representing 1.23% of the capital) based on the definition of employee shareholdings under Article L. 225-102 of the French Commercial Code (shares held by EDF's employees and former employees through the "Actions EDF" and "EDF ORS" FCPE of the EDF group's savings plan). This number also includes almost 4.017 million shares, representing 0.13% of the capital, held as directly or administered registered shares, with no lock-in periods or whose lock-in periods have expired, by employees or former employees.

Following a French state allotment of 389,349,361 EDF shares to EPIC Bpifrance, on 29 January 2018, BPI France and the French State combined crossed the statutory thresholds of 5%, 10%, 15%, 20%, 30%, one third, 50% and two-thirds of the Company's capital and voting rights. The French state and EPIC Bpifrance act together and have to consult each other before every Shareholders' Meeting of EDF. Bpifrance undertook to not transfer, pledge or otherwise dispose of the EDF shares.

In October 2020, the French State reduced its allocation to EPIC Bpifrance by 61,000,000 EDF shares. EPIC Bpifrance also received 6,480,579 shares in respect of the 2020 Dividend paid in June 2021 and 9,033,181 shares in respect of the 2021 Interim Dividend paid in December 2021. In March 2022, EPIC Bpifrance sold

all of these 15,513,760 shares to the French State. EPIC Bpifrance received 12,357,234 shares as the balance of the 2021 Dividend paid in June 2022.

To the Company's knowledge, no shareholder other than the French State and EPIC Bpifrance directly or indirectly holds more than 5% of the capital and voting rights.

The French State opted for a payment in shares of the balance of the 2018 dividend as well as the dividend for the years 2019, 2020 and 2021. It has renewed its commitment for dividends relating to the 2022 and 2023 fiscal years ⁽¹⁾.

The theoretical and exercisable voting rights at the General Meeting of the various categories of shareholders as at 31 December 2022 are as follows:

	Equities	% of capital	Theoretical voting rights	% of theoretical voting rights	Voting rights exercisable at Shareholders' Meetings	% of voting rights exercisable at Shareholders' Meetings
31/12/2022						
State*	3,460,481,557	89.01	6,054,442,140	92.49	6,054,442,140	92.50
Employee shareholdings	61,668,032	1.59	96,231,268	1.47	96,231,268	1.47
Individual and institutional shareholders	364,680,320	9.38	394,777,428	6.02	394,777,428	6.03
Treasury shares	888,511	0.02	888,511	0.02	-	-
TOTAL	3,887,718,420	100	6,546,339,347	100	6,545,450,836	100

* The French State's stake in EDF's share capital includes the EDF shares held by EPIC Bpifrance.

7.3.9 Agreements whose implementation could lead to a change of control

To EDF's knowledge, there are no agreements whose implementation could subsequently lead to a change in the Company's control.

Moreover, pursuant to Article L. 111-67 of the French Energy Code, the French State may not hold less than 70% of EDF's capital.

(1) See press release of 18 February 2022 from the Ministry for the Economy, Finance and Recovery.

7.3.10 Shareholder dialogue

Institutional and individual shareholders (excluding employee shareholders) represent approximately 9% of EDF's share capital as of 31 December 2022. Since the opening of the capital in November 2005, there has been ongoing dialogue with these stakeholders.

The EDF group's financial communication consists in establishing a regular dialogue with the financial markets in compliance with regulations. The objective is for the market to possess the information needed to enhance the Company's value over time, by explaining its strategy, its development model and its environment.

In this context, the Group pursues an active policy of information and dialogue, making available to the public, individual shareholders, institutional investors and, more generally, the financial community in France and abroad, a wide range of documents and information media enabling a better understanding of the Group, its strategy, results and outlook.

Relations with institutional investors and financial analysts

The purpose of this dialogue with the financial markets is to maintain a consistent and faithful image of the EDF group among analysts and investors, in particular so that the latter can assess the Group's operating and financial performance as well as its development prospects.

In 2022, as in previous years, the publication of the Group's financial results on a quarterly basis was the subject of presentations by senior management in conference calls during which it also answered questions from investors and financial analysts.

In addition, throughout the year, senior management and the Financial Communications Department participated in meetings with the financial community (financial analysts and institutional investors) in the form of conference calls and roadshows. The Financial Communications Department also maintains ongoing exchanges with analysts to discuss their models and Group news.

Relations with individual shareholders

To maintain good interactions with its individual shareholders at all times, EDF uses varied and innovative communication channels. In addition to a dedicated space for investors and shareholders on the Company's website ⁽¹⁾, a Shareholders' Club offering its members numerous meetings, mainly in digital form since the outset of the health crisis, and a Facebook page, EDF also offers short educational videos in French and English, accessible to the deaf and hearing impaired, on financial and strategic subjects. The Shareholders' Meeting can be followed live remotely, then replayed on the Company's website, and is the subject of a report distributed via a special edition of the shareholders' newsletter. Shareholders may also contact the Company through a dedicated toll-free number or mail address. The diversity of its individual shareholder base is reflected in the composition of its Shareholders' Advisory Committee.

7.4 Market for the Company's shares

The Company's shares have been listed for trading by Euronext Paris (Compartment A) since 21 November 2005, under ISIN code FR 0010242511, Reuters code (EDF. PA) and Bloomberg code (EDF: FP).

The following graph shows the changes in the Company's share price between 21 November 2005 and 31 December 2022 (base index 100 as at 21 November 2005):



(1) www.edf.fr

The following table shows the share price and volume of EDF shares traded between 1 January 2022 and 31 January 2023 on the Euronext Paris stock market:

	Transactions		Closing price (in euros)	
	(in number of shares)	(in euros*)	Highest	Lowest
2023				
January 2023	58,274,240	699,768,588	12.07	12.00
2022				
December 2022	179,202,223	2,128,602,747	12.04	12.00
November 2022	125,776,146	1,507,974,572	12.01	11.90
October 2022	45,121,272	538,222,340	11.97	11.89
September 2022	65,490,002	777,393,038	12.03	11.79
August 2022	69,975,080	831,529,595	11.96	11.86
July 2022	183,030,607	1,909,888,549	11.90	7.27
June 2022	96,836,957	799,321,284	8.78	7.59
May 2022	73,322,714	614,141,720	8.74	8.02
April 2022	71,584,563	615,299,674	9.10	8.06
March 2022	190,154,638	1,649,981,938	9.15	6.65
February 2022	98,804,741	806,062,287	8.34	6.88
January 2022	151,561,439	1,338,517,656	10.26	7.42

* Transactions in euros correspond to the monthly sum of the product of the daily number of shares traded and the volume-weighted average price of the same day (Source: Euronext).

2022

In 2022, EDF's share price increased by 16.17%, while the Euro Stoxx Utility sector index (SX6P) decreased by -11.11% and the CAC 40 index decreased by -9.49%.

On 31 December 2022, the closing price of the EDF share was €12.00 (€10.33 at 31 December 2021). Its highest closing price in 2022 was €12.04 on 23 December 2022, and its lowest closing price was €6.64 on 7 March 2022.

On 31 December 2022, EDF's market capitalisation totalled €46.65 billion (compared to €33.46 billion at 31 December 2021).

2023

From the beginning of 2023 to 31 January 2023 inclusive, EDF's share price rose by 0.65%, while the CAC 40 index increased by 8.63% and the Euro Stoxx Utility sector index (SX6P) increased by 1.41%.

On 31 January 2023, the closing price of the EDF share was €12.06. Its lowest closing price in 2023, up to 31 January 2023 inclusive, was €12.00, and its highest closing price was €12.07 on 31 January 2023.

On 31 January 2023, EDF's market capitalisation totalled €46.89 billion.

7.5 Related-party transactions

7.5.1 Related-party transactions

The information regarding the details of the transactions concluded by the Company with related parties, as defined by the IFRS, in respect of the 2022 fiscal year, are contained in note 22 to the consolidated financial statements for the fiscal year ended 31 December 2022.

They describe:

- relations with the French state;

- relations with Engie;
- relations with Orano and public sector companies;
- the main transactions with the companies in the scope of consolidation.

The information on the regulated agreements referred to in Article L. 225-38 of the French Commercial Code is stated in the Statutory Auditors' special report, which is reproduced below in section 7.5.2 ("Statutory Auditor's special report on regulated agreements") of this Universal Registration Document.

7.5.2 Statutory Auditors' special report on regulated agreements

Shareholders' Meeting held to approve the financial statements for the year ended December 31, 2022

This is a free translation into English of the Statutory Auditors' special report on regulated agreements that is issued in the French language and is provided solely for the convenience of English speaking readers. This report on regulated agreements should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France. It should be understood that the agreements reported on are only those provided by the French Commercial Code and that the report does not apply to those related party transactions described in IAS 24 or other equivalent accounting standards.

To the Shareholders' Meeting of Electricité de France S.A.,

In our capacity as Statutory Auditors of Electricité de France S.A. ("EDF"), we hereby report to you on regulated agreements.

The terms of our engagement require us to communicate to you, on the basis of information provided to us, the principal terms and conditions of those agreements brought to our attention or which we may have discovered during the course of our audit, as well as the reasons justifying that such agreements are in the Company's interest, without expressing an opinion on their usefulness and appropriateness or identifying such other agreements, if any. It is your responsibility, pursuant to Article R. 225-31 of the French Commercial Code (*Code de commerce*), to assess the interest involved in respect of the conclusion of these agreements for the purpose of approving them.

