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# **EDF PRESENTATION**May 2023

A global leader in electricity generation and energy transition



## **EDF GROUP 2022 KEY FIGURES**

#### **Operational figures as of end 2022**

- 40.3 million customer sites
- > 116.9GW installed capacity<sup>(1)</sup>



- 58% Nuclear18% Hydropower9% Other EnR
- **10%** Gas
- 2% Coal
- 3% Fuel Oil
- > 431.7TWh electricity output<sup>(2)</sup>



- 76% Nuclear8% Hydropower<sup>(3)</sup>
- 6% Other EnR
- 9% Gas
- **0.4%** Coal
- 1% Fuel Oil

> 171,490 employees

o/w.  $\sim$ 64,000 at EDF SA,  $\sim$  39,000 at Enedis,  $\sim$ 17,000 at Framatome,  $\sim$  20,000 at Dalkia,  $\sim$  11,000 at EDF Energy,  $\sim$ 6,000 at Edison &  $\sim$ 5,000 at EDF Renewables

#### **2022 Financials**

- Sales: €143.5bn
- EBITDA: -€5bn
- Net income excluding non-recurring items<sup>(4)</sup>: -€12.7bn
- Net investments<sup>(5)</sup>: €16.4bn
- Net financial debt : €64.5bn
  Green bonds issued on 2013-2022: €10bn
- Ratings<sup>(6)</sup>: BBB stable (S&P) / Baa1 negative (Moody's) / BBB+ stable (Fitch)

# EDF, the world leader in low-carbon electricity generation

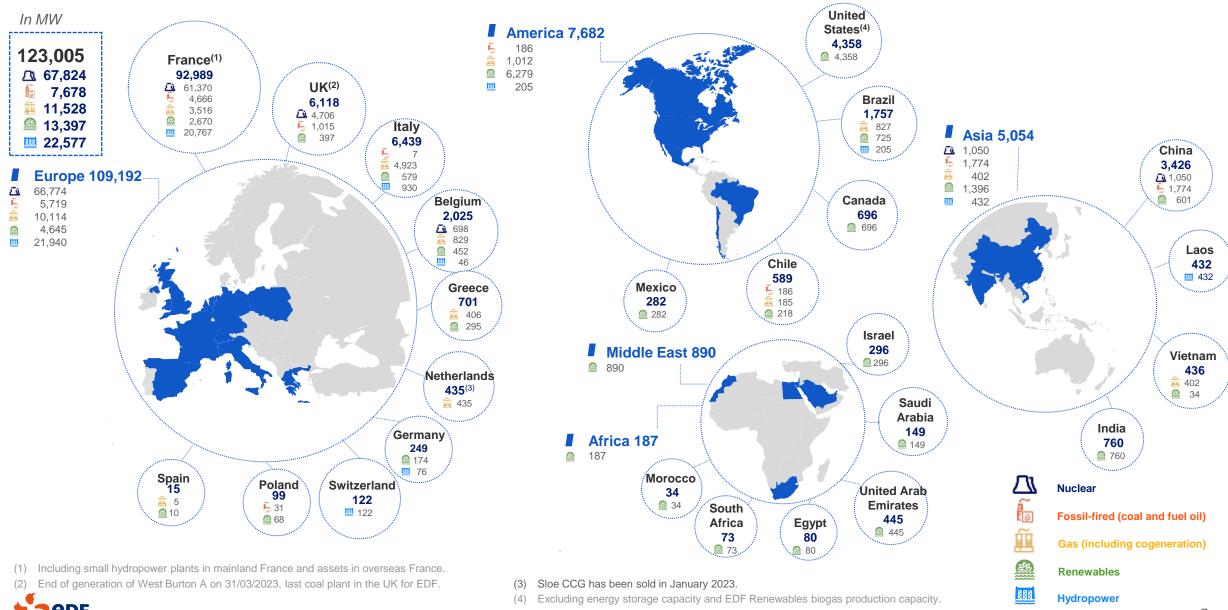
- Carbon intensity: 50gCO<sub>2</sub>/kWh
- 90% decarbonised generation<sup>(7)</sup>
- 1st producer worldwide of zero direct CO<sub>2</sub> emission electricity in 2021 (476TWh)<sup>(8)</sup>
- > 4gCO2eq/kWh: carbon footprint of nuclear life-cycle in France

- (1) Consolidated capacities of EDF Group.
- (2) Output from fully consolidated entities.
- (3) Hydro output including pumping.
- (4) Net income excluding non-recurring items is not defined by IFRS
- standards, also see note 19.1 of the consolidated financial statements.
- (5) Total net investments including acquisitions, excluding disposal plan.
- (6) Sources: rating agencies as of 03/04/2023.

- (7) Direct carbon emissions related to generation, excluding life cycle assessment of generation means and fuels.
- (8) Enerdata Power Plant Tracker (latest publication).

## **EDF GROUP'S NET INSTALLED CAPACITY\* BY COUNTRY AT END-2022**

\* Net capacity according to EDF's percentage ownership in Group companies, including associates and joint ventures.





#### CAP 2030 THREE STRATEGIC KEY PILLARS FOR 2030

The Raison d'être of EDF: To build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development

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

As a key player in the decarbonisation of society, EDF creates value for its customers through the energy and innovative solutions it provides

> **30mtCO**<sub>2</sub> avoided emissions<sup>(1)</sup>

€10bn revenues in services(2)

> 1.5 contract/customer<sup>(3)</sup>

A global leader in the generation of CO<sub>2</sub>-neutral electricity

EDF builds and operates electricity generation facilities that decarbonise the electricity mix and invests in innovative and competitive technologies



**50%** CO<sub>2eq</sub> direct emissions vs 2017

**60GW net** renewables incl. hydraulic

**Grand Carénage** completion

**5 EPR** in operation<sup>(4)</sup>

Initiating new EPRs & 1 SMR

An international key player in the energy transition

EDF is deploying its expertise as a low-carbon energy company in new areas of growth and innovation, far from its historical borders



(3) Scope of 4 priority countries in Europe called "G4" (France, Italy, the UK and Belgium) (residential).

**Zero** coal

**Tripling** activity vs 2015<sup>(5)</sup>

1.5 – 2GW net hydro installed capacity<sup>(5)</sup>

**1** million off-grid kits

- (1) Calculation of emissions avoided by products/services for renewable development in heating networks; energy efficiency; photovoltaic generation (excluding EDF facilities feeding their generation into the grid); electric mobility; residential heating pumps sold by EDF SA, Dalkia, Luminus, EDF in the UK, and Edison.
- (4) Flamanville 3, Hinkley Point C and Taishan.
- (5) Excluding "G4" (France, Italy, the UK, and Belgium).



## A COMMITMENT TO LOW-CARBON GROWTH



## First producer worldwide of zero direct CO<sub>2</sub> emission electricity in 2021 (476TWh)<sup>(1)</sup>

90% decarbonised generation<sup>(2)</sup> thanks to nuclear 76% & renewables 14%

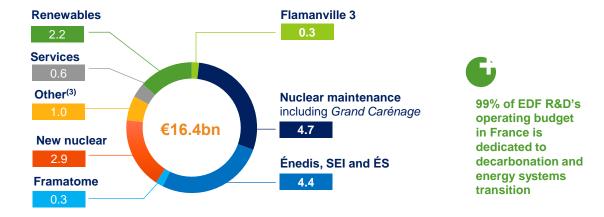
Group **capacity** mainly with **low-carbon technologies** (no direct emissions of CO<sub>2</sub>, such as nuclear 58% & renewables 27%)

#### Renewable energy leader in Europe

Installed renewable capacity worldwide of **36GW** net at end-2022 with a target of **60GW net** in **2030** 

# **94%** of the Group's **investments** are made in accordance with its **carbon neutrality target**

Net investments – end-2022 (excluding disposal plan – in €bn)



#### Nuclear & renewable pipeline of projects

 Nuclear projects: 6 EPR2 to be developed in France and 3 EPR under construction:

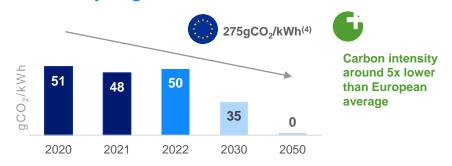




A large Group portfolio of renewable projects – end-2022



#### Carbon neutrality target in 2050

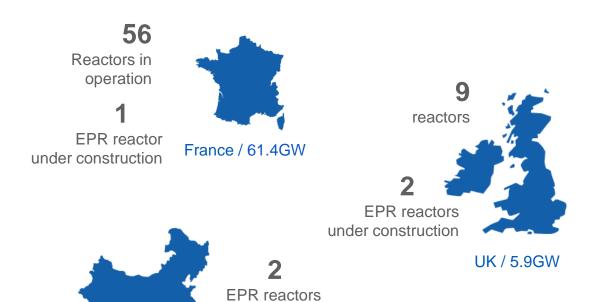


- (1) Enerdata Power Plant Tracker (latest publication).
- (2) Direct carbon emissions related to generation, excluding life cycle assessment of generation means & fuels

- (3) Mainly thermal maintenance, gas, property, central functions.
- (4) 2021 value, EU-27 carbon intensity average of power producers in Europe according to the European Environment Agency (EEA).

