



French société anonyme

With a share capital of 1,943,859,339.5 euros

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# **EDF Group**

## **2022 MANAGEMENT REPORT**

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# 1 SIGNIFICANT EVENTS AND KEY FIGURES

## 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**
  - ◊ Closing of the French State tender offer on 3 February 2023 <sup>(1)</sup>: 95.82% of shares, 96.53% of voting rights, and 99.96% of OCEANE bonds now held
  - ◊ 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 currently operational (versus 30 reactors as of 1 November 2022)
  - ◊ Stress corrosion:
    - Identification of the 16 most sensitive reactors (four N4-series 1450MW reactors and twelve P'4-series 1300MW reactors), 10 of which have been or are currently being treated. Systematic and preventive replacement of pipes by end-2023 at six P'4-series 1300MW reactors that have not yet been treated and of Cattenom 1.
    - All reactors will be inspected by 2025 during already-scheduled outages
    - Development of new procedures for more effective non-destructive inspections
  - ◊ Flamanville 3: adjusted schedule, with a new nuclear fuel loading target for Q1 2024, and completion cost estimated at €13.2bn <sup>(2)</sup>
  - ◊ 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 £25-26bn<sub>2015</sub> <sup>(3)</sup>. 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 <sup>(4)</sup>, with an investment of close to £700M. The project is eligible for the Regulated Asset Base (RAB) funding model <sup>(5)</sup>
  - ◊ Excell plan: perpetuation of actions taken to reach the highest industrial standards
  - ◊ 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 <sup>(6)</sup>
  - ◊ ARENH:
    - Decree for an additional 20TWH allocation of ARENH volumes in 2022 published on 12 March 2022 <sup>(7)</sup>
    - 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'Etat* rejected EDF's appeal concerning the cancellation of the allocation of 20TWh of electricity additional ARENH for 2022 <sup>(8)</sup>
  - ◊ Signature of an exclusive agreement with GE to acquire part of GE Steam Power's nuclear activities <sup>(9)</sup> 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 <sup>(10)</sup> includes nuclear projects, in line with the Taxonomy

(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: €<sub>2015</sub>12.7bn 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

## • 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 <sup>(1)</sup> compatible with French State aid

## • Customers

- ◇ 3% growth in the customer portfolio <sup>(2)</sup>
- ◇ 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 <sup>(3)</sup>
- ◇ 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 <sup>(4)</sup> 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

## • 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 <sup>(5)</sup>

## • Environmental, social and governance commitments

- ◇ Downstream avoided emissions: new target at 30Mt CO2 in 2030 <sup>(6)</sup>. End-2022 level: 11.4Mt CO<sub>2</sub>
- ◇ 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 <sup>(7)</sup>
- ◇ Issue of a €1.25bn green bond to fund investments in electricity distribution, bringing total green bond issues to c. €10bn

## • 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) Important Project of Common European Interest.*

*(2) In millions of customers, counted by point of delivery. One customer may have two points of delivery. For France (DCO, ÉS 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.*

*(3) On volumes sold for delivery in 2023*

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

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

*(6) 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 SA and Dalkia*

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

- **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 Sowe and Mobilize <sup>(1)</sup> 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** 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 potentially 8 more
  - Continuing operation for all reactors, except for safety issues
  - Development of the French SMR programs, including €500 million for NUWARD™
- ◇ 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

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(1) A Renault application

## 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
Operating profit before depreciation and amortisation (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 <sup>(1)</sup>	(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 <sup>(2)</sup>	(24,603)	(1,525)	(23,078)	n.a	n.a
Net indebtedness <sup>(3)</sup>	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 the section on "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 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 4).*

## 2 ECONOMIC ENVIRONMENT

### 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.

#### Spot electricity prices in Europe <sup>(1)</sup>

	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 CO<sub>2</sub> 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 CO<sub>2</sub>, 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.

## Forward electricity prices in Europe <sup>(1)</sup>

	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 CO<sub>2</sub>).