Our role is also to provide you with the information stipulated in Article R. 225-31 of the French Commercial Code relating to the implementation during the past year of agreements previously approved by the Shareholders' Meeting, if any.

We conducted the procedures we deemed necessary in accordance with the professional guidelines of the French National Institute of Statutory Auditors (*Compagnie nationale des commissaires aux comptes*) relating to this engagement. These procedures consisted in agreeing the information provided to us with the relevant source documents.

Agreements submitted to the approval of the shareholders' meeting

Agreements authorized and/or concluded during the year

Pursuant to Article L. 225-40 of the French Commercial Code, we have been notified of the following agreements concluded during the year which were previously authorized by your Board of Directors.

1. Amendment to the settlement agreement relating to the compensation payable by the French State to EDF due to the early closure of the Fessenheim nuclear power plant

Persons concerned: the French State, represented by Mr. Martin Vial on the Board of Directors (at the time of authorization by the Board of Directors), a shareholder owning more than 10% of the voting rights of EDF.

Nature, purpose and terms & conditions: as mentioned in the first paragraph of the second part of this report, a settlement agreement relating to the compensation payable by the French State to EDF in connection with the early closure of the Fessenheim nuclear power plant (the "Settlement Agreement") was signed on September 27, 2019.

At the request of the French State, the decision was made to add certain modifications, by way of an amendment signed on July 25, 2022, to the Settlement Agreement in order to specify the practical terms and conditions of its application and provide better budget predictability for the French State without challenging the principles and balance defined by the Settlement Agreement.

On December 15, 2021, your Board of Directors authorized the signing of this amendment to the Settlement Agreement, considering that it was in EDF's interest to sign it since the modifications to the Settlement Agreement were negotiated by EDF in its best interests and did not challenge the clauses already approved in the Agreement.

2. Underwriting agreement entered into with a banking syndicate as joint global coordinators and bookrunners, including Société Générale, as part of the share capital increase performed on April 7, 2022

Person concerned: Jean-Bernard Levy, Chairman and CEO of EDF (until November 23, 2022) and non-voting member on the Société Générale Board of Directors.

Nature, purpose and terms & conditions: as part of the share capital increase performed on April 7, 2022, with retention of shareholder preferential subscription rights, in the gross amount (including the issue premium) of €3.2 billion, an underwriting agreement (the "Underwriting Agreement") was concluded on March 17, 2022 between the Company and a banking syndicate comprising BNP Paribas, Barclays Bank Ireland PLC, Crédit Agricole Corporate and Investment Bank, Goldman Sachs Bank Europe SE, Natixis and Société Générale as joint global coordinators and bookrunners (the "Global Coordinators") and Banco Santander, S.A., BofA Securities Europe S.A., J.P. Morgan SE and Morgan Stanley Europe SE as joint bookrunners (together the "Underwriters").

Pursuant to the Underwriting Agreement, the Underwriters have pledged jointly but not severally, subject to the fulfillment of the French State's commitment to subscribe to the share capital increase for its share of the capital (the "Subscription Commitment"), to obtain subscription, or otherwise subscribe, to all new shares issued by EDF, except for those covered by the Subscription Commitment.

In consideration for the Underwriters' pledge, EDF has pledged to pay an underwriting fee to each Underwriter equal to a percentage of the gross share capital increase amount (less the amount covered by the Subscription Commitment) underwritten by each of them. Furthermore, EDF could also pay the Underwriters in a discretionary manner an additional fee (representing 0.6% of the gross share capital increase amount less the amount covered by the Subscription Commitment), regarding both its amount and allocation.

Pursuant to the Underwriting Agreement, fees paid by EDF to Société Générale totaled €1,274,682.

On March 17, 2022, your Board of Directors previously authorized the signing of the Underwriting Agreement, considering that it was in EDF's interest to enter into said agreement since it had to be arranged to complete the share capital increase.

3. Agreements concluded by EDF as part of the planned acquisition of the Steam Power nuclear activities of General Electric

On February 10, 2022, EDF and General Electric Company (GE) signed a MOU for the planned acquisition by EDF of GE's Steam Power nuclear activities ("GE Steam Power") (excluding service activities conducted in America).

On November 3, 2022, your Board of Directors previously authorized the signing of the following agreements as part of the signing by EDF of the acquisition agreement involving GE Steam Power's activities on November 4, 2022 (the "Acquisition Agreement").

3.1. Adherence by EDF to the agreement signed between General Electric Company and the French State on February 10, 2022

Persons concerned: the French State, represented on the Board of Directors as of September 23, 2022 by Alexis Zajdenweber, a shareholder with over 10% of EDF's voting rights.

Nature, purpose and terms & conditions: at the same time as the signing of the aforementioned MOU, GE and the French State signed, on February 10, 2022, an agreement (the "Agreement") whose purpose is to provide for (i) the cancellation, as described below in paragraphs 3.2, 3.3 and 3.4 of this report, of two framework agreements and related licensing agreements, entered into in 2014 during the acquisition by GE of all the Power & Grid activities of Alstom and (ii) the French State's commitments as shareholder of GEAST as part of the acquisition by EDF of GE Steam Power's nuclear activities.

At the same time as the signing of the Acquisition Agreement and pursuant to its clauses, EDF adhered to the Agreement by signing it on November 4, 2022 with General Electric Company, and the French State without any financial expense for EDF.

Your Board of Directors considered that it was in EDF's interest to adhere to the Agreement as its adhesion was linked to the signing by EDF of the Acquisition Agreement.

3.2. Agreement for the cancellation of the framework agreement guaranteeing the sustainability of the existing nuclear facilities, concluded during the acquisition by General Electric of all the Power & Grid activities of Alstom

Persons concerned: the French State, represented on the Board of Directors as of September 23, 2022 by Alexis Zajdenweber, a shareholder with over 10% of EDF's voting rights.

Nature, purpose and terms & conditions: the purpose of the cancellation agreement is to cancel the framework agreement which was signed between EDF, GE, Alstom SA and the French State on November 4, 2014 involving commitments to supply services to the current nuclear facilities of the EDF Group to guarantee the sustainability of nuclear facilities in operation, as part of the acquisition in 2014 by GE of all the Power & Grid activities of Alstom.

This cancellation agreement, which was signed by EDF on November 4, 2022 with General Electric Company, the French State and GEAST, is at no expense for EDF.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the framework agreement to be canceled during the completion of this acquisition becoming no longer applicable.

3.3. Agreement for the cancellation of the framework agreement on new nuclear projects, signed during the acquisition by General Electric of all the Power & Grid activities of Alstom

Persons concerned: the French State, represented on the Board of Directors as of September 23, 2022 by Alexis Zajdenweber, a shareholder with over 10% of EDF's voting rights and Jean-Bernard Lévy, the Chairman and CEO of EDF (until November 23, 2022) and Chairman of the Framatome Supervisory Board (until November 25, 2022).

Nature, purpose and terms & conditions: the purpose of this cancellation agreement is to cancel the framework agreement which was entered into between EDF, Areva NP (Framatome assuming the rights of Areva NP in 2017), GE, Alstom SA and the French State on November 4, 2014 involving the commitments relating to the offer discounts based on Arabelle technology for new nuclear projects, as part of the acquisition in 2014 by GE of all the Power & Grid activities of Alstom.

This cancellation agreement, which was signed by EDF on November 4, 2022 with General Electric Company, the French State and GEAST, is at no expense for EDF or Framatome.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the framework agreement to be canceled during the completion of this acquisition becoming no longer applicable.

3.4. Agreement for the cancellation of the licensing agreements concluded during the acquisition by General Electric of all the Power & Grid activities of Alstom

Persons concerned: (i) the French State, represented on the Board of Directors by Alexis Zajdenweber, a shareholder with over 10% of Company EDF's voting rights and a 100% shareholder of SPVPI and (ii) Jean-Bernard Lévy, the Chairman and CEO of EDF (until November 23, 2022) and Chairman of the Framatome Supervisory Board (until November 25, 2022).

Nature, purpose and terms & conditions: the purpose of this cancellation agreement is to cancel the following licensing agreements relating to the framework agreements concluded in 2014 during the acquisition in 2014 by GE of all the Power & Grid activities of Alstom:

- licensing agreement on SPV intellectual property rights for current EDF facilities, concluded between Alstom Technologie AG, SOGEPA, GE, Alstom SA and EDF, and
- licensing agreement on SPV intellectual property rights for new nuclear projects, entered into between Alstom Technologie AG, SOGEPA, GE, Alstom SA, EDF and Areva NP (Framatome assuming the rights of Areva NP in 2017).

This cancellation agreement, which was signed by EDF on November 4, 2022 with General Electric Technology GmbH, General Electric Company, Framatome, SPVPI and GEAST, is at no expense for EDF or Framatome.

Your Board of Directors considered that it was in EDF's interest to sign the cancellation agreement as its conclusion was linked to the signing by EDF of the Acquisition Agreement, the licensing agreements to be canceled during the completion of this acquisition becoming no longer applicable.

Agreements already approved by the shareholders' meeting

Agreements approved during previous years that remained in force during the year

Pursuant to Article 225-30 of the French Commercial Code, we have been notified that the following agreements, previously approved by Shareholders' Meetings of previous years, have remained in force during the year.

1. Settlement agreement relating to the French State's compensation for the closure of the Fessenheim nuclear plant

Persons concerned: the French State, represented by Mr. Martin Vial on the Board of Directors then by Alexis Zajdenweber from September 23, 2022, a shareholder owning more than 10% of the voting rights of EDF.