# EDF: UNIQUE & GLOBAL EXPERTISE AND KNOW-HOW IN THE NUCLEAR INDUSTRY

#### EDF, THE WORLD'S LEADING NUCLEAR OPERATOR(1)



(1) IAEA (International Atomic Energy Agency), Nuclear power reactors in the world, 2022 edition.

in operation

(EDF engineering.

TNPJVC operator)

(2) Technology partnership.

China / Taishan

# EDF MANAGES THE ENTIRE LIFECYCLE OF NUCLEAR GENERATION FACILITIES: DESIGN, OPERATION AND DECOMMISSIONING

- Development of an optimised version of the EPR (EPR 2), which could, in the long term, expand the French nuclear fleet's offer in France and for export. Pooling of EDF and Framatome engineering teams in a joint subsidiary Edvance for new projects in France and abroad
- Development of a type of SMR, Nuward ™, with the CEA, TechnicAtome, NavalGroup, Framatome and Tractebel<sup>(2)</sup>
- Aim to continue the operation, safely, of its reactors beyond 40 years in France and to build the success of the first reactors to pass their fourth tenyear inspection to extend their operating life.

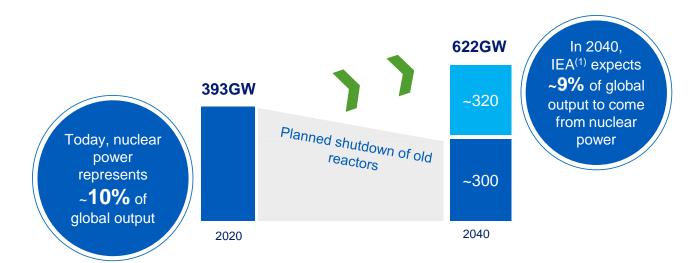
  EDF plans to invest €33bn over the period 2022-2028, as part of the "Grand Carénage" programme
- Construction of EPR-type reactors (France, the UK)
- **Excell Plan, ongoing** to strengthen the industrial quality, the skills, and the governance of the French nuclear industry
- Presence of EDF in the French and international markets for the decommissioning of nuclear power plants and radioactive waste treatment facilities In the UK, EDF Energy responsible for the AGR power plants' defueling, and

Nuclear Decommissioning Authority (NDA) responsible for subsequent decommissioning activities



## UNIQUE POSITIONING IN NUCLEAR NEW-BUILD

## WORLD NUCLEAR CAPACITY EXPECTED TO EXPAND OVER THE NEXT 20 YEARS



- Until 2030, the electric share in energy consumption will sharply raise and is planned to reach 32% in 2040, compared to 20% in 2021. It represents a +20,000TWh<sub>e</sub> growth over the period
- Up to 871GW of installed nuclear capacity will be required to reach carbon neutrality by 2050 worldwide according to the IEA, more than a doubling compared to the level at end 2020
- (1) International Energy Agency's Sustainable development, scenario based on 2021 data (latest publication).
- (2) Final Investment Decision.

# eDF

## EDF UNIQUE POSITIONING ON GLOBAL NEW NUCLEAR BUILD GROWTH

#### **2** EPR reactors

in operation since end-2019



China / **Taishan** 3.5GW



- 1st Unit: start of commercial operation on 13 December 2018
- 2<sup>nd</sup> Unit: start of commercial operation on 7 September 2019

1

France / Flamanville 3 ~1.6GW



- Entering the test phase
- Penetration welds repairing finished
- Target fuel loading date of Q1 2024

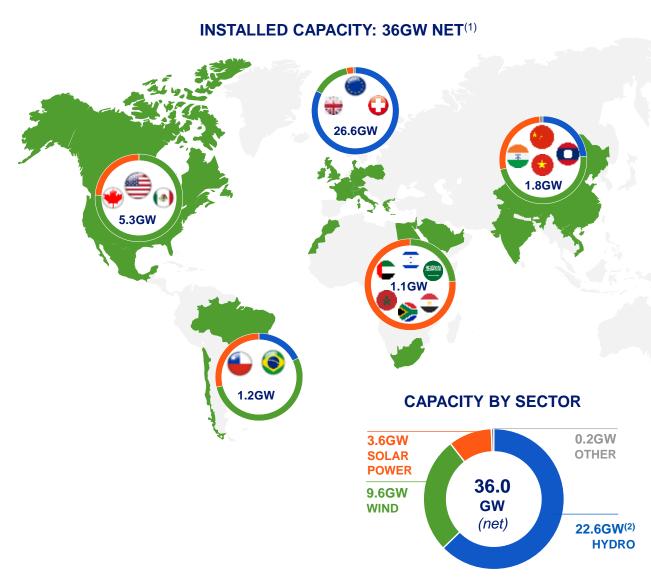
New Nuclear Development

UK / Hinkley Point C 3.2GW



- Final Liner Ring has been lifted onto 1<sup>st</sup> Unit
- 1st Unit Reactor Pressure Vessel delivered to site in February 2023
- Electricity generation of the first reactor expected in June 2027
- Development of an additional nuclear construction project in the UK: Sizewell C (3.2GW). In November 2022, the UK Government announced its decision to invest c. £700m to support the project's continued development. This project is eligible for funding under the Regulated Asset Base funding model. Sizewell C's construction remains subject to EDF taking a FID<sup>(2)</sup>
- EDF has submitted bids for the development or construction of international projects (Jaitapur in India (engineering for six EPRs (~10GW) to be built by NPCIL), participation to a tender in Czech Republic, non bidding offer in Poland)

## EDF, THE EUROPEAN LEADER IN RENEWABLE ENERGIES



A DIVERSIFIED MIX WITH 36GW IN OPERATION

- 22.6GW of hydropower
- 13.2GW of wind and solar power
- 0.2GW others (biomass, geothermy, ...)

**HYDROPOWER** 

- Leading European producer of hydropower
- More than 400 production sites worldwide

A GLOBAL LEADER IN WIND AND SOLAR ENERGY

- 3.6GW gross commissioned in 2022
- 7.1GW gross currently under construction (1.4GW in onshore wind, 1.4GW in offshore wind, 4.3GW in solar)

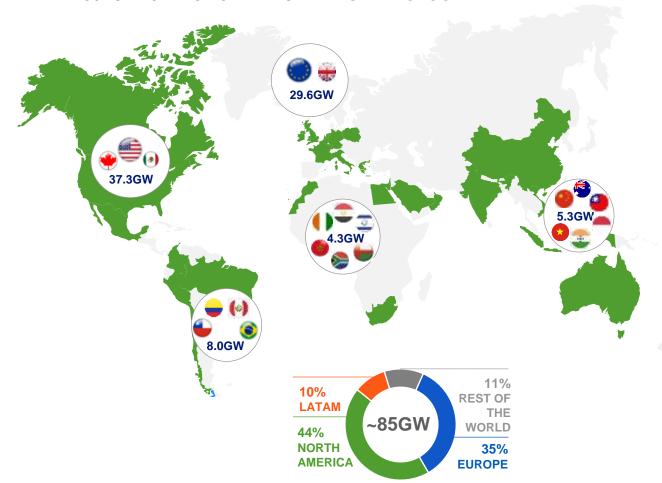
NB: situation at 31/12/2022.

 Installed capacity shown as net, corresponding to the consolidated data based on EDF's participation in Group companies, including investments in affiliates and joint ventures. (2) Including sea energy: 0.24GW.

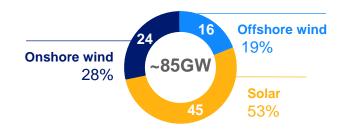


## A PORTFOLIO OF WIND AND SOLAR PROJECTS OF ~85GW<sup>(1)</sup>

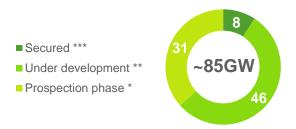
#### A PROJECT PORTFOLIO THAT IS **DIVERSIFIED GEOGRAPHICALLY...**



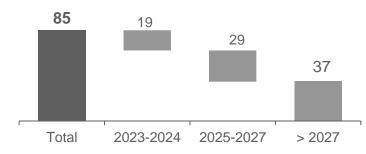
#### ... AND BALANCED BETWEEN WIND AND SOLAR



#### BREAKDOWN BY DEVELOPMENT PHASE(2)



#### BREAKDOWN BY DATE OF START OF CONSTRUCTION (IN GW)(3)



NB: situation at 31/12/2022.

