



2021  
**HALF-YEAR  
RESULTS**

APPENDICES



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# TABLE OF CONTENTS

**P.4**

**STRATEGY AND  
INVESTMENTS**

**P.14**

**ESG**

**P.22**

**RENEWABLES**

**P.35**

**REGULATED**

**P.48**

**FRANCE –  
GENERATION AND  
SUPPLY**

**P.67**

**FINANCIAL  
CONSOLIDATED  
STATEMENTS**

**P.102**

**FINANCING AND  
CASH  
MANAGEMENT**

**P.115**

**OPERATIONAL  
DATA &  
MARKETS**



# 2021 HALF-YEAR RESULTS

## STRATEGY AND INVESTMENTS





# FLAMANVILLE 3 EPR (1,650MW) (1/2)

## CONSTRUCTION PROGRESS

ASN and Senior Civil Servant for Defense and Safety approval (8 October 2020) for the fuel arrival on site.

Delivery of fuel assemblies completed at end-June 2021, consistent with the project schedule.



## UPDATING OF SECONDARY CIRCUIT WELDS

**Penetration welds**

In a letter dated 19 June 2019, the French Nuclear Safety Authority (ASN) asked EDF to rework, before commissioning, the eight VVP <sup>(1)</sup> penetration welds on the Flamanville EPR reactor containment building that deviated from the “break preclusion” reference document. EDF also decided to rework four ARE <sup>(2)</sup> penetration welds.

The scenario retained by EDF for reworking the penetration welds (VVP and ARE) is the use of remotely-controlled robots, designed to conduct high-precision operations within the pipes in question. This technology has been developed for the fleet in operation. The ASN approved the VVP weld repair process in March 2021 with several weeks of delay compared to the planned schedule, and the repair works have started. The first repair weld was declared compliant on 8 June 2021 before stress-relieving heat treatment.

The qualification of the ARE weld repair process is underway. This process is an adaptation of the one used for VVP penetration repairs.

**Other welds**

In addition, the technical investigation into reworking the welds located in the Main Secondary Circuit (Circuit Secondaire Principal) with quality shortfalls and/or not complying with the requirements of the break preclusion reference document defined by EDF is ongoing. The ASN gave its agreement in July 2020 for the repair of a 1<sup>st</sup> batch of 5 welds, then in November for the repair of a 2<sup>nd</sup> batch of 2 welds, in April 2021 for the repair of a 3<sup>rd</sup> batch of 6 welds and mid-July for a 4<sup>th</sup> batch of 2 welds. For the 4 batches authorised to date, 12 welds have been completed. In April, the ASN approved the completion of the corresponding regulatory inspections. These inspections are under way

At this stage, some 100 secondary system welds are impacted by the repairs.

The repair of the penetration welds of the main secondary system is part of the critical project path. The project now has no more room for manoeuvre, in terms both of schedule and costs.

(1) Steam discharge pipework circuit

(2) Water supply circuit for steam generators



# FLAMANVILLE 3 EPR (1,650MW) (2/2)

## CONTROLS ON THE MAIN PRIMARY CIRCUIT

ASN asked EDF to conduct fresh survey inspections by sampling and additional controls of the Main Primary Circuit (Circuit Primaire Principal, CPP). EDF has drawn up a sample of welds that are representative of all Main Primary Circuit welds for this re-inspection. Work started on 24 February 2021 and is due to continue through to the second half of 2021.

In a separate development, on 2 March 2021 EDF declared a significant event to ASN. This concerned the incomplete observance of the “break preclusion” referential of 2006 in respect of the implantation of three nozzles on the main primary circuit (a nozzle allows to connect auxiliary circuits to the primary circuit). Three scenarios have been examined on the ASN request. A file was sent to the ASN on 21 June specifying that EDF has chosen the “Retainer Clamp” (RC) solution and requesting ASN to give its opinion on the solution in the coming months. This solution is the only one compatible with the project’s reference planning and the corresponding costs are being assessed.

## SCHEDULE AND COSTS

On 9 October 2019 <sup>(1)</sup>, the Group submitted a new schedule and a new estimate of construction completion cost <sup>(2)</sup> for Flamanville 3 EPR and indicated that provisional schedule for implementing the repairing of the penetration welds, considering the agreement of the ASN, would mean the fuel being loaded at end-2022 and a revised construction completion cost of €12.4 billion <sup>(2)</sup>. The additional costs with respect to the previous estimate of €<sub>2015</sub> 1.5 billion are mostly booked under “other income and expenses” <sup>(3)</sup> <sup>(4)</sup> rather than as investments.

At end-2020, a review of the first lockdown’s impact on site work did not result in a change of targets regarding the fuel-loading date and construction costs announced in October 2019. However, the review showed that the project has no margin either in terms of schedule or costs. This situation was confirmed by the project reviews carried out so far in 2021.

Meeting these targets is dependent on many factors and technical issues, including ASN investigations.

Furthermore, other risks may also emerge. The risks regarding the schedule and construction completion costs are therefore very high.

(1) See press release of 9 October 2019

(2) In 2015 euros, excluding interim interest (see note 10.2 of the Groupe financial statements)

(3) IAS 16 paragraph 22 on abnormal costs incurred in connection with assets constructed by the Company. These costs will affect the Group share of net income, without any impact on net income excluding non-recurring operations

(4) In first-half 2021, these additional “Other operating income and expenses” totalled €278m and are to be added to the €397m recorded at end-2020.



# HINKLEY POINT C

## MANAGEMENT OF THE PANDEMIC

- Significant measures continue to be in place to ensure maximum safety for on-site staff and the local community, including an intensive testing program (c. 40 000 tests performed in the first six months of 2021).
- HPC noted by Public Health England as industry ‘best in class’ in its counter measures during the pandemic response.
- Number of people working on site have increased from c. 5,000 to 6,700 in the first six months of 2021 and is expected to continue to increase steadily.

## PROGRESS ON SITE

- Q1 - First low pressure rotor fully bladed ➔ achieved on time
- Q2 - Completion of the outfall tunnel drive ➔ achieved in July



The manufacturing of the concrete segments used to line the intake and outfall tunnels is now completed. Since production began in 2019 over 45,000 segments have been produced

## REMINDER ON KEY DATA <sup>(1)</sup>

- In the context of Covid pandemic, a detailed review of schedule and costs has been finalised in January 2021 to estimate the impact of the pandemic so far. This review has concluded the following <sup>(1)</sup>:
  - The target for the start of electricity generation from Unit 1 has been set at June 2026, compared to end-2025 as initially announced in 2016
  - The project completion costs have been estimated at this date in the range of £<sub>2015</sub> 22 to 23bn <sup>(2)(3)</sup>
  - The risk of COD delay of Units 1 and 2 has been kept at respectively 15 and 9 months. The realisation of this risk, for which the probability is still high, would incur a potential additional cost in the order of £<sub>2015</sub> 0.7bn
- Despite effective crisis management, the project continues to suffer from the crisis locally and through the supply chain
- The agreements between EDF and CGN include a capped compensation mechanism between both shareholders in case of cost overruns or delays. Given the expected level of completion costs, this mechanism is applicable and will be triggered when the time comes. This arrangement is part of a Shareholders’ Bilateral Agreement signed between EDF and CGN in September 2016 and is subject to a confidentiality clause
- The project’s total financing needs exceed the contractual commitment of the shareholders, which could result in difficulty in funding the project in the event of shareholder misalignment and lead the Group to assume a portion of the financing needs greater than its share.

(1) See press release published by EDF on 27 January 2021

(2) Reminder on the costs previously announced in the Press release of 25 September 2019: £<sub>2015</sub> 21.5 – 22.5bn. Costs net of operational action plans, in 2015 sterling, excluding interim interest and excluding forex effect versus the reference exchange rate for the project of £1 = €1.23. Costs are calculated on 27 January 2021 by deflating estimated costs in nominal terms using the British Construction OPI – Output Price Index – for all new work.

(3) The resulting EDF IRR (7.1 – 7.2%) is based on an exchange rate £1 = €1.13, UK CPI 2.5% and long term electricity prices extrapolated from the Contract for Difference Strike Price all along the asset (0.1% inflation = 0.1% IRR and £<sub>2012</sub> 10/MWh = 0.1% IRR)



# SIZEWELL C

## KEY ELEMENTS

- Project of new nuclear power station at Sizewell on the Suffolk coast
- Two UK European Pressurised Reactor (EPR) for a total generating capacity of 3.2GW
- Power supply to 6 million homes and electricity generation for 60 years
- Project would be based on EPR technology, replicating as much as possible the station at Hinkley Point C



(1) Final Investment Decision

## GOVERNANCE

- During the development phase preceding FID <sup>(1)</sup>, EDF's stake is 80% and CGN's is 20%. EDF has planned to pre-finance development up to its share of an initial budget of £458M
- Indicative date for FID is now end-2022 or 2023. The additional funding to FID is under discussion with the UK Government
- At the date of the FID, EDF aims to become a minority shareholder with corresponding limited rights and to deconsolidate the project from the Group's financial statements (including in the calculation of the economic indebtedness by the rating agencies).
- EDF's objective is that third party investors enter the project at or before the date of the FID. Securing an appropriate risk-sharing and remuneration mechanism is key to reach this goal. At this stage, it is not certain that the Group will achieve this objective
- EDF's ability to make a FID on Sizewell C depends on the industrial control of the Hinkley Point C project, on the existence of an appropriate regulatory and financing framework, and on the sufficient availability of investors and lenders interested in the project. To date, none of the three conditions are guaranteed
- Failure to obtain the appropriate regulatory and financing framework could lead the Group to make a decision under less-than-optimal conditions or not to make an investment decision

## PROGRESS

- The Development Consent Order (DCO) examination started in April 2021. A decision is expected for mid-2022 by the UK's Secretary of State. The DCO document includes an illustrative and nonbinding construction cost, incorporating a very ambitious cost reduction target, to reflect the objective that Sizewell C should be as much as possible a replication of Hinkley Point C, even if it has to integrate specificities, such as site characteristics for example
- The UK government aims at taking a final investment decision on at least one large scale nuclear power station project to pave the way to carbon net zero in 2050 by the end of Parliament period (2024). The UK Government considers the case for Sizewell C as it reviews options to achieve this ambition
- A legislation setting out the regulatory financial model for new nuclear power in the UK is required, in particular to underpin the financing of Sizewell C



# JAITAPUR

Through the Jaitapur project, the EDF group has been involved in Franco-Indian civil nuclear cooperation since 2010 within the framework of bilateral agreements signed between France and India. It is directly based on the energy transition objectives of the Indian government, set out during the Paris Conference in 2015, which aim to drive forward the increased share of renewable and nuclear energies in the country. Jaitapur is in Maharashtra state and will be the largest nuclear power site in the world

Acting as head of the French nuclear power sector, EDF entered into exclusive negotiations with NPCIL since 2016



- In March 2018, EDF signed a non-binding industrial cooperation agreement with Indian national electricity firm Nuclear Power Corp. of India Ltd. (NPCIL) for the construction of six EPR reactors in Jaitapur. This agreement sets out the industrial plan, the roles and responsibilities of partners, and the next steps in the project
- In this regard, the EDF group and its partners would supply all the studies and equipment for the nuclear island, the conventional island, the auxiliary systems, and the cooling source and galleries
- EDF will not invest in this project

- In its capacity as the owner and future operator of the Jaitapur Nuclear Power Station, NPCIL is expected to be responsible for obtaining all authorisations and certifications required in India, and for constructing all six reactors and site infrastructures. EDF and its industrial partners would assist NPCIL during the construction phase
- In accordance with the schedule set out in the IWFA <sup>(1)</sup>, EDF submitted a non-binding complete technical-commercial offer to NPCIL on 14 December 2018. EDF has submitted a binding offer in April 2021
- EDF is now aiming for the negotiation and signature of a *General Framework Agreement*.

(1) IWFA: International Way Forward Agreement



# NACHTIGAL HYDROELECTRIC DAM IN CAMEROON <sup>(1)</sup>

<div>MAIN ASPECTS OF THE PROJECT</div>	<ul style="list-style-type: none"> <li>• Design, construction and operation for a period of 35 years of a 420MW run-of-the-river hydropower plant on the Sanaga river near the Nachtigal Falls</li> <li>• Construction of a 50-km power transmission line</li> <li>• Project will be owned and operated by NHPC (Nachtigal Hydro Power Company), currently comprising EDF (40%) <sup>(2)</sup>, IFC (20%), the Republic of Cameroon (15%), Africa50 (15%) and STOA (10%)</li> <li>• Expected annual power generation of 3TWh, i.e. 30% of the country's electricity generation output</li> <li>• Substantial economic benefits: up to 3,000 direct jobs during peak construction periods, of which 65% will be locally sourced within a 65km radius of the construction site. The project will generate dozens of permanent jobs</li> </ul>
<div>FINANCING STRUCTURE</div>	<ul style="list-style-type: none"> <li>• Project's expected total cost: €1.2 billion</li> <li>• Shareholders' equity to fund a quarter of the project, lenders to fund the rest</li> <li>• The lender group includes 11 Development Finance Institutions (DFI) and 4 local commercial banks <sup>(3)</sup></li> <li>• The largest hydropower project ever built in Africa through non-recourse project finance debt</li> </ul>
<div>TIMELINE</div>	<ul style="list-style-type: none"> <li>• Final and binding agreements signed on 8 November 2018, financial closing on 24 December 2018</li> <li>• Start of construction in March 2019, 40.9% of civil engineering achieved at 30/06/2021</li> <li>• Covid impact: slowdown of the construction between April and June 2020. Delay in commissioning currently estimated at 4.5 months</li> <li>• Operational commissioning expected in early 2024</li> </ul>



(1) Refer to the press release published by EDF on 8 November 2018

(2) Equity consolidation method

(3) Including: AfDB, IFC (International Finance Corporation) – member of the World Bank Group, CDC, European DFI coordinated by Proparco (AFD, DEG and FMO), EIB, OFID,EAIF, AFC. Local banks include: Attijari/SCB, BICEC, SG Cameroun and Standard Chartered



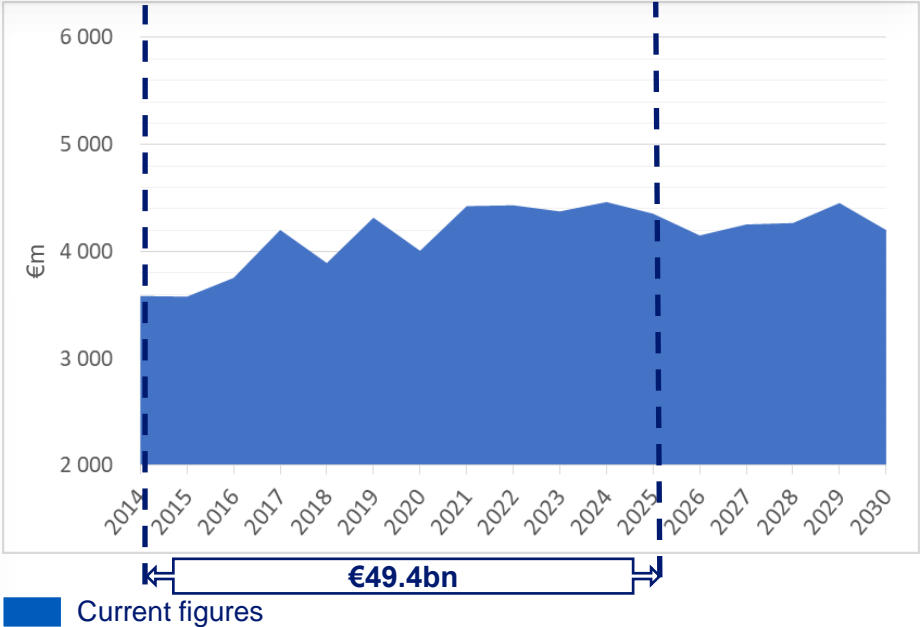
# EXISTING NUCLEAR FLEET AND “GRAND CARÉNAGE” PROGRAMME

## INDUSTRIAL STRATEGY

- Industrial strategy to continue the operation of plants after 40 years for a competitive energy mix:
- Technical capacity of the plants to operate beyond 40 years supported by international benchmarks for similar technologies
  - Extension from 40 to 50 years of the depreciation period of the 900MW nuclear fleet (except Fessenheim) accounted as of 1 January 2016: 3 reactors successfully completed their 4th ten-yearly inspection and thus passed the 40-year milestone (Tricastin 1, Bugey 2 and Bugey 4)
  - Extension from 40 years to 50 years of the depreciation period for 1,300MW nuclear fleet from 1 January 2021, following the generic decision published on 23 February 2021 by the ASN on the 4th ten-yearly inspections of the 900MW series.
  - Strategy confirmed by the guidelines given by multi-year energy programme (PPE)

## GRAND CARÉNAGE PROGRAMME

- Programme integrating the quasi totality of the investments in the existing nuclear fleet over the 2014-2025 period, and beyond.
- In 2015, initial investment programme on the 2014-2025 period was estimated at €<sub>2013</sub>55bn <sup>(1)</sup> and was optimised and revised to €<sub>2013</sub>45bn (€48.2bn in current euros) in 2018.
- In October 2020 <sup>(2)</sup>, it was adjusted to €49.4bn in current euros on the same 2014-2025 period. The new cost estimate accounts mainly for the first findings on the works to be conducted in the context of the ongoing review process related to the fourth periodic safety review of the Group’s 900MW reactors of which an important step was taken with the generic opinion issued by the ASN on 23 February 2021. This estimate will be updated regularly in order to integrate in particular the changes in the work scope and the supply costs
- Investments will remain significant in this program beyond 2025, in particular with a view to extending the life of the 1,300 MW nuclear fleet to 50 years and, if it is decided, to extend the operating life to over 50 years.



(1) The figures presented by the French Cour des comptes in its report of 10 February 2016 cover a longer time horizon, up to 2030, and included, beyond the investment, operating and maintenance expenses. Both assessments are consistent, as stated by the Cour des comptes in its report. Indeed, among the overall estimates calculated by the Cour des comptes and amounting to close to €<sub>2013</sub>100 billion for the 2014-2030 period, the investment -expenditures estimated at €<sub>2013</sub>74.73 billion should be distinguished from the operating expenditures estimated at €<sub>2013</sub>25.16 billion. Within the €<sub>2013</sub>74.73 billion of investment expenses between 2014 and 2030, €<sub>2013</sub>55 billion are dedicated to the 2014-2025 period, which allows the two estimates established by the EDF group and the Cour des comptes to be connected

(2) See press release of the 29 October 2020



# EXTENSION OF AMORTISATION PERIOD FOR 1,300MW NUCLEAR FLEET

The Group considers that all the technical, economic and governance conditions for bringing the depreciation period of 1300MW-series PWR plants in France in line with its industrial strategy were fulfilled during the first half of 2021

## CHANGE IN ACCOUNTING ESTIMATE

The Group has a sufficient level of assurance the technical capacity of the 1300MW plants’ to operate for at least 50 years. This is also confirmed by the international benchmark

The ASN approval published in February 2021 for the generic aspects of the continued operation of the 900MW reactors for a ten years following their fourth 10-year inspection, and the industrial success of the initial fourth 10-year inspection for such reactors of the 900MW nuclear fleet <sup>(1)</sup> reinforce EDF’s confidence that its inspection content for 1300MW series is appropriate and well controlled. Once its fourth 10-year inspections are completed, the 1300MW PWR plants will thus have reached a level of safety similar to EPR safety level

Also, extending operation of the 1300MW-series plants beyond 40 years offers high profitability even in low long-term price scenarios, and in a range of sensitivity scenarios

Finally, operating the 1300MW-series plants for 50 years is consistent with France’s Energy and Climate law of November 2019 and the adoption decree of April 2020 for France’s multi-year energy plan (Programmation Pluriannuelle de l’Energie (PPE))

The Group considers that the best estimate for the depreciation period of the 1300MWe-series plants is now 50 years. This change in accounting estimate is independent of the ASN’s decisions to authorise continued operation. In compliance with the law, such authorisations will be given by the ASN individually for each unit after each 10-year inspection

The Group therefore changed the accounting estimate at 1 January 2021 for all 1300MW power plants

## IMPACTS ON H1 2021 FINANCIAL STATEMENTS

This change of accounting estimate, which is applied on a prospective basis, essentially results in reduced asset depreciation expenses and costs to unwind the discount on provisions in the Group’s financial statements

in €bn	H1 2021	2021 estimate
Net depreciation and amortisation and discount expenses	0.3	0.6
Income before taxes of consolidated companies	0.3	0.6
Net income – Group share	0.2	0.4

At 1 January 2021, provisions relating to nuclear power generation were reduced by €1bn, including €0.8bn covered by dedicated assets. This decrease is largely taxable and generates a current tax liability of €0.2bn



# EDF, ACTOR IN THE HYDROGEN SECTOR

Hydrogen is a key vector in the energy transition: it could meet 20% of worldwide energy demand in 2050 <sup>(1)</sup>

### Complementarity with the EDF’s low carbon mix

- EDF group’s positioning on this market in the line with the objective of carbon neutrality

### Favourable context

- Government incentives in several European countries (France €7bn)




INDUSTRIAL AND COMMERCIAL PARTNERSHIP WITH McPHY (14.4% OWNED TO DATE BY EDF)

Leading player in the hydrogen sector

A complete range of solutions:

- Electrolysers
- Hydrogen charging stations
- Storage



GROUP’S SUBSIDIARY PRESENT ACROSS THE VALUE CHAIN

2021 achievements

- In partnership with Orsted, the Heide refinery and Holcim Lafarge, a 300MW industrial project by Hynamics, selected by the German authorities as part of the IPCEI <sup>(2)</sup> programme
- Commissioning of an initial project on a hydrogen production and distribution station to fuel the buses of an urban transport network in France.
- Hynamics, key partner in a 30 MW electrolyser project in Germany: H<sub>2</sub> production from offshore wind power for a refinery

World presence





HYDROGEN IN ITALY

In Italy, five green hydrogen projects in partnership, of which refineries or steelworks decarbonation and hydrogen distribution and alimentation in public transport (trains and buses)

(1) McKinsey report – *Hydrogen Council* 2019  
(2) Important Project of Common European Interest



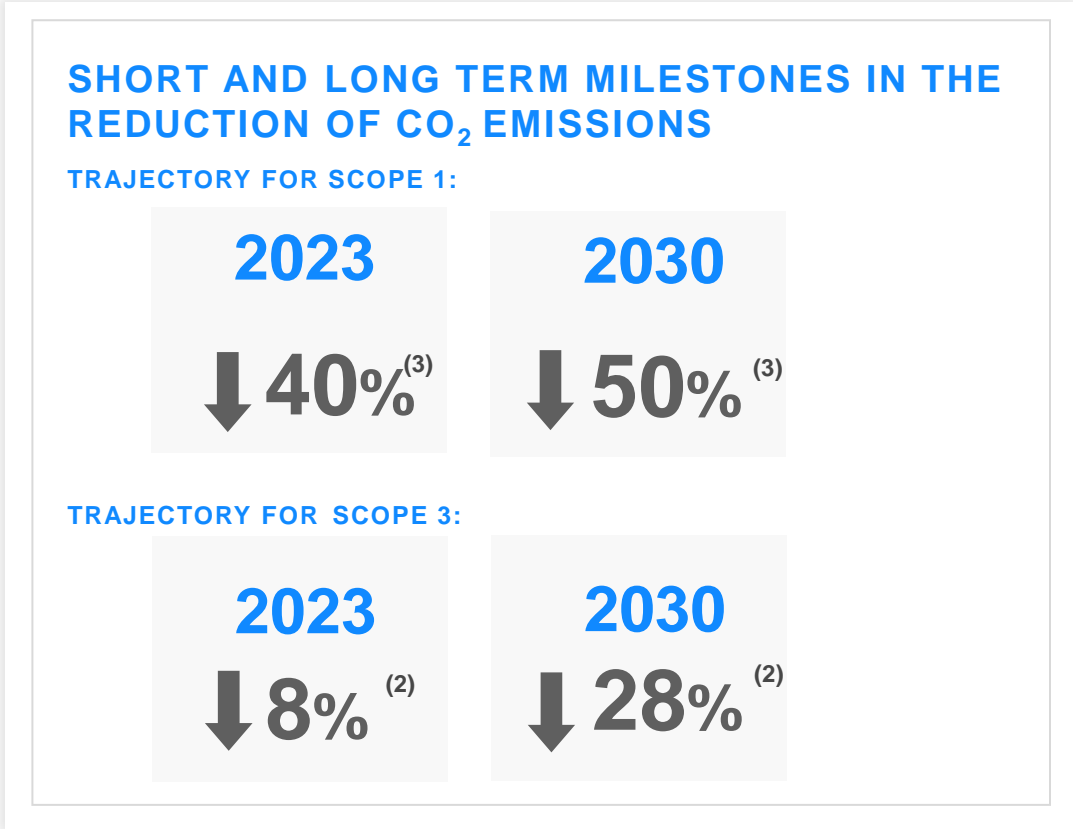
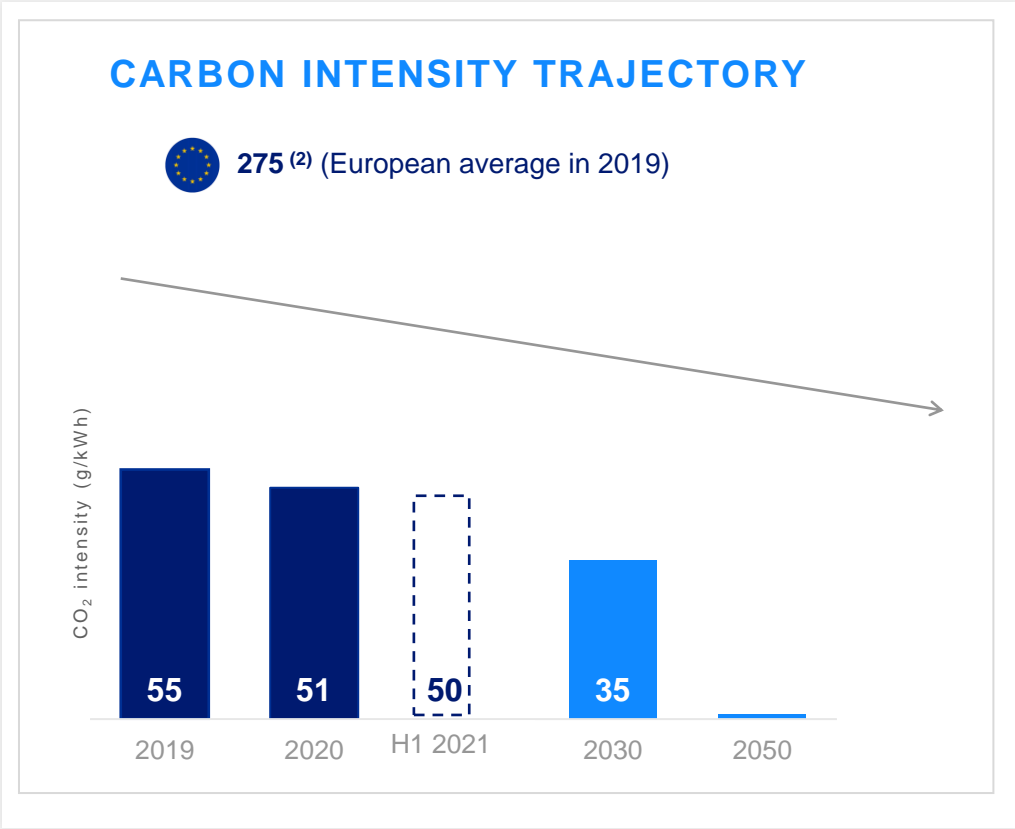
# 2021 HALF-YEAR RESULTS

## ESG





# CARBON NEUTRALITY IN 2050, ALL GEOGRAPHIES ALL SCOPES <sup>(1)</sup>



A TRAJECTORY VALIDATED BY SBTi

SCIENCE  
BASED  
TARGETS

« WELL BELOW 2° »

(1) Resulting in: very low direct emissions (Scope1), high but feasible level of indirect emissions (Scope 3), compensation for residual emissions by projects with negative emissions (3 scopes)  
(2) vs. 2019  
(3) vs.2017

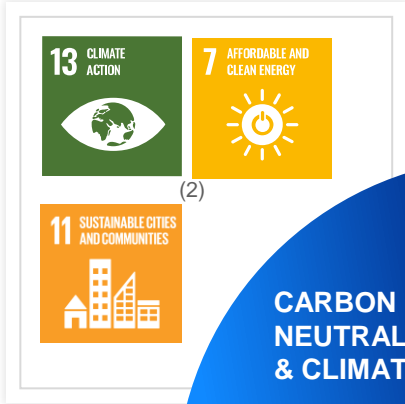


# CSR COMMITMENTS ACCORDING TO THE 4 CHALLENGES OF THE COMPANY

## RAISON D'ÊTRE (1)

**CARBON NEUTRALITY & CLIMATE**

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



**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



**RESPONSIBLE DEVELOPMENT**

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

(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"



# GREEN BONDS: EDF'S COMMITMENTS



## EDF IS A LEADING ISSUER IN THE GREEN BOND MARKET

- **1<sup>st</sup> company** to issue a Green Bond in **2013**
- **Active member** in the governance of **Green Bond Principles**
- **Co-founder** of the **Corporate Forum on Sustainable Finance**
- **2 updates to the Green Bond Framework** in order to help create market best practices

### GREEN BOND FRAMEWORK 2013

- **November 2013: 1<sup>st</sup> issue** of a Green Bond by EDF
  - **€1.4bn**, 7.5-year maturity
- **October 2015: 2<sup>nd</sup> issue**
  - **\$1.25bn**, 10-year maturity

Construction of **new wind power and PV projects**

### GREEN BOND FRAMEWORK 2016

- **October 2016: 3<sup>rd</sup> issue**
  - **€1.75bn**, 10-year maturity
- **January 2017: 4<sup>th</sup> issue**, in 2 tranches
  - **¥19.6bn**, 12-year maturity
  - **¥6.4bn**, 15-year maturity

Construction of **new wind power and PV projects**

Modernisation and improvement of **existing hydropower facilities** in France

### GREEN BOND FRAMEWORK 2020

- **Applicable starting January 2020**
- **Update of the Framework in line with the CAP 2030 strategy**
- **September 2020: 5<sup>th</sup> emission**
  - **€2.4bn**, 4-year maturity

New generation projects in **renewable energies**

Modernisation and improvement of **existing hydropower facilities** in France and abroad

**Energy efficiency projects**

**Biodiversity preservation projects**



# EDF'S GREEN BOND FRAMEWORK FOLLOWS BEST MARKET PRACTICES AND GREEN BOND PRINCIPLES (GBP)



## 1 - USE OF FUNDS

- **Development of new renewable generation capacities**
- **Renovation and modernisation of existing hydroelectric assets** with the aim of improving their efficiency, flexibility and ability to contribute to meeting the needs of electricity systems (that evolve as the share of intermittent means of generation increases in the energy mix) and adapting the existing hydropower assets to changes in climate
- **Energy efficiency solutions** to allow all EDF customers to make better use of energy, mainly through its subsidiary Dalkia
- **Biodiversity**, to enable EDF to continue to pursue its goal of having a positive impact on biodiversity, from simple prevention measures to measurable improvements

## 4 – REPORTING

- **At half-yearly intervals**: allocation of funds
- **Annually**: allocation of funds + list of projects financed by the Green Bond and aggregated impacts (at the level of each green issue)

## 2 - PROJECT SELECTION PROCESS

- A **internal organisation** dedicated to evaluating and ensuring that **only Eligible Projects** as defined in the Use of Funds section are eligible to receive **Green Bond financing**
- **Respect of specific environmental and social criteria**
- Investments may include:
  - **tangible or intangible assets**
  - **Investments** (including acquisitions mainly related to new developments/technologies)
  - **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<sup>(1)</sup>** until their allocation

## 5 – EXTERNAL REVIEW

- **External ex-ante opinion**: “**reasonable**” level of assurance delivered by **Vigeo Eiris** on EDF's Gren Bond Framework (their highest level),
- **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 Bond Framework and the Green Bond Principles, and the conformity of the CO<sub>2</sub> emissions determination modality

(1) Socially Responsible Investments funds, as certified by the French Ministry of Finance's Label ISR



