



# 2022 GREEN FINANCING FRAMEWORK UPDATE

12 JULY 2022



# AGENDA

1. Company overview and strategy
2. Sustainability Strategy
3. Sustainable Finance at EDF
4. New Green Financing Framework
5. Appendix





# 1

## COMPANY OVERVIEW AND STRATEGY



# COMPANY OVERVIEW

EDF's raison d'être is to build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development

## EDF Group: what we do



### Electricity generation

EDF produces safe, affordable and mostly<sup>(3)</sup> carbon-free electricity in power plants which it designs and operates.



### Transmission and distribution

The transmission and distribution networks carry electricity to the end customer while balancing supply and demand.



### Energy supply

The EDF Group sells energy and energy services to nearly 40 million client sites around the world.



### Optimisation and trading

This activity allows EDF to fulfil the energy supply commitments made to its customers by choosing between available resources.

## Key Figures in 2021



€ 84.5Bn

Sales



167,157

Employees throughout the world



38.5M

Customers worldwide<sup>(1)</sup>



523.7 TWh

Electricity generated by the EDF Group



91%

Production free from CO<sub>2</sub> emissions<sup>(2)</sup>



€ 661M

Research and development budget



(1) Customers are counted by site. A customer can have two delivery points, one for electricity and one for gas.  
(2) Direct emissions excluding the life cycle analysis of generating plants and fuel.  
(3) 91% of EDF's generation comes from carbon-free sources

EDF's CAP 2030 strategy reflects EDF's raison d'être, structured around **three strategic axes with specific goals:**

**A creator of services and solutions to support customers and territories shifting towards carbon neutrality**

**>15MtCO<sub>2</sub>** AVOIDED EMISSIONS <sup>(1)</sup>

**€10bn revenues** IN SERVICES <sup>(2)</sup>

**> 1.5** CONTRACTS/CUSTOMER <sup>(3)</sup>

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

**↓ 50%** CO<sub>2</sub>eq DIRECT EMISSIONS vs 2017

**60GW NET**

**>x2** NEW RENEWABLES CAPACITIES (INCL.HYDRO) VS. 2015

INITIATING **NEW**  
**EPRs & 1 SMR**

**An international key player in the energy transition**

**EXIT** COAL

**1.5-2GW NET**

HYDRO INSTALLED CAPACITIES <sup>(4)</sup>

**1 MILLION**  
OFF GRID KITS

(1) Customers, Services & Territories sector's activities. EDF estimate, including CO<sub>2</sub> savings linked mainly to heating and cooling networks, the development of electric vehicle and energy savings certificates

(2) Group

(3) EDF estimation for the 4 core countries, called G4 (France, Italy, United Kingdom and Belgium) (residential)

(4) Excluding G4, i.e. 4 core countries (France, Italy, United Kingdom, Belgium)



# 2

## SUSTAINABILITY STRATEGY



# EDF STRATEGIC PROJECT IS SUPPORTED BY 16 CSR COMMITMENTS

EDF's *raison d'être* is *to build a net zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development*

## CARBON NEUTRALITY & CLIMATE

- EDF : an ambitious carbon trajectory
- Carbon offsetting solutions
- Adapting to climate change
- Development of electricity and energy services



## CARBON NEUTRALITY & CLIMATE



## WELLBEING & SOLIDARITY

## WELLBEING & SOLIDARITY

- Health and safety for all
- Equality, diversity and inclusion
- Ethics, conformity and human rights
- Energy precariousness and social innovation

## PLANET RESOURCES PRESERVATION

- Biodiversity
- Responsible land management
- Integrated and sustainable water management
- Waste and circular economy



## PLANET RESOURCES PRESERVATION

## RESPONSIBLE DEVELOPMENT

## RESPONSIBLE DEVELOPMENT

- Dialogue and consultation
- Responsible regional development
- Development of industrial sectors
- Sustainable and inclusive digitalisation



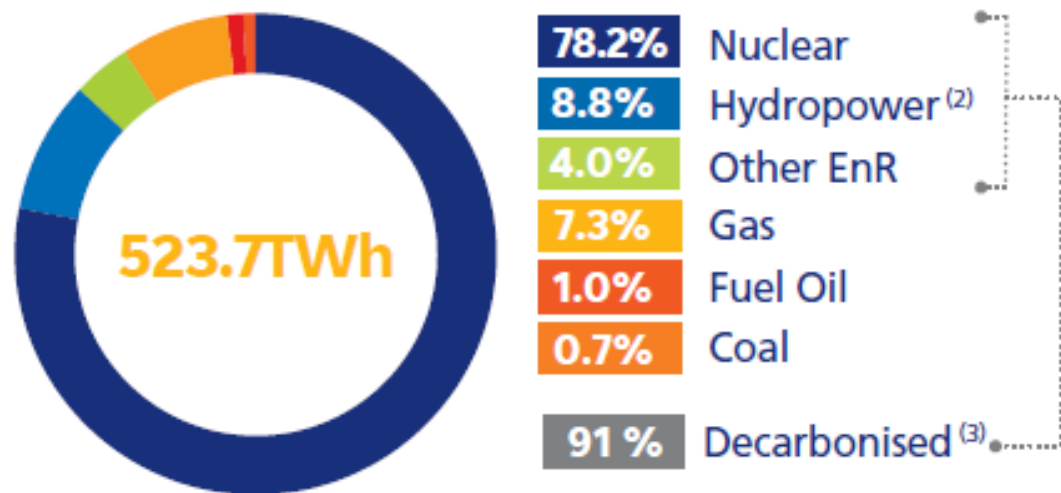
CSR

(1) EDF's *Raison d'être*, approved by the Shareholders' Meeting of 07/05/2020

(2) Priority SDG's as defined in WBCSD public report: An SDD Roadmap for Electric Utilities"



# EDF THE WORLD LEADER IN LOW-CARBON ELECTRICITY GENERATION



As 91 %<sup>(1)</sup> of its electricity production does not emit any CO<sub>2</sub>, the EDF Group can rightly claim that it is the **champion of low-carbon growth.**

In 2021, EDF Group's specific carbon emissions delivered the figure of **48 g/kWh produced** (vs 51 g/kWh in 2020). The Group's carbon intensity is now **5 times lower than the European utilities average.**