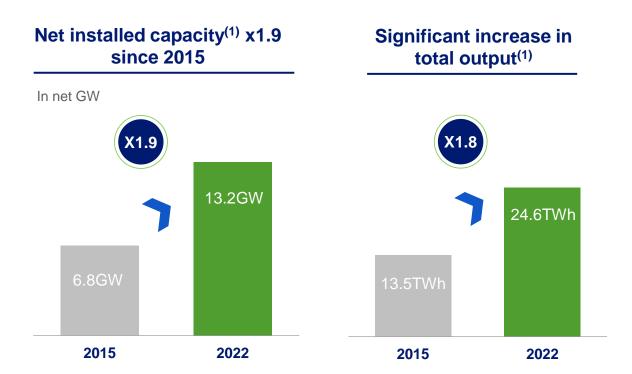
(1) Mainly Wind and Solar. Pipeline excluding capacities under construction. Gross data corresponding to 100% of the capacity of the projects concerned.

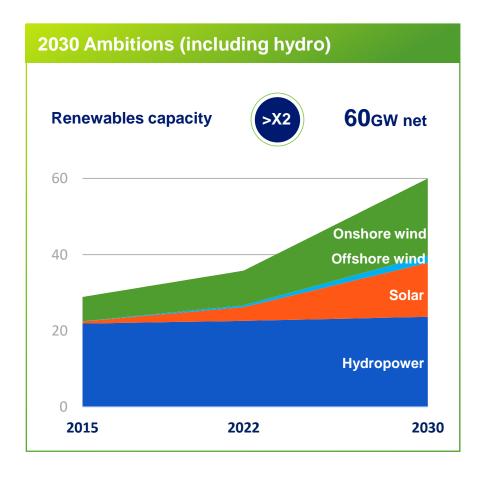
- (2) All the projects in prospection phase included in the pipeline, starting 2020.
- (3) Start of construction portfolio, not probability-based.

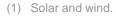
- \* Start of land identification and preliminary studies
- \*\* Sufficient land securisation and start of technical studies
- \*\*\* Securing a power purchase agreement (following a call for tenders, auction, OTC negotiation)



## STRONG GROWTH BASED ON A LARGE PROJECT PORTFOLIO







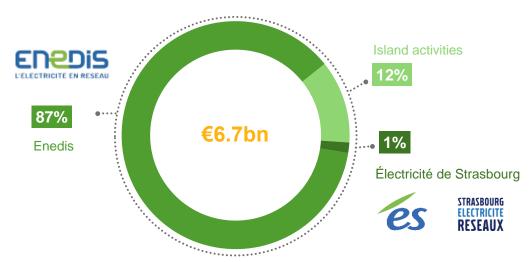


## FRANCE: REGULATED ACTIVITIES (ENEDIS, ÉS<sup>(1)</sup> & ISLAND ACTIVITIES)

- Enedis
- The largest distribution grid in Europe and the main distribution grid in France: connected to 95% of the metropolitan population
- A regulated business model: Enedis has the national monopoly on 386 concession contracts
- Represents usually a share of about a quarter in the metrics of the EDF Group:
   EBITDA (except 2022), investments (€4.4bn in 2022) and headcount (~39k)

- €96bn net investments planned over the period 2023-2040
- 2022 key figures:
  - **€5,8bn**: EBITDA<sup>(2)</sup>
  - 38.1m customers (o/w 28.4m EDF)
  - 1.4m km electric network

#### Breakdown of regulated activities' EBITDA



- (1) Electricité de Strasbourg.
- 2) Including in 2022, the exceptional effect of the retrocession of interconnection fees granted by RTE.

#### · Island activities

- Integrated business model including generation, electricity purchases, distribution (via concessions) and supply at the regulated tariff
  - Capacity 2.0GW<sup>(3)</sup> (fuel 78%, hydropower and other EnR 22%)
  - Electricity generation 6.4TWh<sup>(3)</sup> (fuel 75%, hydropower and other EnR 25%)
  - **1.2m** <sup>(3)</sup> of customers (electricity)

#### Électricité de Strasbourg

- Electricity distribution (15,000km electric network), energy supply to c0.6m customers (3), energy services, renewable energy generation
- (3) Fully consolidated data as of 31/12/2022.



## ENEDIS(1): DISTRIBUTION NETWORK LEADER IN EUROPE

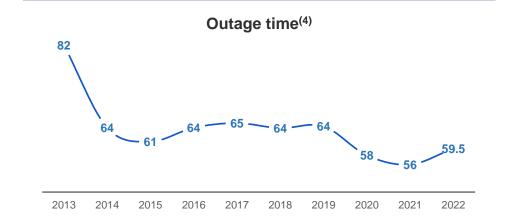
MAJOR
DISTRIBUTION
NETWORK
PLAYER IN
EUROPE

WORLD'S SMARTEST DISTRIBUTION NETWORK OPERATOR<sup>(3)</sup>

TOP-TIER
OPERATIONAL
PERFORMANCE

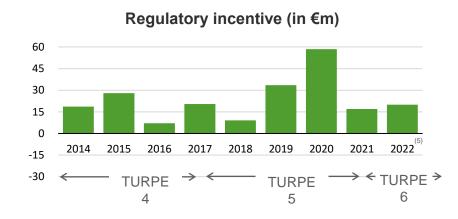


#### **Top-tier operational performance**



Less than 60 minutes for 3 years

## Regulatory incentive bonus systematically obtained since 2014



For TURPE 6, bonus/malus between -€269M and +€201M: this modifies the remuneration potential in relation with performance level

- (1) Enedis is an independent EDF subsidiary as defined in the French Energy Code
- (2) Corresponds to the number of delivery points.
- (3) For the second consecutive year, and by the Singapore Power Group Smart Grid Index (SGI).

- (4) Excluding exceptional events and transport grid incidents.
- 5) Provisional data.



### THE 5 STRATEGIC PLANS OF EDF



**Target:** 30% market share in the electricity supply for electric vehicle owners in 2023 in the Group's four main markets (G4)

- 400,000 charging stations rolled out by 2023
- 20,000 smart charging stations operated by 2023

**Target:** to enable the French nuclear industry to return to the highest level of rigor, quality and excellence in order to meet the needs of existing and future major nuclear projects



# Launch of the Hydrogen Plan in 2022

**Target:** to be a European leader of 100% low-carbon hydrogen generation in 2030 from low-carbon network electricity, renewable energy or nuclear power

• 3GW gross of low-carbon electrolytic hydrogen projects developed by 2030 worldwide