GREEN BONDS: PROCEEDS ALLOCATION



Allocated funds as of 30/06/2021

Issue date <sup>(1)</sup>	Maturity <i>(in years)</i>	Nominal amount <i>(in million of currency units)</i>	Currency	New renewable capacities <sup>(2)</sup>	Investments in hydro facilities <sup>(2)</sup>	Energy efficiency projects	Biodiversity projects	Total <i>(% of raised funds)</i>	
Nov. 2013	7.5	1,400	EUR	1,400	<i>Not applicable</i>	<i>Not applicable</i>	<i>Not applicable</i>	<b>1,400</b>	(100%)
Oct. 2015	10	1,250	USD	1,250	<i>Not applicable</i>	<i>Not applicable</i>	<i>Not applicable</i>	<b>1,250</b>	(100%)
Oct. 2016	10	1,750	EUR	1,248	502	<i>Not applicable</i>	<i>Not applicable</i>	<b>1,750</b>	(100%)
Jan. 2017	12	19,600	JPY	8,149	11,451	<i>Not applicable</i>	<i>Not applicable</i>	<b>19,600</b>	(100%)
Jan. 2017	15	6,400	JPY	5,872	528	<i>Not applicable</i>	<i>Not applicable</i>	<b>6,400</b>	(100%)
Sept. 2020	4	2,400	EUR	2,315	110	-	28	<b>2,453</b>	(96%)

EUR Green Bond issued in September 2020: 96% of the funds allocated at end-June 2021 on the net proceed total of €2,559M

- Dedicated funds to EDF Renewables’ projects are mainly for projects located in the United States, United Kingdom and France
- EDF Hydro, Luminus and EDF ENR have used funds to projects located in France and in Belgium

NB: look-back amount for €1,477M, o/w €1,461M on renewable capacities and €16M on biodiversity projects

Entity	Total
EDF ENR	6
Luminus	7
EDF Hydro	138
EDF Renewables	2,302
<b>Total</b>	<b>2,453</b>

(1) Date of funds reception

(2) Since 2019, the Green Bonds funds are financing eligible investments of Luminus in Belgium: construction of wind farms and renovation of a hydroelectric power plant; and also since 2020 for EDF ENR: installation of solar awnings



# EDF’S SOCIAL BOND FRAMEWORK FOLLOWS BEST MARKET PRACTICES AND SOCIAL BOND PRINCIPLES (SBP)



## 1 - USE OF PROCEEDS

- Eligible Projects include any **capital expenditure contracted with a SME<sup>(1)</sup>** which contributes to the development or maintenance of EDF Group’s power generation and/or distribution assets in Europe (defined as the European Union and the United Kingdom)
- **The social objective** of such projects is to **support the SMEs** that make up a key part of EDF’s industrial fabric and which **provide employment opportunities in the territories where EDF is active**
- **Target population:** employees and subcontractors of SMEs
- No double counting: EDF will not finance projects already financed by any of its green bonds

## 4 – REPORTING

- For each Social Bond issuance, EDF will **report annually on the allocation and impact of the proceeds**, until full allocation or the maturity date of the relevant bond, whichever comes first
- An independent auditor will be appointed to issue an **annual assurance report** on fund allocations, compliance with the Social Bond Principles and compliance of the methods used by EDF to estimate the social impact with the methodology described in the Framework

(1) SMEs are identified based on INSEE (French National Institute of Statistics & Economic Studies) categories, stipulating that an SME (Small- and Medium-Sized Enterprise) has fewer than 250 staff and annual turnover not exceeding €50 million. Suppliers are ranked in the SME category by a service provider that EDF tasks with analysing the supplier list, checking that these SMEs are not controlled above 25% by a Large Enterprise or by an MMC. The scope covers France, where the SMEs’ locations are certified based on their French business number (SIREN)

## 2 - PROJECT SELECTION & EVALUATION PROCESS

- Eligible Projects are subject to a specific assessment and selection process:
- Under the coordination of EDF Group’s Finance Division, **each Finance Department within a relevant EDF Division is responsible for identifying proposed Eligible Projects** that comply with the Use of Proceeds criteria
  - Each EDF division commits **to respect the policies and procedures of the EDF Group**, including those related to ethical procurement and contracting with SMEs
  - Each relevant EDF Finance department will **document the project assessment process** within their scope

## 3 - FUND MANAGEMENT

- Net proceeds are managed through a **dedicated process that ensures traceability until their allocation** to Eligible Projects
- Until full allocation, the balance of the unallocated net proceeds will be invested in short-term financial assets, labelled as “Socially Responsible Investments”, as certified by French Ministry of Finance’s Label ISR

## 5 – EXTERNAL REVIEW

- **External ex-ante opinion:** “**reasonable**” level of assurance delivered by **S&P Global Rating** on EDF’s Social Bond Framework
- **Ex-post certification:** annual report issued by an **external auditor**, on the allocation of funds and the compliance of Social Bond issues with the Social Bond Framework and the Social Bond Principles, and the conformity of the social impacts of financed projects at the portfolio level

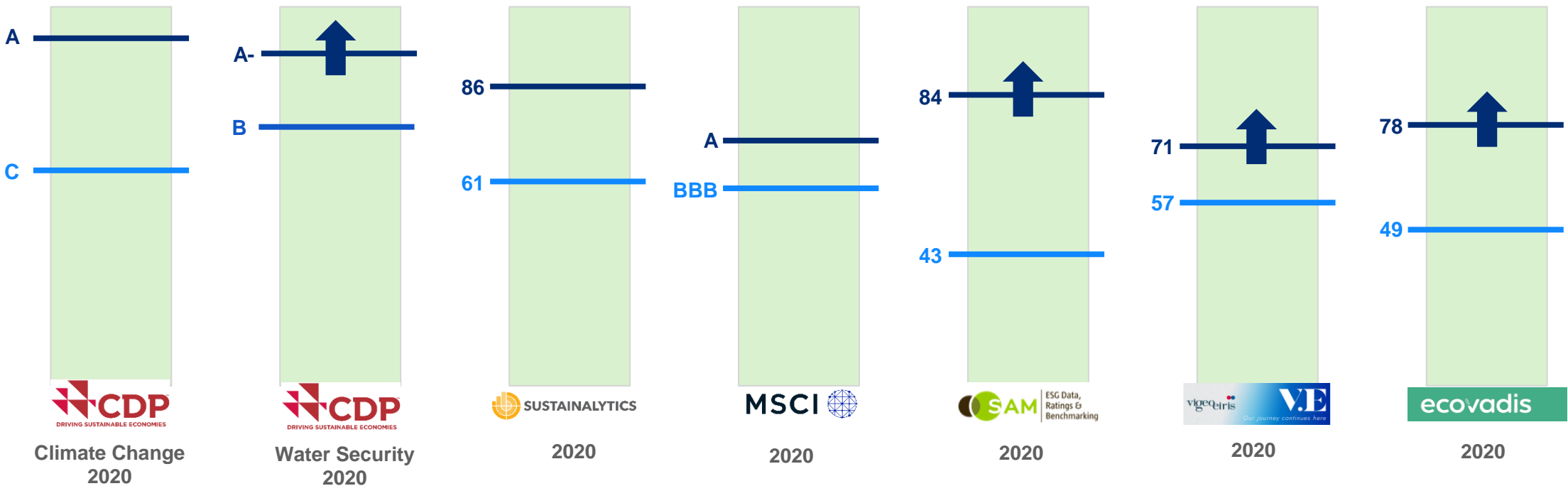
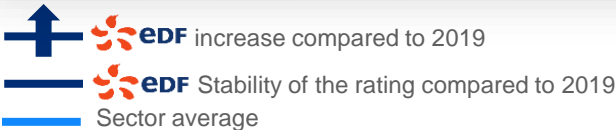


# NON-FINANCIAL RATINGS



Constant progression of the rating: CDP Water Security (passage from Management to Leadership level), S&P CSA (ex-SAM) (+4 points, member of the Sustainability leaders and obtaining of the bronze medal), V.E (ex VigéoEiris) (+5 points in 2020) and 3<sup>rd</sup> in the sector instead of 6<sup>th</sup>, Ecovadis (+5 points in 2020 and obtaining of the platinum medal)

Maintenance in the major non-financial indexes (non-exhaustive list): CDP Climate Change A list, DJSI World, STOXX ESG Leaders, FTSE4Good, MSCI: CLIMATE CHANGE, ESG SCREENED, ESG UNIVERSAL, WORLD CLIMATE CHANGE, CLIMATE CNG EU PARIS ALIGNED... Euronext VE (ex VigéoEiris) : WORLD120, EUROZONE 120, EUROPE 120, FRANCE 20



## EDF major international coalitions



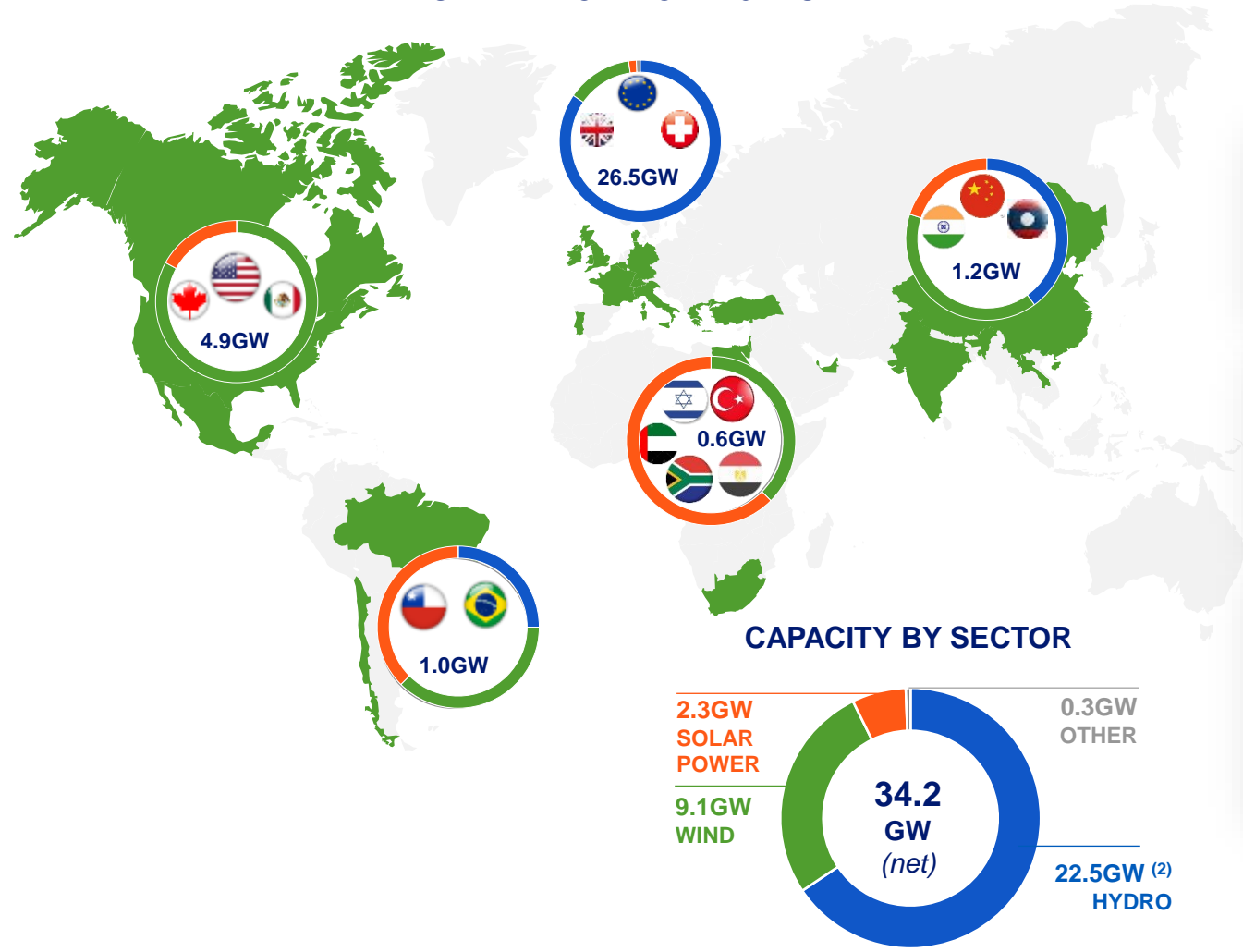
# RENEWABLES





# EDF, THE EUROPEAN LEADER IN RENEWABLE ENERGY

NET INSTALLED CAPACITY: 34.2GW <sup>(1)</sup>



A DIVERSIFIED MIX WITH 34.2GW IN OPERATION

- 22.5GW of hydropower
- 11.4GW of wind and solar power
- 0.3GW others (biomass, geothermy, ...)

HYDROPOWER

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

A GLOBAL LEADER IN WIND AND SOLAR ENERGY

- 1.0GW gross commissioned in H1 2021
- 8.6GW gross currently under construction (1.7GW in onshore wind power, 2.1GW in offshore wind power, 4.8GW 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

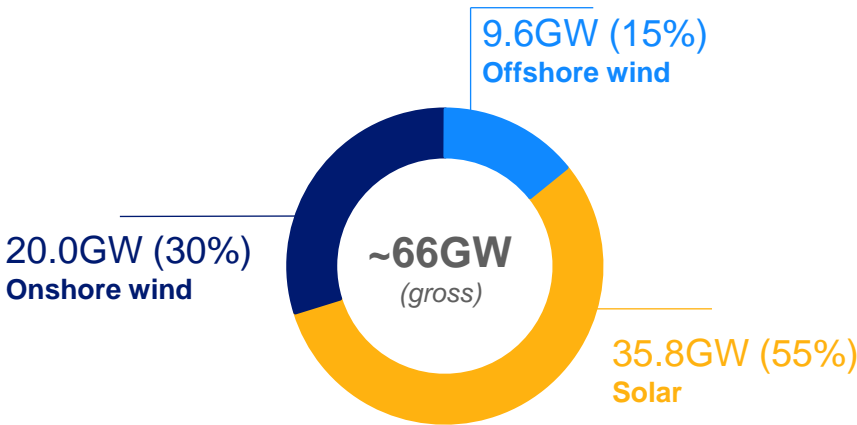


# A PORTFOLIO OF WIND AND SOLAR PROJECTS OF ~66GW <sup>(1)</sup>

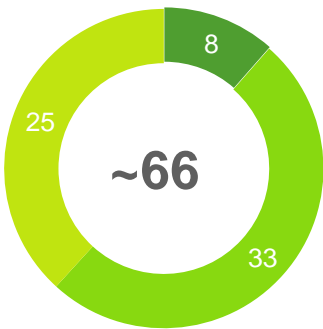
A PROJECT PORTFOLIO THAT IS **DIVERSIFIED GEOGRAPHICALLY...**



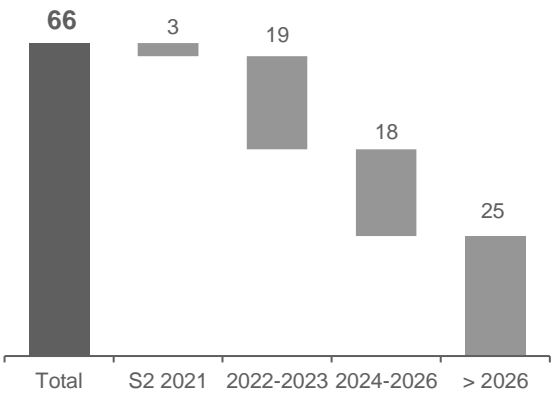
... AND **BALANCED BETWEEN WIND AND SOLAR**



Portfolio of projects <sup>(2)</sup> in GW



Pipeline breakdown by date of start of construction in GW <sup>(3)</sup>



(1) 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) 2020 portfolio start of construction potential, not probability-based

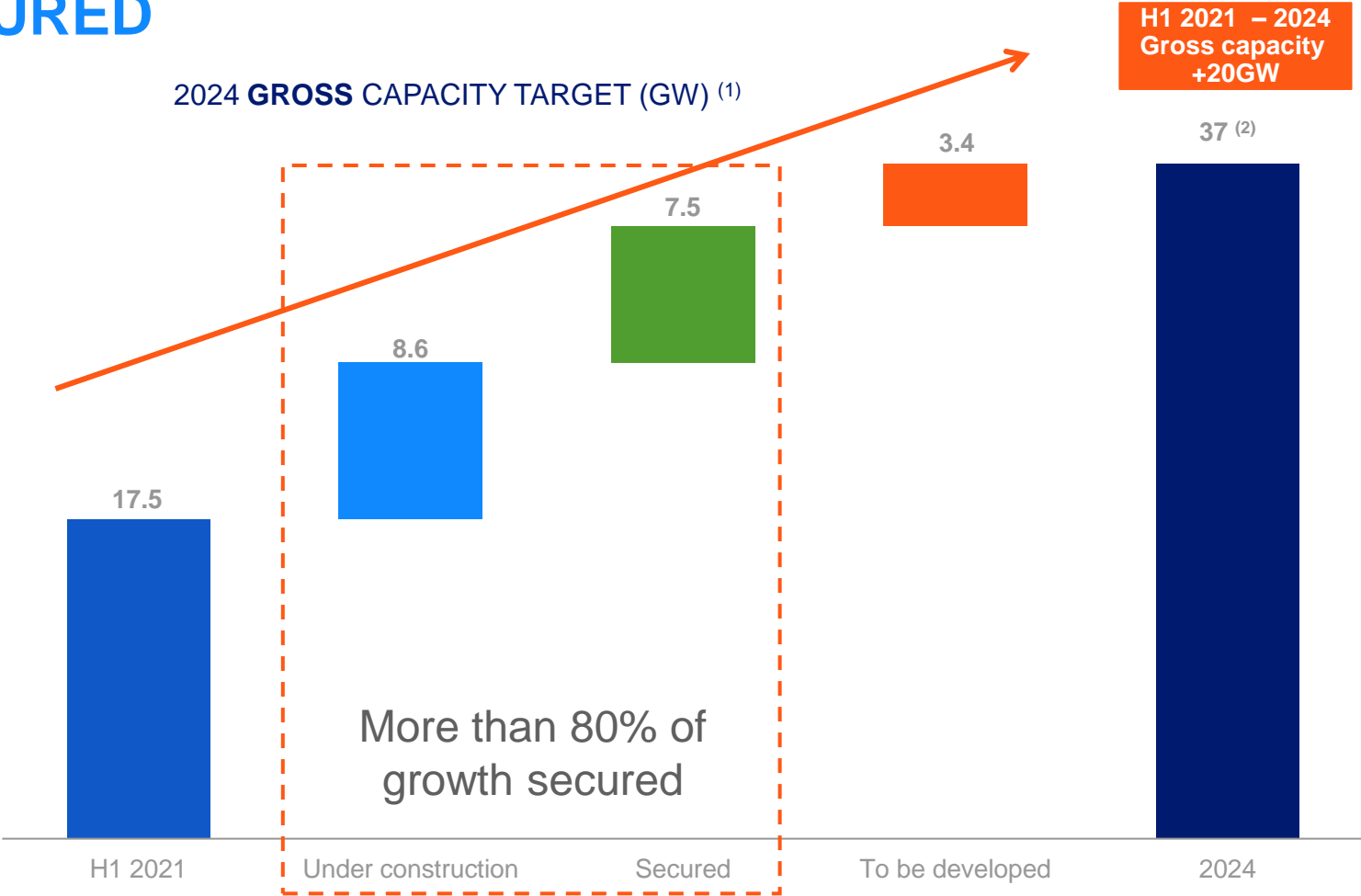
\* Start of land identification and preliminary studies

\*\* Sufficient land securisation and start of technical studies

\*\*\* Securing a power purchase agreement (following a call for tenders, auction, OTC negotiation)



# STRONG GROWTH EXPECTED THANKS TO MORE THAN 16GW OF PROJECTS ALREADY SECURED



NB: This financial communication contains forward-looking data based on targets. Although management believes that this data is reasonable, investors are cautioned that such data is subject to numerous risks and uncertainties that could cause actual results and developments to differ materially from those expressed herein

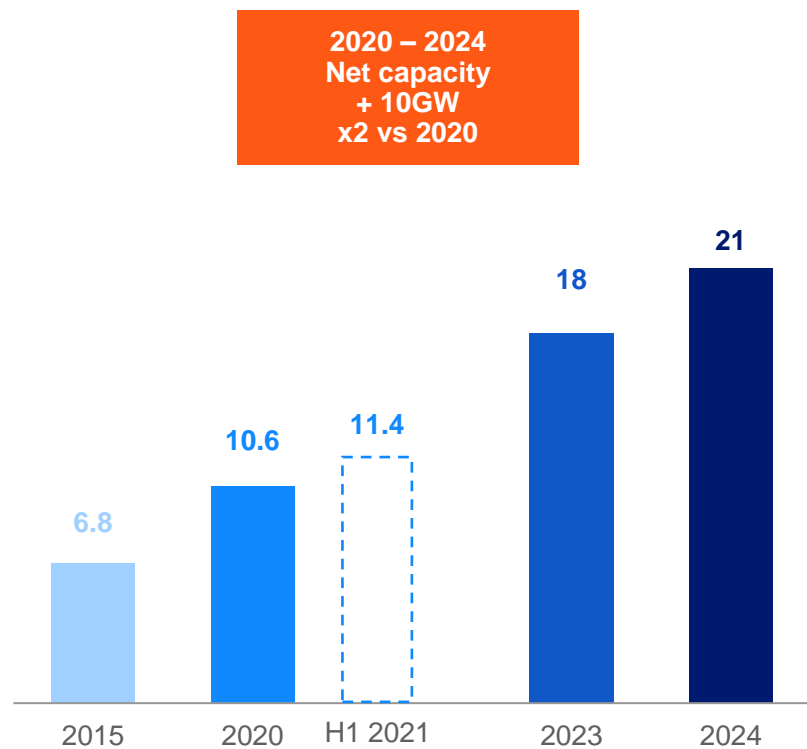
(1) Solar and wind. Gross data corresponding to 100% of the capacity of the projects concerned

(2) As a reminder, the 2023 objective fixed in 2019 was 32.4GW, raised in 2020 at 33.5GW

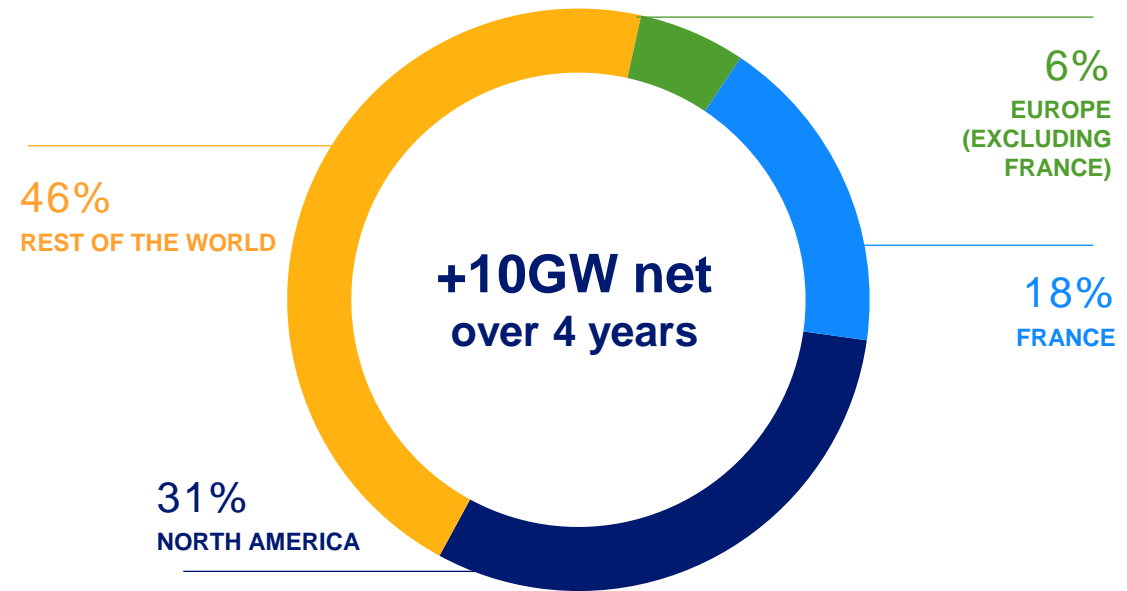


# BALANCED ACCELERATION ACROSS GEOGRAPHIES AND TECHNOLOGIES

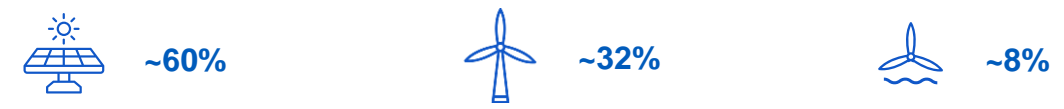
2024 **NET** INSTALLED CAPACITY TARGET (GW) <sup>(1)</sup>



2020-2024 **NET** ADDITIONAL CAPACITY BY GEOGRAPHIC REGION (GW) <sup>(1) (2)</sup>



2020-2024 **NET** ADDITIONAL CAPACITY BY TECHNOLOGY <sup>(2)</sup>



NB: This financial communication contains forward-looking data based on targets. Although management believes that this data is reasonable, investors are cautioned that such data is subject to numerous risks and uncertainties that could cause actual results and developments to differ materially from those expressed herein

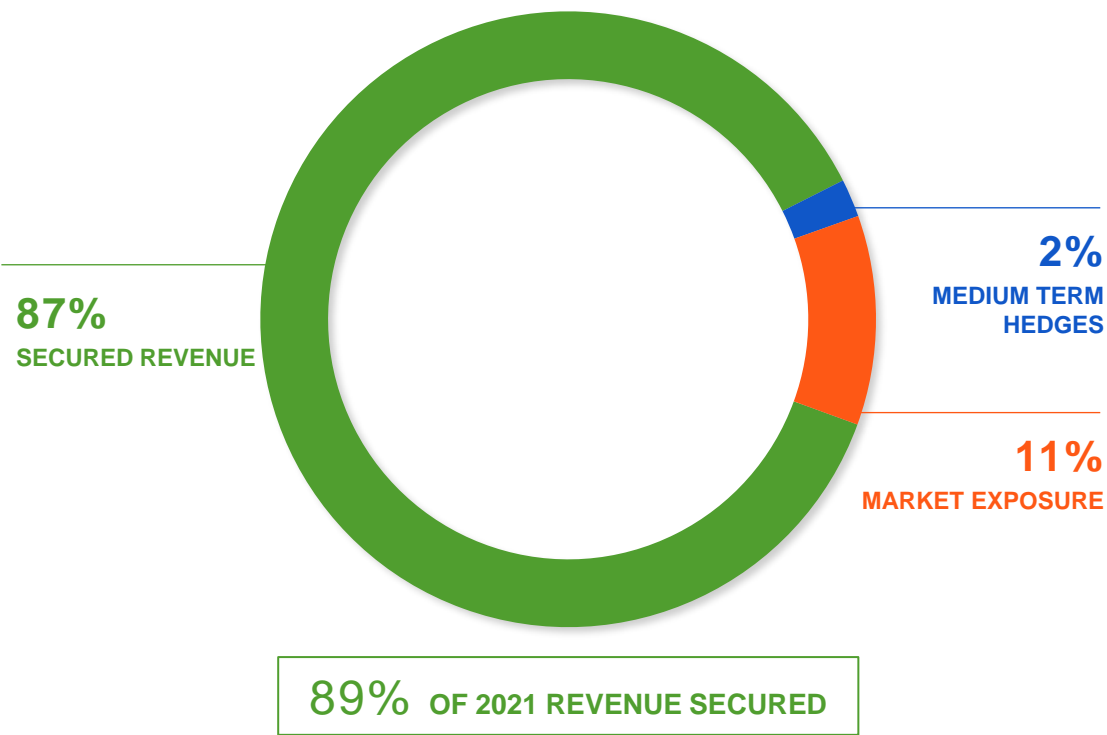
(1) Solar and wind. Installed capacity shown as net, corresponding to the consolidated data based on EDF's participation in Group companies, including investments in affiliates and joint ventures

(2) Situation at end 2020

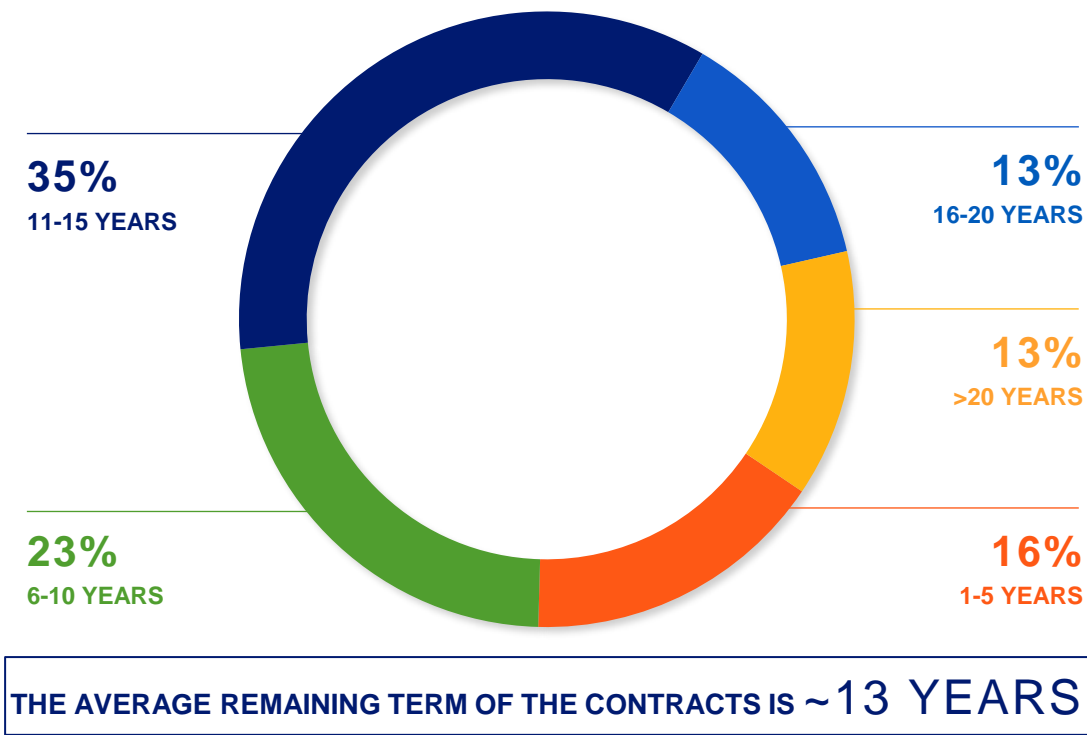


# REVENUE SECURED BY LONG-TERM CONTRACTS

CONTRACTUALISATION OF 2021 CONSOLIDATED REVENUE FROM RENEWABLE GENERATION <sup>(1)</sup>



AVERAGE RESIDUAL DURATION OF LONG TERM CONTRACTS <sup>(2)</sup>



NB: situation at end-2020  
(1) Based on the estimate of 2021 revenues from fully consolidated assets  
(2) Weighting according to estimated 2021 revenues of fully consolidated assets



# OFFSHORE WIND DEVELOPMENTS IN FRANCE: 5 PROJECTS FOR A TOTAL CAPACITY OF MORE THAN 2GW, INCLUDING ~ 1.5GW UNDER CONSTRUCTION

Ongoing construction of **Saint Nazaire offshore wind farm** (started in 2019, expected commissioning in 2022, ~€2bn total investments, partnership with Enbridge)

### MAJOR ACHIEVEMENTS IN 2020 and 2021:

- **Fécamp offshore wind farm**
  - Start of construction in June 2020
  - Expected commissioning in 2023
  - ~ €2bn total investment, partnership with Enbridge and WPD
- **Calvados offshore wind farm (Courseulles-sur-Mer)**
  - Start of construction in February 2021
  - Expected commissioning in 2024
  - ~€2bn total investment, partnership with Enbridge and WPD