Nature, purpose and terms & conditions: the settlement agreement was entered into to determine the heads of damages and the terms and conditions for the calculation of compensation payable by the French State to EDF in connection with the early closure of the Fessenheim nuclear power plant. The conclusion of this settlement agreement, signed on September 27, 2019, was authorized by the Board of Directors' meetings of April 4 and September 20, 2019.

The compensation breaks down as follows:

- Initial payments corresponding to the plant's anticipated closure costs. In this respect, EDF received compensation of €370 million on December 14, 2020. This compensation is recognized in the income statement in operating subsidies at the same rate as the anticipated closure costs, that is €46 million in the year ended December 31, 2022;
- Further payments corresponding to lost profits that would have been generated by future production volumes, determined on the basis of the past production of the Fessenheim power plant, up to 2041, calculated ex post in accordance with the sales prices of nuclear production, and in particular observed market prices. This second category of compensation had no impact in the year ended December 31, 2022.

This agreement was amended on July 25, 2022, as mentioned in paragraph 1 in the first part of this report.

2. Sale agreement between EDF, Areva SA and Areva NP for the acquisition of 75.5% of NEW NP (now called Framatome) capital and other agreements signed by EDF as part of the sale by Areva SA of its entire interest in NEW NP (now called Framatome)

Persons concerned: the French State, represented by Mr. Martin Vial on the Board of Directors then by Alexis Zajdenweber from September 23, 2022, a shareholder owning more than 10% of the voting rights of EDF and AREVA SA.

Nature, purpose and terms & conditions: in connection with the acquisitions carried out by EDF for NEW NP, EDF entered into the following agreements:

(i) a sale agreement between EDF, Areva SA and Areva NP for the acquisition of 75.5% of New NP (now called Framatome) 100%-held by AREVA NP, a subsidiary of Areva SA. The final acquisition agreement covering 75.5% of the capital of Framatome was authorized by your Board of Directors on December 14, 2017 and signed on December 22, 2017. The acquisition was carried out on December 31, 2017 for €1,868 million, excluding acquisition costs.

(ii) the other agreements signed by EDF as part of the aforementioned sale, previously authorized by your Board of Directors on June 23, 2017 and December 14, 2017, i.e.:

- the final sale agreement signed by EDF on December 14, 2017 for the acquisition of 19.5% of the Framatome shares by MHI from Areva SA and Areva NP, under financial conditions similar to those of EDF;
- the final sale agreement signed by EDF on December 14, 2017 for the acquisition of 5% of the Framatome shares by Assystem from Areva SA and Areva NP, under financial conditions similar to those of EDF.

As mentioned in our special report dated March 15, 2022 for the Shareholders' Meeting held to approve the financial statements for the year ended December 31, 2021, the amounts collected by EDF from Areva SA in 2021, pursuant to the sales agreement described in (i) above and the settlement agreement entered into on June 29, 2021, totaled €47 million. Pursuant to the agreements described in (ii) above, in 2022 EDF paid €34 million to Framatome and €13 million to MHI and Assystem in proportion to their investment in Framatome, i.e. €10 million and €3 million, respectively.

Agreements authorized during previous years but not approved by the shareholders' meeting

In accordance with the terms of Article R.225-30 of the French Commercial Code, we have been notified of the following agreements, which were described in our special report on regulated agreements and commitments for fiscal years 2016 to 2021, and which were not approved by the Combined Shareholders' Meeting of May 18, 2017 held to approve the financial statements for the year ended December 31, 2016, which remained in force during the year.

1. Shareholders' agreement between EDF on the one hand, and Caisse des Dépôts et Consignation and CNP Assurances on the other hand, regarding Coentreprise de Transport d'Electricité - CTE, parent company of RTE

Persons concerned: the French State, represented by Mr. Martin Vial on the Board of Directors then by Alexis Zajdenweber from September 23, 2022, a shareholder owning more than 10% of the voting rights of EDF SA, and having a representative on the Board of Directors of CNP Assurances.

Nature, purpose, and terms & conditions: this agreement, signed on December 14, 2016 and implemented on March 31, 2017 between EDF, Caisse des Dépôts et Consignation and CNP Assurances, enabled Caisse des Dépôts et Consignation and CNP Assurances to acquire an indirect interest of 49.9% in the capital of RTE, via CTE, and the set-up of the terms and conditions of a long-term partnership to encourage the development of RTE, notably by the conclusion of a shareholders' agreement.

This shareholders' agreement remained in force in fiscal 2022.

2. Agreement entered into between the French State, EDF, the Caisse des Dépôts, CNP Assurances and CTE relating to the governance of CTE and RTE

Persons concerned: the French State, represented by Mr. Martin Vial on the Board of Directors then by Alexis Zajdenweber from September 23, 2022, a shareholder owning more than 10% of the voting rights of EDF, a party to the agreement and having a representative on the Board of Directors of CNP Assurances.

Nature, purpose and terms & conditions: the purpose of this agreement, entered into between EDF, Caisse des Dépôts and CNP Assurances, CTE and the French State, is to set forth the commitment of the French State to limit its representatives to two on the Supervisory Board of RTE.

Paris La Défense, March 13, 2023

The Statutory Auditors

KPMG S.A.
Marie Guillemot Michel Piette

Deloitte & Associés
Damien Leurent Christophe Patrier

7.5.3 Routine agreements procedure

On 13 February 2020, the Board of Directors approved an internal procedure, meeting the requirements of the AMF recommendation, that is primarily designed to implement the procedure required under Article L. 22-10-12 of the French Commercial Code, to regularly assess unregulated agreements (*i.e.* agreements relating to routine transactions concluded under normal conditions).

Given the high number of routine agreements concluded under normal conditions that EDF may enter into, the procedure involves:

- drawing up a list of routine agreements "by type", that do not require an assessment; this category includes agreements entered into in the normal course of EDF's business and a list of intra-group agreements;

- defining which routine agreements concluded under normal conditions require an annual assessment by the Board; this category includes agreements deemed sufficiently material for at least one of the parties to the contract; it specifically includes agreements that have been approved by the Group Executive Committee's Commitments Committee (CECEG) and agreements entered into with the French state or a public company.

The Board of Directors assesses them once a year at the Board meeting called to approve the annual financial statements, when reviewing the regulated agreements concluded over the fiscal year or agreements concluded and authorised during previous fiscal years that have been performed over the past fiscal year.

7.6 Material contracts

The information on the regulated agreements referred to in Article L. 225-38 of the French Commercial Code is contained in the Statutory Auditors' special report, which is reproduced in section 7.5.2 "Statutory Auditors' special report on regulated agreements" of this Universal Registration Document, section 7.5.2 of the 2021 Universal Registration Document and section 7.5.2 of the 2020 Reference Document.

Except for the contracts which may be described in chapters 1 and 5 of this Universal Registration Document or in the appendix to the consolidated statements

for the fiscal year ended 31 December 2022, in chapters 1 and 5 of the 2020 Universal Registration Document and the 2019 Reference Document or in the appendix to the consolidated statements for the fiscal years ended 31 December 2020 and 2021, including the contracts described hereunder, EDF entered into no material contracts other than those concluded in the normal course of business over the last two years preceding the filing of this Universal Registration Document, the filing of the 2021 Universal Registration Document and the filing of the 2020 Reference Document.

7.6.1 Material contracts entered into in 2022

Material contracts entered into in 2022, other than those conducted in the normal course of business, by the Group, are the followings:

- Agreement for EDF Trading Limited, a wholly-owned subsidiary of EDF, to sell 100% of the share capital of EDF Energy Services LLC (EDFES), the retail business of EDF Trading North America, to BP (12 September 2022);
- Agreement to sell EDF's stake in the Sloe CCGT plant (870MW) in the Netherlands to EPH, the Czech power producer and grid operator (27 September 2022);
- Agreement for Imtech, a subsidiary of Dalkia and the EDF group, to acquire SPIE UK (27 October 2022);
- Agreement for EDF to acquire GE Stream Power's conventional nuclear power plant island business (4 November 2022);
- Agreement for Imtech, a subsidiary of Dalkia and EDF Energy, to sell 100% of the capital of the Irish subsidiary Suir Engineering Ltd to the British equity fund Duke Street (11 November 2022).

7.6.2 Material contracts entered into in 2021

Material contracts entered into in 2021, other than those conducted in the normal course of business, by the Group, are the followings:

- settlement agreement between EDF and AREVA to resolve all disputes between EDF and AREVA relating to the Framatome acquisition agreement contract entered into in 2017 and their commercial relationship prior to the acquisition (29 June 2021).

7.6.3 Material contracts entered into in 2020

Material contracts entered into in 2020, other than those conducted in the normal course of business, by the Group, are the followings:

- purchase agreement for Pod Point, a company specialized in electric charging station in the UK, by EDF Energy (13 February 2020);
- sale agreement for Edison's E&P Division entered into with Energean Oil and Gas (excluding Algeria and Norway) (17 December 2020).



8



ADDITIONAL INFORMATION

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ADDITIONAL INFORMATION

Person responsible for the Universal Registration Document and the Certification

8.1 Person responsible for the Universal Registration Document and the Certification

8.1.1 Person responsible for the Universal Registration Document

Luc Rémont, Chairman and Chief Executive Officer of EDF.

8.1.2 Certification from the person responsible for the 2022 Universal Registration Document containing the annual financial report

I certify that, to the best of my knowledge, the information contained in this Universal Registration Document accurately reflects the facts and contains no omission likely to affect its meaning.