Target: to be a leader in France30% market share by 2035

**Target:** to develop 10GW in new storage sites worldwide by 2035, in addition to the 5GW operated today





## 1 RAISON D'ÊTRE(1), 4 PILLARS, 16 CSR COMMITMENTS

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

# CARBON NEUTRALITY & CLIMATE

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

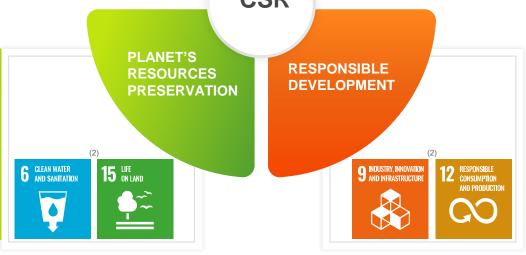


#### **WELLBEING & SOLIDARITY**

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

## PRESERVATION OF THE PLANET'S RESOURCES

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



#### RESPONSIBLE DEVELOPMENT

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

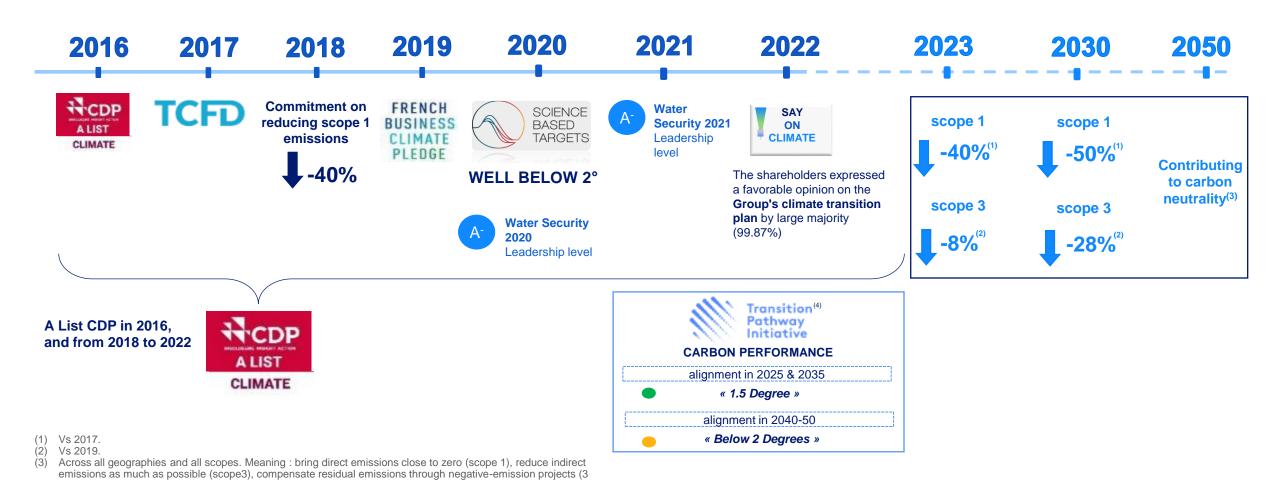
- (1) EDF's Raison d'être, approved by the Shareholders' Meeting of 07/05/2020.
- 2) Priority SDGs as defined in WBCSD public report: "An SDD Roadmap for Electric Utilities".

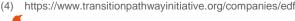


## EDF, A COMPANY COMMITTED TO PROTECTING THE CLIMATE



Ever since the Paris Agreement, EDF has been constantly strengthening its actions and responsibility on climate issues. The Group is committed to reducing its direct and indirect emissions, fostering its climate governance and maintaining its CDP Climate leader position.







## SIMPLIFIED PUBLIC TENDER OFFER FOR EDF SHARE CAPITAL



**Simplified public tender offer**<sup>(1)</sup> launched by the French State on 24 November 2022 to acquire the shares and OCEANE convertible bonds that it does not hold, at a price of €12/share and €15.52/OCEANE

**Action** for annulment of the French Financial Markets Authority's clearance decision on the public tender offer, filed with the Paris Court of Appeal on 2 December 2022 by representatives of minority shareholders

Closing of the Offer<sup>(2)</sup> on 3 February 2023: French State's holding of 95.82% of the shares and 96.53% of the voting rights as well as 99.96% of the OCEANE

Conversion in equity of 40% of OCEANE convertible bonds by the French state for c. €960m

**Dismiss** of the claim lodged by the employee shareholding fund by the Court of Appeal on 2 May 2023 and reopening of the offer for a period of 10 trading days from 4 to 17 May 2023 (3).

Following this period, **squeeze-out procedure** requested by the French State <sup>(3)</sup>, since the legal and regulatory conditions for such implementation will be met.



<sup>(1)</sup> See the 23 November 2022 EDF press release.

<sup>(2)</sup> Subject to its reopening in accordance with the State's undertakings described in the 25 January 2023 EDF press release, including the undertaking not to implement a squeeze-out procedure prior to the Court of Appeal's decision.

<sup>(3)</sup> See the 2 May 2023 EDF press release

## **EDF PRESENTATION**

**May 2023** 

2022 financial highlights and 2023 objectives



## **KEY OPERATIONAL INDICATORS - 2022**



Nuclear output France

**279**TWh

-23% vs 2021

Nuclear output United Kingdom

**43.6**TWh

+5% vs 2021

Group carbon intensity

 $\mathbf{50}_{\text{gCO}_2/\text{kWh}}$ 

vs 48gCO<sub>2</sub>/kWh in 2021

Hydro output mainland France

**32.4**TWh

-22% vs 2021

Group wind & solar output

**24.6**TWh

+18% vs 2021

Group portfolio of wind and solar projects

**85**GW gross

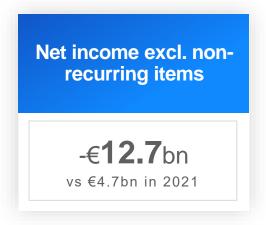
+12% vs end-2021

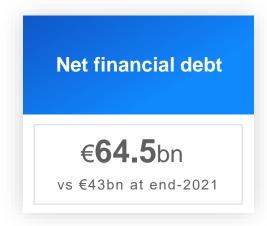


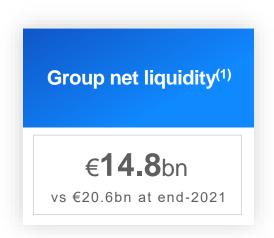
## **FINANCIAL RESULTS - 2022**









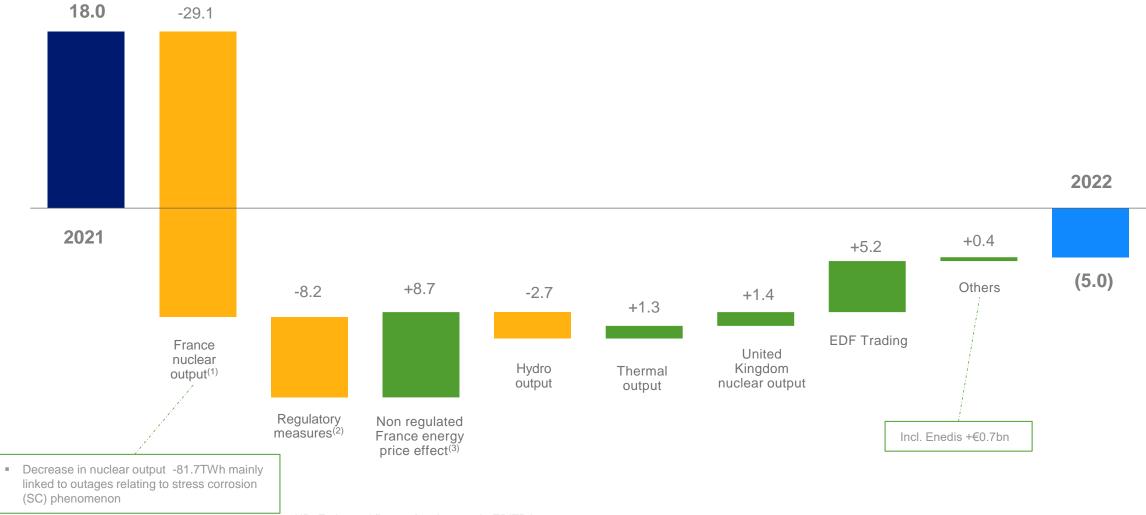


(1) Cash and cash equivalents €10.9bn, liquid assets €18.5bn, undrawn credit lines €14.1bn, and after deduction of the current portion of the borrowings and financial debts for -€28.7bn. Of which €10.6bn of EDF SA net liquidity.



## **GROUP EBITDA - SYNTHESIS**

In €bn



NB: Estimated figures for changes in EBITDA.

- (1) Vs -€32bn published in the 27 October 2022 press release based on the forward prices of 7 October 2022 which have since fallen sharply.
- 2) Vs -€10bn published in the 27 July 2022 press release, the difference coming, notably, from the accounting in 2022 of the compensation of the tariff shield in CSPE.
- (3) Vs +€8bn published in the 27 July 2022 press release, the difference is due to a climate effect and a price effect on open positions.



## **DEBT AND LIQUIDITY**

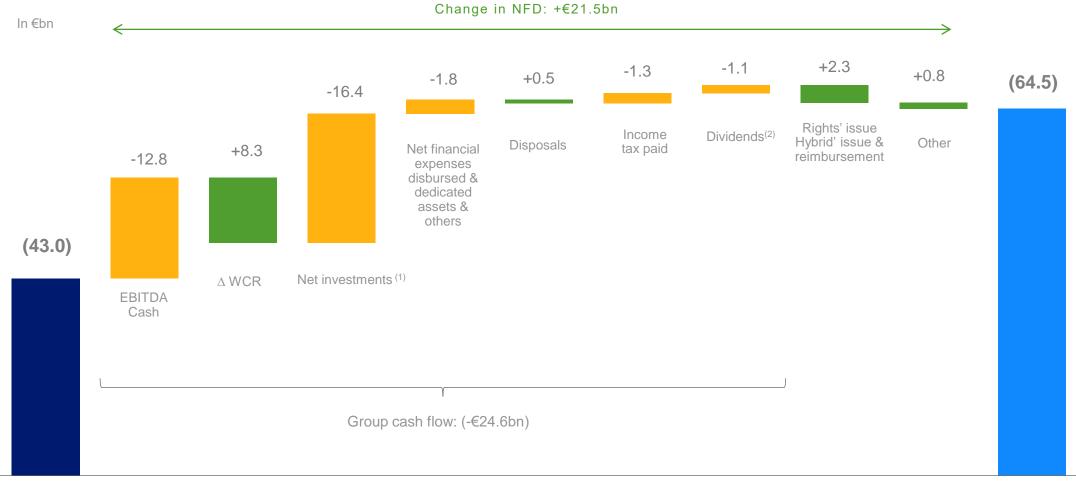
In billions of euros	31/12/2020	31/12/2021	31/12/2022	
Net financial debt	42.3	43.0	64.5	
Net financial debt/EBITDA	2.61x	2.39x	n.a.	
Debt				
<ul><li>Bonds</li></ul>	50.2	49.2	45.2	
<ul> <li>Average maturity of gross debt (in years)</li> </ul>	14.5	13.7	9.4	
Average coupon	2.32 %	2.06%	2.63%	
Gross liquidity (1)	32.4	35.7	43.5	
Financial debt – current part	(11.5)	(15.1)	(28.7)	
Net liquidity	20.9	20.6	14.8	



n.a. = not applicable.