### Further developments:

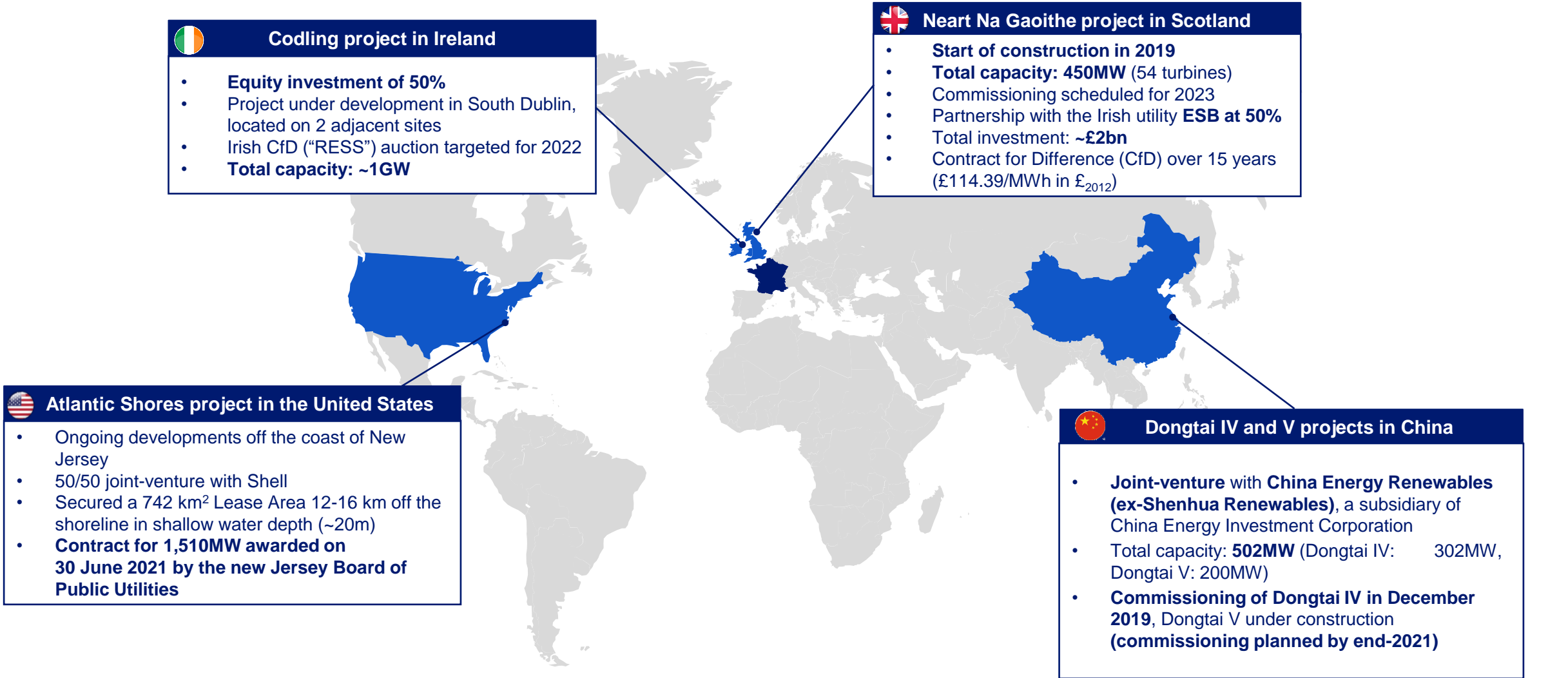
- Ongoing development of **Dunkirk offshore wind farm** (~1bn€ total investment, partnership with Enbridge and Innogy)

Development in progress of **Provence Grand Large, a floating wind pilot project**: contract awarded to EDF Renewables for the installation of three 8MW turbines on floating foundations off the coast of Fos-sur-mer





# INTERNATIONAL OFFSHORE WIND DEVELOPMENTS: NEARLY 4GW IN DEVELOPMENT, 450MW UNDER CONSTRUCTION IN SCOTLAND





# A SUSTAINABLE BUSINESS MODEL BASED ON KEY COMPETITIVE ADVANTAGES



VALUE CREATION:

+150-200 bps

DIFFERENCE <sup>(2)</sup> BETWEEN THE EXPECTED RETURN RATE AND WACC

NB: situation at end-2020

(1) EDF Renewables Development, Engineering and Construction internal teams. Excluding contractors and partners capabilities

(2) Historical average performance estimated as part of a profitability analysis of EDF Renewables projects (scope: 81% of installed capacity, 6.6GW net, 118 projects, 14 countries). The IRR calculation takes into consideration the various assumptions, in particular the evolution of market prices, excluding volumes and periods covered by the PPAs



# TECHNOLOGICAL INNOVATION: A KEY COMPETITIVE ADVANTAGE

## PHOTOVOLTAIC SOLAR

- **Increase the capacity of installations thanks to bifacial PV modules** (technology selected for Al Dhafra project – 2GW)
- **Unlock new potentials in solar PV in geographically constrained areas thanks to floating photovoltaic solar installations ...**
  - Beginning of the construction of the first floating photovoltaic power plant of 20MW in France (Lazer, Hautes-Alpes)
  - Winning a tender in Israel (50MW)
  - Signature of a development agreement for 240MW **hybrid floating solar project** on the Nam Theun 2 reservoir in Laos
- **... and Agri-PV**
  - 1st co-developed pilot project with EDF R&D and INRA, in operation at EDF R&D center « les Renardières »
  - Signature of a charter with the FNSEA to develop and better supervise ground-based photovoltaic projects on agricultural lands in France

## OFFSHORE WIND

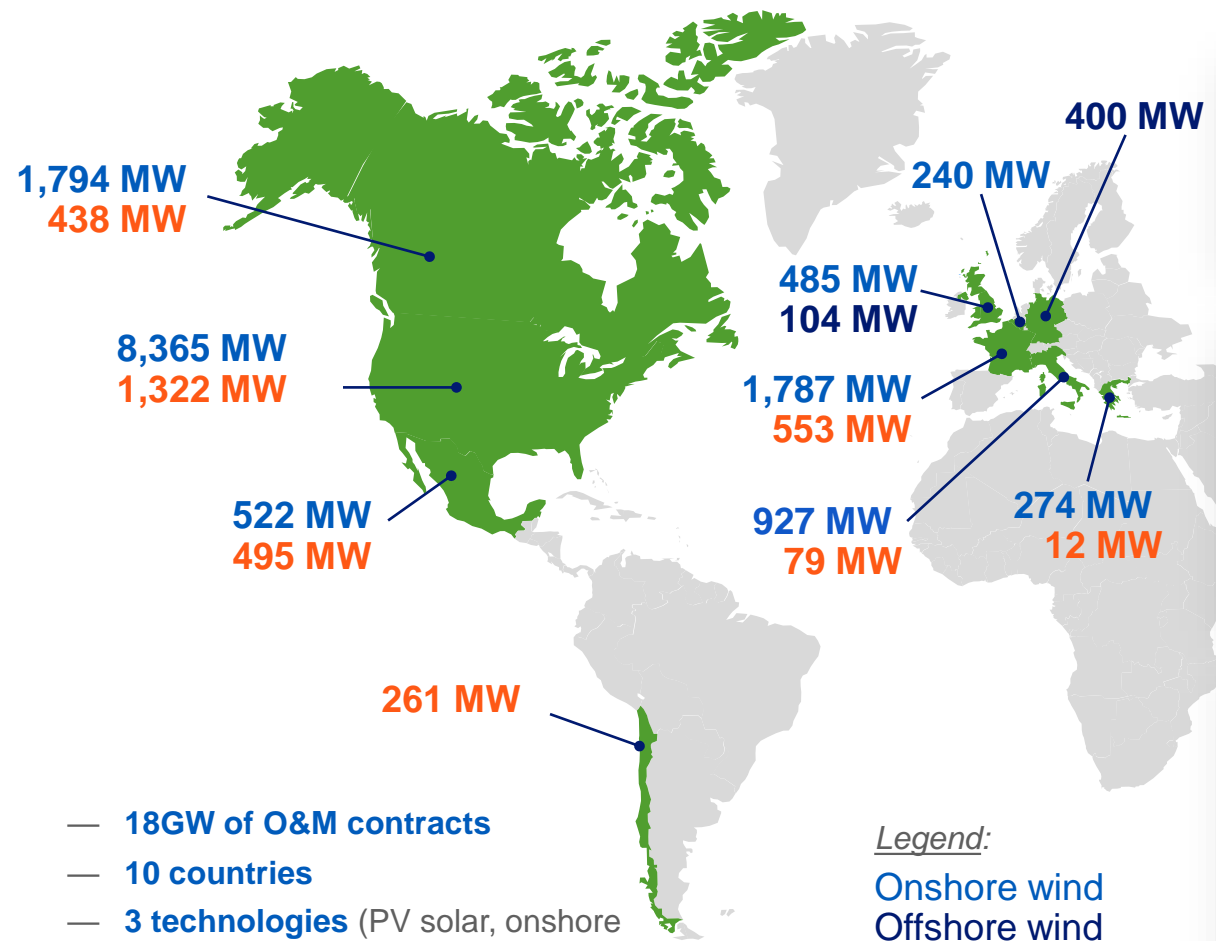
- **Exploiting new offshore potential with floating:** Provence Grand Large (France, a floating project of 3 x 8.4MW located off the coast of Fos-Sur-Mer)

## STORAGE

- **Development of flexibility on the grid using Li-ion batteries coupled to generation assets:** Toucan 2, French Guyana (solar PV) and Chuckwalla, United States (solar photovoltaic)
- **Development of storage projects** (acquisition of Pivot Power in the UK in 2019, with 2 projects to be commissioned in Q1 2021) **and charging systems for electric vehicles** (acquisition of PowerFlex in the United States in 2019, installation of 2,500 EV charging stations in 2020)



# ~ 18GW OF O&M: STRONG EXPERTISE, DIFFERENTIATING FACTOR



- 18GW of O&M contracts
- 10 countries
- 3 technologies (PV solar, onshore wind, offshore wind)
- Remote control and optimisation in real time via a state-of-the-art operations control centre and technical teams in the field

Legend:  
Onshore wind  
Offshore wind  
Solar

OPTIMISED ASSET PERFORMANCE

- Digitalisation and supervision in real time, continuous innovation and predictive maintenance
- Ongoing data lake creation for asset performance optimisation

ENHANCED TECHNICAL EXPERTISE

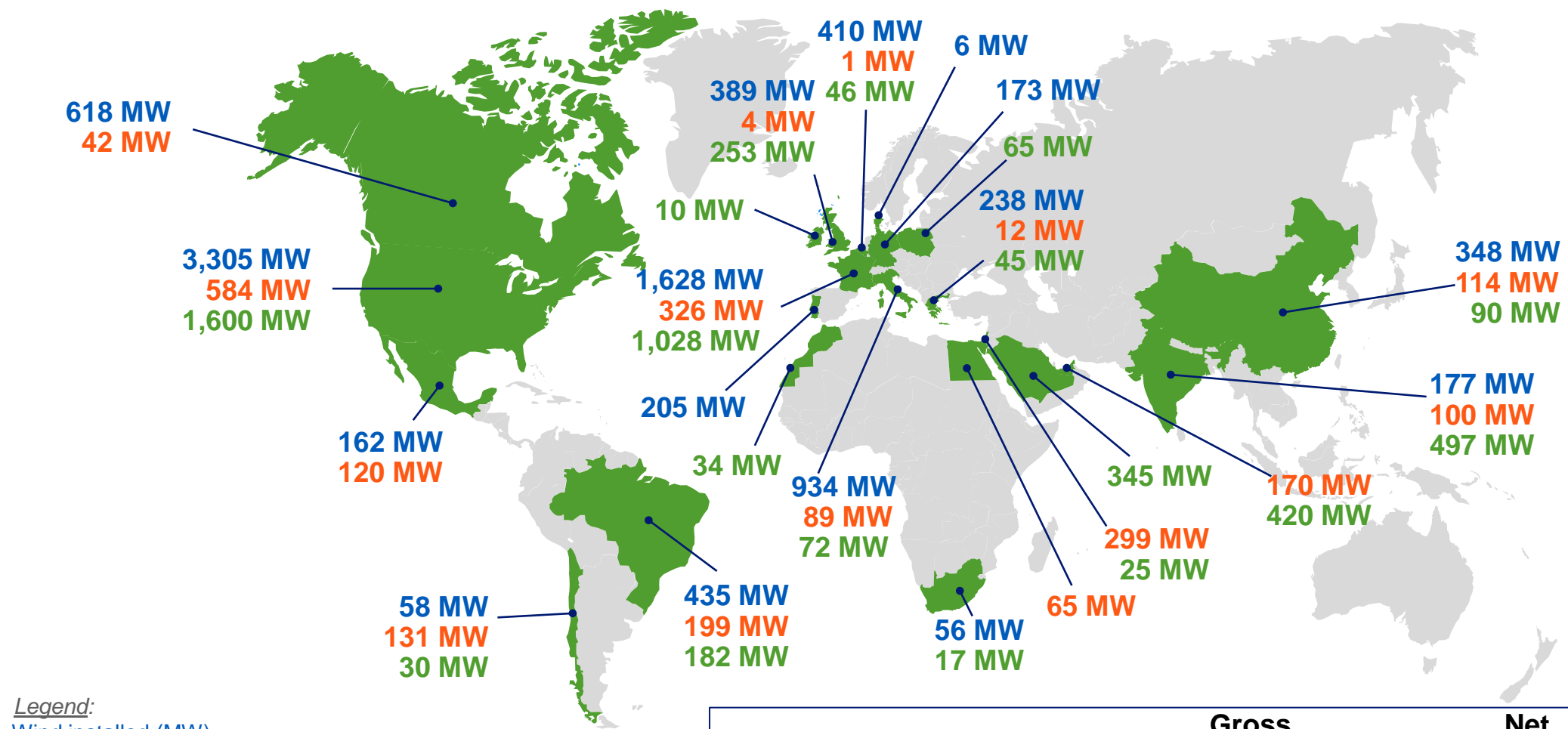
- Continuous feedback on technical issues via O&M monitoring **strengthening knowledge and understanding of industrial technologies**
- A **strong credibility** vis-à-vis turbine manufacturers and third-party investors

REINFORCED COMPETITIVENESS DURING THE DEVELOPMENT PHASES

- Optimised price positioning in competitive processes
- Contract optimisation thanks to the competition between turbine suppliers for initial or renewal O&M contracts
- Early stage project optimisation (development, construction, etc.)



## NET INSTALLED AND UNDER CONSTRUCTION CAPACITY – 30 JUNE 2021



	Gross	Net
Installed capacity	17,509 MW	11,399 MW
Capacity under construction	8,601 MW	4,759 MW
<b>Total</b>	<b>26,110 MW</b>	<b>16,158 MW</b>



# INSTALLED CAPACITY AND CAPACITY UNDER CONSTRUCTION, WIND & SOLAR, AS OF 30 JUNE 2021

(in MW)	Gross <sup>(1)</sup>		Net <sup>(2)</sup>	
	31/12/2020	30/06/2021	31/12/2020	30/06/2021
Wind	12,889	13,171	8,379	9,144
Solar	4,254	4,338	2,199	2,255
<b>Total installed capacity</b>	<b>17,142</b>	<b>17,509</b>	<b>10,578</b>	<b>11,399</b>
Wind under construction	4,126	3,814	2,814	2,289
Solar under construction	3,865	4,786	1,928	2,470
<b>Total capacity under construction</b>	<b>7,990</b>	<b>8,601</b>	<b>4,743</b>	<b>4,759</b>

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

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

(2) Net capacity: capacity corresponding to EDF's stake



**REGULATED**

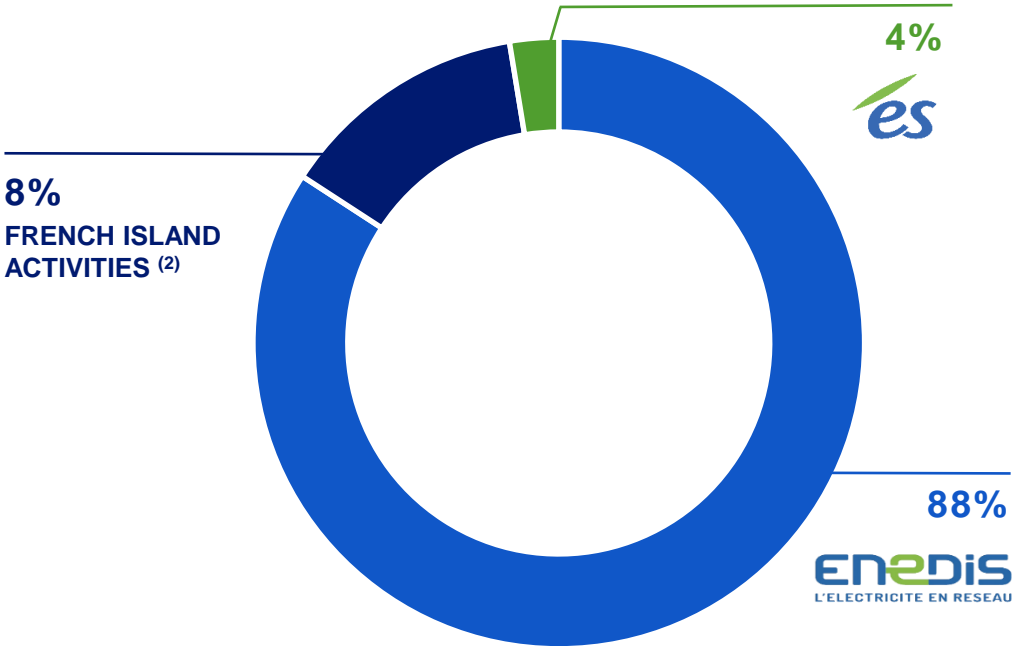




# A REGULATED BUSINESS MODEL IN A SOLE AUTHORIZED STATE CONCESSION OPERATOR MODEL

Regulated activities represent over €5bn annual EBITDA

Breakdown of EBITDA for EDF's regulated activities <sup>(1)</sup>



(1) Breakdown at end-June 2021  
(2) French island electrical activities include Corsica, Martinique, Guadeloupe, French Guiana, Reunion and Saint Pierre and Miquelon, Saint Barthélemy, Saint Martin and Ponant islands

Key assets in France

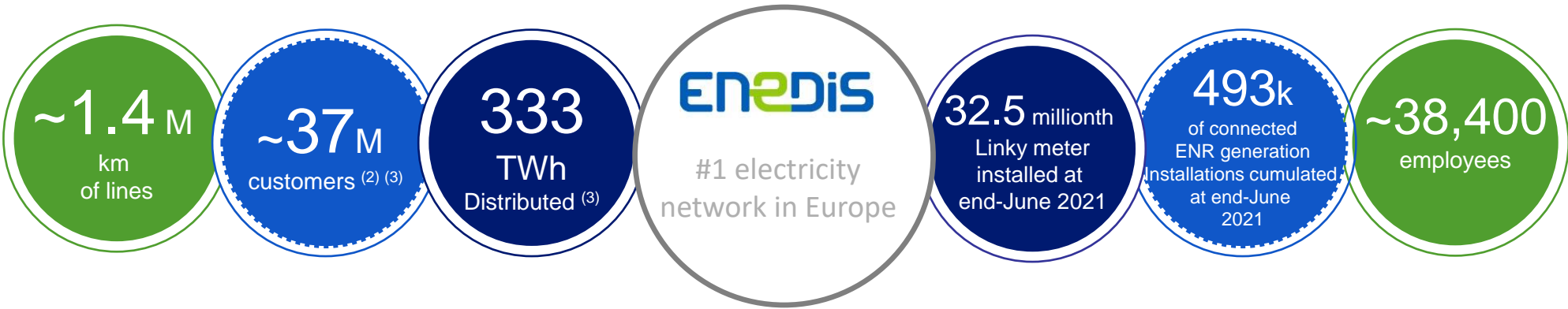
- The biggest distribution grid in Europe
  - The main distribution grid in France: **connected to 95% of the mainland metropolitan population** (the remaining 5% covered by ~170 local distribution companies)
  - A **regulated business model**: ENEDIS has the national monopoly on 421 concession contracts. A large majority of contracts have already been renewed for a period of 25 to 30 years
  - Represents about **a quarter of EBITDA, investments and headcount** of EDF Group
- French island activities <sup>(2)</sup>**
- **Integrated business model** including generation, electricity purchases, distribution (via concessions) and supply at the regulated tariff
  - Grid activities: **similar remuneration to that of Enedis**
  - Generation activities: for assets commissioned before 06/04/2020, remuneration of 11%. For assets commissioned after 06/04/2020, between 7% and 12%
- es**
- **Grid of around 15,000 km** (Strasbourg region)
  - **560,000 delivery points**
  - Around 70% of EBITDA from regulated distribution activities



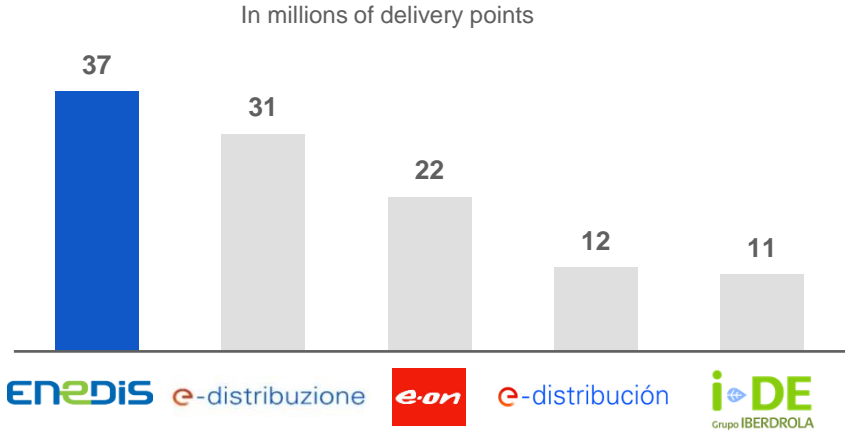
# ENEDIS <sup>(1)</sup> : DISTRIBUTION NETWORK LEADER IN EUROPE

MAJOR  
DISTRIBUTION  
NETWORK  
PLAYER IN  
EUROPE

WELL  
POSITIONED VS  
PEERS...

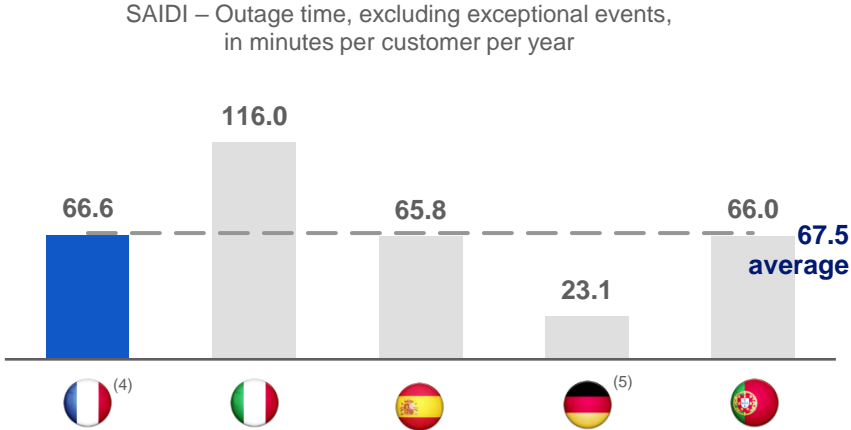


... in terms of number of customers <sup>(3)</sup>...



Data from operators' 2019 annual reports

... as in quality of supply <sup>(3)</sup>



2016 CEER data including transport outage time

<sup>(1)</sup> Enedis is an independent EDF subsidiary as defined in the French Energy Code

<sup>(2)</sup> Corresponds to the number of delivery points

<sup>(3)</sup> Situation at end-2020

<sup>(4)</sup> Indicator including transport, excluding local distribution companies. The outage time in ENEDIS scope was 64 minutes

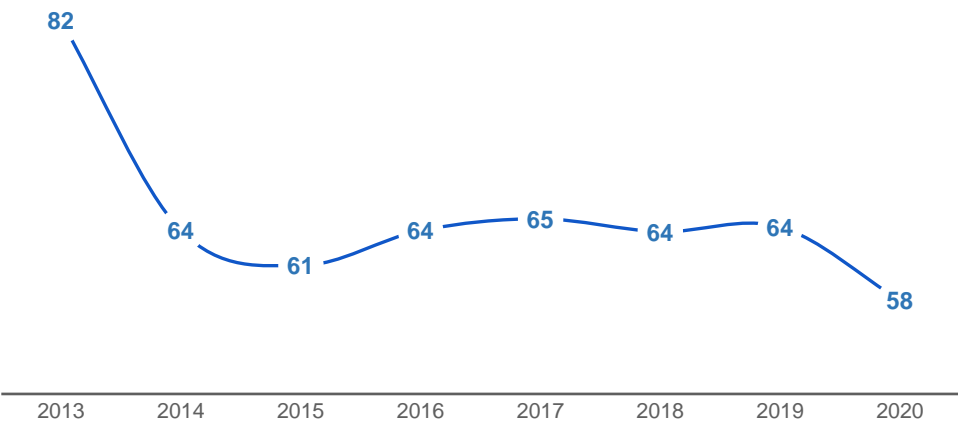
<sup>(5)</sup> Specific to Germany, whose network is much denser than in other countries



# ENEDIS <sup>(1)</sup> : TOP-TIER OPERATIONAL PERFORMANCE

## Top-tier operational performance...

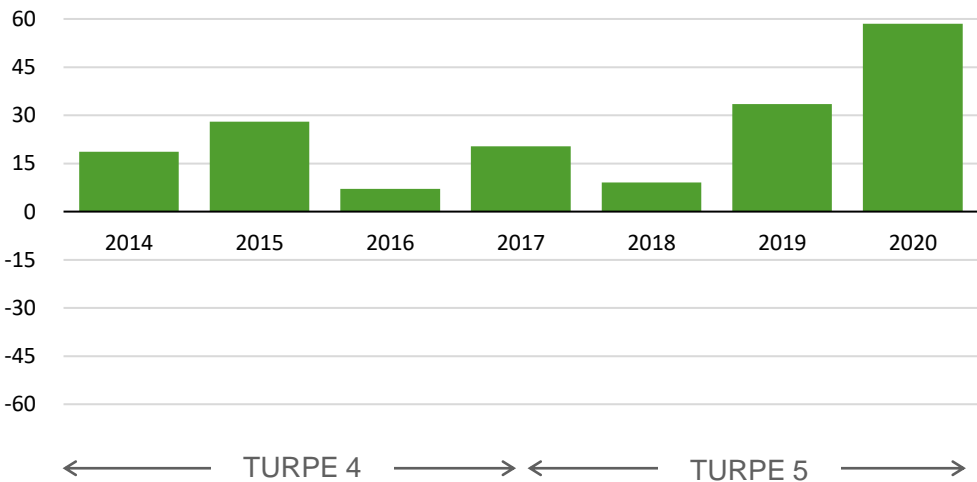
Outage time <sup>(2)</sup>



Outage time stable since 2014 at around 64 minutes

## ... which means it is frequently awarded the regulatory incentive bonus

The regulatory incentive bonus has been systematically obtained since 2014 (in €m)



Increase in MIN/MAX from TURPE 5, from €80m for TURPE 4 to €194m for TURPE 5: this increases the remuneration potential in the event of good operational performance.

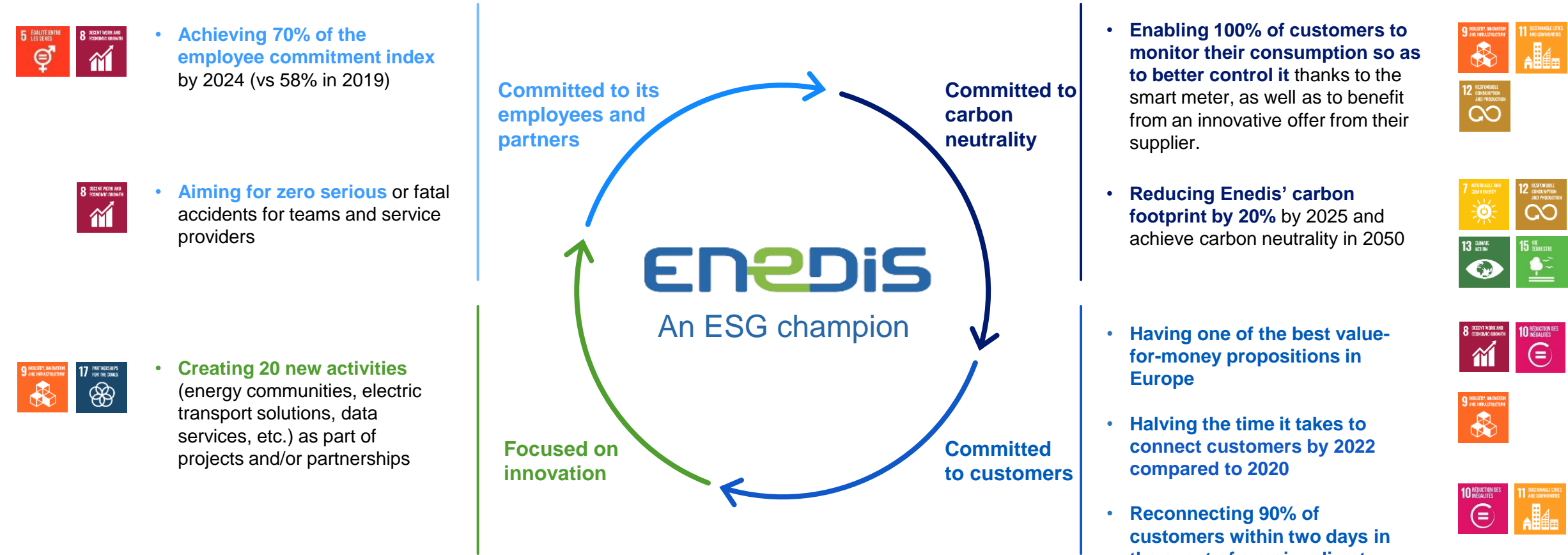
(1) Enedis is an independent EDF subsidiary as defined in the French Energy Code

(2) Excluding exceptional events and transport grid incidents



# ENERGY TRANSITION AT THE SERVICE OF THE TERRITORIES

## 2020-2025 INDUSTRIAL AND HUMAN PROJECT BASED ON EIGHT COMMITMENTS ALIGNED WITH UN OBJECTIVES

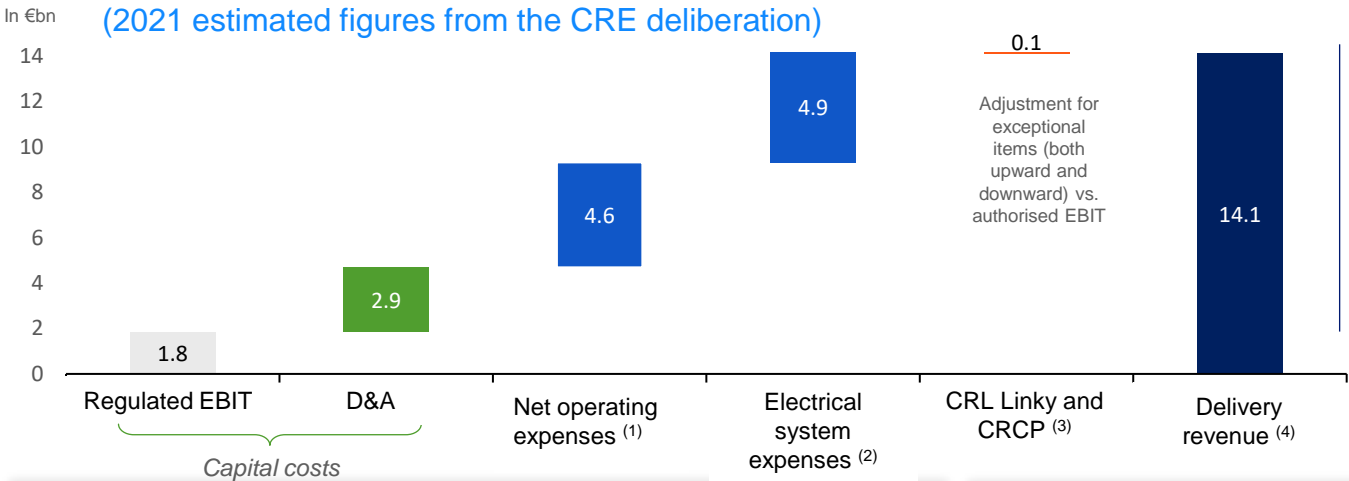




# ENEDIS: TURPE 6, A MATURE REGULATORY FRAMEWORK



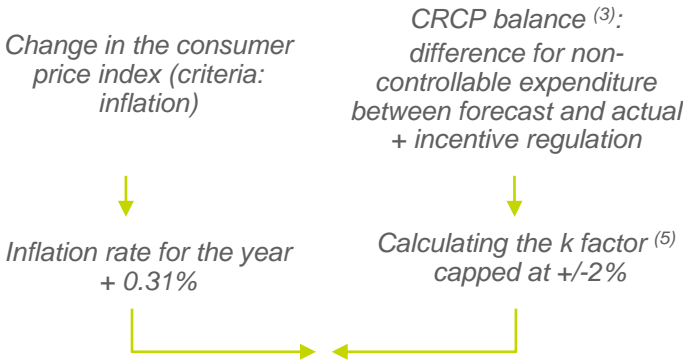
## Key elements of the remuneration: A cost + remuneration approach (2021 estimated figures from the CRE deliberation)