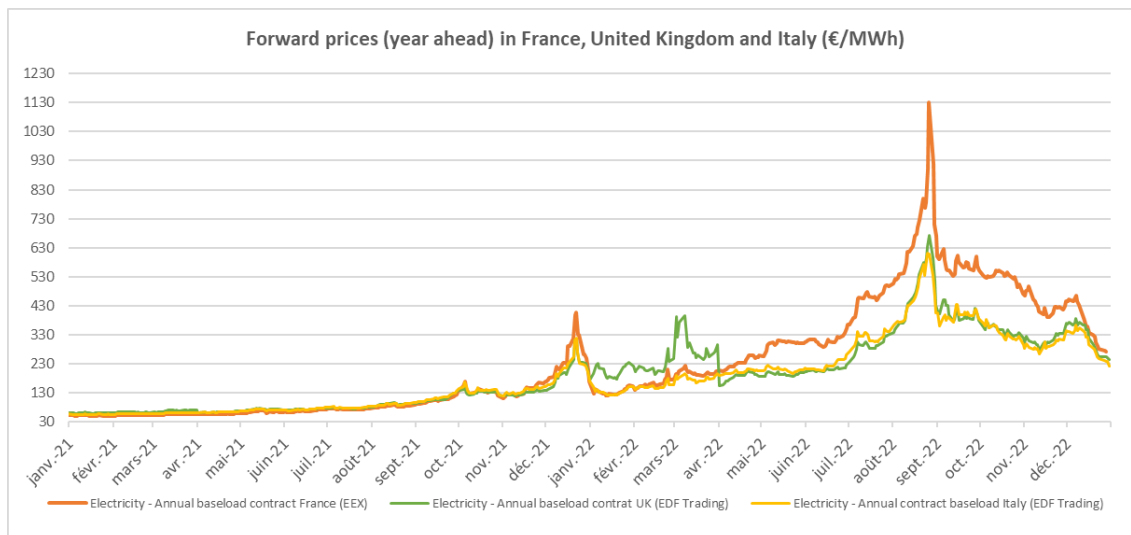
In **France**, the average annual contract baseload price for next-year delivery was €368.5/MWh in 2022, up by 285.9% from 2021. This increase reflects the rise in commodity prices and market expectations of a particularly tense domestic supply/demand balance due to forecasts of low nuclear availability. 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. CO<sub>2</sub> 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).



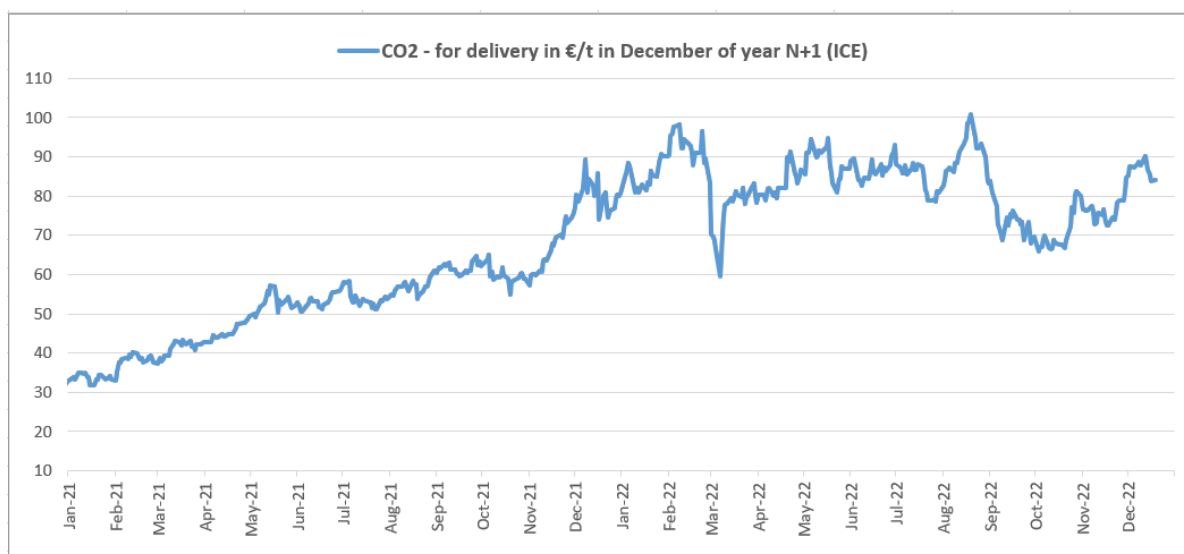
## CO<sub>2</sub> emission quota prices

The price of CO<sub>2</sub> 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 CO<sub>2</sub> 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).