<sup>(1)</sup> With cash and cash equivalents, liquid assets, and undrawn lines of credit.

## **NET FINANCIAL DEBT**



31 December 2021 31 December 2022

NB: figures rounded to the nearest whole number.

(1) Net investments excluding Group disposals.

(2) Dividends paid including hybrid bond remuneration.



## **2023 TARGETS**

2023 TARGETS (1) NET FINANCIAL DEBT / EBITDA

≤ **3**x

ADJUSTED ECONOMIC NET DEBT / ADJUSTED EBITDA(2)

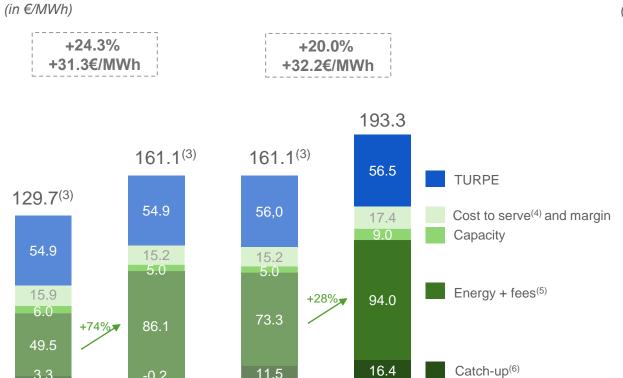
≤ 4.5x

- (1) Based on scope and exchange rates at 01/01/2023. At stable regulatory and fiscal environment and considering the financing of the tariff cap at 15% by the CSPE, and an assumption of 2023 French nuclear output of 300-330TWh, and the generation schedule.
- (2) As per current S&P methodology.



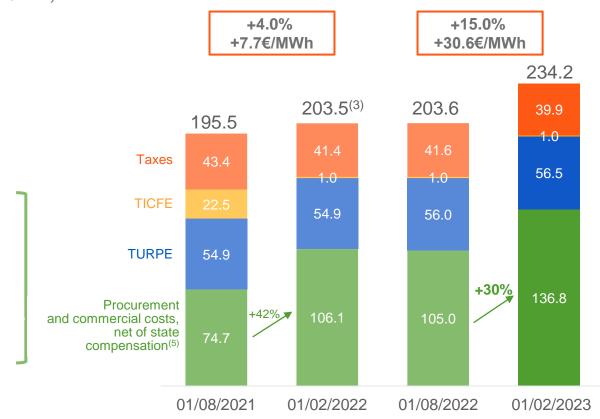
### **REGULATED SALES TARIFFS IN FRANCE: CHANGE IN 2021-2023**

#### RESIDENTIAL BLUE TARIFF EXCLUDING TAXES(1)(2)



## AVERAGE BILL BREAKDOWN VAT INCLUDED (BLUE RESIDENTIAL CUSTOMER)





(1) Source: Journal Officiel.

01/08/2021

(2) The figures are based on an average calculation on customers portfolio at the Regulated Sales Tariffs at end-2021 (latest available database to date).

01/02/2023

01/08/2022

- (3) Due to rounding, the total is not strictly equal to the sum of the components.
- (4) Including cost of Energy Efficiency Certificates.

01/02/2022

- (5) For 2022 and 2023, this part takes into account the tariff cap for the current year. In February 2023, in particular, this part includes the catch-up under the 2022 cap and a **discount of €143.2/MWh** under the 2023 tariff cap. **This discount is compensated by the CSPE under the finance law for 2023** and will therefore not be subject to a catch-up in 2024.
- (6) Remaining tariff increase decided in Year-1 but invoiced in Year+1.



#### **OUTLOOK FOR 2023: TARGETING PROFITABILITY & CONTINUED INVESTMENT PLAN**



Recovery of nuclear generation to 300-330TWh: gradual exit from the stress corrosion crisis

#### Customer support in a context of high prices

- Continuation of the energy sufficiency plan
- Decarbonisation of industry
- Electric mobility

#### **Industrial development**

- o Renewable:
  - in France, commissionings of Fécamp (500MW-off-shore wind), Provence Grand Large (floating off-shore wind), Lazer (floating solar)
  - internationally, watering of the Nachtigal dam (420MW), commissioning of Al Dhafrah solar farm (2GW)

#### o Nuclear:

- start-up tests for Flamanville 3 at the end of the year
- integration of GE Steam Power activities
- start of the electromechanical works at Hinkley Point C

#### O Distribution networks:

acceleration of connections of renewables and charging stations

# LAUNCH OF 4 OPERATIONAL EXCELLENCE PROJECTS

- Increasing metal time
- Accelerating and industrialising digital
- Developing the skills required for group businesses
- Monitoring operational performance

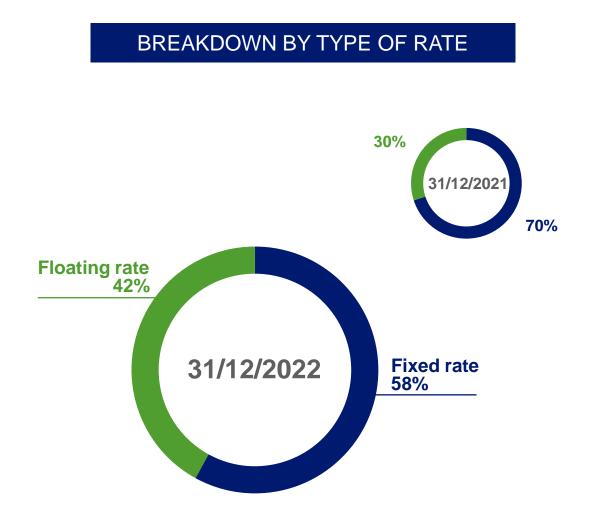


# **EDF PRESENTATION**May 2023

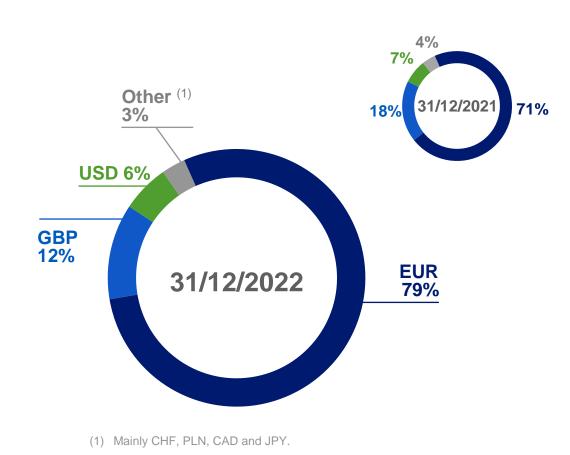
Financing



## **GROSS FINANCIAL DEBT AFTER SWAPS**



#### **BREAKDOWN BY CURRENCY**

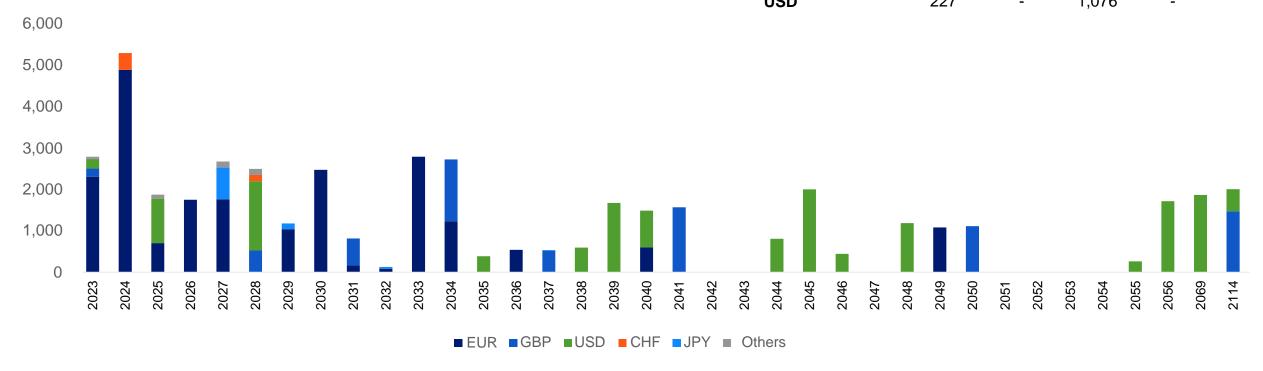




## **BREAKDOWN OF BOND DEBTS REPAYMENTS BY CURRENCY AT END-2022**

In millions of euros, before swaps

Including	2023	2024	2025	2026	
(In €m equivalent)	2023	2024	2023		
EUR	2,303	4,883	701	1,747	
GBP	199	-	-	-	
USD	227	_	1.076	_	