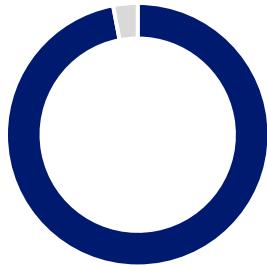
**No exposure to variations in distributed volumes** (number of customers, TWh distributed including weather impact) vs trajectory defined by the regulator

**Incentive regulation:** productivity gains, quality of service and continuity of supply, R&D and smart grids

### Tariff indexation principle (TURPE 6)



### Income and expense <sup>(6)</sup> largely secured by the mechanism of the Income and Expense Adjustment Account (CRCP):



% of revenues covered by the CRCP



% of expenses covered by the CRCP

(1) Net revenue excluding transport

(2) Power system charges = transport purchase from RTE + purchase of network losses

(3) CRCP = expense and income adjustment account; CRL Linky = Linky regulated levelling account (*Compte Régulé de Lissage* [CRL])

(4) French standard data. The difference with IFRS mainly corresponds to Enedis' contribution to the Electricity Equalization Fund

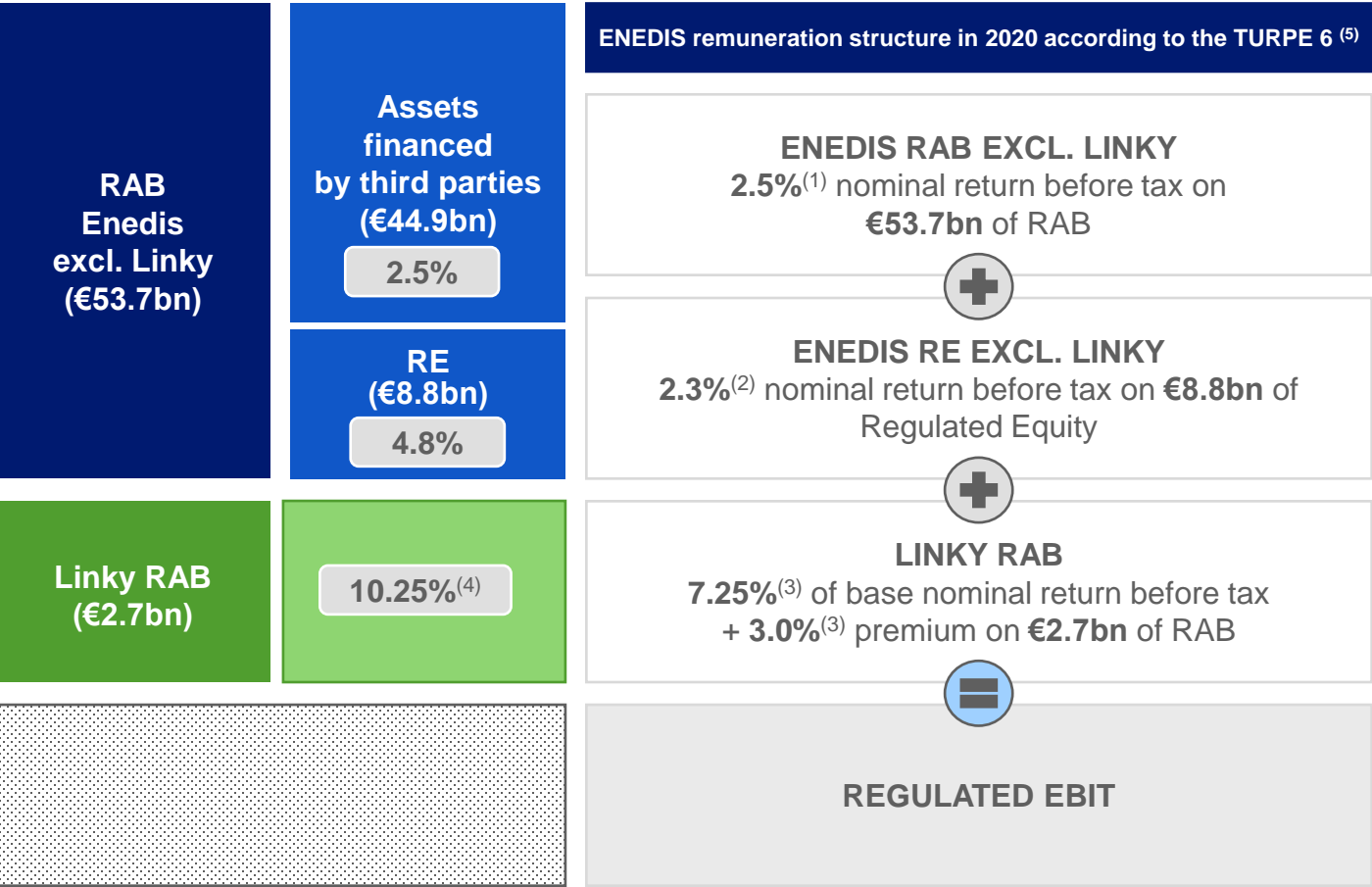
(5) *k* factor = percentage change in the fee table resulting from the clearance of the CRCP balance

(6) Capital charges + operating charges + electric system charges



## TURPE 6 REMUNERATION STRUCTURE: A FAVOURABLE RISK PROFILE

## A remuneration mechanism based on a guaranteed return



## TURPE 6 in continuity with the previous TURPE

- **Return on capital depends little on interest rate trends: stable at 2.5%** since TURPE 4
- Return on **regulated equity**: decrease from **4 to 2.3%** to take into account the reduction of the risk-free rate and the corporate tax rate in France
- **CRCP: mechanism globally validated**. The entry CRCP of TURPE 6 represents a receivable of €588m <sup>(6)</sup> to be spread over the four years of TURPE 6
- **Incentive regulation: targets raised**, notably quality of service
- Main new features: **annual tariff indexation** includes **0.31%** remuneration above inflation.

01/01/2021 figures

- (1) Asset margin = Asset beta x Market risk premium / (1 - tax rate) =  $0.36 \times 5\% / (1 - 26.47\%) = 2.5\%$
- (2) Additional rate of remuneration applied to RE = Risk-free rate / (1 - Tax rate) =  $1.7\% / (1 - 26.47\%) = 2.3\%$
- (3) Remuneration rate for Linky assets = Base rate + expected remuneration bonus  
=  $7.25\% + 3\% = 10.25\%$

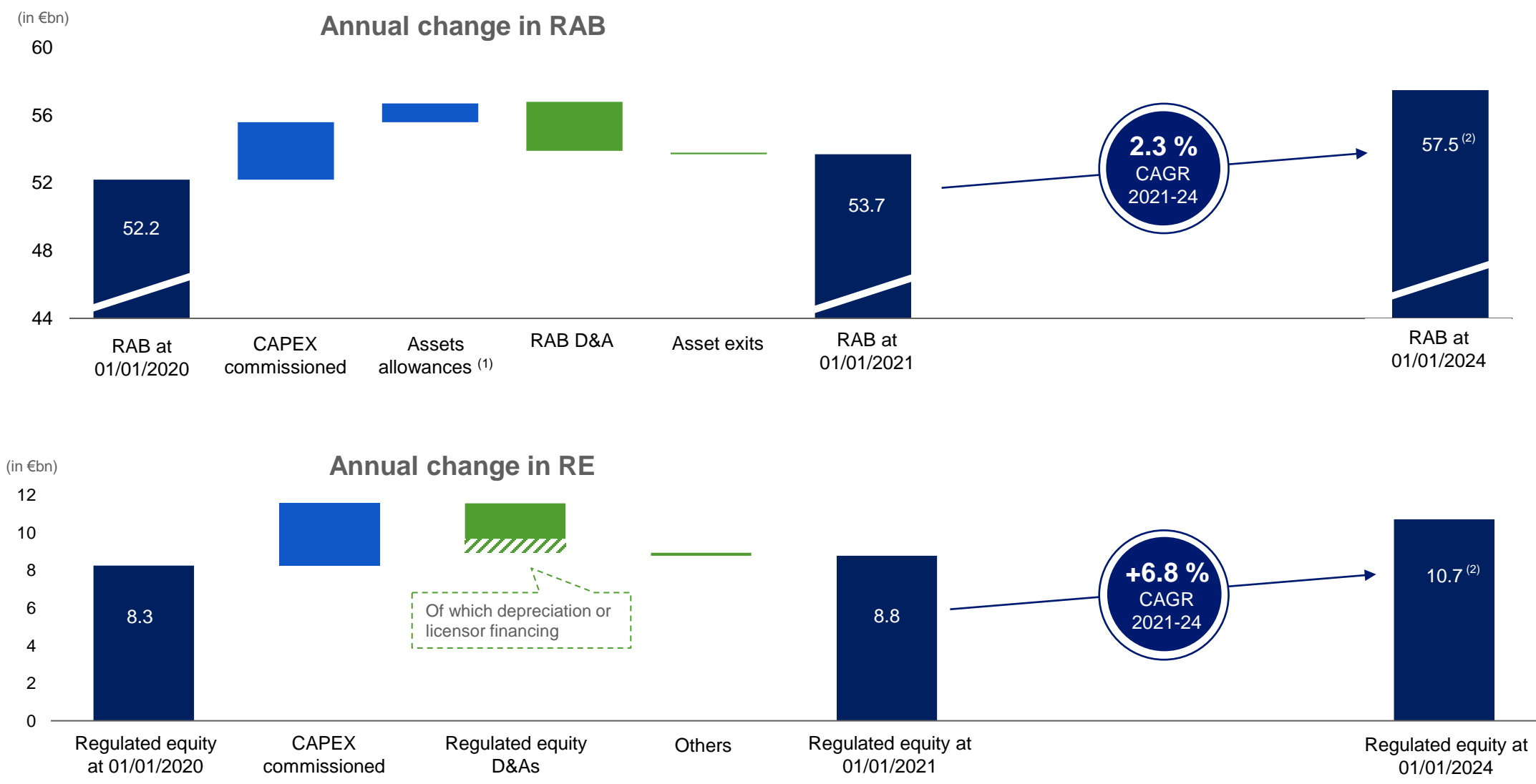
(4) Assuming award of the expected remuneration bonus

(5) Applicable from 1 August 2021

(6) CRE deliberation



# STEADY GROWTH IN RAB AND REGULATORY EQUITY



(1) Work by concession-granting authorities and transferred to Enedis + c.€4bn for the integration of growing columns excluding concession in 2020 (ELAN law)

(2) Estimated figures from the CRE deliberation



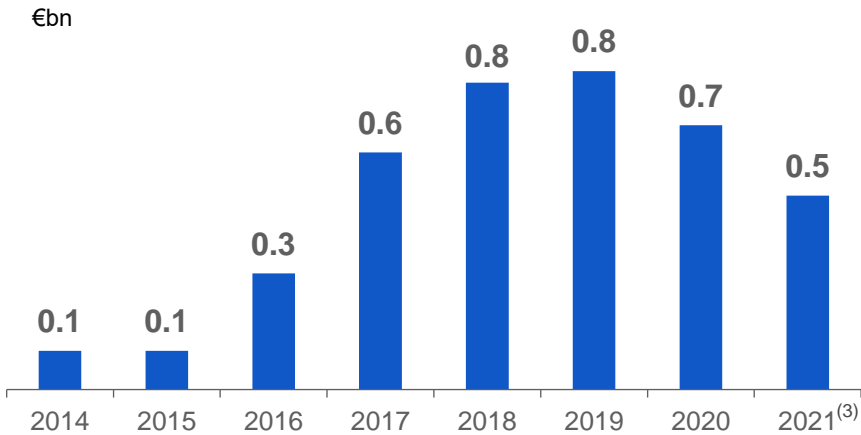
# LINKY <sup>(1)</sup> : AN INCENTIVE TARIFF FRAMEWORK

LINKY: THE ROLLOUT PROGRAM FOR NEW SMART METERS

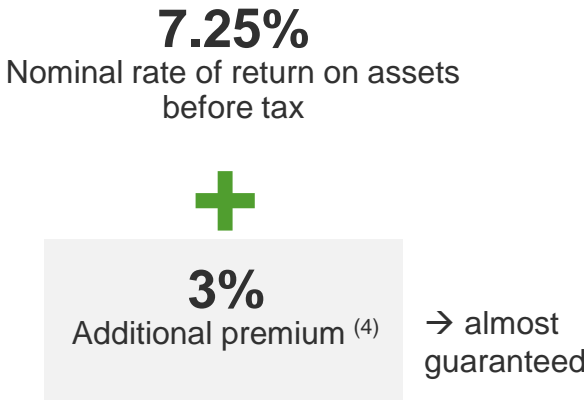
AN ATTRACTIVE REMUNERATION STAGGERED OVER TIME



2014-2021 Investment pattern



Linky – Remuneration



(1) Linky is a project led by Enedis, an independent EDF subsidiary as defined in the French Energy Code

(2) At completion of the program, costs were revised downwards after latest negotiated prices

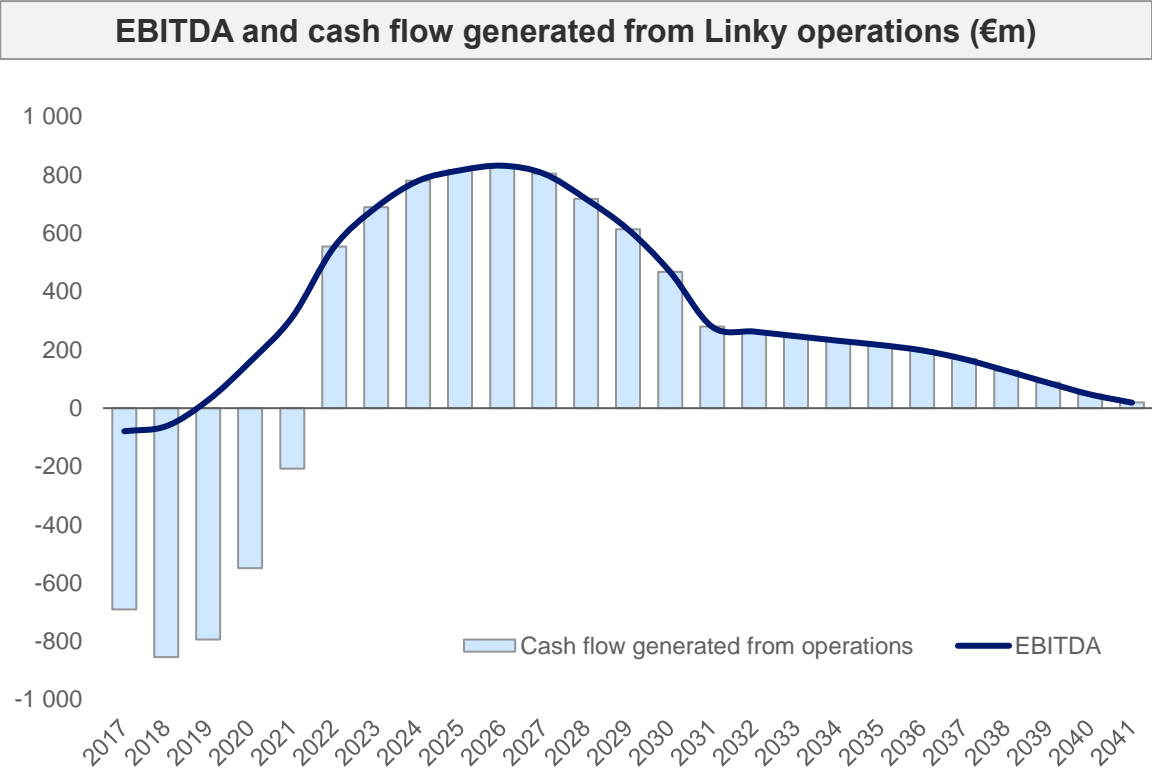
(3) Estimated figures

(4) Additional premium of 3% / Penalties of -2 %, depending on the respect of costs, deadlines and performance of the system during the deployment phase

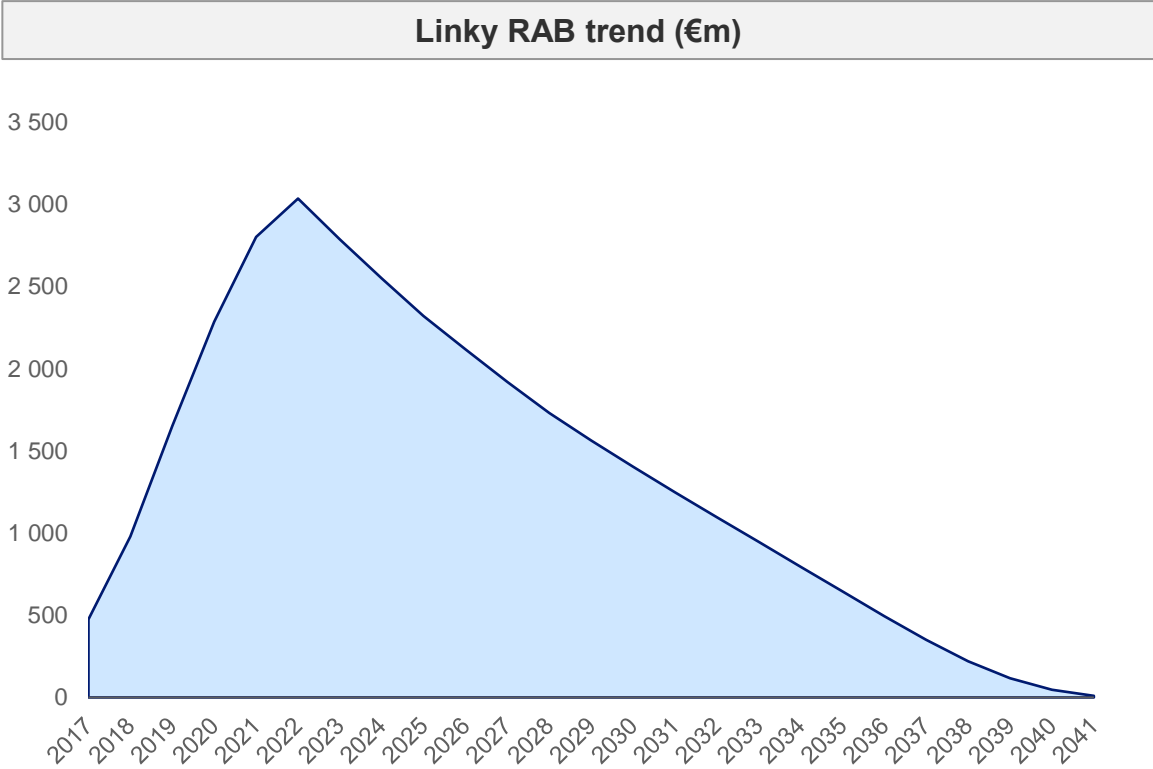


# LINKY: A SIGNIFICANT CONTRIBUTION TO CASH-FLOW FROM 2022

## A significant contribution to cash-flow from 2022...



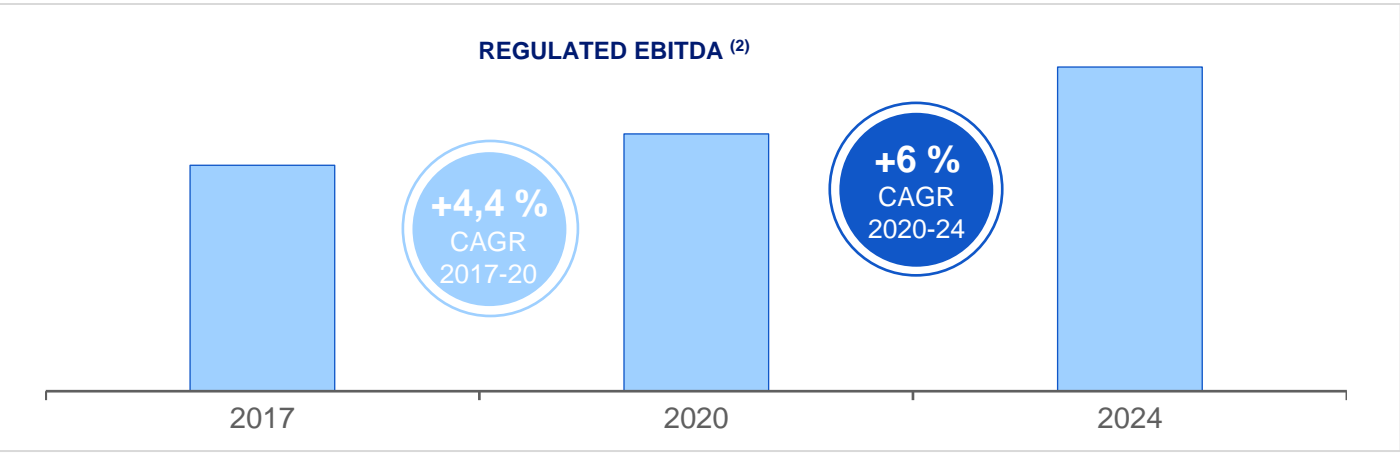
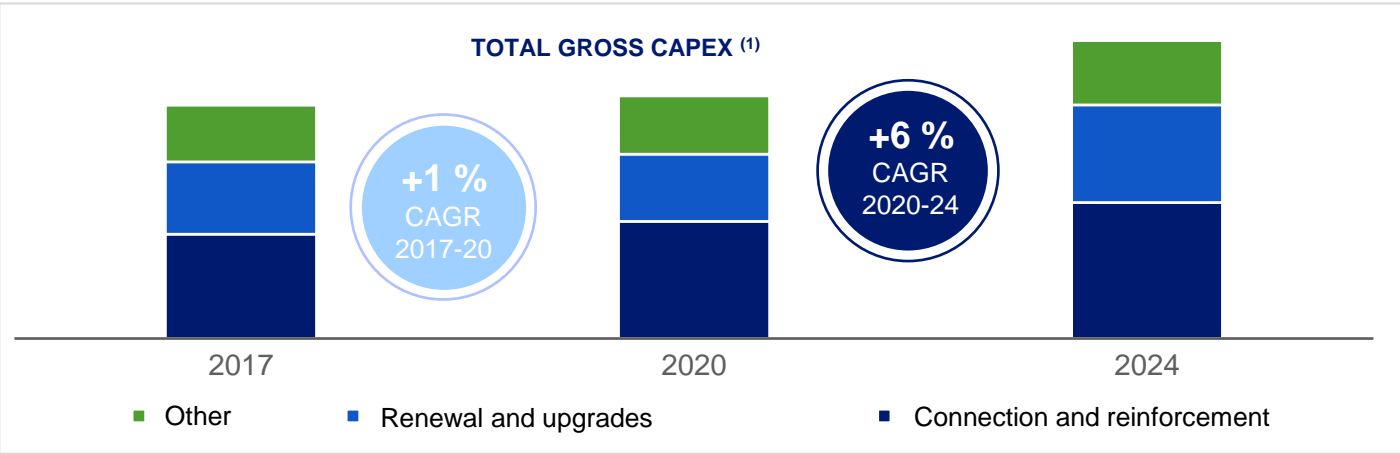
## ... in line with the Linky RAB trend



- Linky's cash flow is negatively impacted until 2021 as a result of the roll-out and the Regulated Deferred Account mechanism (CRL).
- Significant contribution from 2022 before peaking around 2025-2027



# INVESTMENTS ACCELERATION SUPPORTING EBITDA GROWTH



... in a context of development of new uses and ecology transition



Electric vehicles



Centralised and distributed solar



Onshore and offshore wind power



Storage



Consumer connections

(1) Excl. Linky  
(2) Regulatory EBITDA excluding weather impacts, etc., which are offset in subsequent years by the CRCP mechanism



ENEDIS <sup>(1)</sup> : KEY FIGURES

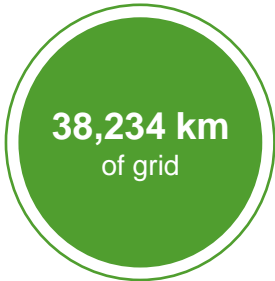
In millions of euros	H1 2020	H1 2021	Δ%
Sales	7,141	8,005	+12.1%
EBITDA	2,019	2,702	+33.8%
Net income excl. non-recurrent items	350	882	+152%
Gross operating investments <sup>(2)</sup>	1,582	2,127	+34.4%

(1) Enedis, an independant EDF subsidiary as defined in the French energy code; local data  
 (2) Including Linky



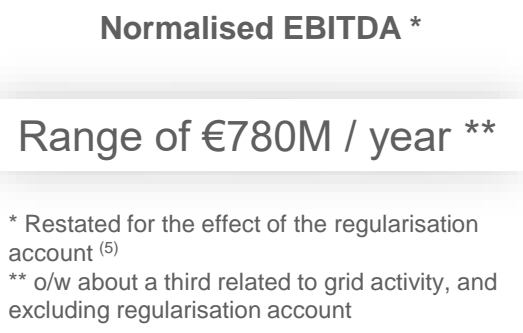
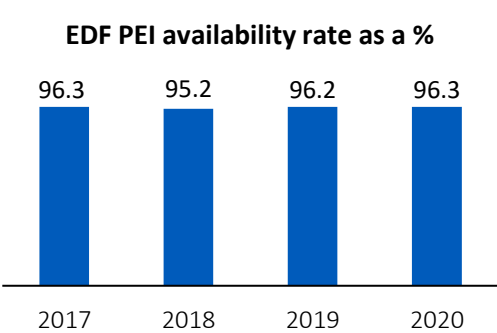
# ISLAND ACTIVITIES <sup>(1)</sup>: SPECIFIC REGULATION AND OPERATIONAL PERFORMANCE SUPPORTING STABLE REVENUES

MAJOR ASSETS  
AT THE HEART OF THE  
TERRITORIES <sup>(2)</sup>



REGULATED ASSETS,  
OPERATED  
EFFICIENTLY,  
GENERATING A STABLE  
EBITDA

- Generation assets:** 11% remuneration for assets commissioned between 2006 and April 2020 (7.25% before) / between 7% and 12% thereafter (decision expected in Q2 2021)
- Networks:** (FPE <sup>(4)</sup>)
 
  - 6.4% return on regulated equity (€0.7bn)
  - 2.5% remuneration on the RAB (€2.5bn)



A CONTRIBUTION TO  
THE ENERGY  
TRANSITION IN ZNI <sup>(3)</sup>

- Smart meter programme:** install and operate 1.2 million smart meters by end 2024. Around 400k smart meters were already installed and operated by the end of 2020: roll-out on schedule.
- Energy efficiency:** sustainable energy-saving measures (insulation, solar water heaters, etc.) with a 2% reduction in consumption in 2019, for example.
- Decarbonation:** integration of renewable energy sources, development and operation of ~30 smart grids, electrification programme in isolated areas. Conversion to liquid biomass of the power plants operating in Port Est, Pointe Jarry and Bellefontaine, as well as the future Larivot plant.

(1) French island electrical activities include Corsica, Martinique, Guadeloupe, French Guiana, Réunion and Saint Pierre and Miquelon  
 (2) Situation at end-2020

(3) ZNI = non-interconnected zones  
 (4) FPE: Electricity Equalization Fund [*Fonds de Péréquation de l'Electricité*], current four-year period from the beginning of 2018 to the end of 2021  
 (5) CRCP of the FPE



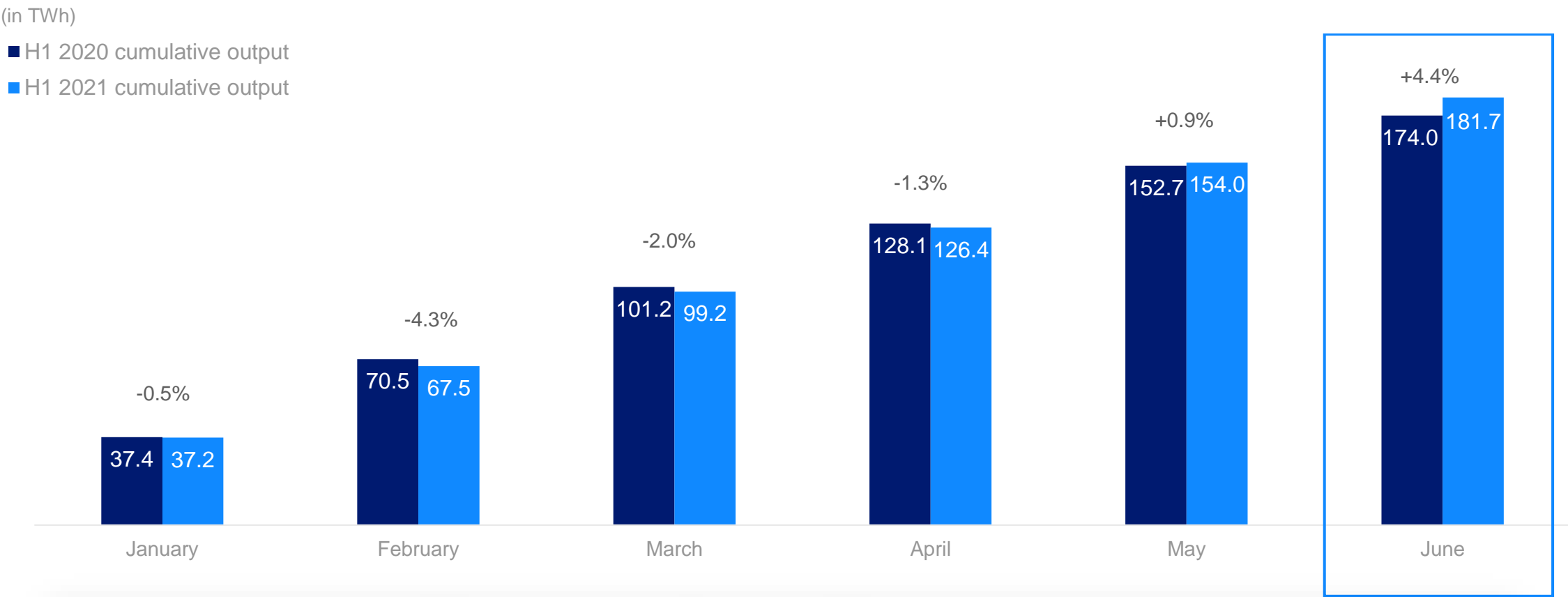
# 2021 HALF-YEAR RESULTS

FRANCE – GENERATION AND SUPPLY





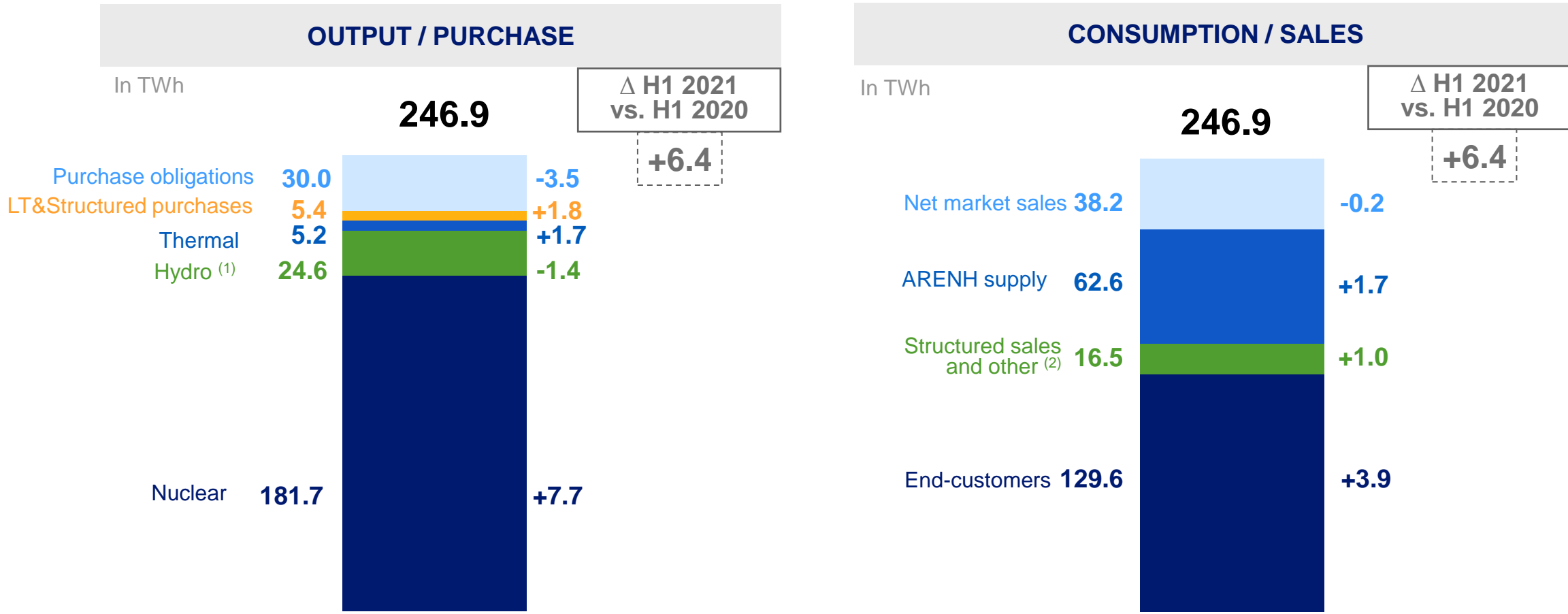
# FRANCE NUCLEAR OUTPUT



➤ **Nuclear output produced 181.7TWh in the first half of 2021, up by 7.7TWh** from the first half of 2020 despite the closure of the two reactors at Fessenheim. This increase is principally explained by lower modulation in generation, in a higher demand context.