I certify that, to the best of my knowledge, the financial statements are prepared in accordance with accounting standards and that they give a true and fair view of the assets and liabilities, financial position and the income of the Company and of all the companies included in the consolidation scope, and that the management report included in this document presents a true and fair view of the business trends, income and financial position of the Company and of all the companies included in the consolidation scope and a description of the main risks and uncertainties they face.

Luc Rémont,

Chairman and Chief Executive Officer of EDF

8.2 Auditors – Statutory Auditors

Deloitte & Associés

6, Place de la Pyramide, 92908 Paris – La Défense Cedex, represented by Mr. Damien Leurent and Mr Christophe Patrier.

KPMG SA

Tour EQHO, 2, avenue Gambetta, CS 60055, 92066 Paris – La Défense Cedex, represented by Ms. Marie Guillemot and Mr. Michel Piette.

The Statutory Auditors were renewed by decision of the Ordinary and Extraordinary Shareholders' Meeting of 18 May 2017 for a period of six fiscal years expiring at the end of the Shareholders' Meeting ruling on the financial statements covering the fiscal year closing 31 December 2022. The aforementioned Statutory Auditors consequently certified the financial statements reproduced in this Universal Registration Document.

8.3 Publicly available documents – LEI number and financial reporting calendar

The Company's press releases, annual reports, including historical financial information relating to the Company and any related updates filed with the AMF, are available on the Company's website: www.edf.fr and a copy may also be obtained at the Company's registered office at 22-30, avenue de Wagram, 75382 Paris Cedex 08 (France).

EDF's LEI number is 549300X3UK4GG3FNM006.

All of the regulated information published by the Company, pursuant to Article 2211 *et seq.*, in the AMF's general regulation, is available at the following address: www.edf.fr.

Finally, the documents and information referred to in Article R. 22-10-23 of the French Commercial Code, are available on the Company's website in the section dedicated to Shareholders' Meetings.

The Company has imposed a 15 days embargo period prior to the announcement of the annual, half-year and quarterly results ("quiet period") during which no new information regarding the business development and EDF's results may be issued to financial analysts and investors, so as to prevent incomplete financial information from being released, enabling the recipients to anticipate EDF's results prior to their official publication.

In application of Article 19 of regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017, the following information is incorporated by reference in this Universal Registration Document:

- the main headings provided for in Appendices 1 and 2 of the delegated regulation (EU) 2019/980 of 14 March 2019;

- the information making up the annual financial report provided for in Articles L. 451-1-2 of the French Monetary and Financial Code and 222-3 of the general regulations of the AMF (French Financial Markets Authority);
- the information making up the management report of the Board of Directors provided for by the French Commercial Code, including the statement of non-financial performance (DPEF) and the annual report on corporate governance;
- the 2021 Universal Registration Document (URD 2021) of the EDF group filed with the AMF on 17 March 2022 under number D-22-0110 and the 2020 Universal Registration Document (URD 2020) of the EDF group filed with the AMF on 15 March 2020 under number D-21-0121, which can be consulted on the <https://www.edf.fr/> website;
- the EDF group's consolidated financial statements (under international accounting standards) for the year ended 31 December 2021 and the Statutory Auditors' report on those financial statements, which are to be found in chapter 6 of the EDF group's 2021 Universal Registration Document ⁽¹⁾;
- the EDF group's consolidated financial statements (under international accounting standards) for the year ended 31 December 2020 and the Statutory Auditors' report on those financial statements, which are to be found in chapter 6 of the EDF group's 2020 Universal Registration Document ⁽²⁾;
- the review of the EDF group's financial position and results for the year ended 31 December 2021, as presented in chapter 5 of the 2021 Universal Registration Document ⁽³⁾;
- the review of the EDF group's financial position and results for the year ended 31 December 2020, as presented in chapter 5 of the 2020 Universal Registration Document ⁽⁴⁾;

(1) See sections 6.1 and 6.2.

(2) See sections 6.1 and 6.2.

(3) See section 5.1.

(4) See section 5.1.

8.4 Concordance tables

8.4.1 Concordance table with Appendix I of (EC) regulation no. 2019/980

The concordance table below identifies the information required by Appendices 1 and 2 of the delegated regulation (EC) no. 2019/980 of 14 March 2019 in accordance with the URD scheme:

Appendices 1 and 2 of the delegated regulation (EC) no. 2019/980 of 14 March 2019.	URD Sections
1. Persons responsible, information from third parties, expert report and approval by the competent authority	
1.1. Name and address of the persons responsible	8.1
1.2. Certification by the persons responsible	8.1.2
1.3. Name, address, qualifications and potential interests of persons acting as experts	n/a
1.4. Certification of third party information	n/a
1.5. Declaration without prior approval of the competent authority	page 3
2. Statutory Auditors	
2.1. Name and address of the Statutory Auditors	Section 8.2
2.2. Changes where applicable	n/a
3. Risk factors	Chapter 2
4. Information about the issuer	
4.1. Legal and commercial name of the issuer	Section 7.1.1
4.2. Location, registration number and LEI of the issuer	Sections 7.1.2 and 8.3
4.3. Date of incorporation and length of life of the issuer	Section 7.1.3
4.4. Registered office and legal form of the issuer, legislation governing the activities, country of origin, address and telephone number of the registered office, website with a disclaimer	Sections 7.1.1 and 7.1.4
5. Business overview	
5.1. Main activities	
5.1.1. Nature of the operations	Section 1.4
5.1.2. Important new products and services	n/a
5.2. Major markets	Section 1.4
5.3. Key events	Sections 5.1.2 and 5.1.3
5.4. Strategy and objectives	Sections 1.3 and 5.4
5.5. Dependency of the issuer on patents, licenses, contracts and manufacturing processes	Sections 1.5 and 2.1
5.6. Competitive position declaration	Section 1.4.2.1.1
5.7. Investments	
5.7.1. Major investments made	Key figures and section 5.1.4.2.3
5.7.2. Principal ongoing or future investments of the issuer for which the latter's management bodies have already made firm commitments and adopted financing methods	Appendix to the consolidated financial statements – Note 10.6
5.7.3. Joint ventures and commitments in which the issuer holds a significant proportion of the capital	Section 4.5.1 and Section 6.1 – Appendix to the consolidated financial statements – Note 12
5.7.4. Environmental issues	Chapter 3
6. Organisational structure	
6.1. Brief description of the Group	Sections 1.2.1 and 1.2.2
6.2. List of significant subsidiaries	Section 1.2.1
7. Operating and financial review	
7.1. Financial position	
7.1.1. Changes in results and financial position including key performance indicators of a financial and, where applicable, non-financial nature	Sections 5 and 6 Chapter 3 and Section 8.4.4
7.1.2. Forecasts for future development and research and development activities	Section 1.5
7.2. Operating results	Section 6.1
7.2.1. Important factors, unusual or infrequent events or new developments	Sections 1.2.3, 5.1.2 and 5.1.3
7.2.2. Explanation of material changes in net sales or revenue	Section 5.1.4
8. Cash and capital resources	
8.1. Capital Information	Sections 7.2 and 7.3
8.2. Cash flows	Section 6.1 – Appendix to the consolidated financial statements – Note 10.4, 10.7 and 13.1
8.3. Financing needs and structure	Section 6.1 – Appendix to the consolidated financial statements – Note 18.3
8.4. Restrictions on the use of capital resources	n/a

Appendices 1 and 2 of the delegated regulation (EC) no. 2019/980 of 14 March 2019.	URD Sections
8.5. Expected sources of financing	n/a
9. Regulatory environment	
9.1. Description of the regulatory environment and any measures or factors of an administrative, economic, budgetary, monetary, or political nature	Sections 1.3 and 1.4
10. Trend information	
10.1. Description of major trends and any significant changes in the Group's financial performance since the end of the last fiscal year	Sections 5.2, 5.4 and 6.6.2
10.2. Events that are reasonably likely to have a material effect on prospects	Section 5.4
11. Profit forecasts or estimates	
11.1. Published profit forecasts or estimates	n/a
11.2. Declaration outlining key forecasting assumptions	Sections 5.1.2 and 5.1.3
11.3. Declaration regarding comparability with historical financial information and compliance of accounting methods	Section 6.1 – Appendix to the consolidated financial statements – Note 1.4
12. Administrative, management, and supervisory bodies and Executive Management	
12.1. Information regarding members	
Name, professional address and functions	Sections 4.2.1 and 4.3.1
Nature of any family relationship	Section 4.4
Expertise and experience	Sections 4.2.1 and 4.3.1
Absence of conviction	Section 4.4.2
12.2. Conflict of interest	Section 4.4.1
13. Remuneration and benefits	
13.1. Remuneration paid and benefits in kind	Sections 4.6.1 and 4.6.2
13.2. Amounts set aside or accrued to provide pension, retirement	Section 4.6.1.1
14. Functioning of administrative and management bodies	
14.1. Date of expiration of the current terms of office	Section 4.2.2.1
14.2. Service contracts entered into between members of the administrative, management or supervisory bodies and the issuer	Section 4.4.3
14.3. Information about Audit and Remuneration Committees	Section 4.2.3
14.4. Statement of compliance with the corporate governance regime in force	Section 4.1
14.5. Potential significant impacts on corporate governance	Section 4.2.2
15. Employees	
15.1. Number of employees	Section 3.4.2.1.1
15.2. Shareholdings and stock options	n/a
15.3. Agreement providing for employee shareholding	n/a
16. Major shareholders	
16.1. Shareholders holding more than 5% of the capital on the date of the registration document	Section 7.3.8
16.2. Breakdown of voting rights	Section 7.2.4
16.3. Direct or indirect control	Section 7.3
16.4. Agreement whose implementation could lead to a change of control	Section 7.3.9
17. Transactions with related parties	Section 7.5
18. Financial information concerning the issuer's assets and liabilities, financial position and results	
18.1. Historical financial information	
18.1.1. Audited historical financial information for the last three fiscal years and the audit report	Section 6.1
18.1.2. Change of accounting reference date	n/a
18.1.3. Accounting standards	Section 6.1
18.1.4. Change in accounting principles	n/a
18.1.5. Financial information under French accounting standards	Section 6.1
18.1.6. Consolidated financial statements	Section 6.1
18.1.7. Date of the latest financial information	n/a
18.2. Interim and other financial information	
18.2.1. Quarterly or half-yearly financial information	n/a
18.3. Audit of historical annual financial information	
18.3.1. Independent audit of historical annual financial information	Section 6.2
18.3.2. Other audited information	n/a
18.3.3. Sources and reasons for unaudited information	n/a
18.4. <i>Pro forma</i> financial information	n/a
18.5. Dividend policy	
18.5.1. Description of the dividend policy and any applicable restrictions	Section 6.5