## **FOCUS ON HYBRIDS SECURITIES AT END-2022**

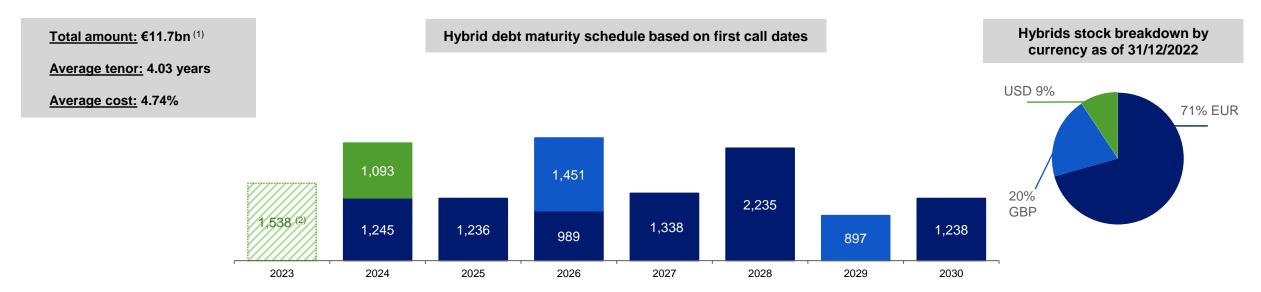
#### **Hybrid issue**



Hybrid issues contribute to strengthening the balance sheet through their qualification as equity under IFRS and 50/50 as debt and equity by rating agencies

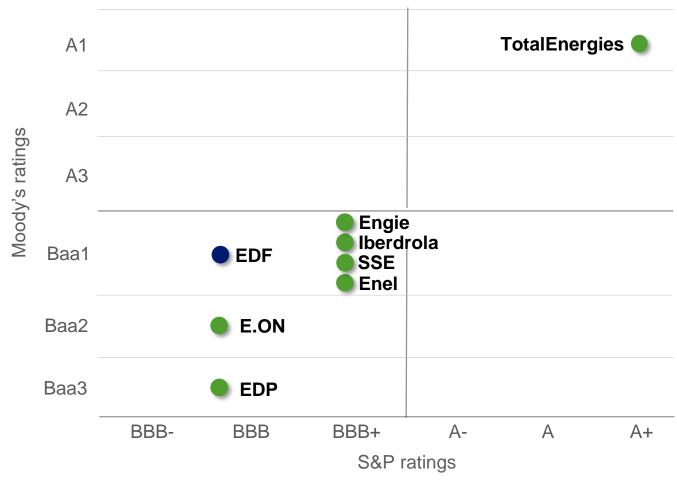
A new €1bn issuance paying 7.5% with a 6-year redemption option was issued at the end of 2022. Following the exercise of its redemption option, the 5.25% perpetual hybrid bond issued on 29 January 2013 was totally redeemed on 29 January 2023, for a residual amount of \$2,098m (i.e €1,538M (1) (2))

#### Hybrid securities stock following new issues (in millions of euros) (1)



- (1) Exchange rate as of transaction time.
- (2) Amount redeemed on 29/01/2023 and reclassified on 31/12/2022 as Other financial debt for €1,966M.

## **COMPARATIVE CREDIT RATINGS**



Sources: rating agencies as of 27/04/2023.

- (1) Update of the outlook of EDF SA by S&P on 14 December 2022.
- (2) Update of the rating and outlook of EDF SA by Moody's on 21 February 2022.
- (3) Update of the outlook of EDF SA by Fitch on 3 April 2023.

	S&P ratings	Moody's ratings	Fitch ratings
EDF	BBB stable <sup>(1)</sup>	Baa1 negative <sup>(2)</sup>	BBB+ stable <sup>(3)</sup>
Engie	BBB+ stable	Baa1 stable	A- stable
TotalEnergies	A+ stable	A1 stable	AA- stable
EDP	BBB stable	Baa3 positive	BBB stable
SSE	BBB+ positive	Baa1 stable	BBB stable
Iberdrola	BBB+ stable	Baa1 stable	BBB+ stable
Enel	BBB+ negative	Baa1 negative	BBB+ stable
E.ON	BBB stable	Baa2 stable	BBB+ stable
RWE	n.d.	Baa2 stable	BBB+ stable

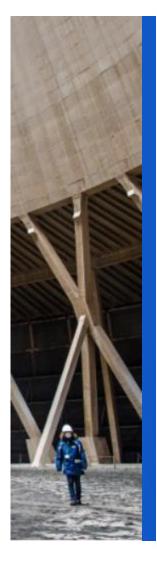


# **EDF PRESENTATION**May 2023

Appendices



## **NUCLEAR: 2022 WAS A CHALLENGING YEAR**



#### **EXISTING NUCLEAR**

43 of 56 reactors currently operational

#### Stress corrosion (SC)

Identification of the **16 reactors most sensitive to SC** phenomenon (the 4 N4-series 1,450MW reactors and the 12 P'4-series 1,300MW reactors)

- 10 of the 16 reactors were treated in 2022 or are undergoing treatment
- Systematic and preventive replacement by end-2023 of the pipes of the 6 P'4-series 1,300MW reactors not yet treated and of Cattenom 1

#### **NEW NUCLEAR**

#### Sizewell C

British government's decision to take a 50%-stake in the company alongside EDF<sup>(1)</sup> by the FID, through an investment of c.£700m

Project eligible for the Regulated Asset Base (RAB) funding model<sup>(2)</sup>

#### Flamanville 3

Schedule and cost adjustment:

- New target of nuclear fuel loading in Q1 2024<sup>(3)</sup>
- Estimated cost at completion of €13.2bn<sup>(3)</sup>

**EXCELL PLAN**: perpetuation of actions taken to reach highest industrial standards (4)

#### **NUCLEAR ACTIVITIES INCLUDED IN THE EUROPEAN TAXONOMY**

#### BELFORT SPEECH (5): RESTARTING NUCLEAR POWER IN FRANCE

- (1) EDF's Final Investment Decision (FID) is subject to certain conditions, particularly the capacity to raise the required funding and deconsolidate the project with a stake of less than 20%.
  - 2) 2022 NEFA act (Nuclear Energy Financing Act), in force as from end-May 2022.
- (3) Previous costs and schedule: €12.7bn<sub>2015</sub> and Q2 2023. In 2015 euros and excluding interim interests during the construction period.
- (4) See the excell plan commitments on EDF website
- (5) Speech by the French President of the Republic on 10 February 2022.



## STRESS CORROSION PHENOMENON (SC)(1)



- As of March 2023, among the 16 most sensitive reactors<sup>(2)</sup> to SC detected in the auxiliary circuits of the main primary circuit:
  - sections of pipe replaced on 10 reactors
  - preventive replacement of impacted lines by end of 2023 of the 6 remaining reactors<sup>(3)</sup>

The 40 less sensitive reactors will be inspected by the end of 2025 during the planned outages

In March 2023, a SC defect detected on a weld that was subject to a double repair in the RIS system of Penly 1.
The pipe has been replaced to date

Identification of 320 welds (repaired during the construction), of which 69 identified as the most sensitive to SC

**Evolution in EDF's strategy:** acceleration of the inspection of the welds (repaired at the time of construction), during scheduled maintenance outages

ASN considers the schedule appropriate

On the basis of the control strategy, estimate of nuclear output in France for 2023 remains in the range 300-330TWh

- (1) See Information notes of 8 March 2023, of 17 March 2023 and Press Releases of 16 March 2023 and of 26 April 2023.
- (2) Most sensitive reactors: the 4 N4 series reactors of 1,450MW and the 12 P'4 series reactors of 1,300MW.
- (3) 6 reactors not treated (Belleville 1, Belleville 2, Cattenom 2, Golfech 2, Nogent 1, Nogent 2).