### → CO<sub>2</sub> emission quota prices in €/t for next-year deliveries in December (ICE) <sup>(1)</sup>



## Fossil fuel prices <sup>(2)</sup>

	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).

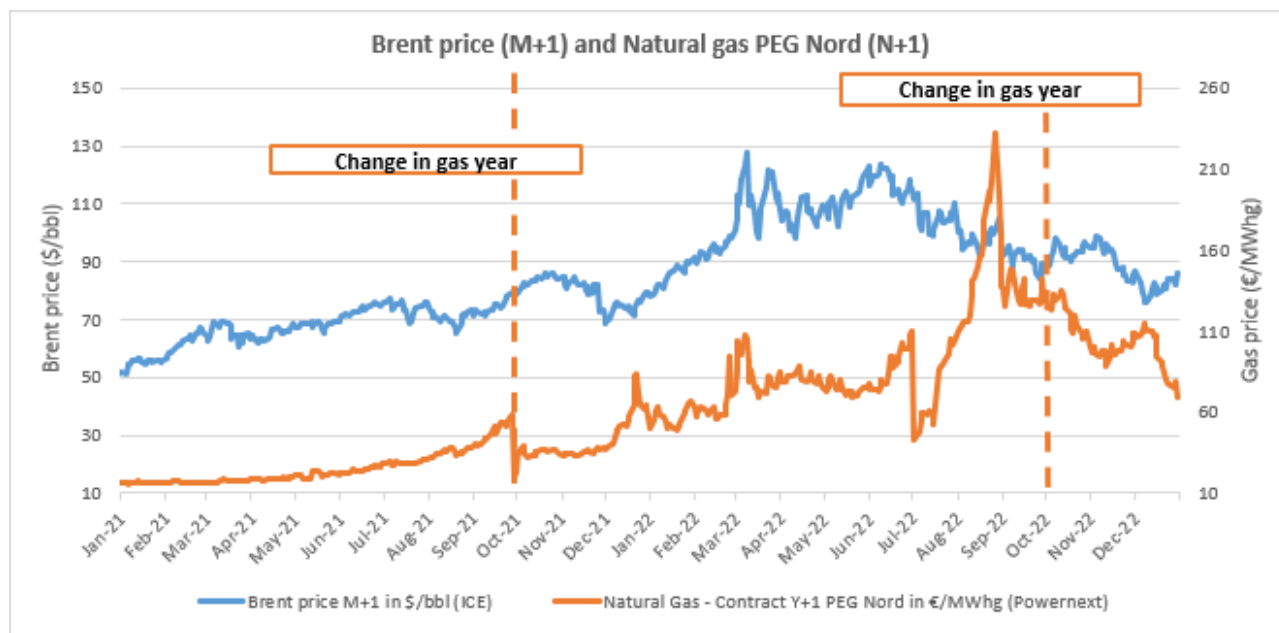
**Oil prices** stood at an average \$99.1/bbl for 2022 (+39.7% or +\$28.2/bbl compared to 2021). The market was under strain, and prices were sustained by shrinking supply and geopolitical tensions.

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/MWhg 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