Appendices 1 and 2 of the delegated regulation (EC) no. 2019/980 of 14 March 2019.

	URD Sections
18.5.2 Amount of dividend per share	Section 6.5.2
18.6. Administrative, judicial and arbitration proceedings	Sections 2.2.1, 7.1.5 and 6.1 – Appendix to the consolidated financial statements – Notes 5 and 17.3
18.7. Significant change in the financial position	Section 6.6.2
19. Additional information	
19.1. Share capital	
19.1.1. Amount of subscribed capital, number of shares issued and fully paid up and par value per share, number of shares authorised	Section 7.3.1, 7.3.3 and Section 6.1 – Appendix to the consolidated financial statements – Note 14
19.1.2. Information on shares not representing the share capital	Section 7.3.5
19.1.3. Number, book value and par value of the shares held by the issuer	Sections 7.3.1 and 7.3.2
19.1.4. Information on convertible or exchangeable securities or securities with subscription warrants	n/a
19.1.5. Information on conditions governing any right of acquisition and/or obligation attached to authorised but unissued share capital or any endeavour to increase the share capital	Sections 7.2.4, 7.2.5 and 7.3.3
19.1.6. Information about the share capital owned by any member of the Group which is under option or subject to a conditional or unconditional agreement to be put under option and characteristics of such options	Section 7.3.6
19.1.7. History of the Company's share capital	Section 7.3.1
19.2. Incorporation documents and articles of association	
19.2.1. Register and company purpose	Sections 7.1.2 and 7.2.1
19.2.2. Rights, privileges and restrictions attached to each class of shares	Section 7.2.4
19.2.3. Provision delaying, deferring or preventing a change of control	Section 7.2.9
20. Material contracts	Section 7.6
21. Available documents	Section 8.3

8.4.2 Concordance table with the management report

This Universal Registration Document includes the elements of the Board of Directors' management report relating to the 2022 fiscal year as provided for in Articles L. 225-100-1 *et seq.* and Article L. 22-10-35 of the French Commercial Code. The management report is composed of the sections of the Universal Registration Document referred to in the following table:

Topics	Reference texts	URD Sections
1. Situation and activity of the Group		
1.1. Situation of the Company during the past fiscal year and an objective and exhaustive analysis of the development of the business, results and financial situation of the Company and the Group, in particular its debt situation, in relation to the volume and complexity of the business.	L. 225-100-1, par. I., 1°, Article L. 232-1, II., L. 233-6 and L. 233-26 of the French Commercial Code	Chapter 5
1.2. Key indicators of financial performance	L. 225-100-1, par I., 2° of the French Commercial Code	Key figures and Chapter 5
1.3. Key indicators of financial and non-financial performance relevant to the particular business of the Company and the Group, including information relating to environmental and employee-related matters	L. 225-100-1, I., 2° of the French Commercial Code	Chapter 3 and concordance table Section 8.4.4
1.4. Key events arising between the end of the fiscal year and the date the management report was written	L. 232-1-II and Article L. 233-26 of the French Commercial Code	Sections 5.1.2, 5.2 and 5.3
1.5. Identity of the main shareholders and holders of voting rights at General Meetings and changes during the fiscal year	L. 233-13 of the French Commercial Code	Sections 7.3 and 7.2.4
1.6. Existing branches	L. 232-1-II of the French Commercial Code	Section 6.6.4
1.7. Acquisition of significant equity holdings in companies having their registered office on the French territory	L. 233-6 al. 1 of the French Commercial Code	Section 5.1.3 and of the Appendix to the consolidated financial statements
1.8. Disposal of cross-shareholdings	L. 233-29, L. 233-30 and R. 233-19 of the French Commercial Code	n/a
1.9. Foreseeable development and future prospects of the situation of the Company and the Group	L. 232-1-II and Article L. 233-26 of the French Commercial Code	Section 5.4
1.10. Research and development activities	L. 232-1-II and Article L. 233-26 of the French Commercial Code	Section 1.5
1.11. Table showing the Company's results over each of the last five fiscal years	R. 225-102 of the French Commercial Code	Section 6.6.1
1.12. Information concerning supplier and customer payment periods	D. 441-6 of the French Commercial Code	Section 6.6.3
1.13. Amount of intercompany loans granted and statement from the Statutory Auditor	L.511-6, 3bis and R. 511-2-1-3 of the French Monetary and Financial Code	n/a

Topics	Reference texts	URD Sections
2. Internal control and risk management		
2.1. Description of the main risks faced by the Company	L. 225-100-1, I., 3° of the French Commercial Code	Section 2.2
2.2. Information on the financial risks related to the effects of climate change and the measures that the Company is taking to reduce them by implementing a low-carbon strategy in all components of its activity	L. 22-10-35, 1° of the French Commercial Code	Sections 2.2.3 and 3.1
2.3. Main characteristics of the Internal control and risk management procedures implemented by the Company and the Group relating to the preparation and processing of accounting and financial information	L. 22-10-35, 2° of the French Commercial Code	Section 2.1
2.4. Information on the objectives and policy regarding the hedging of each main category of transactions and on the exposure to price, credit, liquidity and treasury risks, including the use of financial instruments	Article L. 225-100-1, 4° of the French Commercial Code	Section 5.1.5
2.5. Anti-corruptions provisions	"Sapin II" Act no. 2016-1691 of 9 December 2016	Section 3.3.2.2.1
2.6. Vigilance plan and reporting on its effective implementation	L. 225-102-4 of the French Commercial Code	Section 3.9
		See concordance table section 8.4.3
3 Report on Corporate governance		
4 Share ownership and capital		
4.1. Structure, changes in the Company's capital and crossing of thresholds	L. 233-13 of the French Commercial Code	Section 7.3
4.2. Acquisition and disposal by the Company of its own shares	L. 225-211 of the French Commercial Code	Section 7.3.2
4.3. Overview of employee share ownership on the last day of the fiscal year (proportion of capital represented)	L. 225-102 al. 1 of the French Commercial Code	Section 7.3.8
4.4. References to potential adjustments for the securities giving access to the share capital in the case of share repurchases or financial operations	R. 228-90 and R. 228-91 of the French Commercial Code	n/a
4.5. Information on operations made on the Company's shares by managers and related persons transactions	L. 621-18-2 of the French Monetary and Financial Code	Section 4.5.2
4.6. Amount of dividend paid out over the past three fiscal years	243 bis of the French General Tax Code	Section 6.5.1
		See concordance table section 8.4.4
5 Statement of non-financial performance		
6 Other information		
6.1. Additional tax information	223 quater and Article 223 quinquies of the French General Tax Code	n/a
6.2. Injunctions or fines as a result of anti-competitive practices	L. 464-2 of the French Commercial Code	n/a

8.4.3 Concordance table with the elements of the EDF Board of Directors' report on corporate governance

This Universal Registration Document includes all the elements of the Company's Board of Directors' report pursuant to Article L. 225-37 of the French Commercial Code. The Board's report on corporate governance is composed of the sections of the Universal Registration Document referred to in the following table and is included in the management report in a section on "Corporate governance":