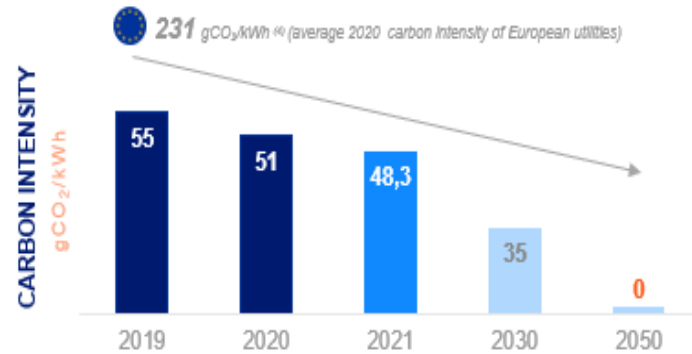


# REDUCING CO<sub>2</sub> EMISSIONS FURTHER

## CARBON INTENSITY

IN LINE WITH EDF NET ZERO TRAJECTORY

Steadily declining and around 5x Lower than European Average

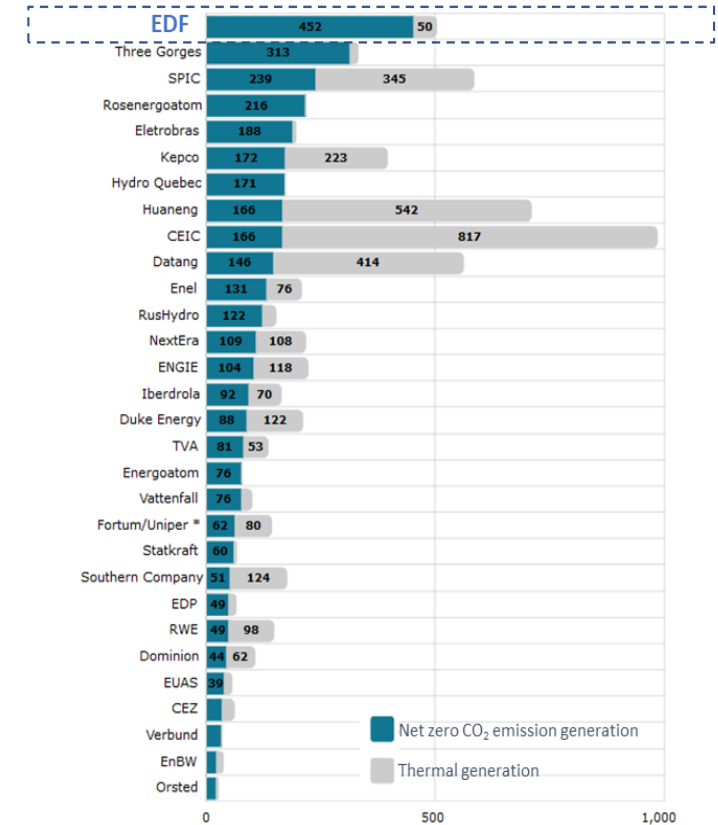


IN 2020 EDF MADE NEW GHG REDUCTION COMMITMENTS BY 2030; THESE HAVE BEEN VALIDATED BY **SCIENCE BASED TARGETS INITIATIVE** ORGANIZATION AS BEING "WELL BELOW 2° C"

**ABSOLUTE SCOPE 1 & 2 GHG EMISSIONS :**  
-50% BY 2030 VS 2017

**ABSOLUTE SCOPE 3 GHG EMISSIONS FROM USE OF SOLD PRODUCT :**  
-28% BY 2030 VS 2019

## WORLD RANKING OF ZERO DIRECT CO<sub>2</sub> EMISSIONS PRODUCERS (2020,TWH) <sup>(1)</sup>



# THE KEY ROLE OF NUCLEAR IN EDF LOW CARBON GROWTH

**4g CO<sub>2</sub> / kWh**

CARBON INTENSITY OF EDF'S FRENCH NUCLEAR FLEET (1)

## TAXONOMY ALIGNMENT

IN 2022 THE EU COMPLIMENTARY DELEGATED ACT ON NUCLEAR IN THE TAXONOMY WAS ADOPTED, AFFIRMING NUCLEAR'S SIGNIFICANT CONTRIBUTION TO CLIMATE CHANGE MITIGATION.





# ESG RATINGS & PERFORMANCE: CONSISTENTLY ABOVE THE SECTOR AVERAGE

MAINTENANCE IN THE MAJOR  
NON-FINANCIAL INDEXES:  
(Non-exhaustive list)

MSCI

- Climate Change
- ESG Screened
- ESG Universal
- World Climate Change
- Climate Paris Aligned
- EU Low Carbon Leaders

EURONEXT

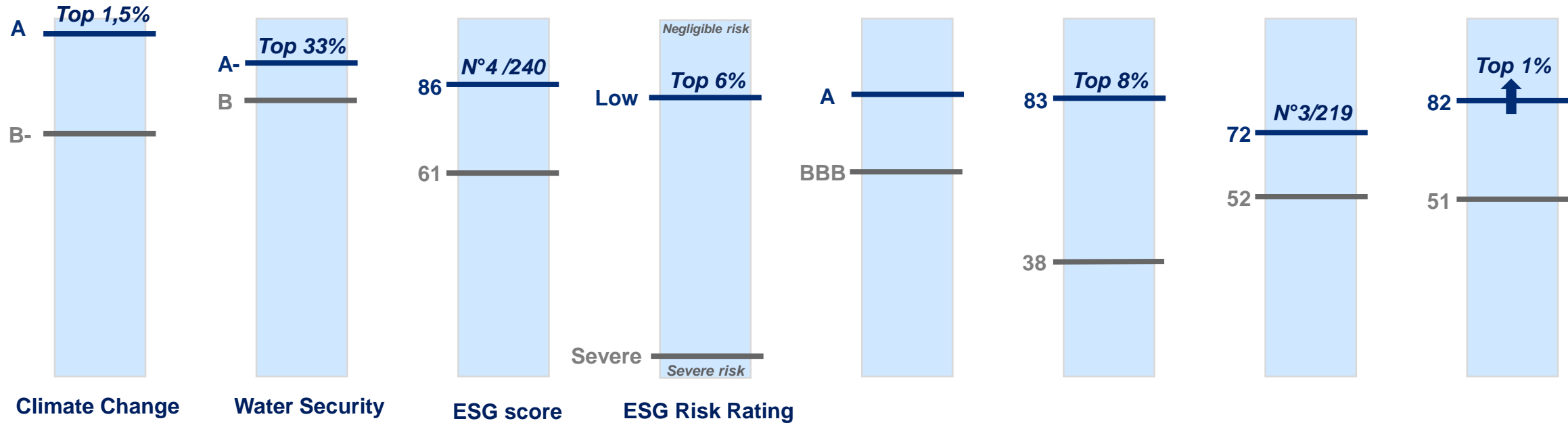
- CAC40 ESG
- Vigeo World 120
- Eurozone 120
- Vigeo France 20

Others

- STOXX Global ESG Leaders
- FTSE4Good



— Sector average  
↕ Change vs. 2020 if ± 3 bps



# 3

## SUSTAINABLE FINANCE AT EDF





# SUSTAINABLE FINANCE AT EDF



## A FREQUENT GREEN AND SOCIAL BOND ISSUER.

By using a strict **use of proceeds approach** to its sustainable issuances, financing is directed toward clearly identified green and/or social investments in accordance with ICMA's green and social bond principles. EDF has demonstrated the success of this approach **since 2013**.

## AN ACTIVE PARTICIPANT IN SUSTAINABLE FINANCE GOVERNANCE

Membre des **principes ICMA depuis 2013** et membre du comité exécutif des principes de 2016 à 2018, EDF est également cofondateur du Corporate Forum On Sustainable Finance agissant en tant que secrétariat fondateur de 2018 à 2019.

**€8.75 BN**

D'OBLIGATIONS VERTES<sup>(1)</sup>

**€1.25 BN**

D'OBLIGATIONS SOCIALES<sup>(1)</sup>

**€9.75BN**

IN SUSTAINABILITY-LINKED  
CREDIT INSTRUMENTS <sup>(1)</sup>



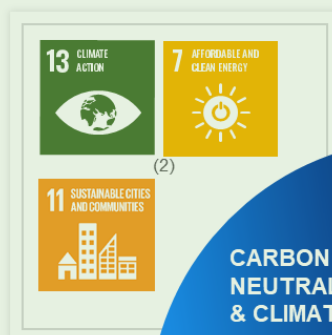
# SUSTAINABLE FINANCE AT EDF

**EDF's sustainability strategy drives its sustainable finance commitments.** Green bonds finance CSR commitments to carbon neutrality and climate and planet resources and protection, and social bonds finance commitments to wellbeing & solidarity and responsible development.

## Green bonds

### CARBON NEUTRALITY & CLIMATE

- EDF : an ambitious carbon trajectory
- Carbon offsetting solutions
- Adapting to climate change
- Development of electricity and energy services



### CARBON NEUTRALITY & CLIMATE

CSR

### PLANET RESOURCES PRESERVATION

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- Biodiversity
- Responsible land management
- Integrated and sustainable water management
- Waste and circular economy



## Social bonds

### WELLBEING & SOLIDARITY

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- Health and safety for all
- Equality, diversity and inclusion
- Ethics, conformity and human rights
- Energy precariousness and social innovation



### RESPONSIBLE DEVELOPMENT

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- Dialogue and consultation
- Responsible regional development
- Development of industrial sectors
- Sustainable and inclusive digitalisation





# EU TAXONOMY 2021 ELIGIBILITY ANALYSIS

In order to prepare implementation of the delegated acts and understand the universe of eligible expenses, in 2021 EDF performed a preliminary analysis of its taxonomy eligible CAPEX and OPEX.