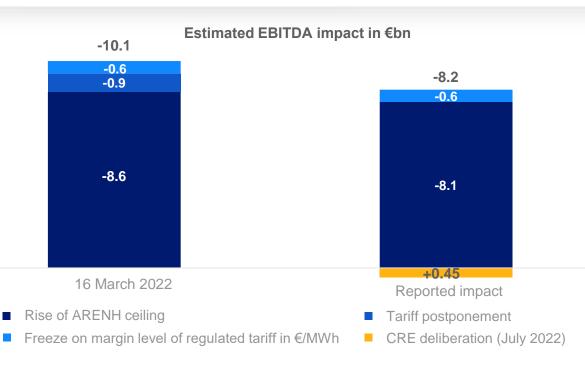


# 2022 EBITDA SENSITIVITY TO REGULATORY MEASURES - GENERATION AND SUPPLY ACTIVITIES

Measure impacts on EBITDA of the decree published on 12 March 2022, based on the average of forward market prices between 2 and 23 December 2021 (€256.98/MWh) and tariff cap:

- An additional 19.5TWh of ARENH at €46.2/MWh was delivered from April to December 2022 to alternative suppliers whose demand was capped during the end-2021 auction: impact estimated at around -€4.1bn. Additional volumes have been reduced from 20TWh to 19.5TWh due to the cessation of activity or the waiver of some suppliers
- The impact of this additional allocation is replicated in EDF offers (regulated tariffs and market offers): impact estimated at around -€4bn
- A positive impact of the CRE deliberation of July 2022 concerning the catch-up of the increase in TRV sourcing in January 2022 of +€0.45bn
- Margin level freeze in €/MWh for regulated tariffs: impact estimated at around -€0.6bn

The 2023 finance law adopted on 31/12/2022 established the tariff cap compensation through the CSPE mechanism. This postponement is booked in the 2022 EBITDA for €1.4bn (vs a previous estimated amount of €0.9bn)



#### Allocation of an additional volume of 20TWh

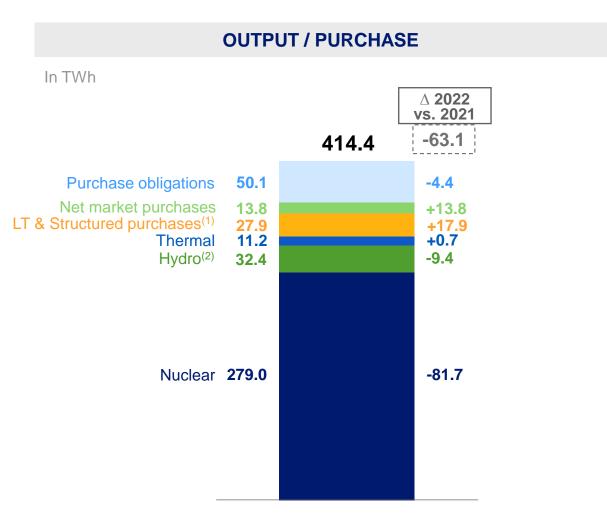
On 3 February 2023, the *Conseil d'Etat* (the French administrative supreme court) rendered its **decision in the context of the appeal for annulment** filed by EDF on 9 August 2022 against the Decree and Orders of 11, 12 and 25 March 2022, implementing **the allocation of an additional volume of 20TWh** of electricity sold at regulated prices to alternative suppliers from April to December 2022 (the "Mechanism"). The *Conseil d'Etat* rejected EDF's appeal against the Mechanism. The decision of the *Conseil d'Etat* is rendered in the first and last instance and therefore not subject to appeal

The claim for indemnification initiated by EDF before the Paris Administrative Court to obtain full compensation from the State for the damage suffered by EDF as a result of the Mechanism, estimated at the end of October 2022 to be €8.34bn (1), as an independent proceeding and its investigation is continuing

(1) This amount of -€8.1bn includes customer consumption at the end of the year that is lower than estimated in October 2022 for approximately +€0.2bn (sufficiency effect).



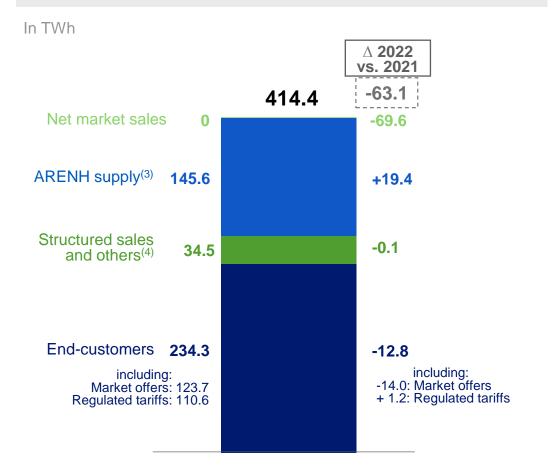
## FRANCE: UPSTREAM / DOWNSTREAM ELECTRICITY BALANCE





- O/w required purchases from eligible suppliers within the frame of the specific additional ARENH mechanism.
- (2) Hydro output after deduction of pumped volumes: 25TWh in 2022 / 35.9TWh in 2021.

#### **CONSUMPTION / SALES**

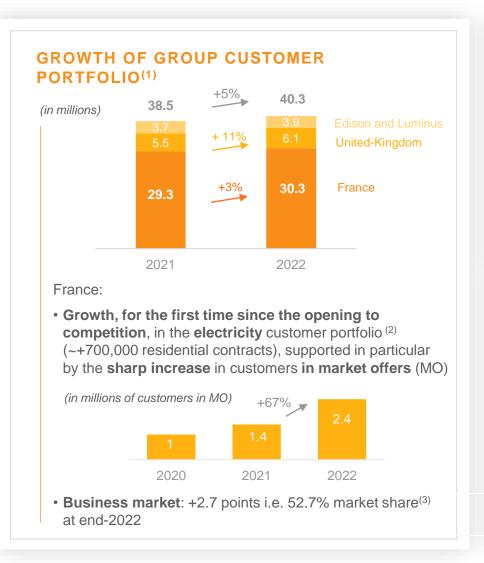


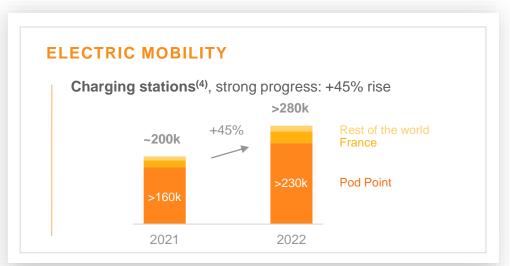
- (3) O/w 19.5TWh as for required sales of ARENH additional volumes to the alternative suppliers (see the decree of March 2022).
- (4) Including hydro pumped volumes of 7.4TWh in 2022 / 5.9TWh in 2021.

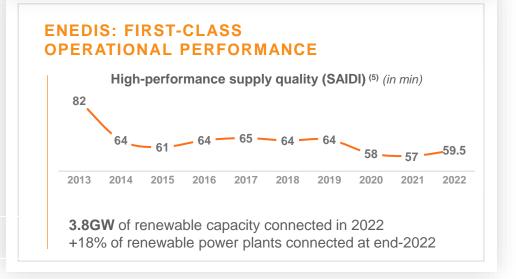


### **CUSTOMERS & ENEDIS**









- (1) Millions of customers, calculated by delivery point. A customer may have two delivery points. For France: Commercial department, ÉS and SEI
- (2) 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 and to be delivered in 2023.
- (4) Installed and managed.
- (5) SAIDI: System Average Interruption Duration Index. Excluding exceptional events and transport grid incidents.



## **INSTALLED CAPACITY AS OF 31 DECEMBER 2022**

(in GW)	Total net capacity of E including shares in ass joint venture	sociates and	Investments in associates and joint ventures		
Nuclear (1)	67.8	55%	-0.2	68.1	58%
Hydro (2)	22.6	18%	1.0	21.5	18%
ENR	13.4	11%	3.1	10.3	9%
Gas (3)	11.5	9%	0.1	11.4	10%
Fuel oil	3.7	3%	0.2	3.5	3%
Coal (4)	4.0	3%	1.8	2.2	2%
Total	123.0	100%	6.1	116.9	100%



NB: The values correspond to the expression to the first decimal or integer closest to the sum of the precise values, taking into account rounding.

<sup>(1)</sup> Taking into consideration the shutdown of Hunterston and Hinkley Point B in the UK.

<sup>(2)</sup> Including sea energy: 0.24GW in 2022.

<sup>(3)</sup> Taking into consideration the increase in capacity of Marghera Levante in Italy.