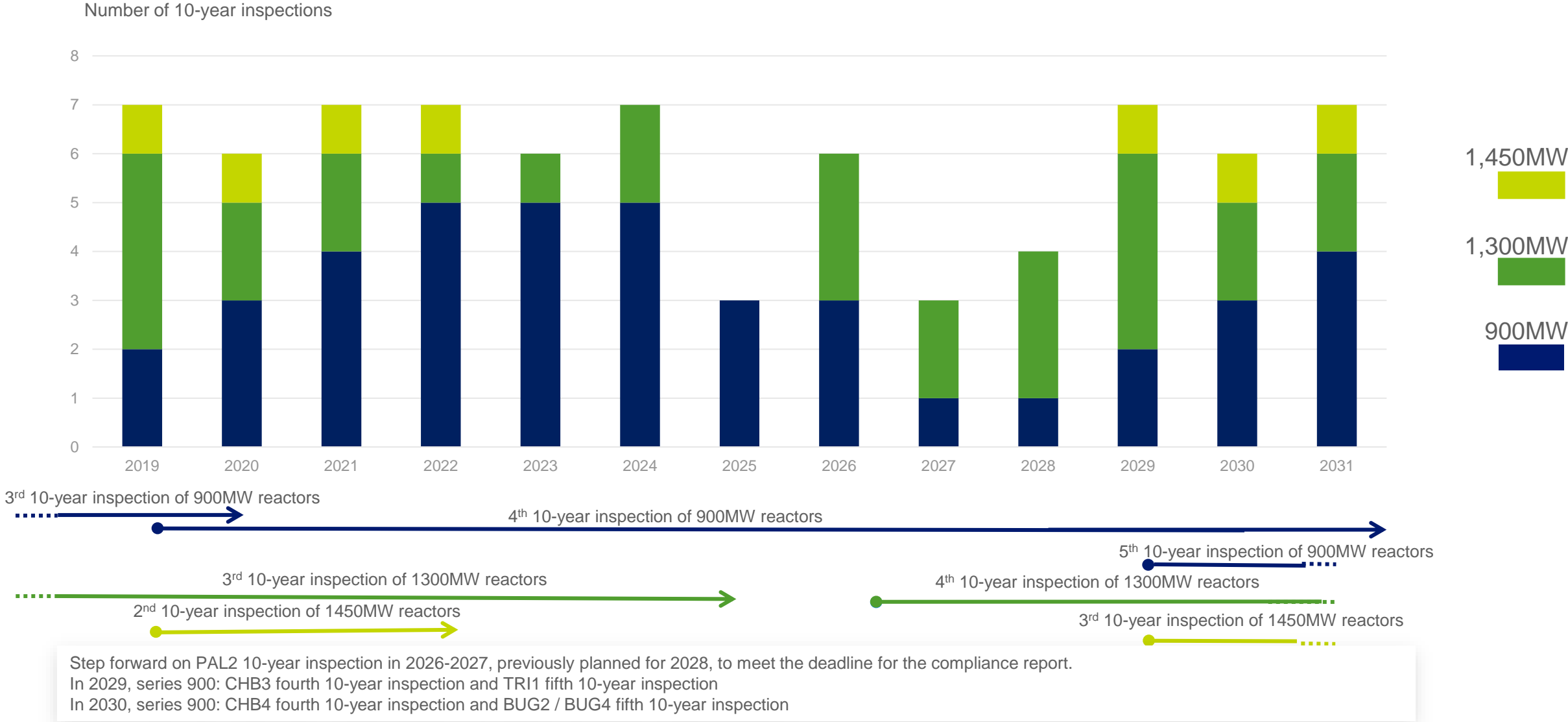


FRANCE: UPSTREAM / DOWNSTREAM ELECTRICITY BALANCE



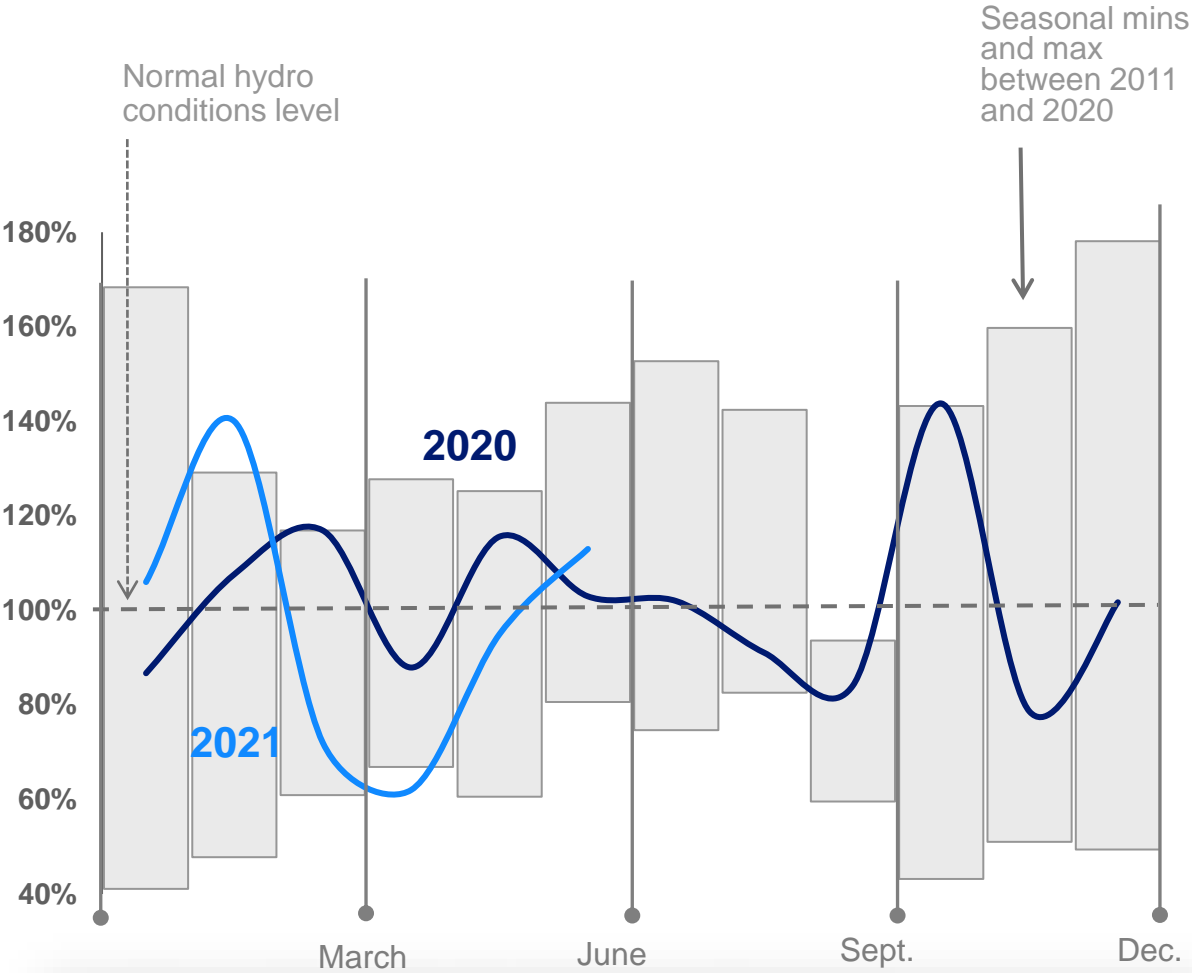
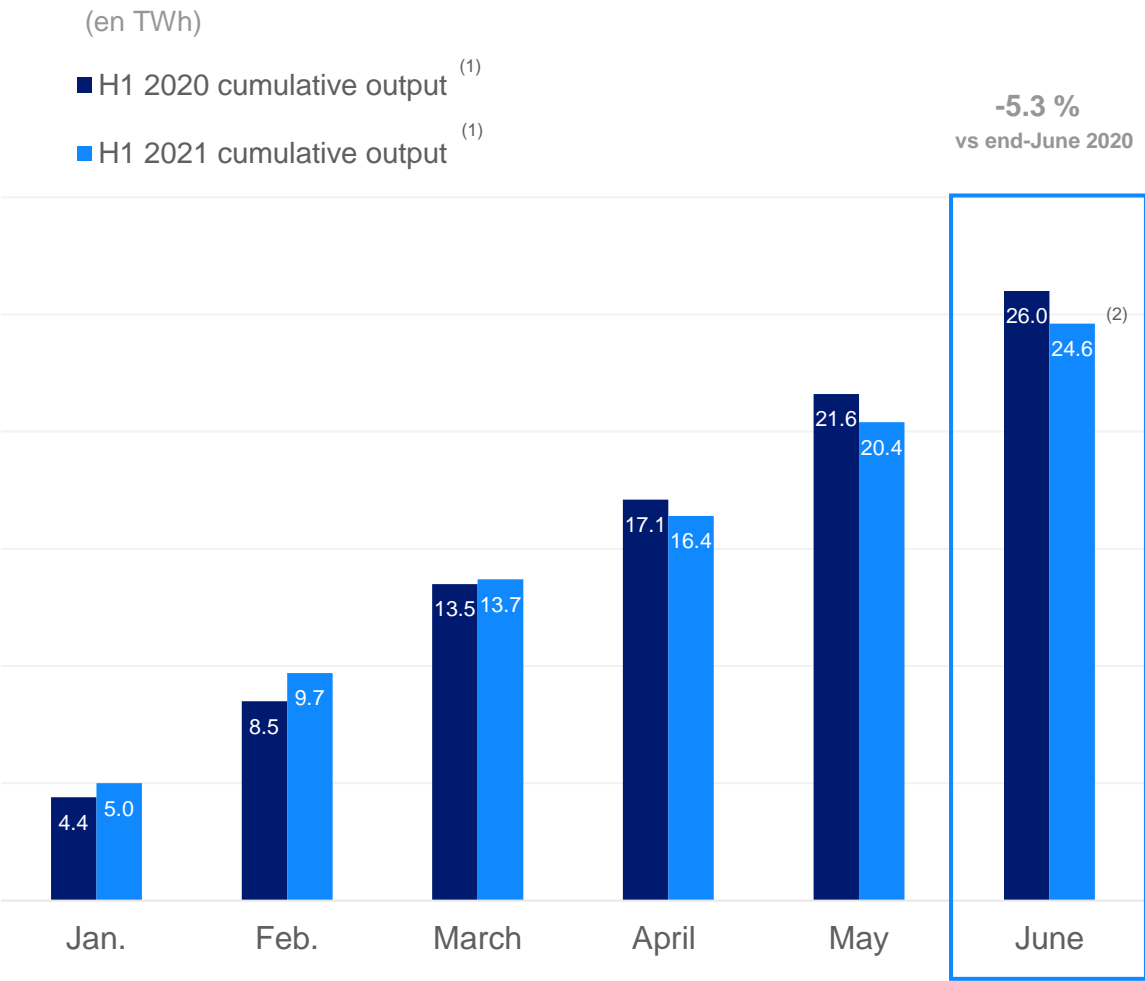


# 10-YEAR INSPECTIONS OF THE NUCLEAR FLEET





# FRANCE HYDRO OUTPUT



(1) Hydropower excluding electrical activities on French islands, before deduction of pumped volume consumption.

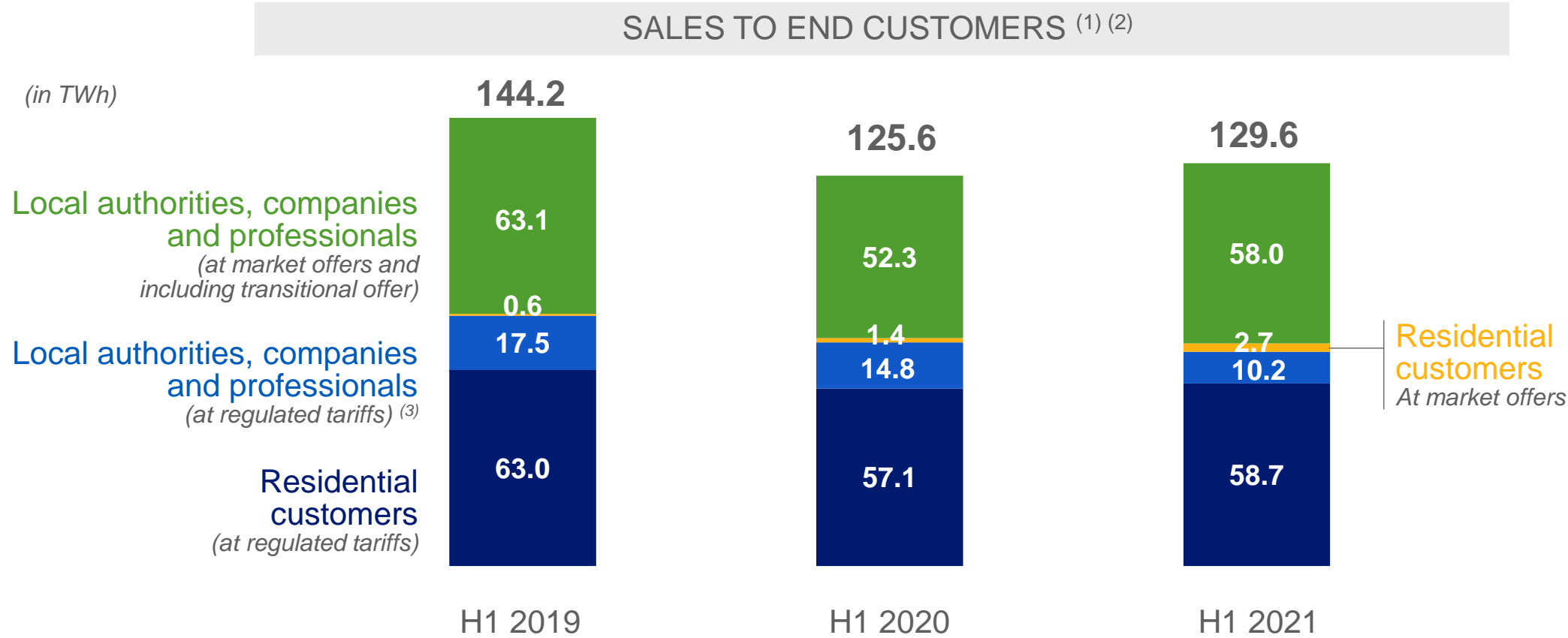
(2) Production after deduction of pumped volume consumption: 22.7TWh in H1 2020, and 21.9TWh in H1 2021.

➤ Hydro conditions in H1 2021 slightly lower than S1 2020

➤ Hydraulic reservoirs filling rate in France at 70.4% at end-June 2021: -2.5 points vs historical average



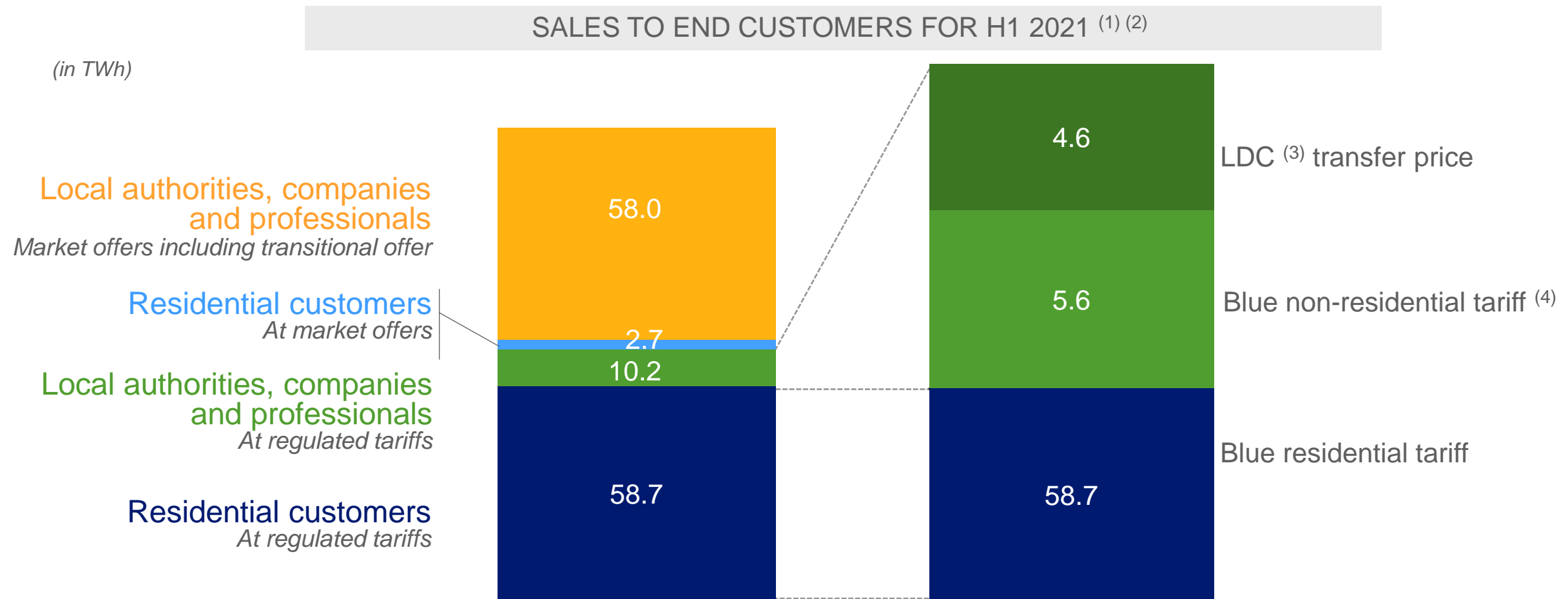
# ELECTRICITY SUPPLY IN FRANCE



(1) Rounded to the nearest tenth  
(2) Including EDF's own consumption  
(3) Blue professional tariff, LDC (Local Distribution Companies) at transfer price and Yellow and Green tariffs, below 36kVA that persist beyond 2015



# ELECTRICITY SUPPLY IN FRANCE – SALES UNDER REGULATED TARIFFS SPLIT



(1) Rounded to the nearest tenth  
(2) Including EDF's own consumption  
(3) Local Distribution Companies (LDCs)  
(4) Of which Yellow and Green tariffs for 0.05TWh - Tariffs lower than 36 kVA

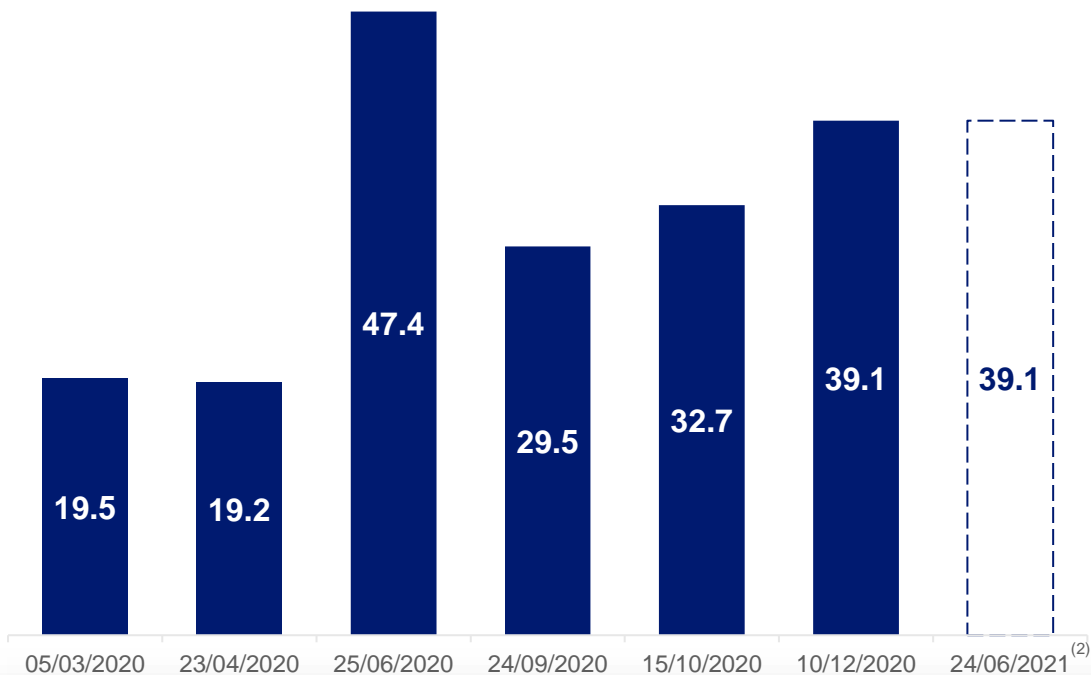


# CAPACITY MARKET IN FRANCE

CAPACITY AUCTION PRICES <sup>(1)</sup>

FOR DELIVERY IN 2021

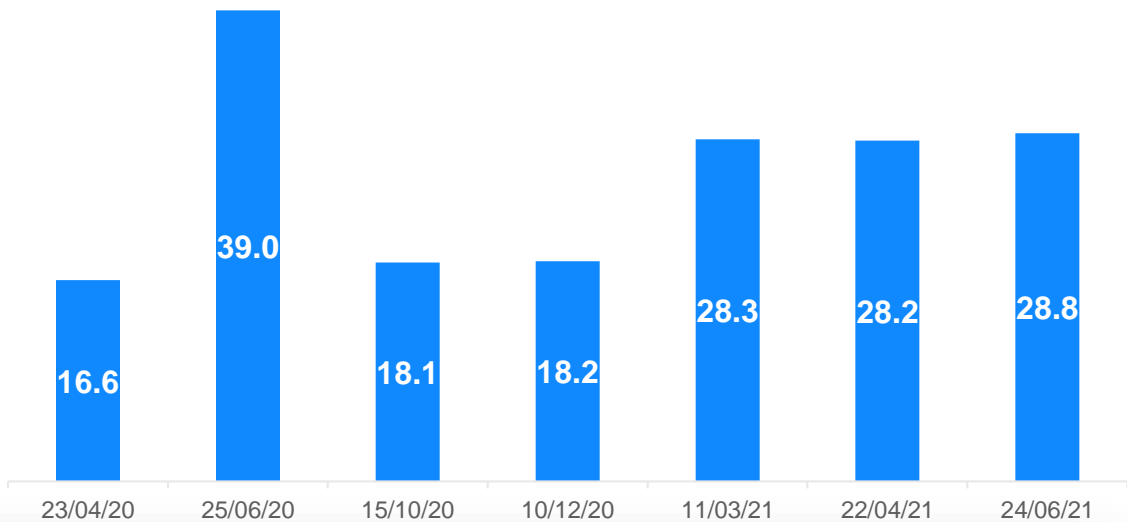
(in €/kW)



- Volume of certified EDF capacities: 63.5 GW at end-June 2021
- Average Price <sup>(3)</sup>: 31.2€/kW

FOR DELIVERY IN 2022

(in €/kW)



- Volume of certified EDF capacities: 68.8 GW at end-June 2021
- 3 remaining auctions in 2021 for delivery in 2022

(1) Data rounded to nearest tenth  
(2) Rebalance session  
(3) Does not take into account rebalance sessions



# CAPACITY MARKET IN FRANCE: IMPACT FOR EDF (1)

	Capacity auctions	Volume of EDF certified capacities (at end-2020)	Impact on EBITDA (Cumulative impacts on regulated sales tariffs (2), offers at market prices and purchases/sales on the wholesale market)
2017	➤ Market Reference Price (PRM): €10/kW (EPEX session on December 2016)	73GW	€580m
2018	➤ Market Reference Price (PRM): €9.34 €/kW (average of the sessions of November and December 2017)	72GW	€591m (5)
2019	➤ Market reference price: €17.37/kW, (unweighted average bid price before delivery year)	71GW	€701m (3) (5)
2020	➤ Market reference price: €19.5/kW, (unweighted average bid price before delivery year)	63GW	€952m (5) (€330m at end-June 2020 (4) )
2021	➤ Market reference price: €31.2/kW, (unweighted average bid price before delivery year)	63GW	€599m at end-June 2021 (4) (5)

Not all of these capacities are directly measurable. In particular, the ARENH subscriptions have a negative impact on capacity revenues insofar as the ARENH product at €42/MWh includes the delivery of capacity guarantees by EDF: 14.4GW of capacity was thus transferred to suppliers having subscribed to the NWRA for 2020 + ~14GW of capacity integrated in the regulated tariffs and market offers by NWRA mirror effect

(1)

Includes sales on the market of Capacity Guarantees for the year related to all delivery years.

(2)

The PRM for the 2017 capacity of €10/kW has been included in the July 2017 tariff schedule.

(3)

Theoretical figure: the capacity on the DCo side has not been fully passed on in the TRVs in 2019 (tariff freeze).

(4)

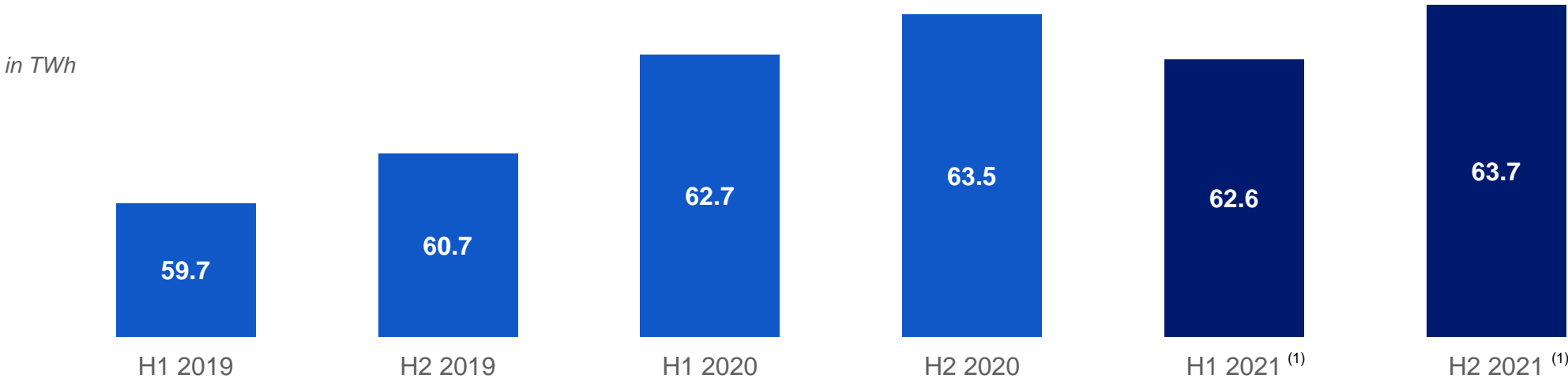
Theoretical figure that doesn't take into account some specific billing methods for downstream customers

(5)

The MRP applies to the billing of the vast majority of the customers on market-price contracts and has been incorporated into the new February schedules for customers on regulated tariffs. Cf CRE deliberation of 11/01/18 for 2018, of 07/02/2019 for 2019, of 16/01/2020 for 2020 and 14/01/2021 for 2021



# ARENH: VOLUMES ALLOCATED



- Maximum annual sales volume of 100TWh <sup>(2)</sup> by EDF to alternative suppliers and ~25TWh for network losses coverage
- In November 2020, ARENH requests from alternative suppliers for 2021 amounted to 146.2TWh.
- The volume for 2021 was therefore capped at the legal ceiling of 100TWh generating the “cropping effect” in the tariff
- At end-May 2021, the supplied volume was not changed for 2021
- Volume sold for 2021, including 26.3TWh sold for network losses coverage:
  - 62.6TWh for H1
  - 63.7TWh for H2
- Pending litigation regarding the implementation of a Force Majeure in the ARENH contract between EDF and some alternative suppliers

Source: CRE

(1) Difference between half year estimated by EDF, from the annual data provided by the CRE, and likely to change during the year through the application of legal, regulatory and contractual provisions (sub-annual window, cancellations, defaults, etc.)

(2) The Energy and Climate Change law of 8 September 2019, provides the government with the possibility of raising the cap for global maximal volumes via a ministerial order, from 100 to 150TWh as of 1 January 2020. The law also allows the government to revise the ARENH price. However, the government announced early November 2020 a status quo for both ARENH volumes and ARENH price for 2021



# ARENH: FORCE MAJEURE LITIGATION

- The Covid health crisis and the emergency measures taken by the French government as of 17 March 2020, have led to a decrease in electricity consumption from non-residential customers and a decrease in electricity wholesale market prices, affecting all suppliers, including EDF.
- Certain suppliers have asked the Presiding Judge of the Paris Commercial Court to order, as a matter of urgency, the total suspension of deliveries of volumes from ARENH and/or their partial suspension up to the amount of the drop in electricity consumption of their customer portfolio during the crisis, invoking the *Force Majeure* clause provided for in the ARENH framework agreement concluded with EDF.
- The Summary Judge has decided that the conditions for *Force Majeure* have been met and has ordered EDF not to oppose the suspension of the agreement, entailing thereby the total interruption of the annual electricity transfer program.
- EDF has appealed the ruling. On 28 July 2020, the Paris Court of Appeals upheld the urgent application judge’s decision, considering that the *Force Majeure* clause in the framework agreement has an automatic effect and that *Force Majeure* could not be excluded with the evidence required in summary proceedings. EDF filed an appeal on 24 September, which is still pending before the Cour de Cassation (the highest court of appeal).
- To safeguard its rights, EDF announced on 2 June the termination, as a precautionary measure, of the ARENH contracts binding it to these energy suppliers, as provided for in the event of a suspension of these contracts beyond a two-month period. Total Direct Energie (TDE) contested this termination before the judge in charge of summary proceedings. The latter ruled on 1 July 2020 and provisionally suspended the effects of EDF’s termination announcement. EDF has appealed this ruling. On 19 November 2020, the Paris Court of Appeals overturned the ruling of the summary judge.
- As the French Energy Regulatory Commission (CRE) has not complied with EDF’s request to suspend ARENH deliveries to TDE <sup>(1)</sup> starting on 23 November for the end of 2020 in accordance with the ruling of the Paris Court of Appeals, EDF filed an appeal with the French State Council for ultra vires on 10 December 2020 with a view to obtaining the revocation of the CRE’s ruling.
- In September, an alternative supplier (Ohm Energie) also urgently appealed to the Presiding Judge of the Paris Commercial Court to suspend payments due for ARENH volumes delivered during the force majeure event, arguing that delivery should not have continued during the period of *Force Majeure*. On 23 October, the Summary Judge dismissed the application.
- These rulings were taken under an urgent procedure, on a provisional basis; only procedures on the merits will make it possible to establish definitively the merits of the respective positions of the parties.
- As of today, some alternative suppliers have introduced full civil proceedings against EDF with the Paris Commercial Court with a view to obtaining compensation for damages supposedly resulting from EDF’s refusal to suspend ARENH deliveries on the basis of force majeure. On 13 April 2021, the Paris Commercial Court handed down an initial ruling ordering EDF to pay €5.88 million in damages and interest to an alternative supplier. The Court considered that the conditions of force majeure were met and concluded that EDF had committed a contractual breach for which it is liable by failing to suspend the delivery of ARENH volumes. EDF appealed against the ruling before the Paris Court of Appeal. Other procedures are ongoing.