## CAPEX <sup>(6)</sup>

€ 12.3<sub>BN</sub>

66%  
OF TOTAL  
CAPEX

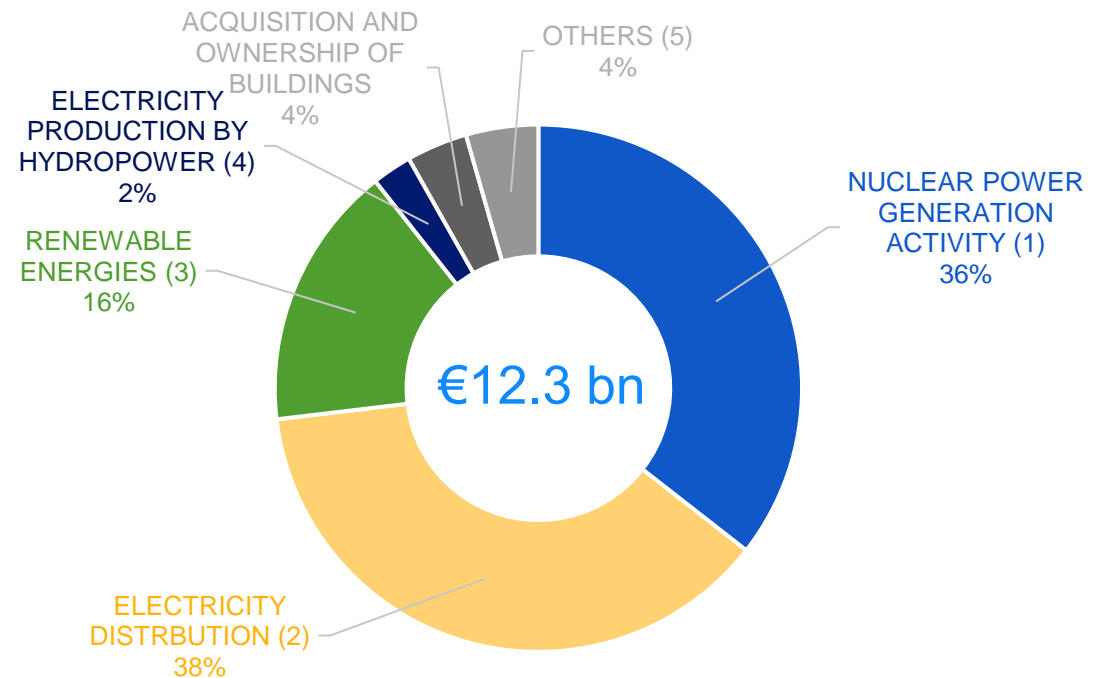
## OPEX

€ 6.0<sub>BN</sub>

66%  
OF TOTAL  
OPEX

Ineligible activities included electricity and gas marketing, gas production and optimization activities.

## SHARE OF 2021 TAXONOMY-ELIGIBLE CAPEX <sup>(1)</sup>



**EDF'S GREEN FRAMEWORK GOES A STEP FURTHER:** USE OF PROCEEDS MUST ALSO **ALIGN** WITH TECHNICAL CRITERIA (DNSH, etc)



- (1) Includes activities 4.26. Pre-commercial stages of advanced technologies with minimal waste from the fuel cycle, 4.27. Construction and safe operation of new nuclear power plants, for the generation of electricity or heat, including for hydrogen production, using best-available technologies, 4.28 Electricity generation from nuclear energy in existing installations, in the complementary Delegated Act
- (2) Includes activity 4.9. Transmission and distribution of electricity in the annexes to the Delegated Acts
- (3) This activity includes activities 4.3. Electricity generation from wind power, 4.1. Electricity generation using solar

- photovoltaic technology and 4.10. Storage of electricity in the annexes to the Delegated Acts.
- (4) Includes activity 4.5. Electricity generation from hydropower in the annexes to the Delegated Acts.
- (5) Includes activities 4.15. Heating/cooling networks and 4.20. Cogeneration of heat/cold and power from bioenergy as well as the activities 9.3. Professional services related to the energy performance of buildings and 7.3. Installation, maintenance and repair of energy efficiency equipment in the annexes to the Delegated Acts
- (6) Gross capex

# 4

## NEW GREEN FINANCING FRAMEWORK







## **To integrate more of the Group's very low-carbon production activities**

EDF's production and distribution activities are already very low carbon: in 2021 91% of EDF's production came from low-carbon sources. EDF's carbon intensity of 48 g CO<sub>2</sub>e / kWh places it 5x lower than the European average. The Framework now includes more of these including nuclear and electricity distribution.

## **To reflect the latest updates to EDF's strategy**

At EDF, Sustainable Finance follows our corporate strategy, not the other way around. The updated Green Financing Framework is linked to the strategic initiatives of Cap 2030 including EDF's Plan Solaire, Plan Stockage, and the new roadmap of the "Grand Carénage" project beyond 2025, among others.

## **To align to the EU Taxonomy and latest updates to the ICMA Green Bond Principles**

Since 2020 major changes have occurred in the sustainable finance market that will have profound changes, including the EU Taxonomy and updates to the Green Bond Principles. As a market leader, EDF's updated Framework aligns with these initiatives and goes beyond.

# A NEW FRAMEWORK FOR A NEW CONTEXT

## EDF'S 2022 GREEN FINANCING FRAMEWORK IS

### IMPLEMENTED BY A RESPECTED ISSUER

Since 2013, EDF's Framework has respected the requirements and key recommendations of **the ICMA Green Bond Principles** including **robust transparent annual impact reporting** 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 accorded it a certified « Medium Green » rating and « Likely aligned »<sup>(1)</sup> with the EU Taxonomy.



(1) CICERO Shades of Green uses 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.



# NEW GREEN FINANCING FRAMEWORK

The scope of the Green Financing Framework includes Green Bonds as well as other products such as 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
  - Distribution of electricity
  - Hydropower generation
  - Nuclear power generation
  - Energy efficiency projects
- **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**.

## 3 – MANAGEMENT OF PROCEEDS

- EDF’s Treasury and Finance will place the outstanding amount of proceeds of any green financing issuance into funds labeled as **green or “Socially Responsible”** and ensure full traceability to eligible projects
- EDF shall use best efforts to allocate all eligible proceeds within 24 months after issuance
- 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












## 4 - REPORTING

- EDF will report annually in its **Universal Registration Document** on the allocation of the proceeds and their environmental impacts
- EDF will continue to **report until full allocation or the maturity date** of the Green Bond issue, whichever comes first

## 5 – EXTERNAL REVIEW



- EDF has appointed **CICERO** to issue Second Party Opinion on its Green Financing Framework and on its alignment to EU Taxonomy
- One of EDF’s **statutory auditors** will provide an assurance report annually