## 2.2 Consumption of electricity and natural gas

### 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.

### 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.

## Consumption of electricity and gas in Italy

**Electricity consumption** in Italy <sup>(1)</sup> 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.

### 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.

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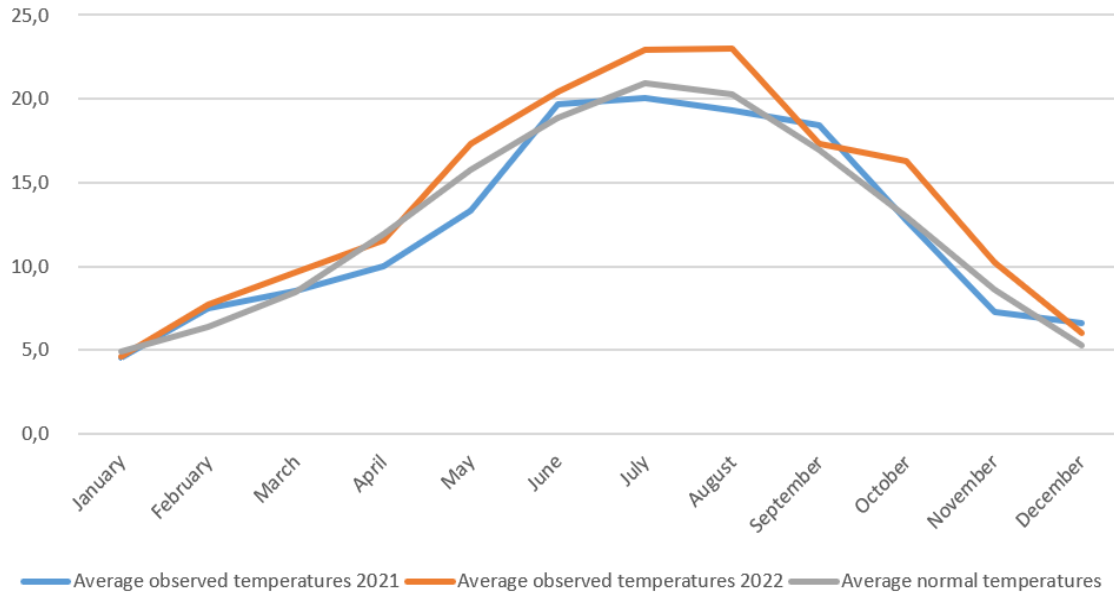
(1) Source of data for Italy: unadjusted data and data provided by Terna, the Italian national grid operator, and adjusted by Edison.

## 2.4 Weather conditions: temperatures and rainfall

### Temperatures in France

With an average temperature of 14°C, 2022 was France's warmest year since 1980 <sup>(1)</sup>. 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 <sup>(1)</sup> <sup>(2)</sup> 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

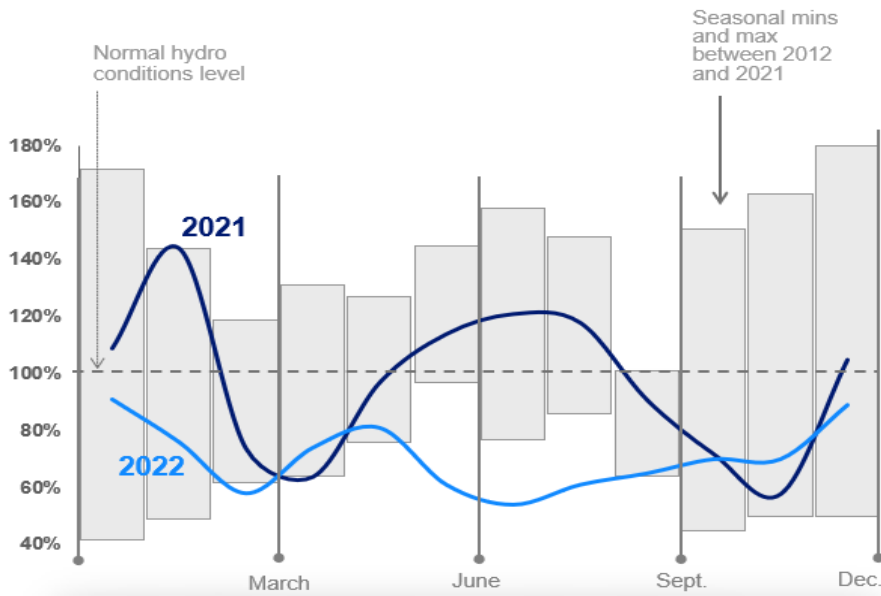
## Rainfall in France

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

### 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>	<b>2022</b>	<b>2021</b>
<b>Sales</b>	<b>143,476</b>	<b>84,461</b>
Fuel and energy purchases	(121,010)	(44,299)
Other external purchases <sup>(1)</sup>	(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
<b>Operating profit before depreciation and amortisation (EBITDA)</b>	<b>(4,986)</b>	<b>18,005</b>
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)
<b>Operating profit (EBIT)</b>	<b>(19,363)</b>	<b>5,225</b>
Cost of gross financial indebtedness	(1,730)	(1,459)
Discount effect	174	(2,670)
Other financial income and expenses	(1,997)	4,489
<b>Financial result</b>	<b>(3,553)</b>	<b>360</b>
<b>Income before taxes of consolidated companies</b>	<b>(22,916)</b>	<b>5,585</b>
Income taxes	3,926	(1,400)
Share in net income of associates and joint ventures	759	644
Net income of discontinued operations	6	(1)
<b>CONSOLIDATED NET INCOME</b>	<b>(18,225)</b>	<b>4,828</b>
<b>EDF net income</b>	<b>(17,940)</b>	<b>5,113</b>
<i>EDF net income - continuing operations</i>	<b>(17,946)</b>	5,114
<i>EDF net income - discontinued operations</i>	6	(1)
<b>Net income attributable to non-controlling interests</b>	<b>(285)</b>	<b>(285)</b>
<i>Net income attributable to non-controlling interests - continuing operations</i>	(285)	(285)
<i>Net income attributable to non-controlling interests - discontinued operations</i>	-	-

(1) Other external expenses are reported net of capitalised production.