Corporate Government/Corporate Officers

Section including elements contained in the report on corporate governance

Reference texts URD Sections

Information on the remunerations

3.1. Policy regarding remuneration of corporate officers	L. 22-10-8, I. al. 2 of the French Commercial Code	Section 4.6.1
3.2. Remuneration and benefits of any kind paid during the fiscal year or granted in respect of the fiscal year to each corporate officer	L. 22-10-9, I., 1° of the French Commercial Code	Sections 4.6.1 and 4.6.2
3.3. Share of the fixed remuneration and variable remuneration	L. 22-10-9, I., 2° of the French Commercial Code	Section 4.6.1
3.4. Use of the option of claiming back variable remuneration	L. 22-10-9, I., 3° of the French Commercial Code	Section 4.6.1.1
3.5. Commitments of any kind entered into by the Company for the benefit of its corporate officers, corresponding to items of remuneration, indemnities or benefits due or likely to be due as a result of the assumption, termination or change of their duties or subsequent to the carrying out of such duties	L. 22-10-9, I., 4° of the French Commercial Code	Section 4.6.1.1
3.6. Remuneration paid or granted by a company included in the consolidation scope within the meaning of article L. 233-16 of the French Commercial Code	L. 22-10-9, I., 5° of the French Commercial Code	Section 4.6.2.3
3.7. Ratio between the level of remuneration of each corporate officer and the average and median remuneration of employees	L. 22-10-9, I., 6° of the French Commercial Code	Section 4.6.1
3.8. Annual changes in remuneration, in the Company's performance, in the average remuneration of the Company's employees and in the aforementioned ratios over the five most recent fiscal years	L. 22-10-9, I., 7° of the French Commercial Code	Section 4.6.1
3.9. Explanation of how the total remuneration complies with the adopted remuneration policy, including how it contributes to the long-term performance of the Company and how the performance criteria have been applied	L. 22-10-9, I., 8° of the French Commercial Code	Section 4.6.1
3.10. Manner in which the vote of the last Ordinary General Meeting provided for in paragraph II of Article L. 225-100 (until 31 December 2020) then in paragraph I of Article L. 22-10-34 (from 1 January 2021) of the French Commercial Code was taken into account	L. 22-10-9, I., 9° of the French Commercial Code	Section 4.6.1
3.11. Deviation from the procedure for implementing the remuneration policy and exceptions	L. 22-10-9, I., 10° of the French Commercial Code	n/a
3.12. Application of the provisions of the second paragraph of Article L. 225-45 of the French Commercial Code (suspension of payment of Directors' remuneration in the event of failure to comply with the gender mix of the Board of Directors)	L. 22-10-9, I., 11° of the French Commercial Code	n/a
3.13. Attribution and conservation of stock-options by the corporate officers	L. 225-185 of the French Commercial Code	n/a
3.14. Attribution and conservation of free shares to corporate officers	L. 225-197-1 and Article L. 22-10-59 of the French Commercial Code	Section 4.6.4

Information on governance

3.15. List of all mandates and positions held in all companies by each corporate officer during the fiscal year	L. 225-37-4, 1° of the French Commercial Code	Sections 4.2 and 4.3 Section 7.5 and Notes 12 and 22 of the Appendix to the consolidated financial statements in section 6.1
3.16. Agreements concluded between a manager or a major shareholder and a subsidiary	L. 225-37-4, 2° of the French Commercial Code	
3.17. Summary table of the outstanding delegations given by the Shareholders' Meeting to perform capital increases	L. 225-37-4, 3° of the French Commercial Code	Section 7.3.3
3.18. Method of Executive Management	L. 225-37-4, 4° of the French Commercial Code	Sections 4.2.2 and 4.3.1
3.19. Membership, conditions for the preparation and organisation of the Board of Directors' work	L. 22-10-10, 1° of the French Commercial Code	Section 4.2
3.20. Principle of balanced representation of women and men on the Board of Directors	L. 22-10-10, 2° of the French Commercial Code	Section 3.3.3.1
3.21. Limits placed by the Board on the powers of the Chief Executive Officer	L. 22-10-10, 3° of the French Commercial Code	Sections 4.2.2 and 7.2.9
3.22. Reference to the Corporate Governance Code and implementation of the comply or explain principle	L. 22-10-10, 4° of the French Commercial Code	Section 4.1
3.23. Specific procedures relating to the participation of shareholders in the Shareholders' Meeting	L. 22-10-10, 5° of the French Commercial Code	Section 7.2.8
3.24. Evaluation procedure for current agreements – Implementation	L. 22-10-10, 6° of the French Commercial Code	Section 7.5.3
3.25. Information likely to have an impact in the event of a takeover bid or exchange offer	L. 22-10-11 of the French Commercial Code	Sections 7.2 and 7.3

8.4.4 Concordance table with the statement of non-financial performance

This Universal Registration Document includes the statement of non-financial performance for the 2022 fiscal year prepared in accordance with Articles L. 22-10-36 and R. 225-105 of the French Commercial Code.

Thus, to the extent necessary to understand the Company's position, the evolution of its business, its economic and financial results and the impact of its activity, the Statement of Non Financial Performance (DPEF) presents information on how the Company and the Group take into account the social and environmental consequences of their activities, as well as the effects of these activities on respect for human rights and the fight against corruption and tax evasion.

The DPEF is hence made up of the sections of the Universal Registration Document identified in the table below:

Topics	Reference texts	URD Sections
5.1. Business model	L. 233-13 of the French Commercial Code	Sections 1.1 and 1.4
5.2. Description of the main risks relating to the activity of the Company or the Group, including – if relevant and proportionate – risks due to its business relationships, products or services	L. 225-102-1 and R. 225-105, I. 1° of the French Commercial Code	Chapter 3 and Section 2.2
5.3. Information on how the Company or Group takes into account the social and environmental consequences of its activity, and the effects of this activity in terms of respect for human rights and the fight against corruption (description of the policies applied and due diligence procedures implemented to prevent, identify and mitigate the main risks related to the Company's or Group's activity)	L. 225-102-1, par. III, L. 22-10-36, R. 225-104 and R. 225-105, par. I. 1° of the French Commercial Code	Chapter 3
5.4. Results of the policies applied by the Company or Group, including key performance indicators	L. 225-102-1 and R. 225-105, I. 3° of the French Commercial Code	Chapter 3
5.4. CSR issue topics from the materiality matrix	Key performance indicators	Chapter 3
<i>Group carbon trajectory</i>	Carbon intensity: specific CO ₂ emissions due to electrical generation ✓	Section 3.1.1
<i>Carbon offset solutions</i>	Deployment rate of the scoping guide on carbon offset solutions	Section 3.1.1.6
<i>Adapting to climate change</i>	Rate of deployment of new climate change adaptation plans	Section 3.1.3
<i>Developing electricity use and energy services</i>	Avoided CO ₂ emissions thanks to sales of innovative goods and services	Section 3.1.4
<i>Biodiversity</i>	Achievement rate of Group commitments under the act4nature international initiative	Section 3.2.1
<i>Responsible land management</i>	Rate of implementation of innovative solutions for multi-use of land	Section 3.2.2
<i>Integrated and sustainable water management</i>	Water intensity: water consumed/electricity generated by fleet ✓	Section 3.2.3
<i>Radioactive and conventional waste, and circular economy</i>	Annual rates of conventional waste directed to recovery facilities	Section 3.2.4
<i>Security, health and safety for all</i>	Global LTIR	Section 3.3.1
<i>Ethics, compliance and human rights</i>	Annual rate of feedback to whistleblowers within a maximum of one month, informing them of the admissibility and further processing of their alert	Section 3.3.2
<i>Equality, diversity and inclusion</i>	Gender balance index: percentage of women in the Management Committees of the Group's entities	Section 3.3.3
<i>Energy poverty and social innovation</i>	Annual advisory actions carried out with customers within the framework of the Energy Support scheme	Section 3.3.4
<i>Dialogue and consultation with stakeholders</i>	Annual rate of projects for which a dialogue and consultation process is undertaken	Section 3.4.1
<i>Responsible regional development</i>	Annual rate of procurement from SMEs	Section 3.4.2
<i>Responsible development of industrial sectors</i>	Rate of implementation of support actions carried out by EDF in favour of the relocation and maintenance of skills in the nuclear industry (Programme France Relance)	Section 3.4.3
<i>A data responsible company</i>	Rate of fulfilment of commitments made by EDF to the Institut du Responsable digitalization (INR)	Section 3.4.4
5.5. Social information (employment, work organisation, health and safety, social relations, training, equal treatment)	L. 225-102-1 and R. 225-105, II. A. 1° of the French Commercial Code	Sections 3.3.3, 3.5.3, 3.4.2.1 and 3.3.1.3

	Topics	Reference texts	URD Sections
5.6.	Environmental information (general environmental policy, pollution, circular economy, climate change)	L. 225-102-1 and R. 225-105, II. A. 2° of the French Commercial Code	Sections 3.1.3, 3.2.1 and 3.3.1
5.7.	Societal information (societal commitments in favour of sustainable development, subcontracting and suppliers, fair practices)	L. 225-102-1 and R. 225-105, II. A. 3° of the French Commercial Code	Section 3.4.2
5.8.	Information relating to the fight against corruption and tax evasion	L. 22-10-36 and R. 225-105, II. B. 1° of the French Commercial Code	Section 3.3.2.2
5.9.	Information on human rights actions	L. 22-10-36 and R. 225-105, II. B. 2° of the French Commercial Code	Sections 3.9 and 3.3.2
5.10.	Specific information:		
	<ul style="list-style-type: none"> • Technological accident risk prevention policy implemented by the Company; • Ability of the Company to cover its civil liability with regard to property and persons as a result of the operation of such facilities; • Resources allocated by the Company to ensure the management of compensation for victims in the event of a technological accident for which it is liable 	L. 225-102-2 of the French Commercial Code	Section 2.1.3.7
5.11.	Collective agreements concluded within the Company and their impact on the economic performance of the Company and working conditions of employees	L. 225-102-1, III and R. 225-105 of the French Commercial Code	Section 3.5.3
5.12.	Attestation of the independent third party body on the information contained in the statement of non-financial performance (DPEF)	L. 225-102-1, III and R. 225-105-2 of the French Commercial Code	Section 3.8.4
5.13	Eligibility and alignment of the Group's activities with the European Taxonomy		Section 3.8.3

✓ 2022 value subject to a reasonable assurance audit by Deloitte & Associés.