# FOCUS ON ELIGIBLE CATEGORIES (1/2)

Activity	Eligible Investments	EU Taxonomy Categories	CICERO Shades of Green
 <b>Renewable power projects</b>	<ul style="list-style-type: none"> <li>Onshore and offshore wind energy,</li> <li>Solar energy</li> <li>New hydropower, Biomass, Geothermal, Energy storage</li> </ul>	<ul style="list-style-type: none"> <li>✓ 4.1 Electricity generation using solar photovoltaic technology</li> <li>✓ 4.3 Electricity generation from wind power</li> <li>✓ 4.5 Electricity generation from hydropower</li> <li>✓ 4.10 Storage of electricity</li> </ul>	 Dark Green
 <b>Hydropower generation</b>  With reporting for biodiversity	<ul style="list-style-type: none"> <li>Replacing large electric and mechanical components,</li> <li>Renovating electrical facilities and control systems,</li> <li>Upgrading existing facilities to improve the generation efficiency</li> <li>Environmental refurbishment of generation facilities including especially protection of biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>✓ 4.5 Electricity generation from hydropower</li> </ul>	 Dark Green
 <b>Energy efficiency projects</b>	<ul style="list-style-type: none"> <li>Smart Lighting projects</li> <li>District or private sector heating and cooling networks (production facilities and distribution networks)</li> <li>Production and cogeneration of heat/cool and power from bioenergy and waste heat,</li> </ul>	<ul style="list-style-type: none"> <li>✓ 4.15 District heating/cooling distribution</li> <li>✓ 4.20 Cogeneration of heat/cool and power from bioenergy</li> <li>✓ 4.24 Production of heat/cool from bioenergy</li> <li>✓ 4.25 Production of heat/cool using waste heat</li> </ul>	 Medium to  Light Green
 <b>Distribution of electricity</b>	<ul style="list-style-type: none"> <li>Investments in the distribution network connected to the European system</li> <li>Connections to renewable energy facilities</li> <li>Allowing higher inflows of renewable energy into the grid</li> <li>Infrastructure supporting the electrification of transport (including EV charging)</li> <li>Smart metering</li> </ul>	<ul style="list-style-type: none"> <li>✓ 4.9 Transmission and distribution of electricity</li> </ul>	 Medium to  Dark Green



# FOCUS ON ELIGIBLE CATEGORIES (2/2)

Activity	Eligible Investment	EU Taxonomy Categories	CICERO Shades of Green
 <b>Nuclear power generation</b>	<ul style="list-style-type: none"><li>• Research, development, demonstration, and deployment of innovative reactors that produce energy from nuclear processes with minimal waste from the fuel cycle</li><li>• Projects authorized no later than 2045 by the competent authorities for the construction and safe operation of “best available technologies” nuclear</li><li>• Projects authorized no later than 2040 by the competent authorities to extend the operating life of existing reactors</li></ul>	<ul style="list-style-type: none"><li>• 4.26 Pre-commercial stages of advanced technologies with minimal waste from the fuel cycle</li><li>• 4.27 Construction and safe operation of new nuclear power plants, for the generation of electricity or heat, including for hydrogen production, using best-available technologies</li><li>• 4.28 Electricity generation from nuclear energy in existing installations</li></ul>	 Medium Green

**EDF shall identify at issuance if it intends to finance nuclear power generation with the proceeds of a given bond, or if nuclear power generation shall not be financed with such proceeds**

The Complementary Delegated Act for nuclear and gas activities was adopted on 9 March 2022 by the European Commission and was not subject to a veto by 11 July 2022. It will be published in the Official Journal and will enter into force from 2023.

**Financed nuclear projects will align with all applicable screening criteria including Do No Significant Harm and minimum social safeguards**

# EU TAXONOMY ALIGNMENT

Financed activities will align to the EU Taxonomy

Taxonomy aligned activities must:

Make a **substantial contribution to the climate mitigation objective of the EU** by complying with the associated criteria

**Do No Significant** harm to any of the other five environmental objectives

**Comply with minimum safeguards** thanks to the adoption by all Group companies of the Code of Ethics

**CICERO Green:** The Framework has been subject to an independent second party review, CICERO Shades of Green which has accorded it a certified « **Medium Green** » rating and « **Likely aligned** » with the EU Taxonomy





# REPORTING

EDF will report annually in its Universal Registration Document on the following items, and on the applicable methodology.

EDF will continue to report until full allocation or the maturity date of the Green Bond issue, whichever comes first.

## Allocation Reporting

**EDF will produce an annual report on the allocation of the proceeds of its Green Financings**

The report will contain the following information:

- Total amount of proceeds
- Total amount of proceeds allocated to eligible projects
- Total amount of unallocated proceeds
- Allocations by eligible project category
- Allocations by geographical distribution
- Number of eligible projects
- Commissioning date of projects financed

## Impact Reporting



### Renewable Power Projects

- Installed capacity in MW
- Expected production in GWh per year
- Expected avoided CO2 emissions in tons of CO2 per year



### Hydropower Generation

- Installed capacity impacted by investments in MW
- Expected electricity output in GWh per year
- A qualitative description of environmental benefits
- For biodiversity projects: qualitative impacts and, at EDF's discretion, quantitative impacts according to a suitable indicator



### Distribution of Electricity

- Installed capacity connected to network in MW
- Expected avoided CO2 emissions in tons of CO2 per year (as applicable)



### Energy Efficiency Projects

- Expected avoided CO2 emissions in tons of CO2 per year



### Nuclear power production

- Installed capacity in MW
- Expected production in GWh per year
- Expected avoided CO2 emissions in tons of CO2 per year

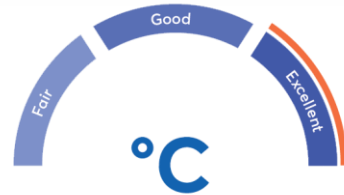
# EXTERNAL REVIEW

EDF's Green Financing Framework has been subject to a thorough second party review by CICERO Shades of Green

SHADES OF  
GREEN



GOVERNANCE  
ASSESSMENT



GREEN BOND AND  
LOAN PRINCIPLES



EU TAXONOMY

Likely aligned <sup>(1)</sup>



## About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO and has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008.



(1) CICERO Shades of Green uses 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.



- ★ 2021 Largest External Reviewer, Climate Bonds Initiative Awards
- ★ 2020 External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- ★ 2020 Largest External Review Provider In Number Of Deals, Climate Bonds Initiative Awards
- ★ 2019 External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- ★ 2019 Largest Green Bond SPO Provider, Climate Bonds Initiative Awards
- ★ 2018 External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- ★ 2018 Largest External Reviewer, Climate Bonds Initiative Awards
- ★ 2017 Best External Assessment Provider, Environmental Finance Green Bond Awards
- ★ 2016 Most Second Opinions, Climate Bonds Initiative Awards



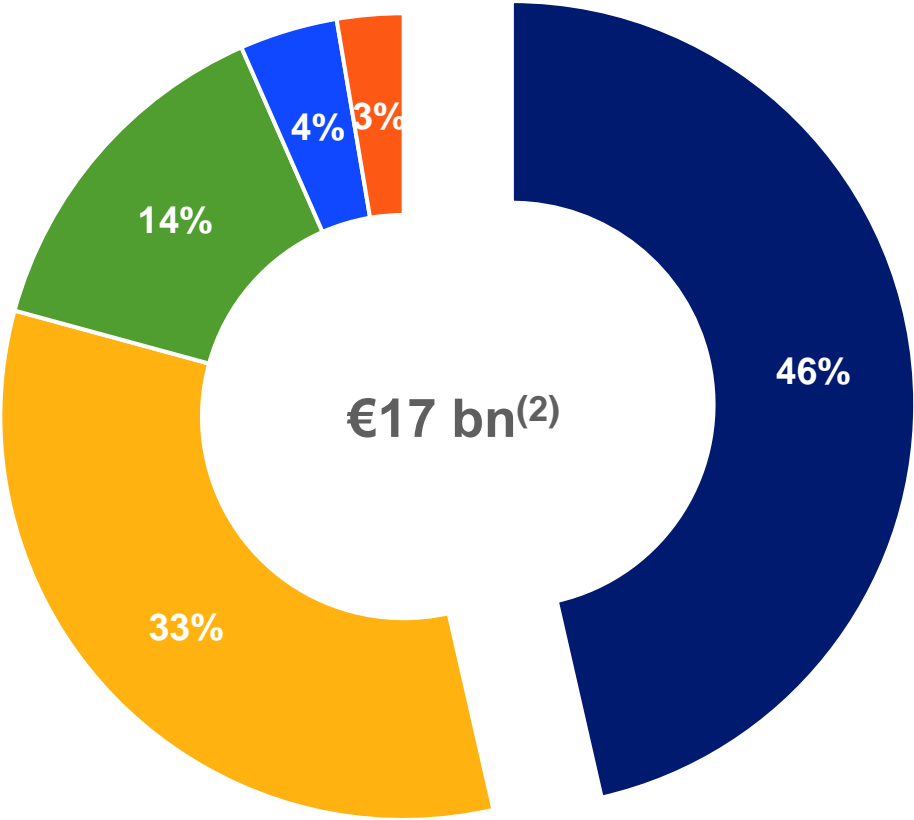
# ILLUSTRATIVE TAXONOMY-ALIGNED ALLOCATION <sup>(1)</sup>

Based on EDF's 2021 taxonomy eligibility analysis.