#### 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%.

#### Change in Group sales and breakdown by segment

<i>(in millions of euros)</i>	<b>2022</b>	<b>2021</b>	<b>Variation</b>	<b>Variation (%)</b>	<b>Organic variation (%)</b>
<b>Sales</b>	<b>143,476</b>	<b>84,461</b>	<b>59,015</b>	<b>69.9</b>	<b>69.4</b>

The following table shows sales by segment, excluding inter-segment eliminations.

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)	Organic Variation (%)
France - Generation and supply <sup>(1)</sup>	48,686	33,182	15,504	46.7	46.7
France - Regulated activities <sup>(2)</sup>	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
<b>GROUP SALES</b>	<b>143,476</b>	<b>84,461</b>	<b>59,015</b>	<b>69.9</b>	<b>69.4</b>

(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.

n.a: not applicable

## 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 <sup>(1)</sup>, down by 9.4TWh, mainly due to very poor hydrological conditions in 2022 (see section 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.

(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).

## 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 SEI-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 <sup>(1)</sup> 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).

## 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.

## 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.

## 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.

## 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.

## 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.

## 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** <sup>(2)</sup>, 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).

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(1) Enedis is an independent EDF subsidiary as defined in the French Energy Code.

(2) Belgium comprises Luminus and EDF Belgium.



## 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.

## 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.

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)	Organic variation (%)
<b>Sales</b>	<b>143,476</b>	<b>84,461</b>	<b>59,015</b>	<b>69.9</b>	<b>69.4</b>
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
<b>EBITDA</b>	<b>(4,986)</b>	<b>18,005</b>	<b>(22,991)</b>	<b>n.a</b>	<b>n.a</b>

### 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.
  - **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 Renouvelables** registered an organic decrease of €129 million (-35.8%) in other operating income and expenses, mainly reflecting the lower impact of disposal operations.

## 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
<b>GROUP EBITDA</b>	<b>(4,986)</b>	<b>18,005</b>	<b>(22,991)</b>	<b>n.a</b>	<b>n.a</b>

n.a.: not applicable

### 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 <sup>(1)</sup>, 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 <sup>(2)</sup>. Before these measures, EBITDA benefited from market price rises passed on to customers for an estimated amount of €8,679 million <sup>(3)</sup>.

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.

(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.

## 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 <sup>(1)</sup>. Changes in the TURPE tariffs also had a favourable effect, estimated at €0.5 billion <sup>(2)</sup>.

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).

## 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.

## 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.

## 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.

## 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.

## 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 *Infrastruttura 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.

## Other international

EBITDA was down in **Belgium** <sup>(3)</sup>, 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.

## 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.

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(1) 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.

(2) Indexed adjustments to the TURPE 6 distribution tariff: + 0.91% at 1 August 2021 and +2.26% at 1 August 2022.

(3) Luminus and EDF Belgium.

### 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.

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)
<b>EBITDA</b>	<b>(4,986)</b>	<b>18,005</b>	<b>(22,991)</b>	<b>- 127.7</b>
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
<b>EBIT</b>	<b>(19,363)</b>	<b>5,225</b>	<b>(24,588)</b>	<b>n.a</b>

\* Including net increases to provisions for replacement of concession assets.

#### **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.

#### **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.

#### **(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.

#### **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).

### 3.4 Financial result

<i>(in millions of euros)</i>	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
<b>FINANCIAL RESULT</b>	<b>(3,553)</b>	<b>360</b>	<b>(3,913)</b>	<b>n.a</b>

*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 7);
- 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.

### 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.

### 3.6 Net income excluding non-recurring items

The Group's net income excluding non-recurring items <sup>(1)</sup> 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").