# REGULATED SALES TARIFFS IN FRANCE (1/3)

## Change in Blue tariff

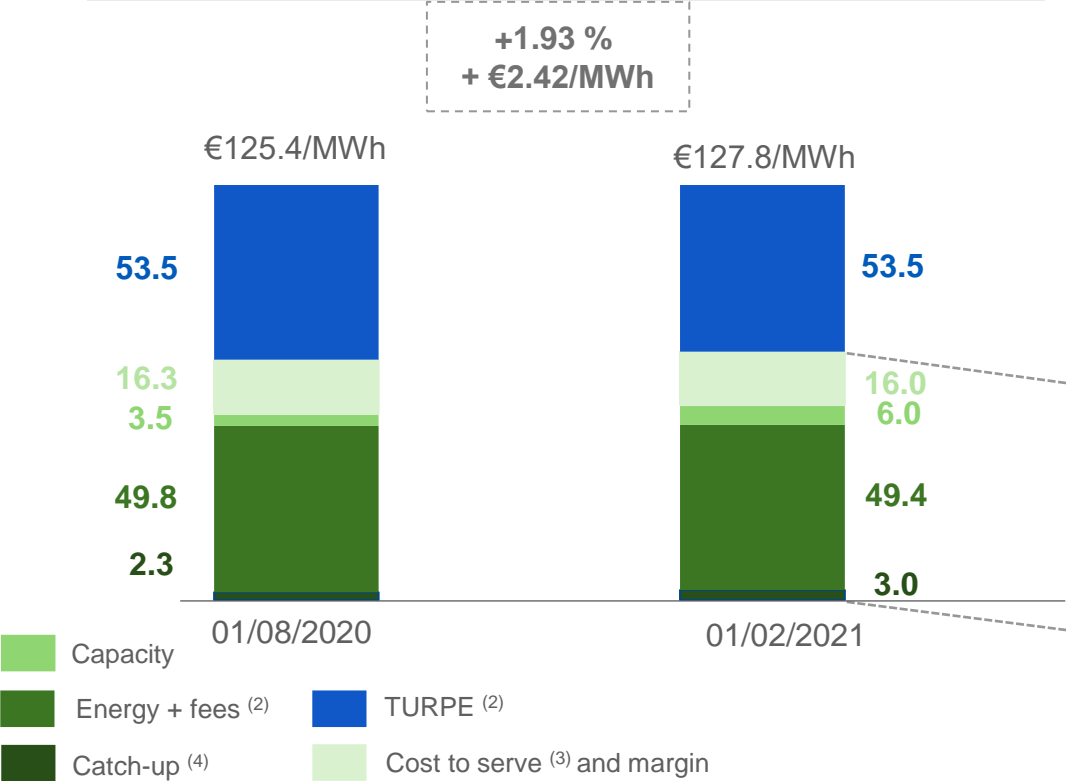
Date	Change in Residential Blue tariff		Change in Non-Residential Blue tariff	
	(VAT excluded)	(including VAT)	(VAT excluded)	(including VAT)
01/02/2018	+0.7%	+ 0.6%	+1.6%	+ 1.3%
01/08/2018	-0.5%	- 0.3%	+1.1%	+ 0.9%
01/06/2019	+7.7%	+ 5.9%	+7.7%	+ 5.9%
01/08/2019	+1.49%	+ 1.26%	+1.34%	+1.1%
01/02/2020	+3.0 %	+2.4%	+3.1%	+2.4%
01/08/2020	+1.82%	+1.54%	+1.81%	+ 1.58%
01/02/2021	+1.93%	+1.61%	+3.23%	+2.61%
01/08/2021 <sup>(1)</sup>	+1.08%	+0.48%	+0.84%	+0.38%

(1) CRE proposition from its deliberation of the 8 July 2021, for an implementation at the earliest on the 1 August 2021

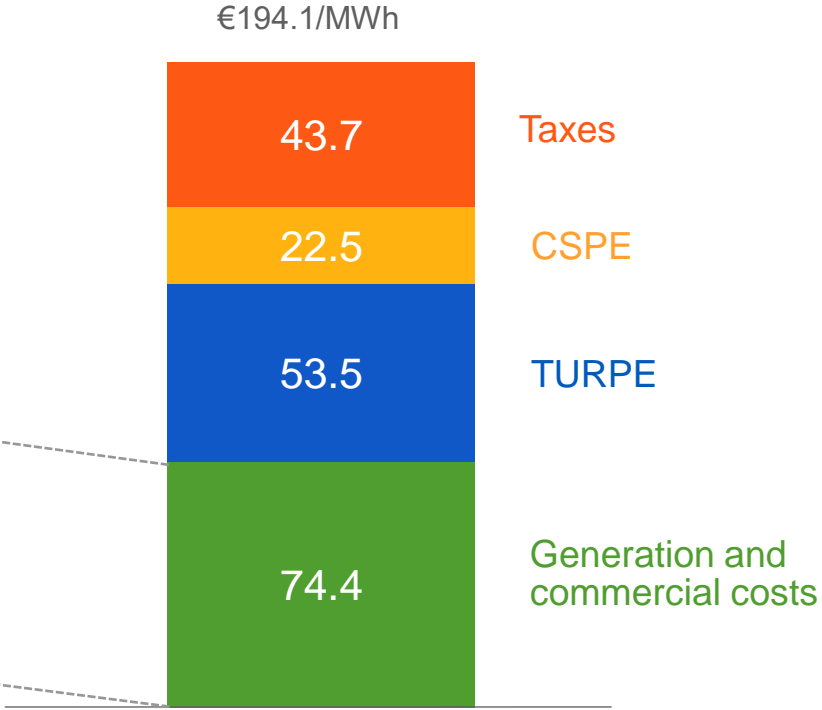


# REGULATED SALES TARIFFS IN FRANCE : CHANGE IN FEBRUARY 2021 (2/3)

RESIDENTIAL BLUE TARIFF EXCLUDING TAXES <sup>(1)</sup>



AVERAGE BILL BREAKDOWN. VAT INCLUDED  
(BLUE RESIDENTIAL CUSTOMER)



(1) Source: Data from the 14 January 2021 deliberation of the CRE, approved by official decision published at the Journal Officiel on 31 January 2021

(2) At August 2020 and February 2021, the “Energy + fees” and “TURPE” figures are based on an average calculation on customers portfolio at the Regulated Sales Tariffs at end-2019 (base calculation for the CRE deliberation of 14/01/2021)

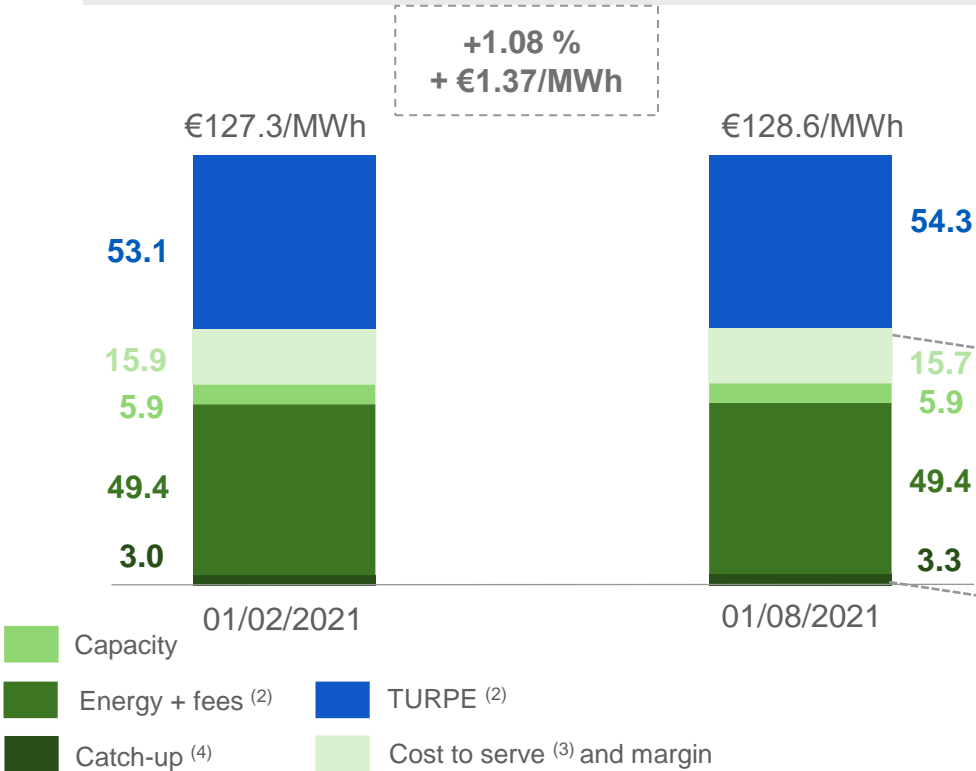
(3) Including cost of Energy Efficiency Certificates

(4) Catch-up due to tariffs freeze at the beginning of 2019 + balance of cost to serve 2020

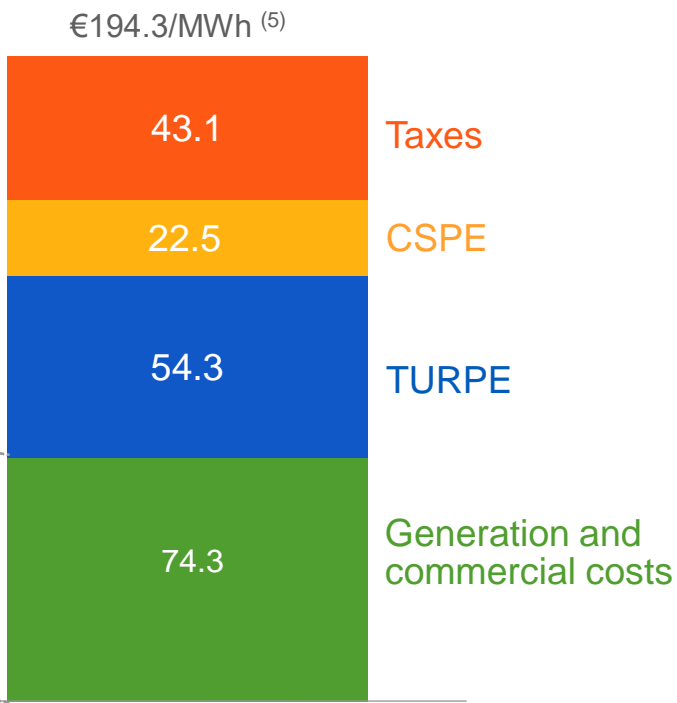


# REGULATED SALES TARIFFS IN FRANCE : CRE PROPOSITION IN AUGUST 2021 (3/3)

RESIDENTIAL BLUE TARIFF EXCLUDING TAXES <sup>(1)</sup>



AVERAGE BILL BREAKDOWN. VAT INCLUDED (BLUE RESIDENTIAL CUSTOMER)



(1) Source: Data from the 8 July 2021 deliberation of the CRE, awaiting confirmation by government decision published at the Journal Officiel

(2) At August 2021 and February 2021, the “Energy + fees” and “TURPE” figures are based on an average calculation on customers portfolio at the Regulated Sales Tariffs at end-2020 (base calculation for the CRE deliberation of 08/07/2021)

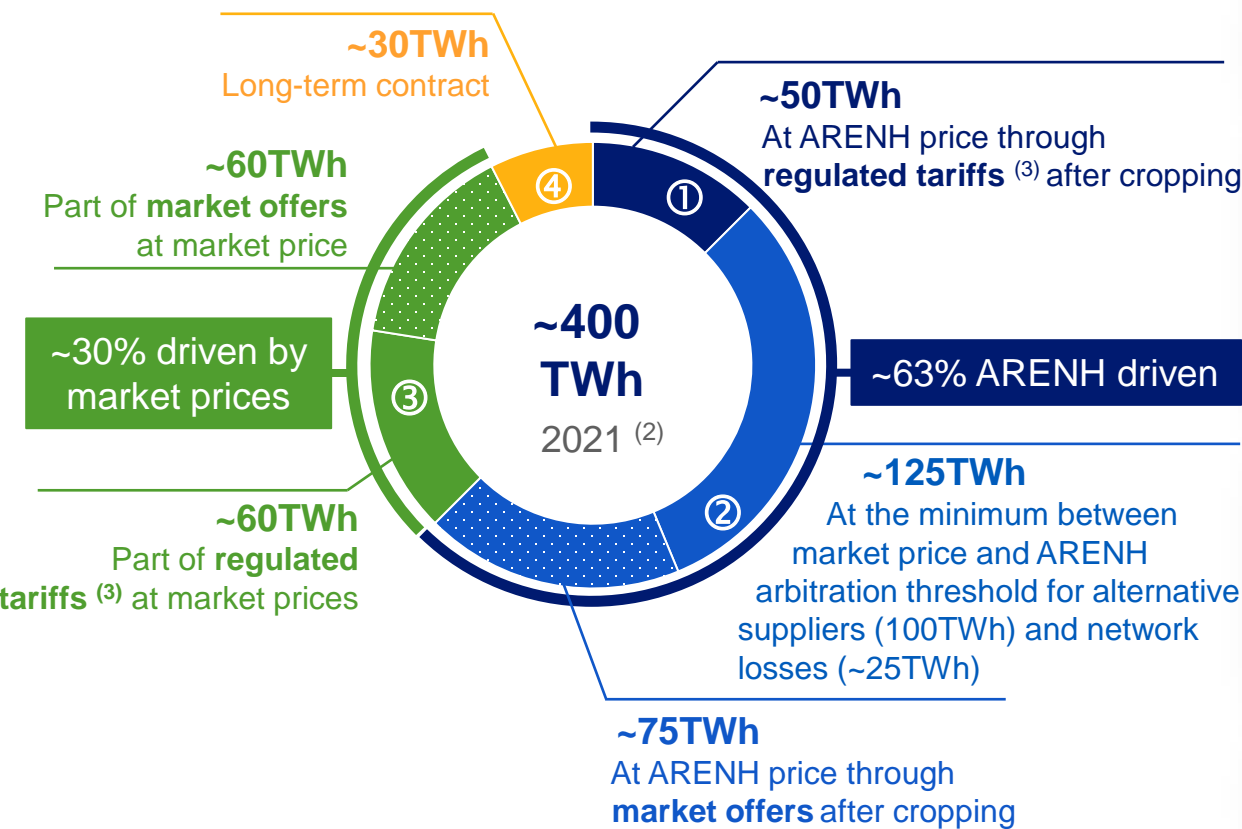
(3) Including cost of Energy Efficiency Certificates

(4) Balance of over-coverage 2018 – catch up due to tariff freeze at the beggining of 2019 +commercial costs 2020

(5) Due to rouding, the total is not strictly equal to the sum of the components



# DISTRIBUTION OF ELECTRICITY SALES <sup>(1)</sup> ACCORDING TO THEIR MARKET PRICE EXPOSURE



- 1** Volumes sold at the ARENH price following the cost-stacking formula in the regulated sales tariffs (essentially blue residential and non-residential tariffs)
- 2** Volumes sold at the market price if this price is lower than ARENH arbitration threshold (ARENH price - capacity price) and ARENH price otherwise <sup>(4)</sup>, which include:

  - The ARENH volumes that can be requested by alternative suppliers and network operators for their purchases of losses
  - Part of the volumes <sup>(5)</sup> sold to EDF final customers under market-based contracts
- 3** Volumes sold at the market price, whatever the price, which include:

  - Part of the volumes sold to EDF final customers: “market complement supply” in the regulated tariffs <sup>(6)</sup>, balance of the volumes sold to clients under market-based contracts
  - Volumes sold on wholesale power markets
- 4** Contracts at negotiated prices that do not follow a market-indexed structure

(1) Sales excluding purchase obligations volumes and volumes under long-term supply contracts. Estimated distribution based on the situation in 2020, in particular in terms of EDF downstream market shares. In 2019 and 2020, the level of cropping corresponding to ARENH over subscription (133 and 147 TWh) by alternative suppliers has been applied to downstream offers

(2) Full year estimate, rounded to the nearest tenth TWh

(3) Regulated electricity sales tariffs

(4) EDF is subjected to the arbitrage between the two prices and its date of exercise is variable depending on the volumes (it takes place at the latest at the time of the ARENH end of year subscription window for a delivery the following year)

(5) Related to the replication of the sourcing cost structure of alternative suppliers: shares of the volumes corresponding to the "ARENH rights"

(6) Related to the replication of the sourcing cost structure of alternative suppliers: the balancing volumes sourced on the market which exceed the "ARENH rights"



# PUBLIC SERVICE COSTS: STABLE MECHANISM FOR COMPENSATING PUBLIC SERVICE COSTS AND TAXES SINCE 2016 (1/3)

- The 2015 amended French finance act and the 2016 French finance act introduced the principles of a new mechanism for compensating energy public service costs, effective as of 1 January 2016, with the following specific characteristics:
  - The State's budgeting of public service charges for energy (electricity and gas) is defined for 2021 on the basis of the CRE's (Commission for Energy Regulation) decision of 15 July 2020. From 1 January 2021, the CSPE (French compensation mechanism for public energy service charges) will be fully financed by the "Public Energy Service" programme of the General Budget. The 2021 Initial Budget Act thus budgets €9,149m, of which €8,104m is dedicated to EDF for 2021 expenses.
- Repayment achieved at the end of 2020 of EDF's historical compensation deficit, in accordance with the Ministers' letter of 26 January 2016, enacted in the Decree of 18 February 2016 and the Orders of 13 May and 2 December 2016
- The CSPE (French contribution to electricity public service) tax has remained stable at €22.5/MWh since 2016 (full rate). Since early 2017, the tax is paid into the French general budget and not to the Energy Transition special purpose account, as was the case in 2016



# CSPE: CHARGES FOR EDF (2/3)

Article L121-6 of the Energy Code stipulates that the charges attributable to the public service tasks assigned to the electricity operators are fully compensated by the State

En millions d'euros	H1 2019		H1 2020		H1 2021	
Purchase obligation <sup>(1)</sup>	2,960	74%	3,532	79%	2,907	75%
Other <sup>(2)</sup>	1,016	26%	929	21%	958	25%
<b>Total EDF CSPE</b>	<b>3,976</b>	<b>100%</b>	<b>4,461</b>	<b>100%</b>	<b>3,865</b>	<b>100%</b>

The trend in public service charges between first-half 2020 and first-half 2021 can be attributed to two distinct factors:

- Purchase obligation charges in metropolitan France decreased between H1 2020 and H1 2021. This was linked to the adverse climatic conditions for wind and photovoltaic (sun) production. The decline in volumes was accompanied by an increase in electricity spot prices of €34.8/MWh between H1 2020 (€23.7/MWh) and H1 2021 (€58.5/MWh). As with the volume effect, this increase reduced charges by tightening the gap between the purchase obligation price and the market valuation.
- The expenses associated with NIZs <sup>(3)</sup> increased between H1 2020 and H1 2021. The decrease in electricity consumption in NIZs stemming from the health crisis led to a contraction in power generation and, hence, to a decline in CSPE charges. The effects of the health crisis were more significant in 2020, compared with 2021.

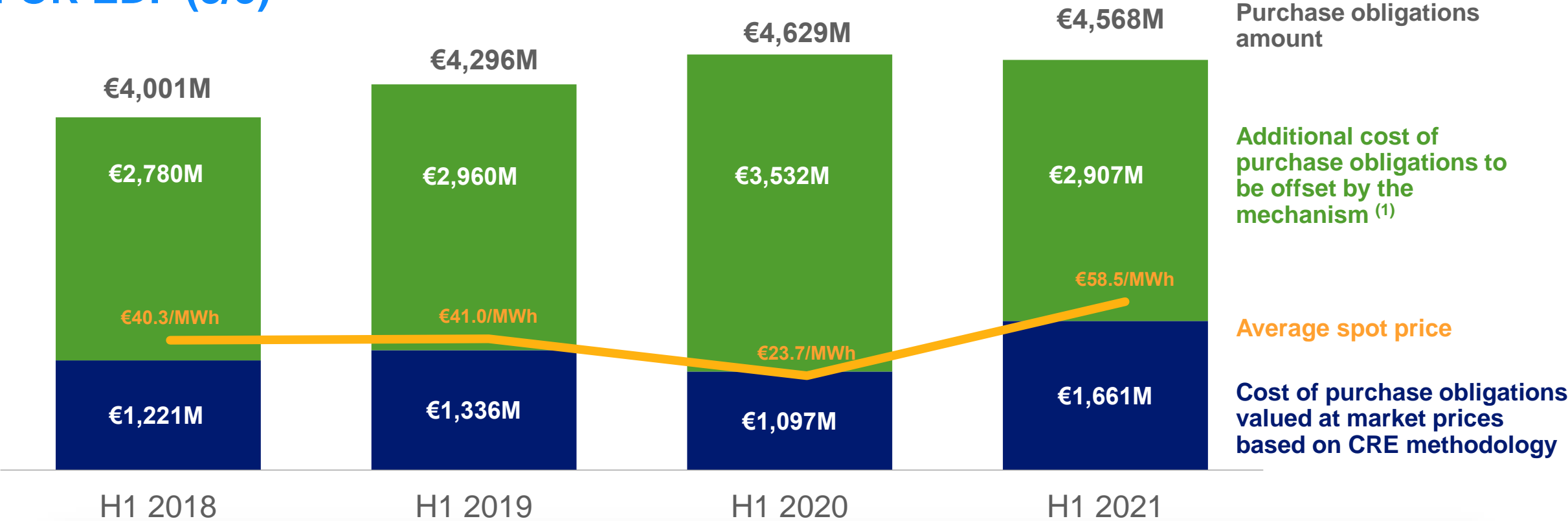
(1) Purchases obligations include electricity generated from: hydropower (less than 12MW), biomass, wind power, PV power, cogeneration, recovery of household waste and energy recovery, with the exception of ZNI <sup>(3)</sup>

(2) Additional generation costs and purchase obligations in ZNI<sup>(3)</sup>, the TPN (First Necessity Tariff) and the FSL (Housing Solidarity Fund)

(3) ZNI: *Zones non interconnectées* corresponding to overseas departments and Corsica and some of the Breton islands



# CSPE: CHANGE IN PURCHASE OBLIGATIONS IN MAINLAND FRANCE FOR EDF (3/3)



**Principle:** The compensation mechanism of public energy services <sup>(2)</sup> charges offsets the difference between the cost of purchase obligations in mainland France and market prices

(1) EDF SA excluding island activities  
 (2) The compensation mechanism of public energy services charges also covers the tariff equalization costs in the ZNI (*Zones Non Interconnectées*), and the solidarity programs.



# ENERGY EFFICIENCY CERTIFICATES SYSTEM

<p>Implemented in 2006 Confirmed in 2015</p>	<p>The French response to requirements of the European Directive 2012/27/EU on energy efficiency.</p> <p>Article 30 of the energy transition law for Green Growth of 17 August 2015: a new Energy Efficiency Certificate (EEC) obligation benefiting households suffering from energy poverty, in addition to the traditional EEC obligation starting in 2016</p>
<p>Enhanced targets, a greatly increased scheme cost</p> <p>Publication 5th period obligation</p>	<p>The national obligation for the 4th period (2018-2021) is set at 2,133TWhc by the decree of 11 December 2019</p> <ul style="list-style-type: none"> <li>➤ Including 533TWhc for the benefit of households that suffer from energy poverty and 1,600TWhc of obligation of classic EEC. This represents a doubling over the 3rd period 2015-2017 (700TWhc classic EEC, 150TWhc energy poverty EEC). Between the two periods, the cost of the EEC scheme is multiplied by 7 and now exceeds €5bn/year.</li> <li>➤ Launch of several “Coup de Pouce” operations at a fixed EEC price during the 4th period, so that the obligated parties can answer to their contract obligations at reasonable cost</li> </ul> <p>The national obligation for the fifth period was set at 2,500TWhc by the decree of 3 June 2021 (up 17.2% compared with the fourth period).</p> <ul style="list-style-type: none"> <li>➤ Of which 730TWhp for households in energy poverty (+37% with the increase of the precariousness base) and 1,770TWhp of conventional energy savings certificates (CEE) obligation (+10.7%)</li> <li>➤ Rebalance of the obligation between energies, historically unfavourable to electricity (Elec +4% / Gas +58% Fuels 18% compared with the 4th period)</li> <li>➤ Phased lowering of the franchise threshold (400 GWh/year →100GWh/year from 2024) to limit distortions to competition</li> <li>➤ Limitation of “Coups de Pouce” schemes and more generally bonuses (25% of the obligation) and programmes (11.5% of the obligation) as well as a refocusing of the system on very modest households</li> </ul>
Involved parties	<p>An obligation imposed on energy suppliers to achieve energy savings for customers called “obligated parties”.</p> <ul style="list-style-type: none"> <li>➤ Electricity, gas, heating, refrigeration, domestic fuel and automotive fuel</li> </ul> <p>In order to promote the issuance of energy efficiency operations to their customers</p> <ul style="list-style-type: none"> <li>➤ Households, local authorities, social housing landlords or business/professionals</li> </ul>
EDF and the mechanism	<p>EDF is the first obligated party and intervenes in several areas (2020 data):</p> <ul style="list-style-type: none"> <li>➤ Residential (265,000 renovation operations, up 20% due to the increase in insulation work and the replacement of heating equipment thanks to the subsidies provided by the “Coups de Pouce” schemes via the "Mon chauffage durable" offer), social-housing lessors (180,000 subsidised housing units), industry and services (7,000 actions)</li> <li>➤ Financing of national programmes (<i>Toits d’abord</i> with the Abbé Pierre Foundation, ADVENIR for electric vehicle recharging stations, FEEBat for training craftsmen, <i>Habiter mieux</i> from ANAH to fight against energy poverty, ACTEE with the FNCCR, etc.).</li> </ul>



# 2021 HALF-YEAR RESULTS

## CONSOLIDATED FINANCIAL STATEMENTS





# SIMPLIFIED INCOME STATEMENT

In millions of euros

	H1 2020	H1 2021
<b>Sales</b>	<b>34,710</b>	<b>39,621</b>
Fuel and energy purchases	(16,550)	(18,753)
Other external expenses	(3,469)	(3,629)
Personnel expenses	(7,020)	(7,273)
Taxes other than income taxes	(2,813)	(2,509)
Other operating income and expenses	3,338	3,144
<b>EBITDA</b>	<b>8,196</b>	<b>10,601</b>
Impact of the commodities volatility	(323)	(541)
Amortisation/depreciation expenses and provisions for renewal	(5,358)	(5,194)
(Impairment)/reversals	(738)	(502)
Other income and expenses	(153)	(92)
<b>EBIT</b>	<b>1,624</b>	<b>4,272</b>
Financial income	(2,302)	861
Income before taxes of consolidated companies	(678)	5,133
<b>Net income – Group share</b>	<b>(701)</b>	<b>4,172</b>
<b>Net income excl. non-recurring items <sup>(1)</sup></b>	<b>1,267</b>	<b>3,740</b>

(1) Excluding non-recurring items & commodities volatility



CHANGE IN SALES <sup>(1)</sup>

In millions of euros	H1 2020	Forex	Scope	Organic growth	H1 2021	Δ% org. <sup>(2)</sup>
France – Generation and supply activities	14,449	-	186	1,366	16,001	9.5
France – Regulated activities <sup>(3)</sup>	8,139	-	-	957	9,096	11.8
Framatome	1,490	(28)	8	164	1,634	11.0
United Kingdom	4,595	30	5	257	4,887	5.6
Italy	2,909	-	(13)	1,015	3,911	34.9
Other international	1,244	(49)	40	159	1,394	12.8
EDF Renewables	770	(23)	(3)	63	807	8.2
Dalkia	1,988	(1)	26	313	2,326	15.7
Other activities	1,200	(11)	(2)	700	1,887	58.3
Inter-segment eliminations	(2,074)	-	-	(248)	(2,322)	12.0
<b>Total Group</b>	<b>34,710</b>	<b>(82)</b>	<b>247</b>	<b>4,746</b>	<b>39,621</b>	<b>13.7</b>

(1) Breakdown of sales across the segments, before inter-segment eliminations

(2) Organic change at constant scope and exchange rates

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



CHANGE IN EBITDA <sup>(1)</sup>

In millions of euros	H1 2020	Forex	Scope	Organic growth	H1 2021	Δ% org. <sup>(2)</sup>
France – Generation and supply activities	3,894	-	-	944	4,838	24.2
France – Regulated activities <sup>(3)</sup>	2,460	-	-	750	3,210	30.5
Framatome	98	(6)	(2)	93	183	94.9
United Kingdom	438	3	-	(174)	267	(39.7)
Italy	380	-	(4)	158	534	41.6
Other international	208	(11)	(3)	12	206	5.8
EDF Renewables	418	(17)	2	(109)	294	(26.1)
Dalkia	165	-	1	49	215	29.7
Other activities	135	(4)	-	723	854	535.6
<b>Total Group</b>	<b>8,196</b>	<b>(35)</b>	<b>(6)</b>	<b>2,446</b>	<b>10,601</b>	<b>29.8</b>

(1) Contribution to the Group

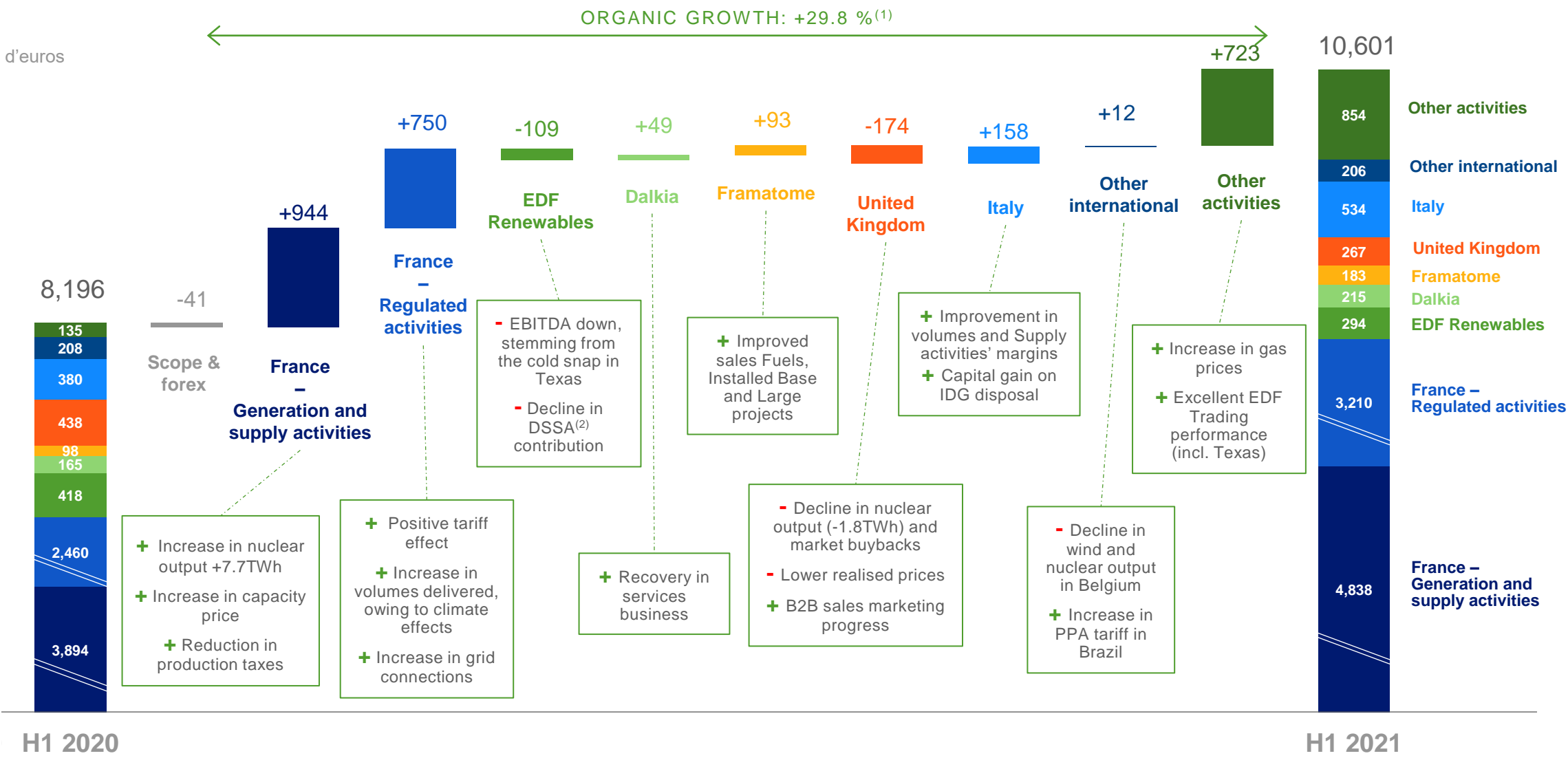
(2) Organic change at constant scope, standard and exchange rates

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



EBITDA BY SEGMENT

En millions d'euros





ENERGY SERVICES

DALKIA				
In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	165	215	+30.3	+29.7

GROUP ENERGY SERVICES <sup>(2)</sup>				
In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	188	255	+35.6	+34.0
Net investments	(181)	(122)	-32.0	-

- Strong EBITDA growth of close to 30%:
  - Recovery in business for services and construction
  - UK commercial activity
  - Weather conditions colder in H1 2021 after particularly clement weather in H1 2020

- EBITDA
  - Recovery of Dalkia and Edison businesses after the health crisis in H1 2020 and dynamic residential customer sales in France
- Net investments
  - Change mainly reflecting the Pod Point acquisition in H1 2020 with no equivalent in H1 2021



DALKIA WASTENERGY DISPOSAL COMPLETED



BREATHE (UK SUBSIDIARY OF DALKIA), SUPPORTS 4 HOSPITALS BENEFITING FROM THE FUNDING OF CARBON INTENSITY STATE REDUCTION FOR AN AMOUNT OF RENOVATION WORKS OF £100M

(1) Organic change at comparable scope, exchange rates and standards.