Note that this analysis looked only at eligibility for nuclear and future amounts may change subject to strict alignment analysis.



Capex	Opex
Energy efficiency €0.0 BN	€0.4 BN
Hydropower €0.3 BN	€0.4 BN
Renewable energy €2.0 BN	€0.4 BN
Electricity distribution €4.6 BN	€1.0 BN



Capex	Opex
Nuclear €4.4 BN	€3.5 BN

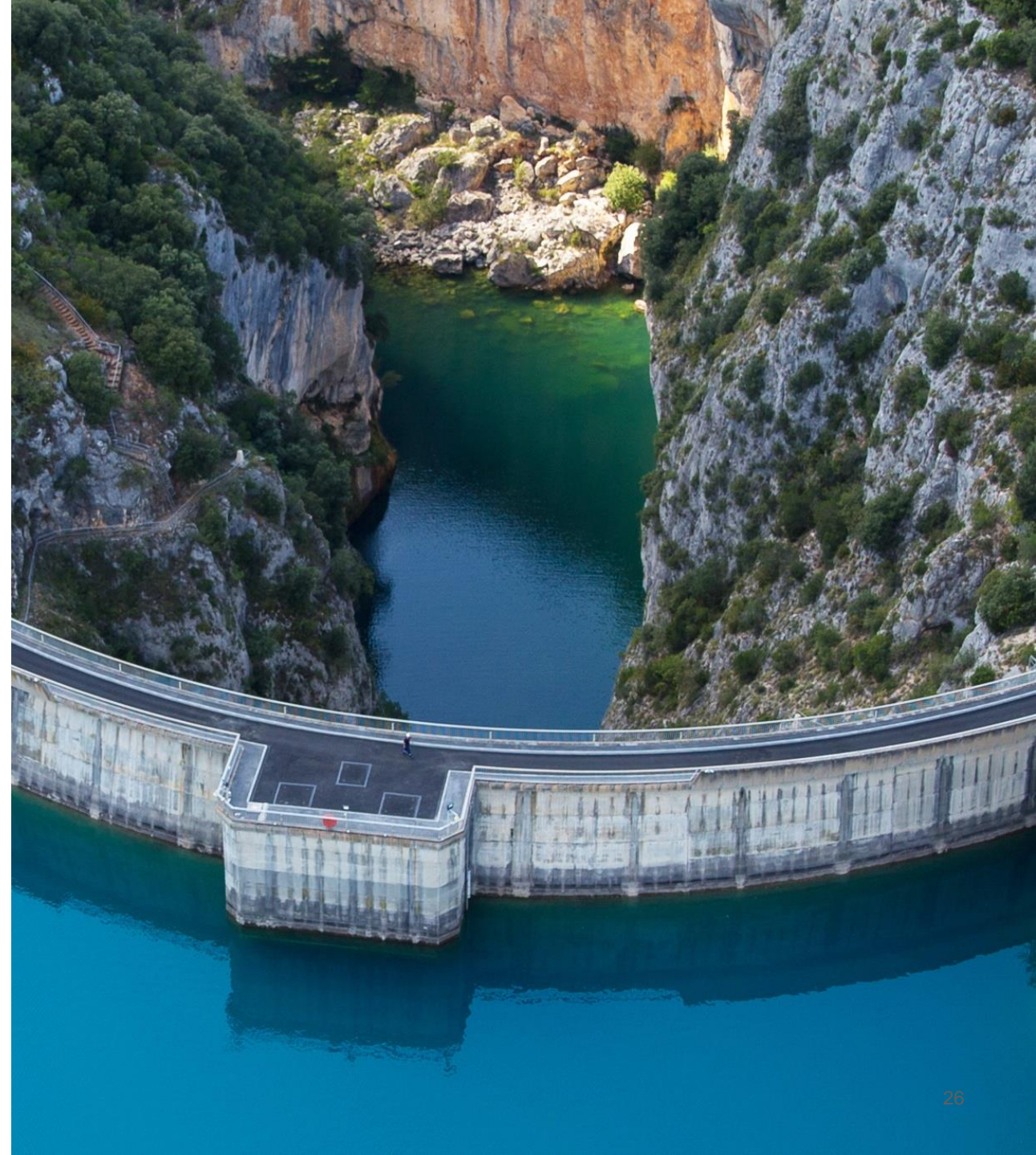
EDF WILL DISTINGUISH CLEARLY BETWEEN GREEN ISSUANCES THAT FINANCE NUCLEAR AND THOSE THAT FINANCE ALL OTHER ACTIVITIES



(1) Non-binding estimate, EDF makes no commitment on allocations, either real or implied  
(2) Less 2021 amounts of €1.2bn allocated to acquisition and ownership of buildings and « Other » which do not figure in EDF's Green Bond Framework

# 5

## APPENDIX AND PROJECT EXAMPLES



# GREEN BONDS: PROCEEDS ALLOCATION AND AVOIDED CO<sub>2</sub> EMISSIONS

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 <sup>(1)</sup> avoided CO <sub>2</sub> 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	1.75Md€	1,248M€	EDF Renewables projects	54%	962	1.61
		502M€	EDF Hydro operations	100% <sup>(2)</sup>	903	0.01
Jan. 2017	26,000M¥	14,021M¥	wind projects (EDF Renewables, Luminus)	15%	86	0.12
		11,979M¥	EDF Hydro operations + hydro Luminus project	87%	133	0.01
Sept. 2020	2.4Md€	2,246M€	projects + portfolio purchases by EDF Renewables, EDF ENR projects, Luminus projects	78%	1,412	1.35
		138M€	EDF Hydro operations and biodiversity projects	100%	123	0.001
Nov. 2021	1.85Md€	-				
Total					5,410	6.48

The detailed list of EDF Renewables projects and hydraulic investment operations by category will be published in the 2020 EDF URD document

(1) Sum of the impacts of each project weighted by the share of total investment funded by the corresponding Green Bond

(2) Share of investments funded by EDF taken in full, including half of Romanche-Gavet investment amount



# EXISTING NUCLEAR FLEET AND “GRAND CARÉNAGE” PROGRAMME

## GRAND CARÉNAGE PROGRAMME: FIRST PHASE

Targets of the first phase 2014-2025:

- Extend operating lifespan beyond 40 years
- Help the fleet meet its production targets in complete safety
- Secure and optimise the financial trajectory of investments