### 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.*

## 4 NET INDEBTEDNESS, CASH FLOWS AND INVESTMENTS

<i>(in millions of euros)</i>	2022	2021	Variation	Variation (%)
<b>EBITDA</b>	<b>(4,986)</b>	<b>18,005</b>	<b>(22,991)</b>	<b>- 127.7</b>
Cancellation of non-monetary items included in EBITDA	(7,825)	(869)	(6,956)	n.a
<b>Cash EBITDA</b>	<b>(12,811)</b>	<b>17,136</b>	<b>(29,947)</b>	<b>n.a</b>
Change in working capital	8,301	(1,526)	9,827	n.a
Net investments <sup>(1)</sup> (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
<b>Operating cash flow <sup>(2)</sup></b>	<b>(21,535)</b>	<b>(213)</b>	<b>(21,322)</b>	<b>n.a</b>
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
<b>Group cash flow <sup>(3)</sup></b>	<b>(24,603)</b>	<b>(1,525)</b>	<b>(23,078)</b>	<b>n.a</b>
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
<b>(Increase)/decrease in net indebtedness, excluding the impact of changes in exchange rate</b>	<b>(22,105)</b>	<b>(1,333)</b>	<b>(20,772)</b>	<b>n.a</b>
Effect of change in exchange rates	85	(515)	600	n.a
Effect of other non-monetary changes	508	1,150	(642)	- 55.8
<b>(Increase)/decrease in net indebtedness of continuing operations</b>	<b>(21,512)</b>	<b>(698)</b>	<b>(20,814)</b>	<b>n.a</b>
<b>Net indebtedness at beginning of year</b>	<b>42,988</b>	<b>42,290</b>	<b>698</b>	<b>1.7</b>
<b>NET INDEBTEDNESS AT END OF YEAR</b>	<b>64,500</b>	<b>42,988</b>	<b>21,512</b>	<b>50.0</b>

(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.

n.a.: not applicable

## 4.1 Net Financial Debt

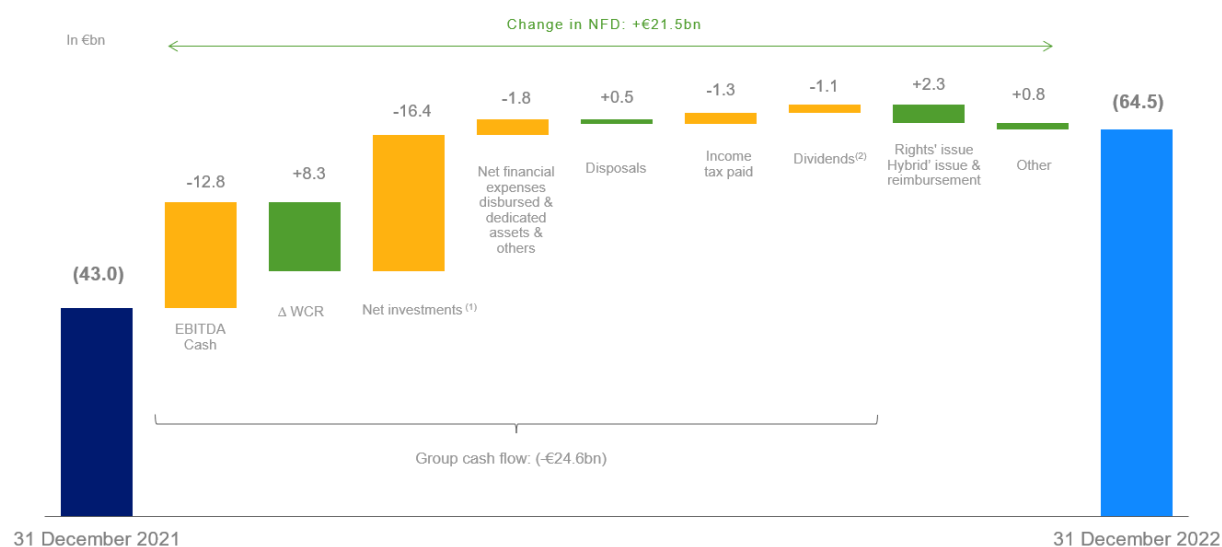
Net financial debt comprises total loans and financial liabilities, less cash and cash equivalents and liquid assets. Liquid assets are financial assets consisting of funds or securities with initial maturity of over three months that are readily convertible into cash and are managed according to a liquidity-oriented 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
<b>NET FINANCIAL DEBT <sup>(1)</sup></b>	<b>64,500</b>	<b>42,988</b>	<b>21,512</b>	<b>50.0</b>

(1) 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.