(2) The Group Energy services include Dalkia, Citelum and CHAM and the service businesses of EDF Energy, Edison, Luminus and EDF SA. They consist in particular of street lighting, heating networks, decentralised low-carbon generation based on local resources, energy consumption management and electric mobility.



FRAMATOME

In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	211	293	+38.9	+42.7
EBITDA EDF Group contribution	98	183	+86.7	+94.9

- >
 Very strong EBITDA growth, nearly 95% in organic terms:
 
  - **Better production** of “Fuel” plants and “Components manufacturing” partly linked to the recovery of business after the Covid crisis in H1 2020
  - **Higher sales volumes** for Installed Base and Large Projects business
  - **Continuation of the action plan on structural costs**



ACQUISITION OF  
**VALINOX**, FRENCH  
 SPECIALIST IN  
 TUBES FOR  
**NUCLEAR REACTOR  
 STEAM  
 GENERATORS**



**ORDER INTAKE**  
 H1 2021: €2.0bn <sup>(2)</sup>

(1) Organic change at comparable scope, exchange rates and standards.

(2) At Framatome perimeter



UNITED KINGDOM

In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	438	267	-39.0	-39.7

➤ Generation

- Nuclear output at 20.9TWh, -1.8TWh vs H1 2020, in line with the outage calendar (in particular the extension of the outage of Sizewell B)
- Sharp decline in realised nuclear prices, factoring in the need to buy back electricity at high prices

➤ Supply

- Growth in business in the B2B segment after the Covid crisis in H1 2020



**POD POINT:**  
c. 122,000 CHARGING  
POINTS<sup>(2)</sup> ROLLED  
OUT END-JUNE 2021,  
**+28% VS END-**  
**DECEMBER 2020**

(1) Organic change at comparable scope, standards and exchange rates.  
(2) Charging stations also known as “sockets” by Pod Point



ITALY

In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	380	534	+40.5	+41.6

➤ **Strong growth in EBITDA: +41.6%**

➤ **Supply**


- Recovery in business, in particular in the industrial customer segment
- Colder weather in 2021: increase in B2B and B2C gas volume sales
- Improvement in margins on B2C gas and electricity sales

➤ **Gas business**

- Capital gain on the disposal of IDG (gas distribution)
- Reduced margins in some gas assets

➤ **Electricity business**

- Thermal: better CCGT availability and optimisation of electric system services
- Increase in the contribution of renewable production (hydro and wind)



**S&P UPGRADES  
EDISON'S RATING FROM  
BBB-/A-3 TO BBB/A-2**



OTHER INTERNATIONAL

In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
EBITDA	208	206	-1.0	+5.8
o/w Belgium <sup>(2)</sup>	135	122	-9.6	-7.4
o/w Brazil	54	77	+42.6	+59.3

> Belgium<sup>(2)</sup>

- **Wind:** production -17.9%, in line with less favourable wind conditions than in H1 2020 despite the increase in installed capacity to 557MW<sup>(3)</sup> (+1.6% vs. end-2020)
- **Nuclear:** production down, requiring to buyback electricity at high prices
- **Thermal:** good level of output thanks to better availability and an increase in service provided to the electric system
- **Supply:** after a slowdown in 2020 owing to the health crisis<sup>(3)</sup>, business growth for services and good resilience of supply activities against a backdrop marked by intense competition and extension of social tariffs

> Brazil
 

- Increase in November 2020 of the tariff for electricity sales (PPA) for EDF Norte Fluminense and selling on spot markets at high prices
- Unfavourable forex movements (BRL depreciation versus Euro)



FINALISATION OF THE ACQUISITION OF A PORTFOLIO<sup>(4)</sup> OF APPROX. 330,000 CUSTOMERS (ESSENT BELGIUM - GAS & ELECTRICITY) IN BELGIUM



SIGNATURE OF A CONTRACT FOR THE CONSTRUCTION ASSISTANCE, OPERATION AND MAINTENANCE OF THE MARLIM AZUL CCG PLANT IN BRAZIL FOR A 10-YEAR TERM

(1) Organic change at comparable scope, standards and exchange rates.  
 (2) Luminus and EDF Belgium.

(3) Net capacity at Luminus perimeter. 600MW in gross capacity (2.0% growth vs. end-2020).  
 (4) See Luminus press release of 3 May 2021



OTHER ACTIVITIES

In €m	H1 2020	H1 2021	Δ%	Δ% Org. <sup>(1)</sup>
<b>EBITDA</b>	<b>135</b>	<b>854</b>	<b>x6</b>	<b>x6</b>
<i>of which gas activities</i>	<i>(296)</i>	<i>188</i>	<i>n.a.</i>	<i>n.a.</i>
<i>of which EDF Trading</i>	<i>391</i>	<i>608</i>	<i>+55.5</i>	<i>+56.3</i>

- **Gas business**
  - Very favourable impact of upward evolution to medium/long-term Europe/US spreads
- **EDF Trading**
  - Very solid performance linked to high commodity market volatility in Europe and the US

(1) Organic change at comparable scope, standards and exchange rates.



# CHANGE IN FINANCIAL RESULT

In millions of euros	H1 2020	H1 2021	Δ
Cost of gross financial debt	(868)	(754)	114
<i>o/w interest expenses on financing operations</i>	(872)	(760)	112
Discount expenses <sup>(1)</sup>	(1,172)	(1,016)	156
Other financial income and expenses	(262)	2,631	2,893
<i>o/w gains on dedicated assets disposals</i>	70	34	(36)
<i>o/w net change in fair value of debt and equity instruments of dedicated assets</i>	(830)	1,836	2,666
<b>Financial result</b>	<b>(2,302)</b>	<b>861</b>	<b>3,163</b>
<i>Excluding non-recurring items before tax (change in IFRS 9 fair value of financial instruments)</i>	909	(1,854)	(2,763)
<b>Current Financial result</b>	<b>(1,393)</b>	<b>(993)</b>	<b>400</b>

(1) Including the impact of the decrease in the discount rate of nuclear provisions in France in 2020



# FROM INTEREST CHARGES ON FINANCING ACTIVITIES TO NET FINANCIAL EXPENSES DISBURSED

In millions of euros	H1 2020 <sup>(1)</sup>	H1 2021	Δ
<b>Interest charges on financing activities</b>	(872)	(760)	<b>112</b>
Accrued interest	(131)	(86)	<b>45</b>
Other financial income and charges <i>(including dividends)</i>	412	453	<b>41</b>
<b>Net financial expenses disbursed</b>	<b>(591)</b>	<b>(393)</b>	<b>198</b>

(1) The published figures for 2020 include a €69 million reclassification in « Net financial expenses disbursed » : (9) in « Dedicated assets » and (60) in « Other non-monetary changes »



# NET INCOME EXCL. NON-RECURRING ITEMS

In €m	H1 2020 current	H1 2020 non current	H1 2020	H1 2021 current	H1 2021 non current	H1 2021
<b>EBITDA</b>	8,196	-	<b>8,196</b>	10,601	-	<b>10,601</b>
Commodities volatility	-	(323)	<b>(323)</b>	-	(541)	<b>(541)</b>
Amortisation/depreciation expenses and provisions for renewal	(5,255)	(103)	<b>(5,358)</b>	(5,122)	(72)	<b>(5,194)</b>
Impairments and other operating income and expenses	-	(891)	<b>(891)</b>	-	(594)	<b>(594)</b>
<b>EBIT</b>	2,941	(1,317)	<b>1,624</b>	5,479	(1,207)	<b>4,272</b>
Financial result	(1,393)	(909)	<b>(2,302)</b>	(993)	1,854	<b>861</b>
Income tax	(377)	419	<b>42</b>	(1,187)	(271)	<b>(1,458)</b>
Share of net income from associates and joint-ventures	172	(161)	<b>11</b>	378	(34)	<b>344</b>
Net income of discontinued operations	(33)	(128)	<b>(161)</b>	(3)	-	<b>(3)</b>
Deduction net income from minority interests	(43)	128	<b>85</b>	(66)	(90)	<b>(156)</b>
<b>Net income – Group share</b>	1,267	(1,968)	<b>(701)</b>	3,740	432	<b>4,172</b>



# SHARE IN NET INCOME OF ASSOCIATES AND JOINT VENTURES

In millions of euros	H1 2020	H1 2021	Δ
CTE/RTE	56	116	60
CENG	(113)	105	218
Other <sup>(1)</sup>	68	123	55
<b>TOTAL</b>	<b>11</b>	<b>344</b>	<b>333</b>

(1) Mainly Jera Trading, NTPC, CES (Companhia Energética Sinop SA), Jiangxi Datang International Fuzhou Power Generation Company Ltd and different companies owned by EDF Renewables and EDF SA



# NET INCOME FROM MINORITY INTERESTS

In millions of euros	H1 2020	H1 2021	Δ
Framatome	(12)	2	14
United Kingdom	(116)	(215)	(99)
Italy	5	11	6
Other international	(1)	4	5
EDF Renewables	18	8	(10)
Other	21	34	13
<b>TOTAL</b>	<b>(85)</b>	<b>(156)</b>	<b>(71)</b>



# CHANGE IN NET FINANCIAL DEBT

In millions of euros

	H1 2020 <sup>(1)</sup>	H1 2021
<b>EBITDA</b>	<b>8,196</b>	<b>10,601</b>
Cancellation of non-monetary items included in EBITDA	(304)	(391)
<b>EBITDA Cash</b>	<b>7,892</b>	<b>10,210</b>
Change in net WCR	(1,364)	(1,896)
Net investments – excluding disposals 2020-2022 <sup>(2)</sup>	(6,988)	(7,679)
Dividends received from associates and joint ventures	112	112
Other elements	(168)	(181)
<b>Operating Cash Flow</b>	<b>(516)</b>	<b>566</b>
Assets disposals	-	420
Income taxes paid	(368)	(343)
Net financial expenses	(591)	(393)
Dedicated assets	54	(79)
Dividends paid in cash	(408)	(411)
<b>Group Cash Flow</b>	<b>(1,829)</b>	<b>(240)</b>
Other monetary changes	(125)	942
<b>Change in net financial debt</b>	<b>(1,954)</b>	<b>702</b>
Effects of change and exchange rates	467	(304)
Other non-monetary changes – IFRS 16	(406)	(364)
Other non-monetary changes	1,043	1,249
<b>Change in net financial debt from continuing operations</b>	<b>(850)</b>	<b>1,283</b>
<b>Change in net financial debt from discontinued operations</b>	<b>(19)</b>	<b>-</b>
<b>Net Financial Debt – Opening balance</b>	<b>41,133</b>	<b>42,290</b>
<b>Net Financial Debt – Closing balance</b>	<b>42,002</b>	<b>41,007</b>

(1) The published figures for 2020 include a €69 million reclassification in « Net financial expenses disbursed » : (9) in « Dedicated assets » and (60) in « Other non-monetary changes »

(2) Including Linky and HPC



# NET INVESTMENTS

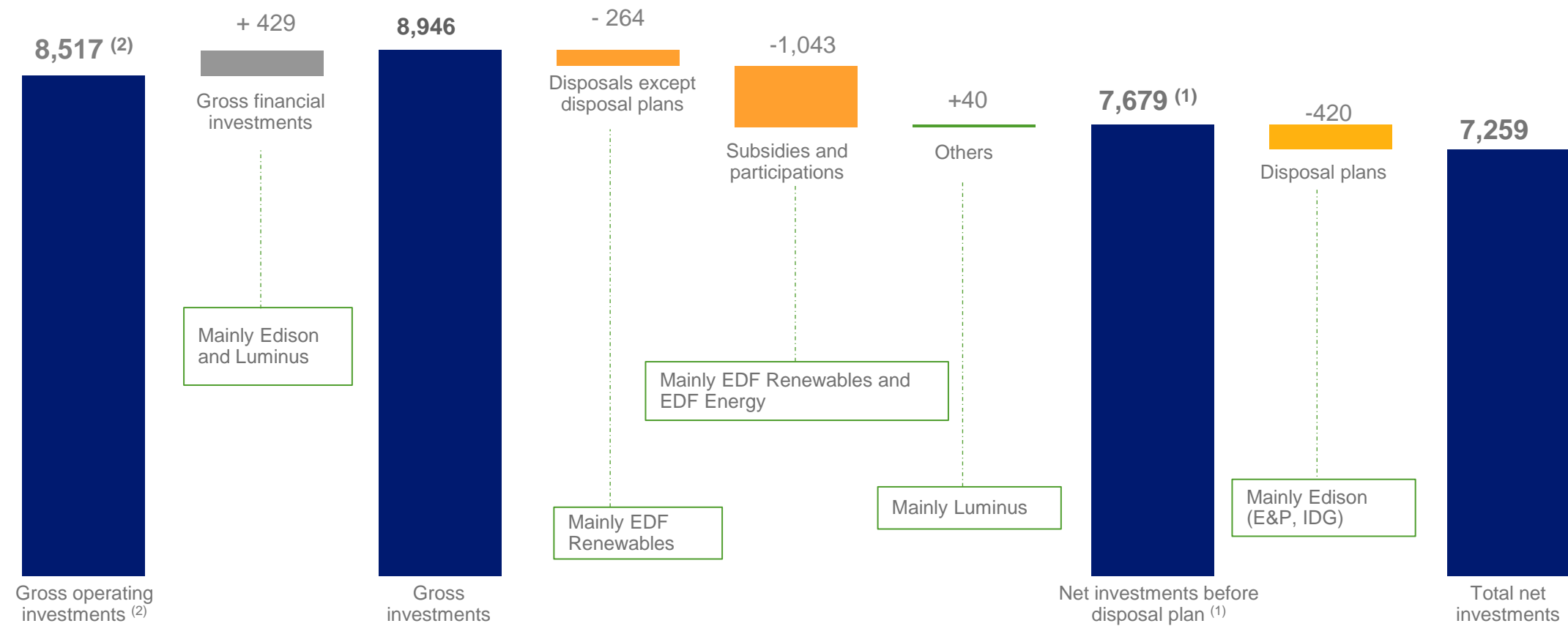
In millions of euros	H1 2020 restated	H1 2021	Δ	Δ %
France – Generation and supply activities	2,812	2,655	(156)	(6)
France – Regulated activities	2,009	2,407	398	20
Framatome	83	74	(8)	(10)
United Kingdom	1,239	1,433	194	17
Italy	166	486	320	193
Other international	30	197	167	561
EDF Renewables	591	368	(222)	(38)
<i>o/w Gross investment</i>	<i>844</i>	<i>1 032</i>		
<i>o/w Disposals and subsidies</i>	<i>(252)</i>	<i>(664)</i>		
Dalkia	27	80	53	200
Other activities	31	(21)	(52)	(168)
<b>Total net investments, excluding assets disposal plan</b>	<b>6,988</b>	<b>7,679</b>	<b>692</b>	<b>10</b>
Group assets disposal plan	-	(420)	(420)	-
<b>NET INVESTMENTS</b>	<b>6,988</b>	<b>7,259</b>	<b>272</b>	<b>4</b>

NB: figures rounded up to the nearest whole number



# INVESTMENTS: FROM GROSS TO NET (1)

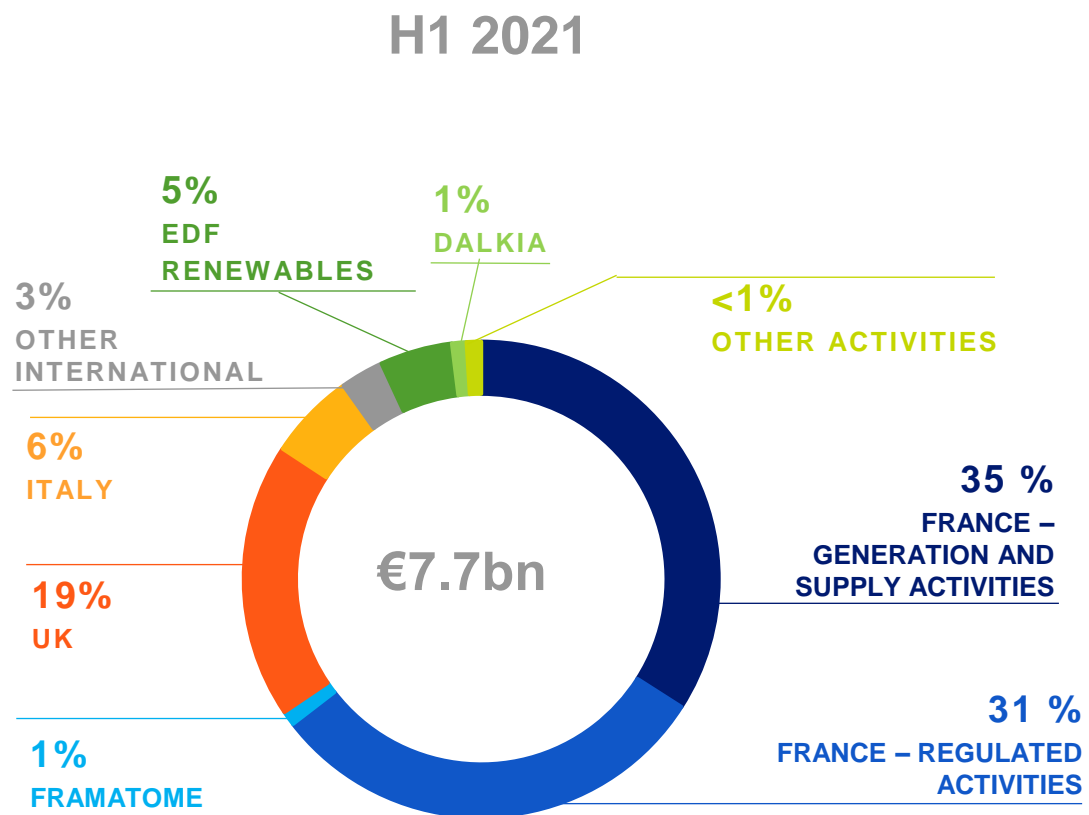
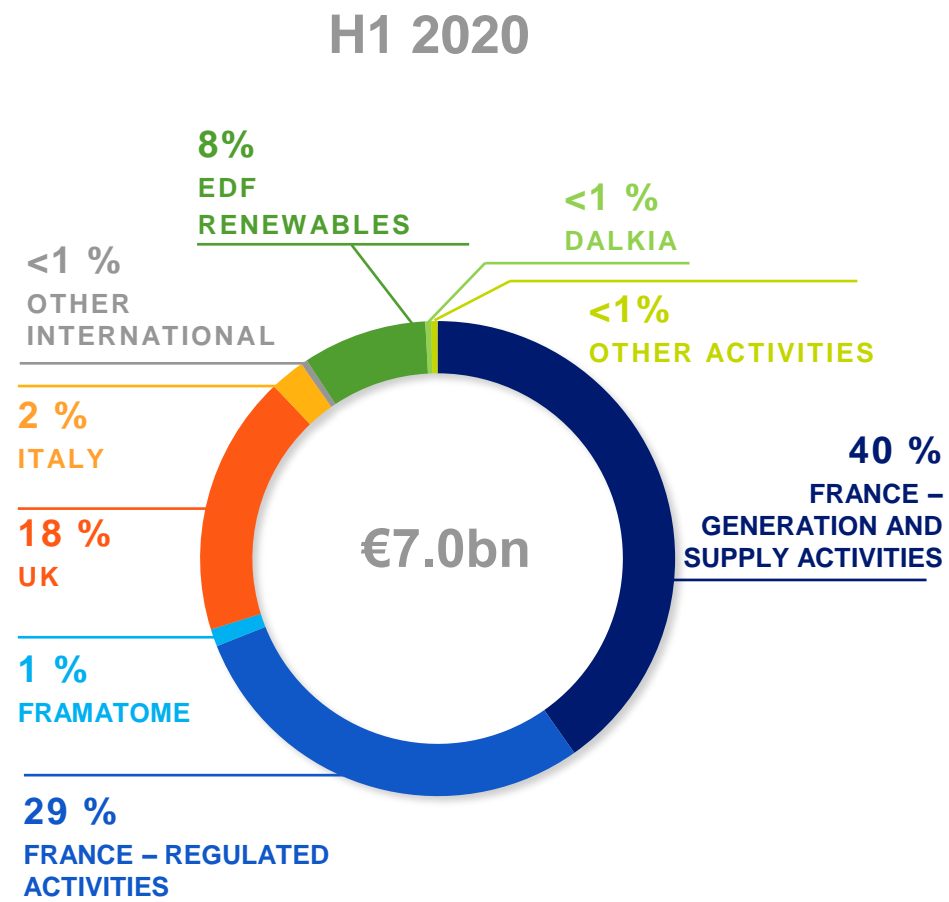
In millions of euros



(1) Net investments in the Change in NFD statement including Linky, HPC and excluding disposal plan  
(2) Investments in intangible assets and property, plant and equipment in consolidated cash flow statement

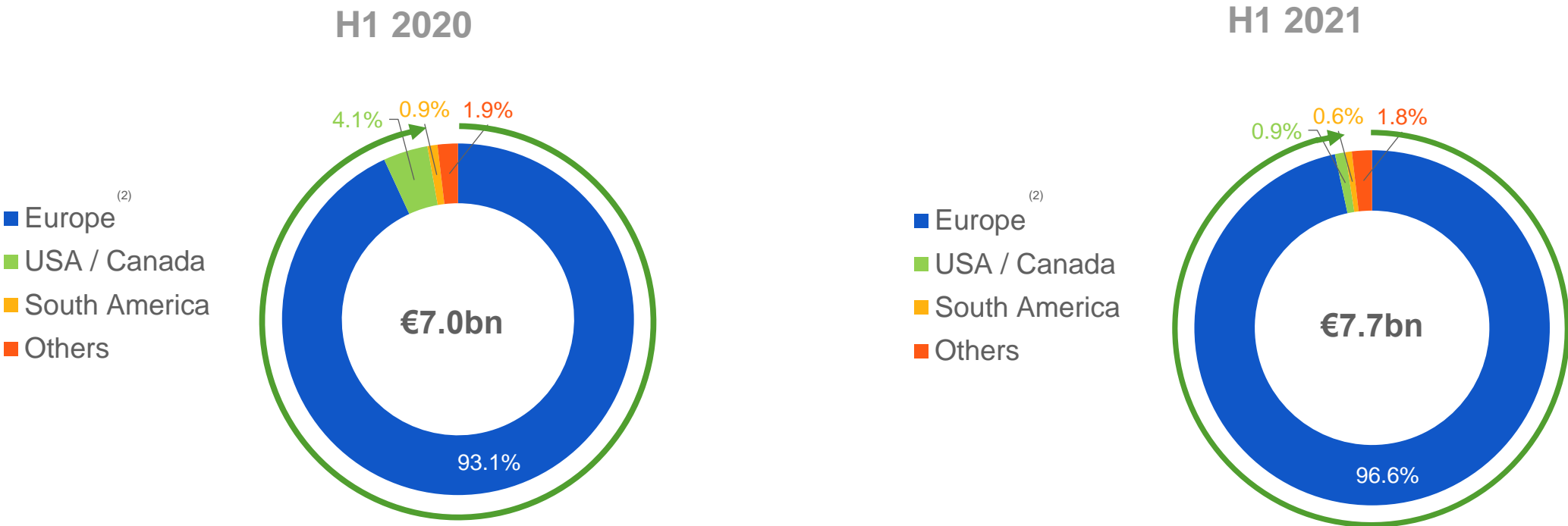


# NET TOTAL INVESTMENTS INCLUDING ACQUISITIONS EXCLUDING DISPOSAL PLAN





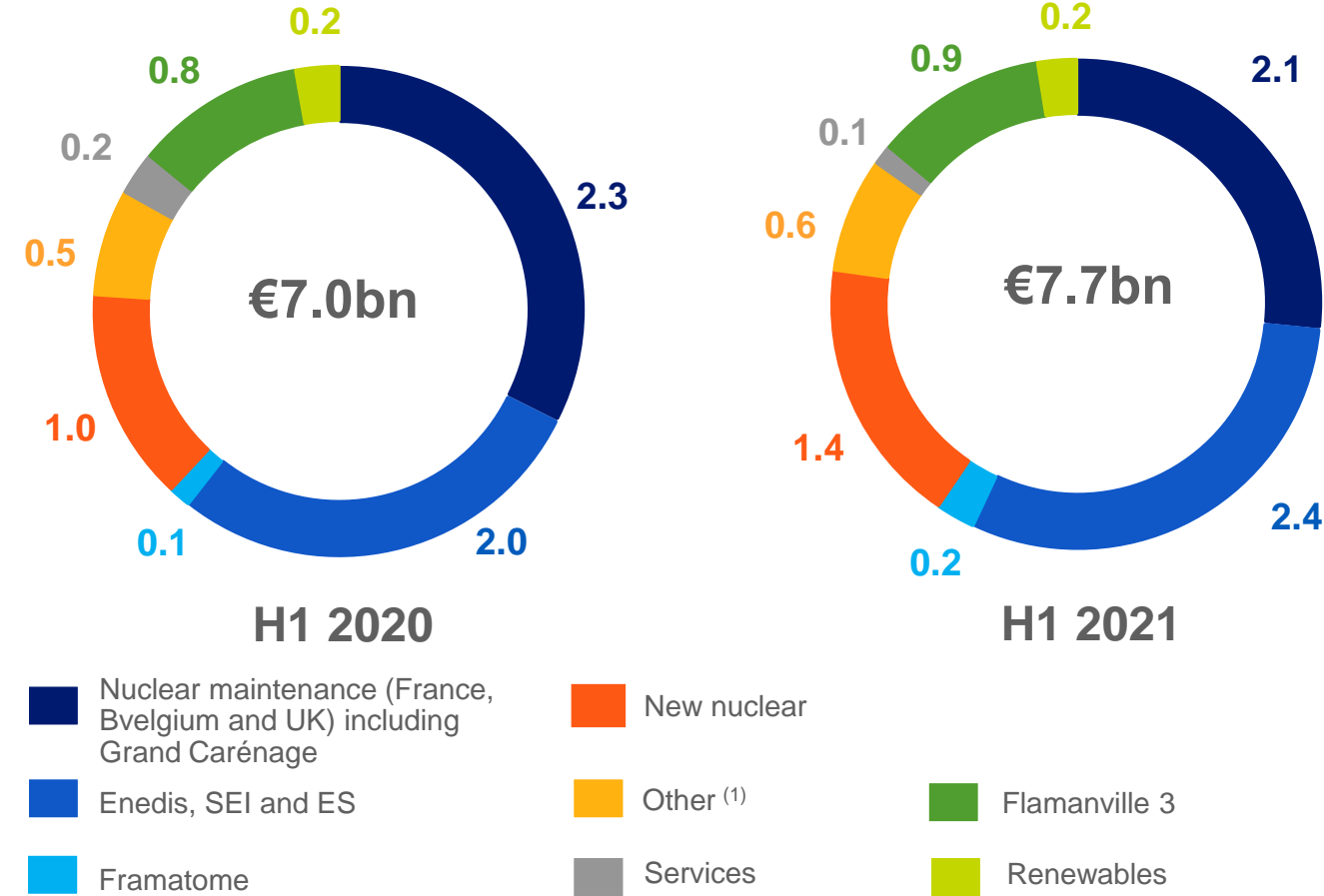
# GEOGRAPHICAL BREAKDOWN OF NET TOTAL INVESTMENTS (1)





NET INVESTMENTS INCLUDING ACQUISITIONS EXCLUDING DISPOSAL PLAN

In billions of euros



H1 2021 data

In billions of euros	Maintenance	Development	TOTAL
Renewables	0.2	0.7	0.9
Nuclear maintenance (France, Belgium and UK) including Grand Carénage	2.1	-	2.1
Enedis, SEI and ES	1	1.4	2.4
Framatome	0.04	0.04	0.1
Project Flamanville 3	-	0.2	0.2
Services	0.04	0.1	0.1
New nuclear		1.4	1.4
Other <sup>(1)</sup>	0.2	0.4	0.6
<b>TOTAL</b>	<b>3.6</b>	<b>4.1</b>	<b>7.7</b>

NB: figures rounded up to the nearest decimal number  
(1) Mainly thermak maintenance, gas, property, central functions,



SIMPLIFIED BALANCE SHEET

ASSETS (in millions of euros)	31/12/2020	30/06/2021	LIABILITIES (in millions of euros)	31/12/2020	30/06/2021
Intangible and tangible assets	179,658	182,256	Equity (EDF's share)	45,633	53,773
Other non-current assets	57,574	61,250	Equity (non-controlling interests)	9,593	10,279
<b>Non-current assets</b>	<b>237,232</b>	<b>243,506</b>	<b>Total equity</b>	<b>55,226</b>	<b>64,052</b>
Inventories and trade receivables	29,259	30,525	Non-current provisions	85,837	83,674
Other current assets	30,834	35,874	Special distribution concession liabilities	48,420	48,501
Cash and cash equivalents	6,270	5,928	Non-current other liabilities	63,888	61,068
<b>Current assets</b>	<b>66,363</b>	<b>72,327</b>	<b>Non current liabilities</b>	<b>198,145</b>	<b>193,243</b>
Assets held for sale	2,296	2,617	<b>Current liabilities</b>	<b>52,412</b>	<b>60,880</b>
			Liabilities related to assets classified as held for sale	108	275
<b>Total assets</b>	<b>305,891</b>	<b>318,450</b>	<b>Total liabilities</b>	<b>305,891</b>	<b>318,450</b>