Strategy confirmed by the guidelines laid out in the multi-annual energy plan

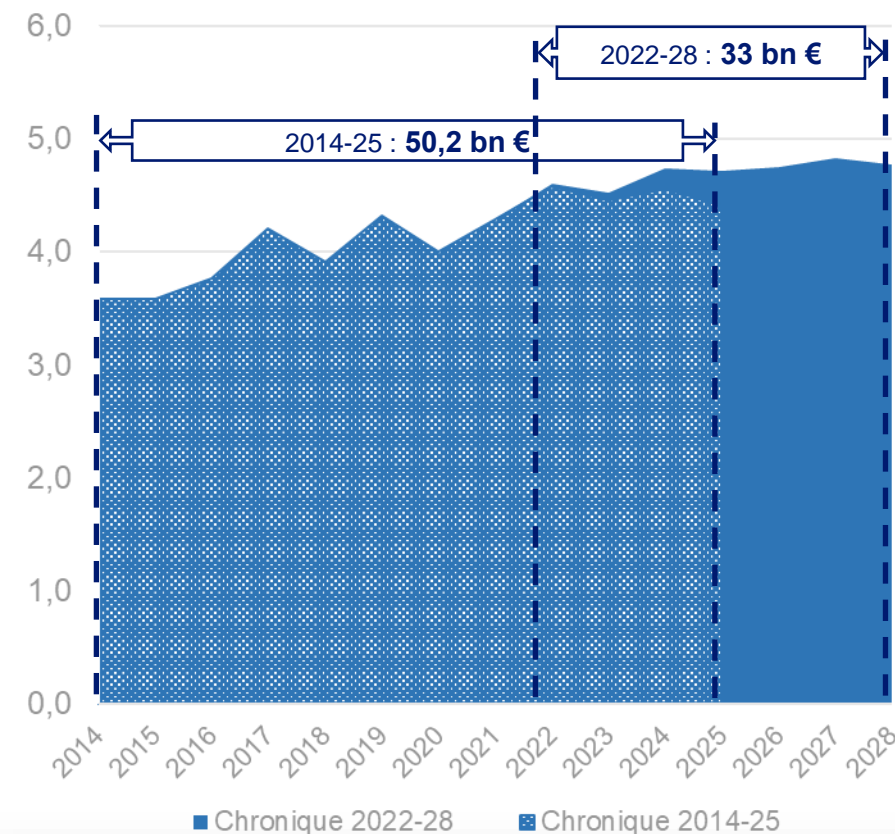
## EXTENSION OF TECHNICAL SCOPE AND TIMEFRAME: SECOND PHASE

Launch of the second phase of *Grand Carénage* programme for the period 2022-2028, including <sup>(1)</sup>:

- Continuation of the fourth ten-year visits of 900MW reactors, with additional works in accordance with ASN recommendations
- Studies and launching of the fourth ten-year visits of 1,300MW reactors based on feedback from the ruling on the fourth ten-year visits of 900MW reactors
- Prior studies for the continued operation beyond 50 years of 900MW reactors
- Continuation of maintenance operations and replacement of large components to allow to extend lifespan of the fleet beyond 50 years

## CORRESPONDING FINANCIAL TRAJECTORY

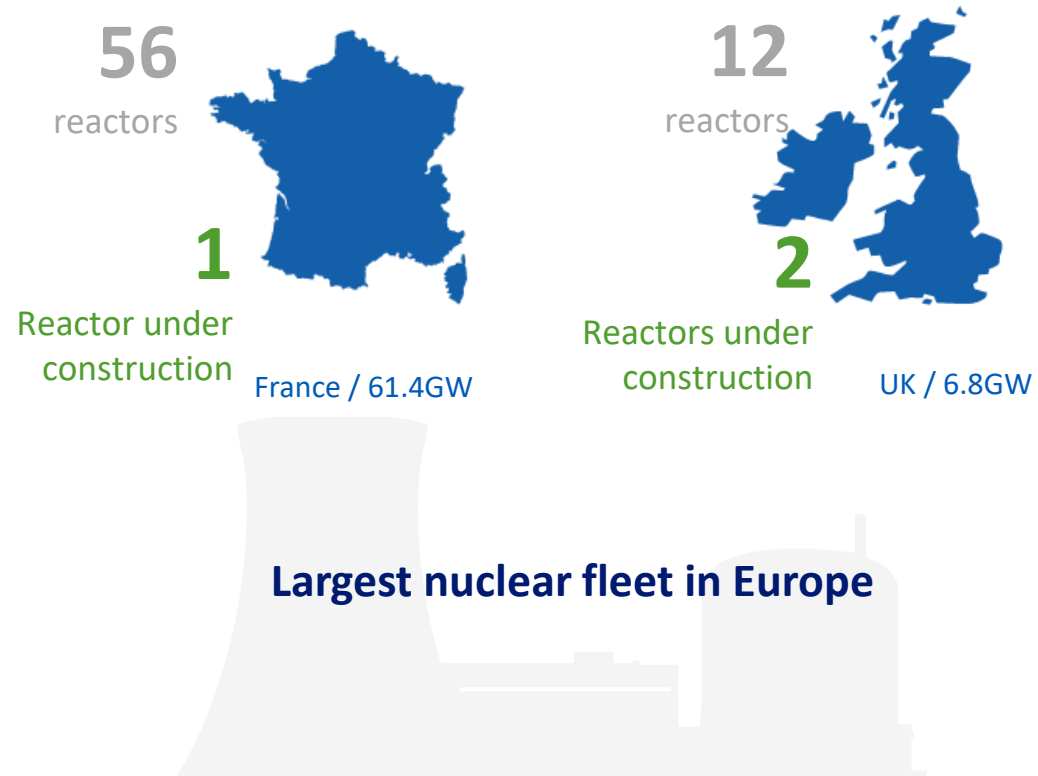
- 2014-2025 period total costs amounting to €50.2bn
- Total expenses for the new scope of the 2022-2028 period estimated at €33bn <sup>(2)</sup>



LAUNCH OF THE SECOND PHASE OF THE  
GRAND CARÉNAGE PROGRAMME  
AN AVERAGE INVESTMENT OF €4.7BN A YEAR

# 1 PROVEN TRACK RECORD IN OPERATING NUCLEAR POWER

## EDF EXISTING FLEET



## UNIQUE OPERATIONAL EXPERIENCE

Construction of EPR-type reactors in France, China (operational) & Great Britain

Development of EPR2 for the renewal of the French nuclear fleet

Development of NUWARD™, a small modular reactor (SMR), in partnership with CEA, Naval Group, TechnicAtom

Key player in the French and international markets for the **decommissioning of nuclear power plants** and **radioactive waste treatment facilities**

# 1 NUCLEAR POWER: MAJOR CONTRIBUTION TO DECARBONISED GENERATION



## ANNOUNCEMENTS BY THE FRENCH PRESIDENT TO SUPPORT THE NUCLEAR SECTOR

- Launch of a construction program of 6 EPR2 reactors with potentially 8 more
- Extended operations for all reactors except for safety issues
- Launch of French SMRs including €500m for NUWARD™

## NEW NUCLEAR MAJOR PROJECTS

### FLAMANVILLE 3

- Update** of fuel loading target from end-2022 to Q2 2023 and construction costs from €12.4bn to €12.7bn<sup>(1)</sup>



### SIZEWELL C

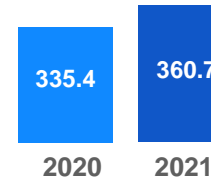
- Draft law introduced by the UK government on a **funding** scheme (Regulated Asset Base) of new nuclear projects



## EXISTING NUCLEAR

### FRANCE

Generation  
(in TWh)



“**Grand Carénage**”: Five 4th 10-year inspections completed, 2 under way

Signature of an exclusive agreement to acquire part of the GE Steam Power’s nuclear activities<sup>(2)</sup>

**Extension** of 1,300MW nuclear fleet depreciation period to 50 years

### UNITED KINGDOM

Generation  
(in TWh)



**Closure** of Dungeness B and Hunterston B power plants<sup>(3)</sup>

## NUCLEAR POWER INCLUDED IN EUROPEAN TAXONOMY<sup>(4)</sup>

(1) See 12 January 2022 press release. Cost in 2015 euros and excluding interim interests.

(2) See 10 February 2022 press release. Excluding the American continent.