8.4.5 Concordance table with the annual financial report

This Universal Registration Document includes the annual financial report for the 2022 fiscal year. It has been prepared in application of Articles L. 451-1-2 of the French Monetary and Financial Code and Article 222-3 of the AMF general regulation. The annual financial report is composed of the sections of the Universal Registration Document referred to in the following table:

Topics	URD Sections
1. EDF annual financial statements	Section 6.3
2. EDF group consolidated financial statements	Section 6.1
3. Management report (minimum information within the meaning of Article 222-3 of the general regulations of the AMF (French Financial Markets Authority))	8.4.2
4. Statement by the persons responsible for the annual financial report	8.1.2
5. Statutory Auditors' reports on the EDF's financial statements and the consolidated financial statements	Sections 6.2 and 6.4

Glossary

IAEA	International Atomic Energy Agency based in Vienna (Austria).
ANDRA	National agency for radioactive waste. In France, radioactive waste is managed by the National Agency for Radioactive Waste Management (ANDRA), a public industrial and commercial institution created under the French law of 30 December 1991.
ASN	Nuclear safety authority. For a detailed description of the ASN's remits, please refer to section 1.4.1.1.2.1.
Assembly/Fuel	Nuclear fuel is in the form of an assembly made up of an array of 264 fuel rods, bound together by a rigid structure made of tubes and grids. Each fuel rod consists of a water-tight zirconium tube into which uranium oxide pellets are piled, constituting the fuel. The assemblies are loaded side by side into the reactor vessel – 205 assemblies are required for a 1,500MW reactor – to make up the core of the reactor. During operation, these assemblies are crossed by bottom to top with primary water which heats on contact and carries this energy to the steam generators.
Becquerel (Bq)	International legal unit for measuring radioactivity. The Becquerel (Bq) is equal to one disintegration per second. The activity represented by this unit is so low that multiples of it are used: the MBq (megabecquerel or million Becquerels) and the GBq (gigabecquerel or billion Becquerels).
Biogas	Gas generated from the fermentation of organic animal or plant matter
Biomass	Technologies based on biomass mainly consists of burning certain types of waste, particularly from the timber and farming industries, or exploiting wood fuel forests, to produce heat or electricity.
Cogeneration	Generation technique for combined electricity and heat generation. The advantage of cogeneration is the ability to capture the heat produced by the fuel whereas in traditional electricity generation this heat is lost. This process also allows the same facility to meet the heating (hot water or steam) and electricity needs of both industrial and local authority customers. This system improves the energy efficiency of the generation process and reduces fuel use by an average of 20%.
Metering	A system allowing for the recording, at a given network connection point, of the volumes of electricity transmitted or distributed (power, frequency, active and reactive energy).
Congestion	Situation in which an interconnection linking the national transmission grids cannot absorb all of the physical flows resulting from international exchanges required by market operators due to a shortage of capacity in the interconnection and/or the national transmission grids involved.
CRE	French energy regulatory Commission. See section 1.4.2.1.1.
Combined-Cycle Gas	The most recent technology for generating electricity in a natural gas-fired plant. A combined cycle is made up of one or more combustion turbines and a steam turbine allowing for an improved yield. The syngas is routed to the combustion turbine, which generates electricity and very hot exhaust gases (effluents). The heat from the exhaust gases is recovered by a boiler, thus producing steam. Part of the steam is then recovered by the steam turbine to generate electricity.
Fuel Cycle	The nuclear fuel cycle encompasses all industrial operations in France and abroad which enable the supply of the fuel to generate energy in a reactor, then to unload and process it. See section 1.4.1.1.2.3.
Waste	<p>The nuclear generation of 1MWh of electricity (equivalent to the monthly consumption of two households) produces around 11g of total waste across all categories.</p> <p>Short-lived waste represents more than 90% of the total, but contains only 0.1% of the radioactivity of waste. Accordingly, based on their level of radioactivity, they are separated into two sub-categories: Low-Level waste and Very-Low-Level waste.</p> <p>Long-Lived Medium and High-Level waste are produced in low quantity (less than 10% of the total quantity), but they contain almost all of the radioactivity of the waste (99.9%).</p>
Plant availability	Fraction of power available, out of theoretical maximum energy, counting only technical unavailability. The availability coefficient (Kd) is defined as the ratio between annual actual generation capacity (or amount producible annually) and maximum theoretical generation capacity, where maximum theoretical generation capacity = installed capacity × 8,760 hours. The Kd, which counts only technical non-availability, i.e., scheduled shutdowns, unplanned outages and testing periods, characterises a plant's industrial performance.
Disruption	Voluntary reduction of electrical power by a customer, in exchange for compensation. It is called "diffused" when it is due to the aggregation of small consumption sites.
LDC	French Local Distribution Companies. LDCs sell and deliver electrical energy to end users located in their exclusive service area.
Renewable energies	Energies for which production does not require extinction of the initial resource. They include hydro, wind, solar, marine (the energy produced by marine waves and currents), geothermal (energy derived from the heat below the earth's magma) energies, and bio-mass (energy derived from living matter, particularly wood and organic waste). They often include energy from the incineration of household or industrial waste.
Enrichment	Process to increase the fissile content of an element. In its natural state, uranium is 0.7% uranium 235 (fissile) and 99.3% uranium 238 (non-fissile). To enable its efficient use in a pressurised water reactor, it is enriched with uranium 235 whose proportion is increased to around 4%.
Intermediate Storage	Intermediate stage in the process of managing nuclear waste. It involves placing waste packages in a facility to ensure, for a given period of time, their isolation from contact with man and the environment with the intention of retrieving them for a further stage in the waste management process. Intermediate storage facilities are designed, built and managed by the producers of such waste (EDF, AREVA NC (ex-COGEMA) and CEA) and are close to areas where waste is conditioned.
EPR	European Pressurised water Reactor. The latest generation of reactors currently under construction (known as "generation 3"), it is the result of Franco-German cooperation, and offers advanced safety, environmental and technical performance.
Fluorination (conversion)	Also called "conversion", fluorination allows for the purification of uranium compounds and their transformation into uranium hexafluoride (UF ₆), allowing their enrichment using current techniques.
Electricity supply	<p>Electricity demand can be broken down into four types of consumption:</p> <ul style="list-style-type: none"> • the "basic" (or "ribbon") supply of electricity, which is generated and consumed throughout the year; • "semi-basic" supply is the electricity generated and consumed over the winter period; • "peak" supply corresponds to periods of the year when electricity generation or supply is in heavy demand; • "lance" supply is a complement to "ribbon" supply.