<sup>(4)</sup> Taking into consideration the transfer of Shiheng facilities to China Energy Group.

## **ELECTRICITY OUTPUT**

#### Output from fully consolidated entities

(in TWh)	2	2021	2022		
Nuclear	409.8	78%	328.0	76%	
Total ENR	67.1	13%	60.2	14%	
Hydro <sup>(1)</sup>	46.2	69%	35.6	59%	
Wind	18.3	27%	21.2	35%	
Solar	1.8	3%	2.5	4%	
Biomass	0.8	1%	0.9	2%	
Gas	38.0	7%	36.5	9%	
Fuel oil	5.1	1%	5.4	1%	
Coal	3.5	1%	1.7	0.4%	
Group	523.7	100%	431.7	100%	

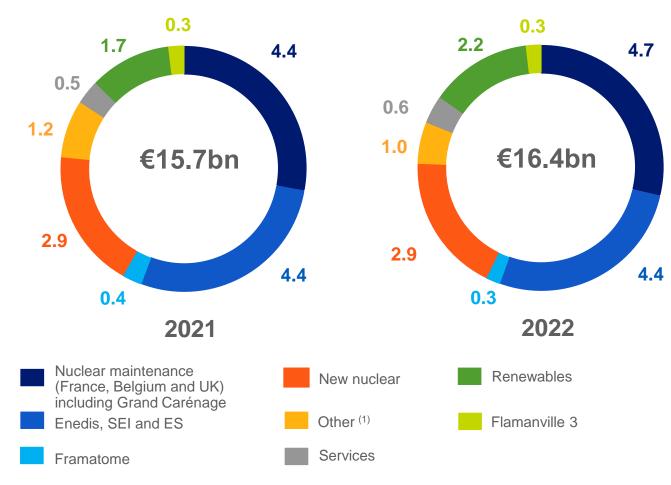
NB: The values correspond to the expression to the first decimal or integer closest to the sum of the precise values, taking into account rounding.



<sup>(1)</sup> Hydro output includes tidal energy for 543GWh in 2021 and 549GWh in 2022 as well. Hydro output after deduction of pumped volumes is 40.3TWh in 2021 and 28.2Wh in 2022.

## NET INVESTMENTS INCLUDING ACQUISITIONS EXCLUDING DISPOSAL PLAN

In billions of euros



	Maintenance	Development	TOTAL
Renewables	0.4	1.8	2.2
Nuclear maintenance (France, Belgium and UK) including Grand Carénage	4.7	0.0	4.7
Enedis, SEI and ES	1.7	2.7	4.4
Framatome	0.0	0.3	0.3
Flamanville 3 project	0.0	0.3	0.3
Services	0.0	0.6	0.6
New nuclear	0.0	2.9	2.9
Others (1)	0.6	0.4	1.0
TOTAL	7.5	8.9	16.4

- Net investments eligible according to the European taxonomy: 69% (2)
- Net investments aligned / eligible: 95.5%

NB: figures rounded up to the nearest decimal number.

- (1) Mainly thermal maintenance, gas, property, central functions.
- (2) See Chapter 3.8.4 of the URD. Decarbonised investments in nuclear activities in the United Kingdom are excluded from the European taxonomy and are non-eligible.



## **NEW GREEN FINANCING FRAMEWORK IN JULY 2022**

RESPECTS THE GREEN BOND PRINCIPLES

Since 2013, EDF's Framework has followed the requirements and key recommendations of **the ICMA Green Bond Principles** including **robust transparent annual impact reporting** and subject to an annual verification report



ALIGNED TO THE EU
TAXONOMY

The Framework includes only eligible project categories with investments that **are fully aligned to the EU Taxonomy**, including the technical screening criteria « Do No Significant Harm » (DNSH) and minimum social safeguards



**BEST IN CLASS** 

The Framework has been subject to an independent second party review, CICERO Shades of Green which has awarded it a certified « Medium Green » rating and « Likely aligned » <sup>(1)</sup> with the EU Taxonomy



(1) CICERO Shades of Green uses use the terminology "likely aligned/partially aligned/not aligned". The term "likely" is not to indicate an uncertainty in CICERO's assessment but is meant to reflect the current lack of official authority as a verifier of the EU Taxonomy.



# GREEN FINANCING FRAMEWORK FOLLOWS BEST MARKET PRACTICES AND IS ALIGNED WITH THE EU TAXONOMY

First company to issue a Green Bond in 2013. Active member of the Green Bond Principles governance and co-founder of the Corporate Forum on Sustainable Finance

3 updates of the Framework in order to contribute to better market practices, to be aligned with the European Taxonomy and include Green Bonds, Green Commercial Paper and Green Repo

#### 1 - USE OF FUNDS

- Use of Proceeds shall be limited to projects in the below eligible categories
  - Renewable power projects,
  - Hydropower generation,
  - Energy efficiency projects,
  - Distribution of electricity,
  - Nuclear power generation
- Eligible investments shall align with the EU Taxonomy, including "Do No Significant Harm" criteria and minimum social safeguards
- Look-back period limited to three calendar years from the issuance year

#### 2 - PROJECT SELECTION PROCESS

- An ad-hoc working group is responsible for helping EDF entities identify green bond eligible projects and verifying their eligibility
- EDF currently verifies and reports Taxonomy eligible CAPEX and according to the Taxonomy regulation and Taxonomy complementary delegated acts. As of 2021 EDF reports these amounts in its Universal Registration Document.
- EDF shall exclude projects already financed by its social bond program.
- Investments may include tangible or intangible assets, Investments and some operating expenditures (such as R&D and investments in the maintenance of green assets)

#### 3 - FUND MANAGEMENT

- Funds are **managed and monitored separately** until they are allocated to eligible projects. They are invested in **Socially Responsible Investments funds** (1) until their allocation
- Net proceeds of green bond issuances identifying nuclear power generation as an eligible project shall be managed in a portfolio separate from other issuances to ensure full traceability
- EDF shall use best efforts to allocate all eligible proceeds within 24 months after issuance

#### 4 – REPORTING

- At half-yearly intervals: allocation of funds
- Annually: allocation of funds + list of projects financed and environmental impacts (at the level of each green issue) in URD

#### 5 – EXTERNAL REVIEW

- **External ex-ante opinion**: "Medium Green" rating and "Likely aligned" with the EU Taxonomy by Cicero on EDF's Green Financing Framework
- Ex-post certification: annual report issued by an external auditor on the allocation of funds and the compliance of Green Bond issues with the Green Financing Framework, the Green Bond Principles, the compliance of the CO<sub>2</sub> emissions calculation terms



## **GREEN BONDS: PROCEEDS ALLOCATION AND IMPACT REPORTING**



Issue date	Fund raised	Funds allocated	Projects financed by the Green Bond	Part of the total investments financed by the Green Bond	Total net <sup>(1)</sup> capacity of the project financed (in MW)	Expected net (1) avoided CO2 emissions (in Mt/yr)
Nov. 2013	1.4Md€	1.4Md€	EDF Renewables projects	59%	976	1.55
Oct. 2015	1.25Md\$	1.25Md\$	EDF Renewables projects	58%	815	1.83
Oct. 2016	Oct. 2016 1,75Md€ 1,248M€		EDF Renewables projects	54%	962	1.61
Oct. 2010	1.7 SWIGC =	502M€	EDF Hydro operations	100%	903	0.01
In., 0047	Jan. 2017 26,000M¥	14,021 <b>M</b> ¥	Wind projects (EDF Renewables, Luminus)	15%	86	0.12
Jan. 201 <i>1</i>		11,979 <b>M</b> ¥	EDF Hydro operations + hydro Luminus project	87%	133	0.01
Sept. 2020	2.4Md€	2,246M€	Projects & portfolio purchases by EDF Renewables, EDF ENR & Luminus projects	78%	1,412	1.35
·	_	138M€	EDF Hydro operations and biodiversity projects	100%	123	0.001
Nov. 2021	1.85Md€	1,139M€	EDF Renewables projects EDF Hydro operations and biodiversity projects	60% 98%	895 422	0.88 0.001
				Total	6,727	7.361

Issue date	Fund raised	Funds allocated	Projects financed by the Green Bond	Part of the total investments financed by the Green Bond	Renewable capacity connected (in MW)	Number of smart meters	New grid lines built (in km)
Oct. 2022	1.25Md€	1.25Md€	Distribution of electricity projects	100%	5,181	5,488,000	2,950

The detailed list of EDF Renewables projects and hydraulic investment operations by category will be published in EDF 2022 URD.

<sup>(1)</sup> Sum of the impacts of each project weighted by the share of total investment funded by the corresponding Green Bond.