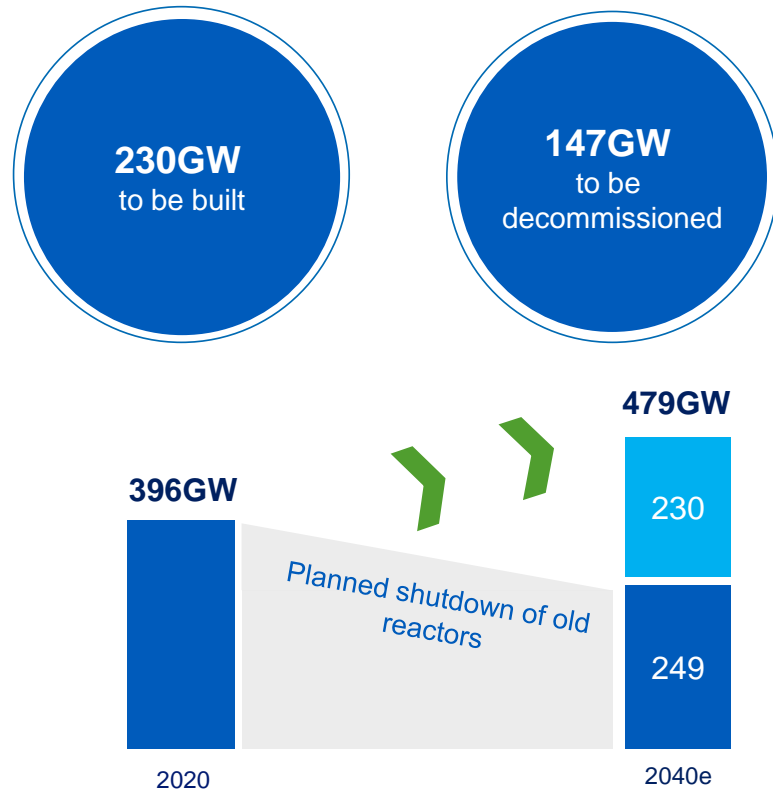
(3) Closures in June 2021 and January 2022, respectively. Decision to close Hinkley Point B in mid-2022.

(4) Complementary delegated act of 09/03/2022

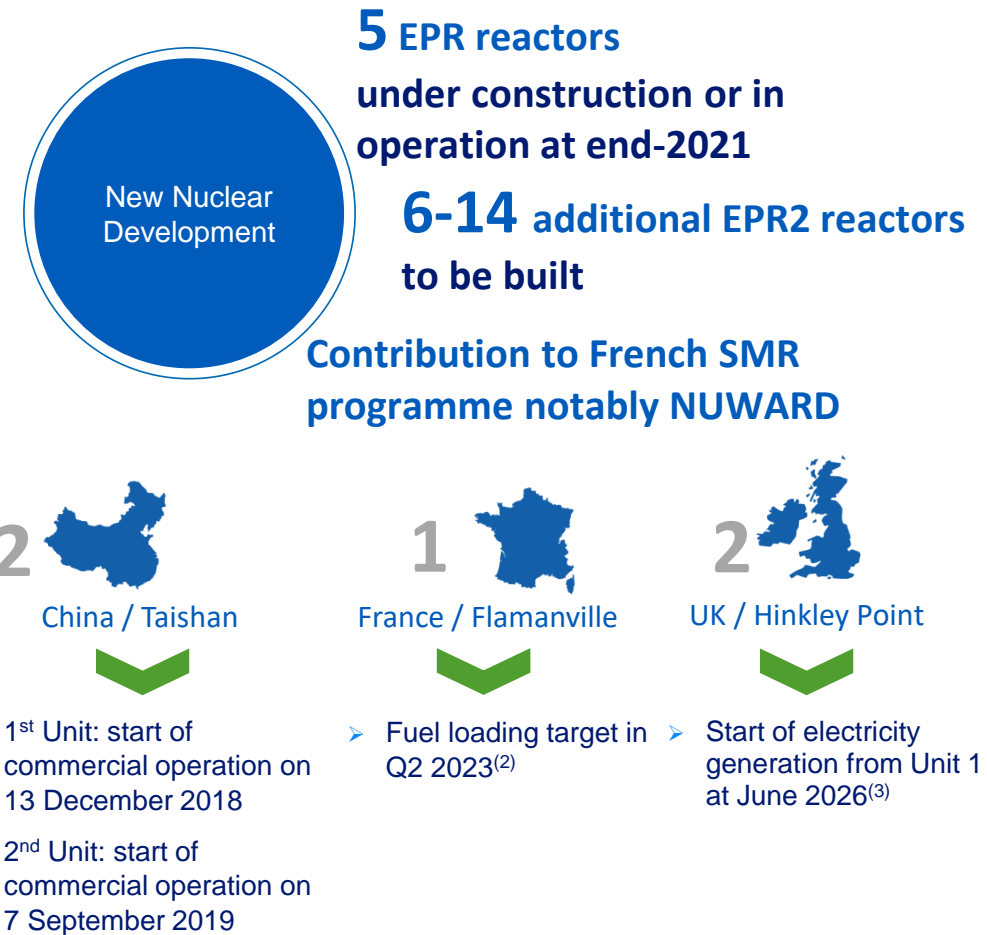


# 1 UNIQUE GLOBAL POSITIONING IN NUCLEAR NEW-BUILD

World nuclear capacity expected to expand over the next 20 years <sup>(1)</sup>



Unique positioning on global new nuclear build growth



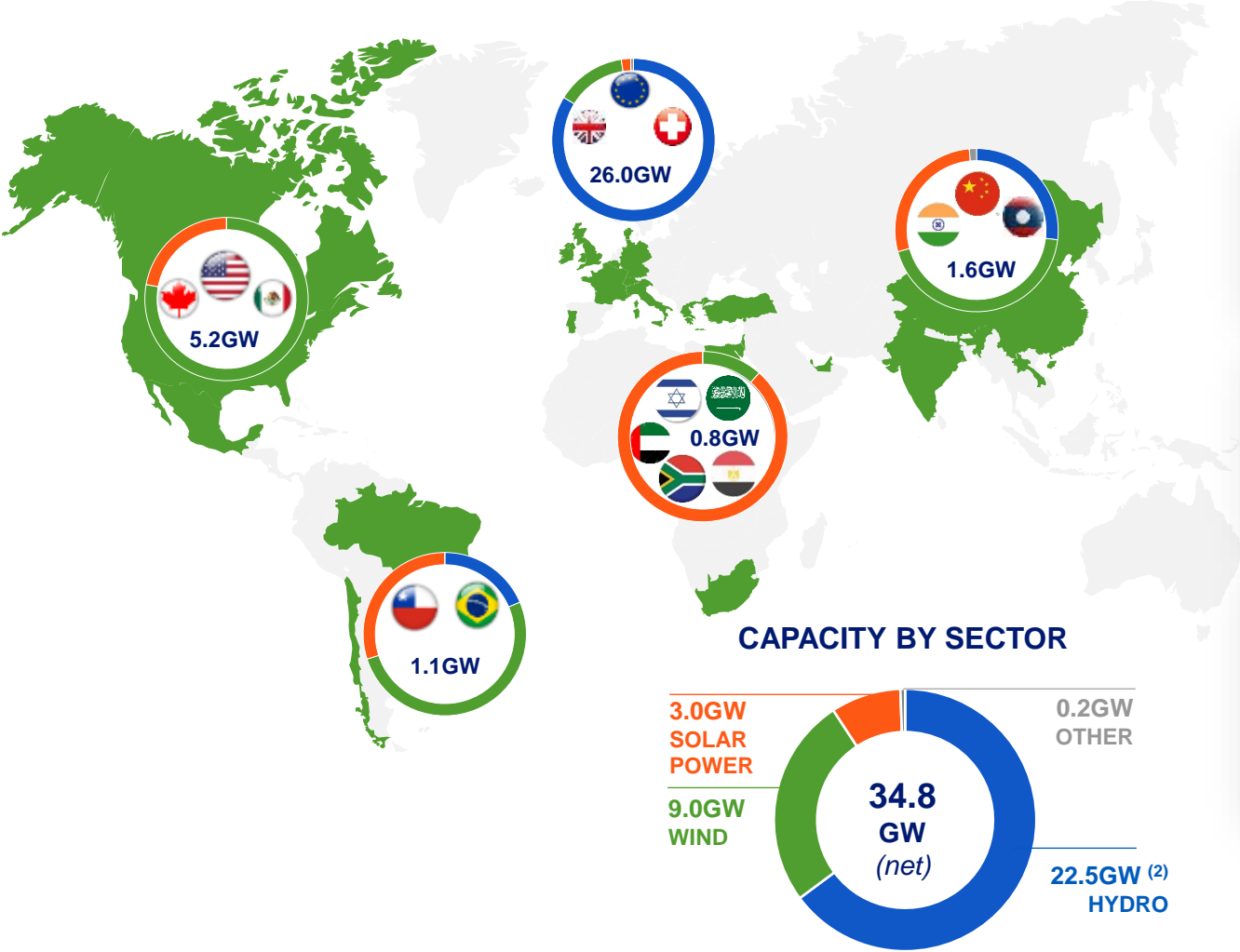
<sup>(1)</sup> International Energy Agency's reference scenario