Greenhouse gases (GHG)	Gas that retains a portion of the solar radiation in the atmosphere and for which an increase in emissions due to human activity (man-made emissions) causes an increase in the earth's average temperature and plays an important role in climate change. The Kyoto Protocol covers the seven following principal greenhouse gases: carbon dioxide (CO ₂), methane (CH ₄), nitrogen protoxide (N ₂ O), hydrofluorocarbons (HFC), perfluorated hydrocarbons (PFC), sulfurhexafluoride (SF ₆) and, since 2013, nitrogen trifluoride (NF ₃).
Liquefied Natural Gas (LNG)	Natural gas turned into liquid form by reducing its temperature to -162°C, allowing for a reduction by 600 in its volume.
Man-sievert	Unit expressing the collective equivalent dose. A man-sievert is the collective dose from exposure of 1,000 men to 1mSv (milliesievert).
Hydrogen	The conversion of natural gas into hydrogen generates CO ₂ hence the qualification of "grey" hydrogen. This form of hydrogen is used on a large scale, particularly in the chemical industry to produce ammonia and fertilisers. So-called "blue" hydrogen is obtained when the emitted CO ₂ is captured and then reused or stored. So-called "green" hydrogen is generated from renewable energy sources. The electricity generated by wind turbines or solar panels is transformed with water through an electrolysis process. No greenhouse gases are emitted. Hydrogen can be stored in large quantities and then converted back into electricity.
INB	Basic Nuclear Facilities
Interconnection	Electricity transmission infrastructure that allows for exchanges of energy between different countries, by connecting the transmission network of one country to that of a neighbouring country.
IRSN	<i>Institut de radioprotection et de sûreté nucléaire</i> . IRSN is the public expert in research and assessment of nuclear and radiological risks.
Balancing Mechanism	Created by RTE on 1 April 2003, the balancing mechanism allows it to use power reserves that can be mobilised in the event of an imbalance between supply and demand.
Microgrid	Microgrids are small power grids designed to provide a reliable supply of electricity to a small number of consumers. They combine multiple local and diffuse production facilities, consumption facilities, storage facilities and tools for supervision and demand management. They can be connected directly to a distribution network or operate disconnected from the network (islanding).
MW – MWh	The megawatt-hour (MWh) is the energy unit generated by a facility and is equal to the facilities' power, expressed in megawatts (MW), multiplied by the duration of operations in hours. 1MW = 1,000 kilowatts = 1 million watts 1MWh = 1MW produced for 1 hour = 1 megawatt-hour 1GW = 1,000MW = 1 billion watts 1TW = 1,000GW
MWh cumac	The MWh cumac is the certificate energy unit of counting which corresponds to the cumulative energy savings aggregated on the operations' lifetime.
Series	In the nuclear field, a series of plants means a set of nuclear plants with identical generation capacity. EDF's PWR model is divided into three series of available electrical power: the 900-MW series (34 tranches of approximately 900MW each), the 1,300-MW series (20 tranches) and the 1,450-MW series (4 tranches).
Plutonium (Pu)	Element with the atomic number of 94 (number of protons) and no naturally occurring isotopes (elements whose atoms possess the same number of electrons and protons – thus the same chemical properties – but a different number of neutrons). Plutonium 239, a fissile isotope, is produced in nuclear reactors from uranium 238.
Producible hydropower generation	Maximum energy that hydropower facilities may produce using contributions under normal hydraulicity conditions. However, generation from hydroelectric facilities does vary, sometimes markedly, from one year to the next depending on hydraulicity (rainfall and snowfall). In dry years, the generation index may vary by 20% or more from the standard level.
Radiation protection	At a power plant, ionising radiation sources are numerous: the fuel itself, equipment activated by neutron flux (particularly that which is close to the core, such as tanks or lids) and particles from corrosion of the primary circuit of reactors and carried by the primary fluid. The level of exposure of a person is quantified by the dose equivalent in Sieverts (Sv). The total dose equivalents, called "collective dosimetry" and expressed in man-sieverts, is used as an indicator of dose received by all participating persons. The mobilisation of stakeholders has allowed a continuous improvement of performance on the protection of employees against the effects of ionising radiation.
Distribution network	Downstream of the transmission network, medium- and low-voltage distribution networks serve end-users (residential, local authorities, SMEs, SMLs, etc.).
Transmission network	Network providing for the transmission of electrical power at High and Very High Voltages from the generating sites to the distribution networks or industrial sites directly connected to it; this includes the major interconnection transmission network (400,000 volts and 225,000 volts) and the regional distribution networks (225,000 volts, 150,000 volts, 90,000 volts and 63,000 volts).
Entity Responsible for Balance	Entities with which RTE signs a contract for the financing of shortfalls between forecast and actual consumption and the production of a portfolio of users brought together by the entity responsible for balance which plays a role of insurer covering the potential losses arising from the many differences between over- and under-supply.
Reprocessing	Reactor burnt fuel reprocessing aimed at separating materials that can be recycled (uranium and plutonium) from final waste.
Scopes 1, 2 and 3	Every year, EDF draws up a GHG report (scopes 1, 2 and 3) covering the Group scope calculated according to the principles of the GHG Protocol Corporate Standard: <ul style="list-style-type: none"> ● scope 1 covers the direct emissions generated by EDF's assets: CO₂, CH₄ and N₂O emissions from power and heat generation plants, consumption of fossil fuels for heating, fuel consumption of the fleet of vehicles and machinery, fugitive emissions from hydropower plant reservoirs, fugitive emissions of SF₆ and refrigerating agents; ● scope 2 covers indirect emissions linked to losses in the electricity networks of our electricity distribution companies and those linked to the purchase of energy for our own needs: electricity consumption of tertiary buildings and data centres, consumption of heating and chilled water networks for our own use; ● scope 3, which comprises 15 categories (GHG Protocol), covers other indirect emissions generated by our suppliers (purchases of goods and services, upstream of fuels including nuclear, leased assets, downstream freight of by-products), and by our customers (upstream and combustion of gas purchased for resale to end customers, production of electricity and heat purchased for resale to end customers) or at our facilities (depreciation of emissions linked to the manufacture of fixed assets, emissions from non-consolidated investments, upstream and losses linked to the transport and distribution of electricity, upstream and losses of electricity, heat and cold consumption for own use, waste management, travels of employees, etc.).

Systems services	Systems services are services provided to users (consumers or electricity producers) through the joint action of the electricity transmission network operator RTE and the producers. They are intended to regulate frequency and voltage in order to maintain the balance between electric consumption and generation at all times. They are created by RTE from elementary contributions from producers, <i>i.e.</i> primary and secondary reserves provided to RTE. RTE remunerates the producers for these auxiliary services before re-invoicing these services <i>via</i> the tariff to use the network under the rules defined by the Union for the Coordination of Transmission of Electricity (UCTE).
Smart city	The smart city is a new urban development concept aiming at improving the quality of life of city dwellers by making the city more adaptive and efficient, using new technologies based on an object and service ecosystem. The scope of this new way of managing cities includes: public infrastructure (buildings, street furniture, home automation, etc.), networks (water, electricity, gas, telecoms); transport (public transport, intelligent roads and cars, carpooling, so-called soft mobility – by bike, on foot, etc.); e-services and e-administrations.
Smart charging	Smart charging is an umbrella term for all technologies aimed at optimising the charging or discharging of an electric vehicle through efficient, flexible and economical management of the vehicle's recharging power.
SMR	SMRs (Small Modular Reactors), <i>petits réacteurs modulaires</i> in French, are small-scale power plants with one or more reactors with a unit power of less than 300MWe. This small power allows for the reduction of certain systems, standardisation of design and thus a reduction in the duration of construction sites in order to improve their competitiveness.
STEP	Pumped-storage hydropower plant. Power plant with two tanks, an upper and a lower one, connected by pumps that allow the water to be pumped up once turbinised and located in the lower tank, towards the upper tank.
Storage	Storage consists in placing packages of radioactive waste in a facility, ensuring their long-term management, <i>i.e.</i> , under safe conditions allowing for long-term risk control.
Nuclear safety	Nuclear safety includes all of the technical, organisational and human measures which are intended to prevent accident risks and to limit the effects of an accident, and which are taken at every stage of the nuclear power plant lifecycle (from design to operation and finally to decommissioning).
European Green Taxonomy	Commission delegated regulation (EU) 2021/2139 of 4 June 2021 supplementing regulation (EU) 2020/852 of the European Parliament and of the Council with the technical review criteria for determining under which conditions an economic activity can be considered to contribute substantially to climate change mitigation or adaptation and whether that economic activity does not cause significant harm to any of the other environmental objectives.
Therms (th)	One therm (th) is equivalent to 1,163kWh or 4,186 million joules.
Nuclear unit	Electrical generation unit consisting of a nuclear boiler and a turbo-alternator generator. A nuclear unit essentially consists of its reactor type and the power of its turbo-alternator generator. EDF nuclear plants include two or four units, and occasionally six.
Uranium	In its natural state, uranium is a mix containing three main isotopes (elements whose atoms have the same number of electrons and protons, thus the same chemical properties, but a different number of neutrons): <ul style="list-style-type: none"> ● uranium 238, 99.3% fertile; ● uranium 235, 0.7% fissile; ● uranium 234. Uranium 235 is the only natural fissile isotope, a quality which justifies its use as an energy source.
Enriched uranium	Uranium, whose isotope 235 content, the only fissile material, has been increased from its low natural level (0.7%) to approximately 4% in order to be used as pressurised water reactor fuel.
ERU (enriched reprocessed uranium)	To be used in a reactor, reprocessed uranium (RepU), even if containing more fissile uranium than in its natural state, must be further enriched. It is therefore called enriched reprocessed uranium (ERU).
RepU (reprocessed uranium)	Reprocessed uranium ("RepU"), uranium derived from spent fuel reprocessing, differs from natural uranium as it contains slightly more uranium 235 and other uranium isotopes. It is recyclable and RepU fuel assembly refuelling is ordinarily used in reactors.
Vitrification	Process of immobilisation in a glass structure of concentrated solutions of high-level radioactive waste by mixing at high temperature with glass paste.
Non-interconnected zones	Zones in France which are not connected (by power lines) to metropolitan France (Corsica and overseas departments).



ADDITIONAL INFORMATION

Glossary

In this Universal Registration Document (the "Universal Registration Document" or "URD"), unless otherwise stated, the terms "Company" and "EDF" refer to Électricité de France SA, and the terms "EDF group" and "Group" refer to EDF and its subsidiaries and affiliates. In addition to the information contained in this Universal Registration Document, investors should carefully consider the risk factors described in chapter 2 "Risk factors and control framework". These risks, or one of these risks, could negatively impact the Group's business, position, financial results or outlook. Furthermore, other risks not yet identified or considered as material by the Group, could also have a negative impact, and investors could consequently lose all or part of their investment in the Company.

This Universal Registration Document also contains information relating to the markets in which the EDF group operates. This information has been taken from surveys carried out by external sources. Given the rapid changes affecting the energy sector in France and throughout the world, it is possible that this information could prove to be erroneous or no longer up-to-date on the filing date of this Document or thereafter. The Group's activities may therefore evolve in a manner different to that described in this Document, and the statements or information presented in this document may prove to be erroneous. Forward-looking statements in this Document, specifically in section 1.3 "Group strategy and objectives" and section 5.1.5 "Outlook", are based on assumptions and estimates that could change or be impacted by risks, uncertainties (linked, in particular, to the economic, financial, competitive, regulatory and climatic environment) and other factors that may cause the future income, performance and achievements of the Group to differ significantly from the objectives expressed and suggested. These factors may include changes in the economic and commercial environment, in the regulations, and in the factors set forth in chapter 2 "Risk factors and control framework".

Pursuant to French and European legislation, RTE and Enedis, which are regulated subsidiaries that are managed in accordance with the management independence rules defined by the French Energy Code, and are respectively responsible for the transmission and distribution of electricity within the EDF group, are not allowed to disclose certain information they gather while conducting their activities to other Group entities, including its Management. Similarly, certain data specific to generation and supply activities cannot be disclosed to the entities responsible for transmission and distribution. This Universal Registration Document has been prepared by the EDF group in compliance with these rules. For the sake of brevity, further references to RTE and Enedis in this Universal Registration Document will not always specify that they are independent subsidiaries within the meaning of the French Energy Code. A glossary of the main technical terms is provided at the end of this Universal Registration Document.

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