## 4.2 Operating cash flow

The operating cash flow <sup>(1)</sup> was -€21,535 million in 2022, down by €21,322 million compared to 2021.

### 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.

### 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.

### Net investments

Net investments (excluding disposals and including HPC and Linky) amounted to €16,395 million in 2022, up by €670 million from 2021.

<i>(in millions of euros)</i>	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
<b>NET INVESTMENTS</b>	<b>16,395</b>	<b>15,725</b>	<b>670</b>	<b>4</b>

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.

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.

*(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.*



## 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).

### Asset disposals

Asset disposals totalled €535 million in 2022. They essentially concerned the sale of the EDF Energy Services business in the United States.

### 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 7.1).

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;
- 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.

### Dividends paid in cash

In 2022 EDF paid out €1,085 million comprising:

- the 2021 dividend (€72 million) paid by EDF SA <sup>(1)</sup>
- 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)

## 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 <sup>(2)</sup>.

## 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).

# 5 SUBSEQUENT EVENTS

Subsequent events are described in note 23 to the 2022 consolidated financial statements.

# 6 FINANCIAL OUTLOOK

## 2023 Objectives <sup>(3)</sup>

- Net financial debt / EBITDA: ≤ 3x
- Adjusted economic net debt / Adjusted EBITDA <sup>(4)</sup>: ≤ 4.5x

(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) Based on constant S&P methodology

## 7 MANAGEMENT AND CONTROL OF MARKET RISKS

See section 2.2.2. "Management of financial and market risks" of the 2022 Universal Registered Document.

### 7.1 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 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 SA'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 SA's trading room.

Regular internal audits are carried out to ensure controls are actually applied and are effective.

#### *Liquidity position and management of liquidity risk*

##### 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.

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.

##### 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 SA 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 SA 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 SA 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).

## 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 SA 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.*

## 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%
<b>TOTAL DEBT</b>	<b>96,053</b>	<b>0</b>	<b>96,053</b>	<b>100%</b>

\* 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
<b>TOTAL DEBT</b>	<b>96,053</b>	<b>1,999</b>	<b>98,052</b>

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

(in millions of currency units)	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
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 SA'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.

## 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 (in millions of euros)	Initial debt structure	Impact of hedging instruments	Debt structure after hedging	Impact on income of a 1% variation in interest rates
Fixed rate	69,748	(13,784)	55,964	-
Floating rate	26,305	13,784	40,089	401
<b>TOTAL</b>	<b>96,053</b>	<b>0</b>	<b>96,053</b>	<b>401</b>

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 (in millions of euros)	Value	Impact on income of a 1% variation of interest rates	Value after a 1% variation in interest rates
<b>FLOATING-RATE INSTRUMENTS</b>	<b>37</b>	<b>-</b>	<b>37</b>

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.

## 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 SA's dedicated assets".

### Coverage of employee benefit obligations for EDF SA 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 SA'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.

## Management of financial risk on EDF SA'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 <sup>(1)</sup> 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 are described in note 15.1.2 to the 2022 consolidated financial statements, and details of their realisable value and book value are also presented in note 15.1.2.

## 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%
<b>TOTAL DEDICATED ASSETS</b>	<b>100%</b>	<b>33,904</b>	<b>-8.5%</b>	<b>100%</b>	<b>37,454</b>	<b>11.9%</b>

### 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.

(1) An internal committee and permanent body for evaluation, consultation and operational decision-making for dedicated asset management.



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.

### 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.

## 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.

## 7.2 Management and control of energy market risks

### 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.

### 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 <sup>(1)</sup> 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.

### 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 <sup>(2)</sup>. 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.

<sup>(1)</sup> 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.

<sup>(2)</sup> 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.



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.

## **8 TRANSACTIONS WITH RELATED PARTIES**

The types of transaction undertaken with related parties are detailed in note 22 to the 2022 consolidated financial statements, "Related parties".

## **9 SCOPE OF CONSOLIDATION**

A list of all consolidated companies at 31 December 2022 is presented in note 3 to the 2022 consolidated financial statements; "Scope of consolidation".