<sup>(2)</sup> The project has no margin either in terms of schedule or cost

<sup>(3)</sup> See press release of 27 January 2021. The risk of COD delay of Units 1 and 2 is estimated respectively at c.15 and 9 months. The probability that this risk occurs is high

# EDF, THE EUROPEAN LEADER IN RENEWABLE ENERGY

2021 NET INSTALLED CAPACITY: 34.8GW <sup>(1)</sup>



A DIVERSIFIED MIX WITH 34.8GW IN OPERATION

- 22.5GW of hydropower
- 12.0GW 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

- 3.1GW gross commissioned in 2021
- 7.9GW gross currently under construction (1.5GW in onshore wind power, 1.9GW in offshore wind power, 4.5GW in solar power)

(1) 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



## COMMUNITIES DALKIA IN NORTHWEST REGION

### THE VIRTUOUS HEATING NETWORK OF THE CITY OF MAUBEUGE

In order to provide the city of Maubeuge with a responsible and economically efficient heating solution, our teams relied on the recovery of waste heat from the existing waste recovery center **to inject it into a district heating and domestic hot water network.**



83 %

Renewable energy in the  
network mix.



10 100 tons

Of CO2 avoided every year

### KEY STRENGTHS

- Intelligent and high performing energy management thanks to the connection to Dalkia's energy performance management center (DESC).
- An average reduction of 15% in the energy bill of subscribers. The network helps to fight against energy poverty.



# Enedis: modernizing and securing the largest electricity distribution network in Europe

**1,4 million km**  
of electrical lines

Incl. : **728,390 km of LV network**  
(47% underground, 53% overhead)  
**653,389 km of MV network**  
(51% underground, 49% overhead)

## Modernize

**11 500 km**  
of updated network  
every year

Incl. : **5,000 km of high voltage network**  
**6,500 km of LV network**

## Develop

**15 000 km**  
of new network every year  
→ About 1 trip around the earth every 3 years

## Strengthening infrastructure to integrate renewable energy

**2 344 stations**  
including 19 new stations in 2021  
146 stations over 10 years





# An acceleration of renewable energy connections

## Nearly 540,00 renewable energy installations

connected to the distribution network as of the end of 2021 including 60% in rural communities

## 148 000 auto consumers

at year end 2021 vs 3 000 in 2015

## 34 GW of renewable production connected to the network

+40% of renewables interconnection since 2017

## Close to 90% of intermittent renewables (mainly PV)

connected to the distribution network

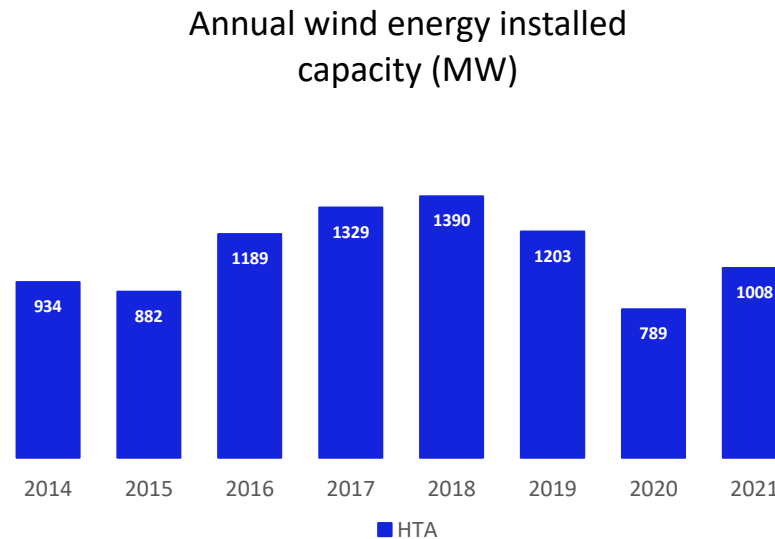
## PPE objectives in 2028 :

+1 million renewable energy producers,  
representing about 70 GW

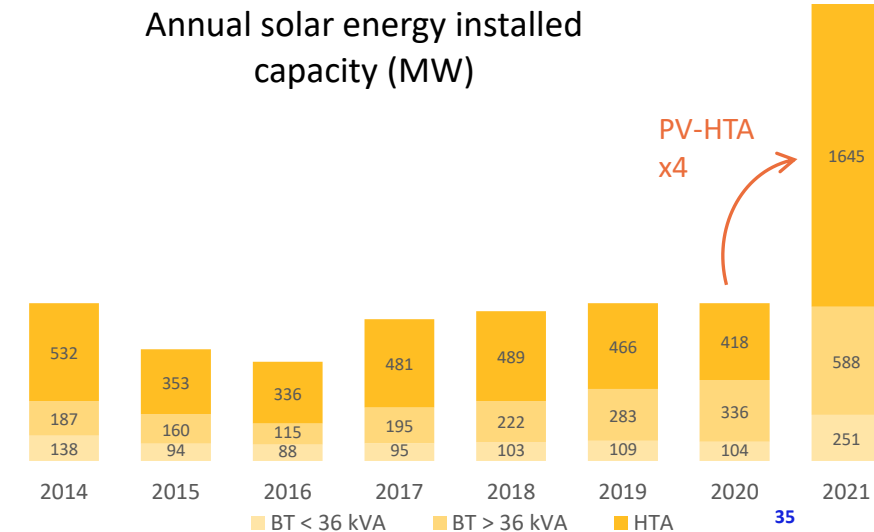
## Additional flexibility to facilitate integration of renewable energy

Connection agreements  
Smart connection offers

Annual wind energy installed  
capacity (MW)



Annual solar energy installed  
capacity (MW)



# HYDROELECTRIC POWER – PROJECT EXAMPLES



## Construction & development of Gavet (Romanche)

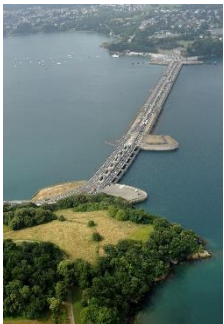
Major reconfiguration project of 5 dams and 6 power plants in 1 dam and 1 underground generation plant, with an ambitious re-naturation operation, a broad information campaign for stakeholders, significant economic benefits for local communities, and a return-to-work support programme

- Re-naturation using local plants harvested within a maximum radius of 25km to restore shorelines, grasslands and groves
- Management plan for 57 hectares of compensation areas
- Social integration clause implemented on the Romanche-Gavet site, to support the return to employment of people in difficulty

## Development of kembs: reserved flow turbinage (Rhine)

Installation of the reserved flow in the Rhine to improve the living conditions of local aquatic life, allowing the attraction and the proper functioning of the fishway, as well as the feeding of the “Little Rhine”, a re-natured branch, supporting the return of endemic species

- Re-naturation of 100 hectares of agricultural fields in order to provide different environments favourable to biodiversity
- Sustained discussions with relevant stakeholders (for example, the *Petite Camargue Alsacienne*)



## Partial renovation of the *La Rance* tidal power plant

- The consultation mechanism relating to the management of water levels in the Rance estuary, the first of this scale at the hydropower level, brought together 68 stakeholders and identified 9 major expectations in terms of water management, broken down into 13 objective criteria. The consultation, conducted by EDF, was supervised by a third party, who guaranteed its neutrality and fairness
- As part of this consultation, EDF carried out “life-size” tests to deploy a new mode of operation, in line with the identified expectations. These tests, conducted at different water levels, brought together 48 local “observers”, in partnership with the *Coeur Emeraude* association



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