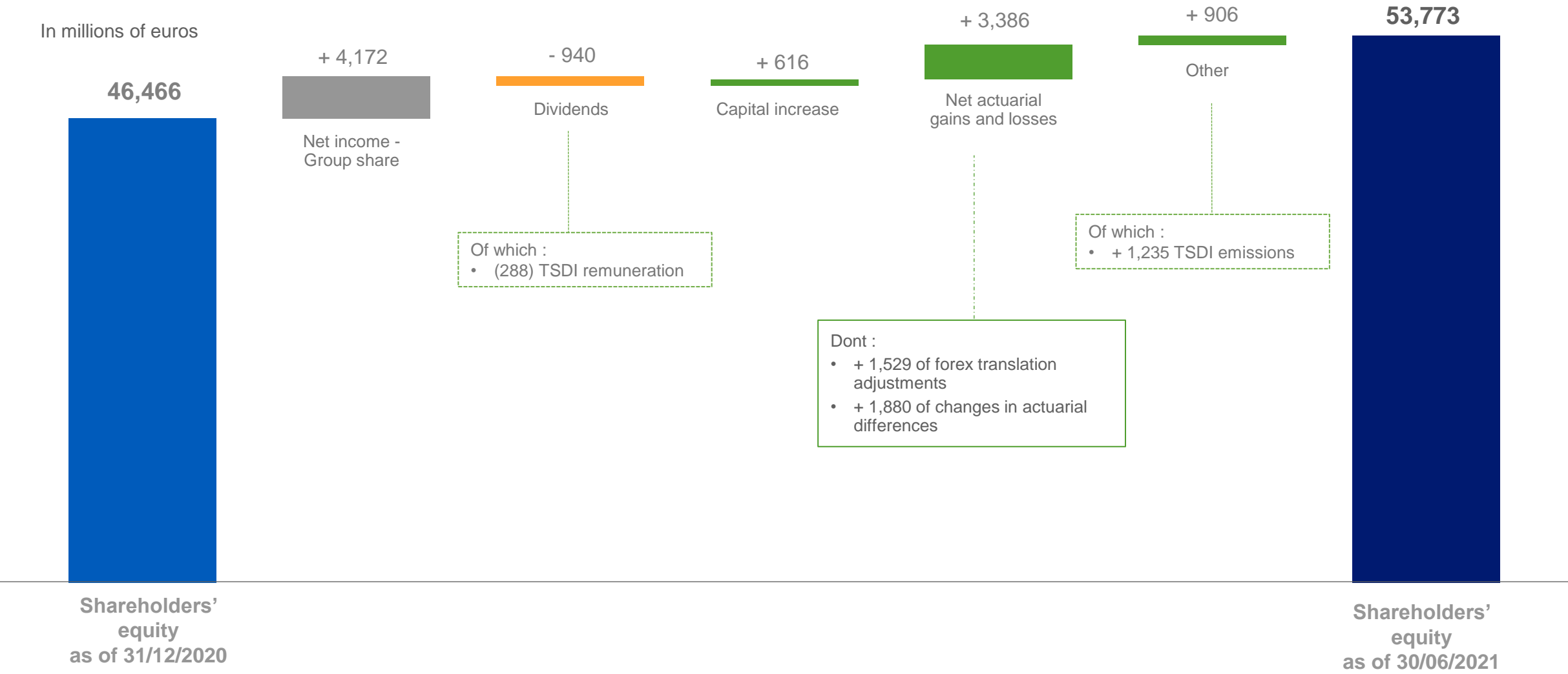
GOODWILL

In millions of euros	31/12/2020	30/06/2021	Δ
EDF Energy <sup>(1)</sup>	7,569	7,929	360
Framatome	1,332	1,332	-
Dalkia	572	576	4
Other	792	803	11
<b>TOTAL</b>	<b>10,265</b>	<b>10,640</b>	<b>375</b>

(1) Variation mainly linked to the foreign currency adjustments



GROUP SHAREHOLDERS' EQUITY





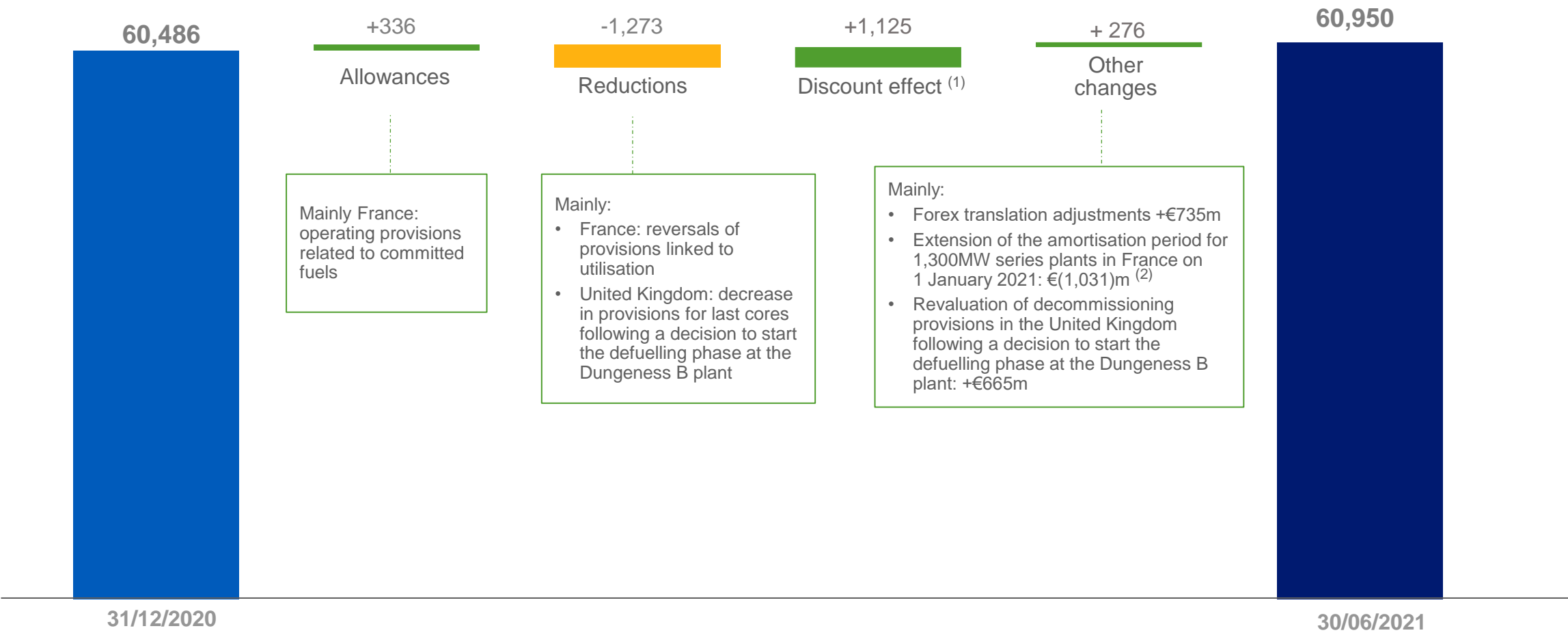
GROUP PROVISIONS

In millions of euros	31 December 2020			30 June 2021		
	Current	Non Current	Total	Current	Non Current	Total
Provisions for back-end nuclear cycle	1,430	26,137	27,567	1,168	26,649	27,817
Provisions for nuclear decommissioning and last cores	723	32,196	32,919	1,358	31,775	33,133
Other provisions for decommissioning	120	1,744	1,864	86	1,787	1,873
Provisions for employee benefits	879	22,130	23,009	843	19,783	20,626
Other provisions	2,675	3,630	6,305	3,246	3,680	6,926
<b>Total Provisions</b>	<b>5,827</b>	<b>85,837</b>	<b>91,664</b>	<b>6,701</b>	<b>83,674</b>	<b>90,375</b>



GROUP NUCLEAR PROVISIONS

In millions of euros



(1) Of which France +€732m and United Kingdom +€389m

(2) In respect of provisions with related assets (impact on value of balance sheet assets). The impact on provisions adjusted through the income statement was +€15m (presented in "increases" and "decreases"), i.e., a total impact from the extension to the depreciation period of 1,300MW series plants in France of €(1,016)m as of 1 January 2021



# FRANCE NUCLEAR PROVISIONS

In millions of euros	31/12/2020	Net allowances	Discount effect	Other changes <sup>(1)</sup>	30/06/2021
<b>Total provisions for back-end nuclear cycle</b>	<b>24,622</b>	<b>(435)</b>	<b>419</b>	<b>117</b>	<b>24,723</b>
Provisions for management of spent fuel	11,322	(281)	196	(9)	11,228
Provisions for long-term management of radioactive waste	13,300	(154)	223	126	13,495
<b>Total provisions for nuclear dismantling and last cores</b>	<b>20,200</b>	<b>(55)</b>	<b>313</b>	<b>(1,144)</b>	<b>19,314</b>
Provisions for dismantling power stations	17,489	(55)	272	(936)	16,770
Provisions for last cores	2,711	-	41	(208)	2,544
<b>TOTAL FRANCE NUCLEAR PROVISIONS</b>	<b>44,822</b>	<b>(490)</b>	<b>732</b>	<b>(1,027)</b>	<b>44,037</b>

NB: Regarding the allocation to Dedicated Assets for nuclear provisions coverage, please refer to the slide “Dedicated Assets” on p.112

(1) Other changes include changes in asset-backed provisions. These changes are not included in the income statement.



# DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE (1/5)

	December 2020	June 2021
Regulatory ceiling rate – nominal		
Regulatory ceiling rate – real	2.7% <sup>(1)</sup>	2.8%
Nominal discount rate	3.3%	3.4%
Real discount rate	2.1%	2.1%
Inflation	1.2%	1.3%

The real discount rate, calculated according to the calculation methods applied since end-2020, is 2.1% given the market data at this date, with an inflation assumption of 1.3%

The real discount rate is stable compared to end-2020

(1) 2.66% rounded to 2.7%



# DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE (2/5)

## REGULATORY CEILING

- The **discount rate** for nuclear provisions in France must respect a **regulatory ceiling** calculated using a formula determined by ministerial order in accordance with the French Environmental Code (Art. D594-4)
- A **new regulatory ceiling**, applying from second-half 2020, has been determined by the ministerial order of 1 July 2020 (Art. 3)
- The **formula for the current regulatory ceiling** is expressed as a real value (including inflation) and equal, after a four-year transition period starting from end-2020, to the representative value of expectations of the real long-term interest rate selected for the calculation published by the European Insurance and Occupational Pensions Authority (EIOPA) of the ultimate forward rate (UFR) applicable on the date in question and increased by 150 basis points
- The application of the formula at 30/06/2021 gives a **regulatory ceiling for the discount rate of 2.8% in real value**



# DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE (3/5)

## EVOLUTION IN DISCOUNT RATE CALCULATION METHODS

- The discount rate is now established on the basis of an interest-rate curve. This curve includes:
  - a sovereign yield rate, based on market data at the end of trading for liquid time frames (0 to 20-year OAT rate curve) and subsequently converging, by using an interpolation curve, towards the ultimate forward rate (UFR) <sup>(1)</sup>;
  - to which is added a spread curve for A to BBB-rated corporate bonds.

On the basis of the disbursement cash flows expected for nuclear engagements, an equivalent single discount rate is deducted from the rate curve thus constructed.
- The inflation rate assumption is established on the basis of an inflation rate curve, built using inflation-linked market products and taking account of economic forecasts, and consistent in the long term with the inflation rate assumption underlying the UFR (2%).
- This discount rate calculation method led, at 30 June 2021, to a nominal discount rate of 3.4% combined to an inflation rate of 1.3% (respectively 3.3% and 1.2% at 31/12/2020), so an unchanged real rate of 2.1%

(1) The UFR was determined by the EIOPA for extremely long-term insurance liabilities comprising disbursements beyond market time frames. It is selected in the calculation methodology consistent with the decision of the administrative authority, which, in its order of 1 July 2020 amending the order of 21 March 2007 on the securing of financing for nuclear expenses, changed the formula for the regulatory ceiling of the discount rate, henceforth taking the UFR as a reference rather than the arithmetic average of the last 48 months of the TEC 30, the reference to the UFR being considered as more relevant for nuclear provisions given the extremely long-term maturities.



# DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE (4/5)

## SENSITIVITIES AT 31/12/2020

- All other things being equal, depending on discount rate and inflation rate assumptions, **the sensitivity <sup>(1)</sup> to a 0.2% decrease in the real discount rate (excluding the corresponding tax effect) would be:**
  - For balance sheet provisions: €2,032m <sup>(2)</sup> (of which €1,772m for provisions covered by dedicated assets)
  - For income before tax: €(1,221)m
- This increase in nuclear provisions, and in particular those to be covered by dedicated assets, **does not imply a direct transposition of this effect to the Group's net debt** on the dates under consideration, as the amount to be allocated to dedicated assets in respect of each financial year varies, notably according to (given the order of 1 July 2020):
  - the profitability of the dedicated assets and the resulting coverage rate <sup>(3)</sup>
  - of the period within which the allocation is made, with regulation allowing ministers to determine a maximum period of five years for making the allocation

(1) As published in the consolidated statements at 31 December 2020

(2) Including €811M recorded against assets

(3) No need to allocate once the coverage rate reaches 100%



# DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE: SENSITIVITY ANALYSIS OF THE DISCOUNT RATE BASED ON PROVISIONS AT 31/12/2020 (5/5)

		Sensitivity to the discount rate			
<i>For a variation of 20 base points</i>		Provisions (discounted value)	On balance sheet provisions		On pre-tax earnings
In millions of euros			+0.20 %	-0.20 %	+0.20 % -0.20 %
<b>Back-end nuclear</b>					
Management of nuclear fuel	11,322	(261)	287	229	(253)
Provisions for waste removal and conditioning <sup>(1)</sup>	-	-	-	-	-
Long-term management of radioactive waste	13,300	(793)	954	646	(796)
<b>Dismantling and last cores</b>					
For decommissioning permanently shut-down nuclear plants	12,775	(498)	522	-	-
For decommissioning nuclear plants in operation	4,714	(160)	172	160	(172)
Last cores	2,711	(91)	97	-	-
<b>Total</b>	<b>44,822</b>	<b>(1,803)</b>	<b>2,032</b>	<b>1,035</b>	<b>(1,221)</b>
<i>o/w part of the coverage base for dedicated assets</i>	<b>32,676</b>	<b>(1,564)</b>	<b>1,772</b>	<b>875</b>	<b>(1,043)</b>

(1) Reclassified as long-term radioactive waste management at 31/12/2020 to ensure consistency with the latest nomenclature (breaking down nuclear charges into defined operations) as annexed to the amended decree of 21 March 2007 on securing the financing of nuclear expenses.



# IMPACT OF A 50BP INCREASE IN LONG-TERM RATES

## (EUR – GBP – USD)

Forecasted estimated <sup>(1)</sup> impact of a 50bp increase in the long-term rates in 2021

In €m		Nuclear provisions France		Provisions for employee benefits France		TOTAL	
Impact on EBITDA				90		90	
Impact on financial result (discount expense)	Estimated impact at <b>+20bp</b> on the real discount rate of nuclear provision	1,000	Estimated impact at <b>+50bp</b> on the real discount rate of provisions for employee benefits			1,000	Impact on income before taxes: <b>+€1,090m</b>
Impact on income taxes		(300)		(30)		(330)	
Impact on net income		700		60		760	
Impact on <i>Cash Flow Statement</i>	Impact on cash-flow: <b>+€300m</b> Reduction of nuclear provisions: <b>€(1,800)m</b> Negative impact on dedicated assets: <b>+€500m€</b>	(300)	Impact on cash-flow: <b>+€30m</b> Reduction of social commitments: <b>€(3,500)m</b> Negative impact on coverage assets: <b>+€1,000m</b> Tax allowance: <b>+€750m</b>	(30)		(330)	
Impact on economic debt <sup>(2)</sup>		(1,000)		(1,720)		(2,720)	

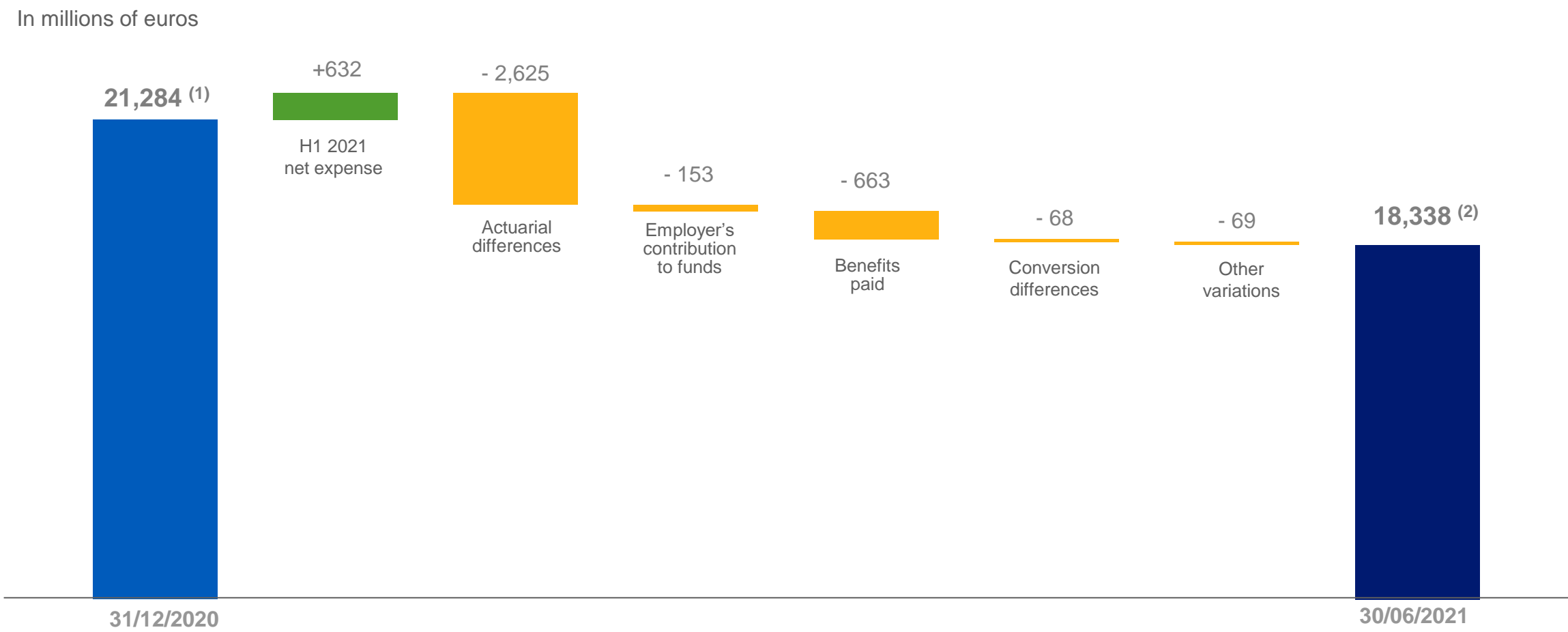
Favourable impact of around **+€1.1bn** on 2021 pre-tax net income and **-€2.7bn** on economic debt decrease

(1) Estimate given for information only. The comprehensive economic effects of an increase in rates for the Group are not presented here. Parentheses indicate an unfavorable impact on the flows (increase of the expenses or decrease of the products) or favorable on the economic debt (decrease). Nuclear provisions France: estimated impact of + 0.2% on the real rate

(2) Economic debt: Net financial debt + provisions (net of the effect on backing assets and after application of a 30% tax allowance on provisions for employee benefits)



GROUP PROVISIONS FOR EMPLOYEE BENEFITS: CHANGE IN NET LIABILITY



(1) Including: provisions for employee benefits €23,009m and non-current financial assets €(1,725)m  
(2) Including: provisions for employee benefits €20,626m and non-current financial assets €(2,288)m



# 2021 HALF-YEAR RESULTS

## FINANCING AND CASH MANAGEMENT





# DEBT AND LIQUIDITY

In billions of euros	30/06/2020	31/12/2020	30/06/2021
<b>Net financial debt</b>	42.0	42.3	<b>41.0</b>
Net financial debt/EBITDA	2.54x	2.61x	<b>2.21x</b>
<b>Debt</b>			
• Bonds	51.6	50.2	<b>46.8</b>
• Average maturity of gross debt (in years)	12.7	14.5	<b>15.3</b>
• Average coupon	2.10%	2.32%	<b>2.27%</b>
<b>Gross liquidity <sup>(1)</sup></b>	40.9	32.4	<b>28.4</b>

(1) With cash and cash equivalents, liquid assets, and undrawn lines of credit



# NET FINANCIAL DEBT

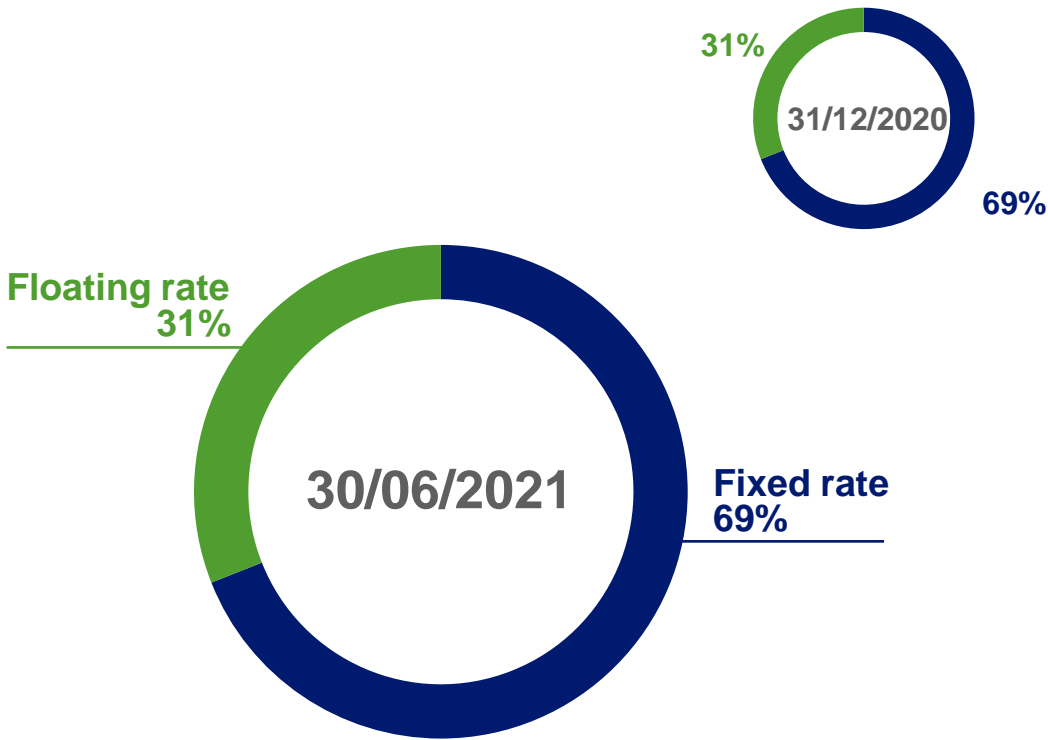
In millions of euros	30/06/2020	31/12/2020 <sup>(1)</sup>	30/06/2021 <sup>(1)</sup>
Financial debt	77,856	65,591	61,503
Derivatives used to hedge debt	(5,912)	(1,986)	(2,831)
Cash and cash equivalents	(15,561)	(6,270)	(5,928)
Liquid financial assets available for sale	(14,386)	(15,028)	(11,715)
Net financial debt reclassified (IFRS 5) <sup>(2)</sup>	5	(17)	(22)
<b>Net financial debt</b>	<b>42,002</b>	<b>42,290</b>	<b>41,007</b>

(1) After application of IFRS 16  
(2) After disposal of Edison's E&P

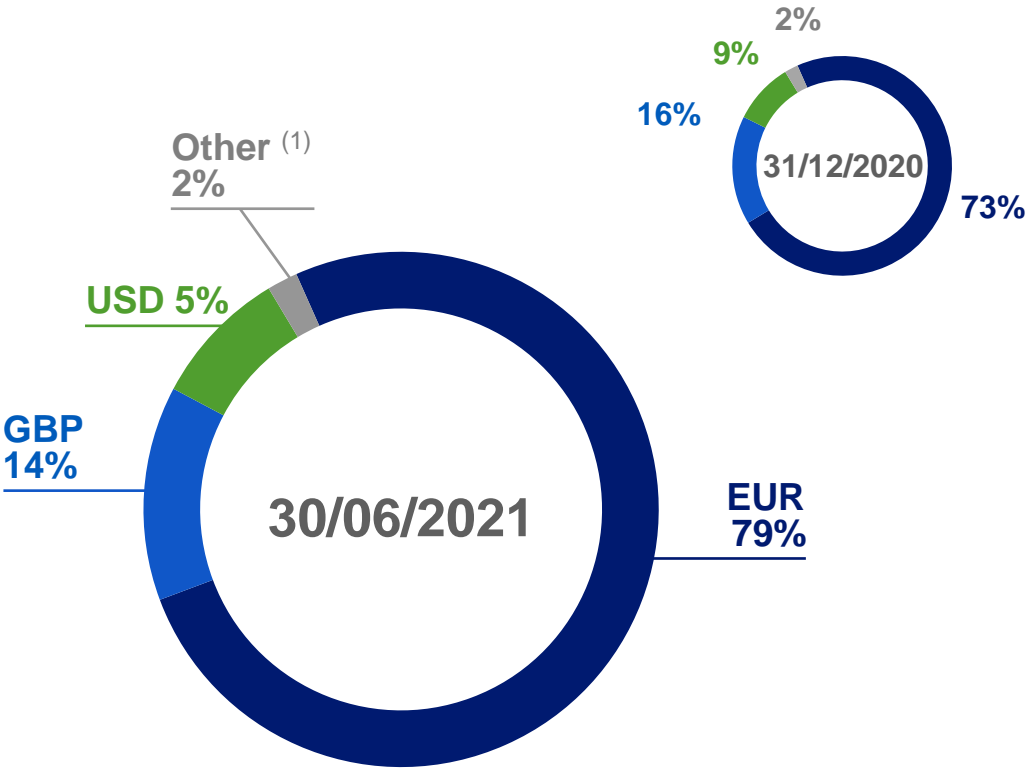


# GROSS FINANCIAL DEBT AFTER SWAPS

BREAKDOWN BY TYPE OF RATE



BREAKDOWN BY CURRENCY

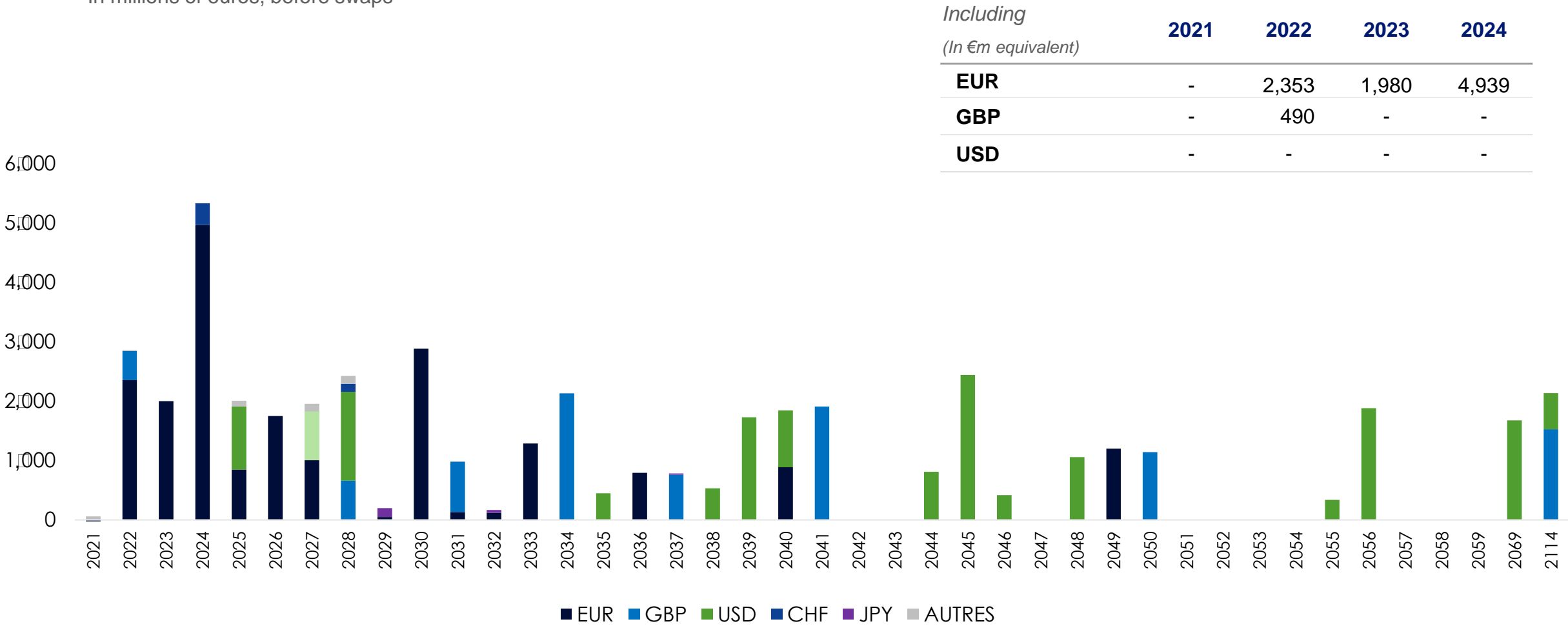


(1) Mainly CHF, PLN, CAD and JPY



# BREAKDOWN OF BOND DEBTS BY CURRENCY

In millions of euros, before swaps





MAIN OUTSTANDING BONDS AS OF 30 JUNE 2021 (1/2)

Green Bond

Green Bond

Issue date <sup>(1)</sup>	Maturity	Nominal amount <i>(in millions of currency units)</i>	Currency	Coupon
01/2012	01/2022	2,000	EUR	3.88%
09/2012	03/2023	2,000	EUR	2.75%
09/2009	09/2024	2,500	EUR	4.63%
09/2020	09/2024	2,400	EUR	0.00%
10/2015	10/2025	1,250	USD	3.63%
11/2010	11/2025	750	EUR	4.00%
10/2016	10/2026	1,750	EUR	1.00%
01/2017	01/2027	107,900	JPY	1.09%
03/2012	03/2027	1,000	EUR	4.13%
09/2018	09/2028	1,800	USD	4.50%
04/2010	04/2030	1,500	EUR	4.63%
10/2018	10/2030	1,000	EUR	2.00%

(1) Date of funds reception




MAIN OUTSTANDING BONDS AS OF 30 JUNE 2021 (2/2)

Issue date <sup>(1)</sup>	Maturity	Nominal amount <i>(in millions of currency units)</i>	Currency	Coupon
07/2001	07/2031	650	GBP	5.88%
02/2003	02/2033	850	EUR	5.63%
06/2009	06/2034	1,500	GBP	6.13%
10/2016	10/2036	750	EUR	1.88%
09/2018	09/2038	650	USD	4.88%
01/2009	01/2039	1,750	USD	6.95%
11/2010	11/2040	750	EUR	4.50%
10/2011	10/2041	1,250	GBP	5.50%
01/2014	01/2044	1,000	USD	4.88%
10/2015	10/2045	1,500	USD	4.75%
10/2015	10/2045	1,150	USD	4.95%
09/2018	09/2048	1,300	USD	5.00%
12/2019	12/2049	1,250	EUR	2.00%
09/2010	09/2050	1,000	GBP	5.13%
10/2016	10/2056	2,164	USD	4.99%
11/2019	12/2069	2,000	USD	4.50%
01/2014	01/2114	1,350	GBP	6.00%

(1) Date of funds reception



# FOCUS ON HYBRIDS SECURITIES



OVERVIEW OF KEY ELEMENTS

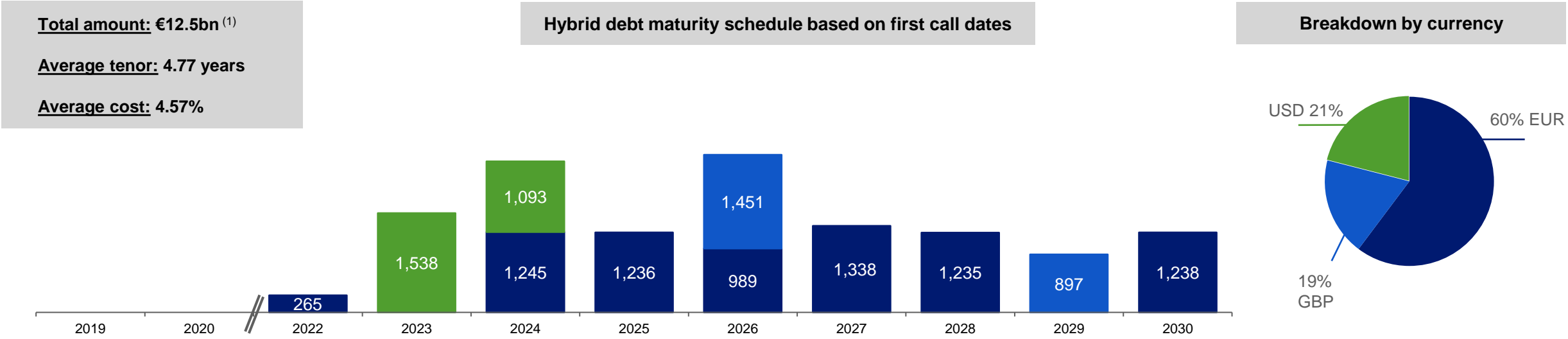
Hybrid issue

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

New issue in May 2021 of Euro-denominated hybrid notes for a total nominal amount of €1,250 million with an initial coupon of 2.625%

These issues allowed to extend the maturity of the stock of hybrids and to reduce the average coupon

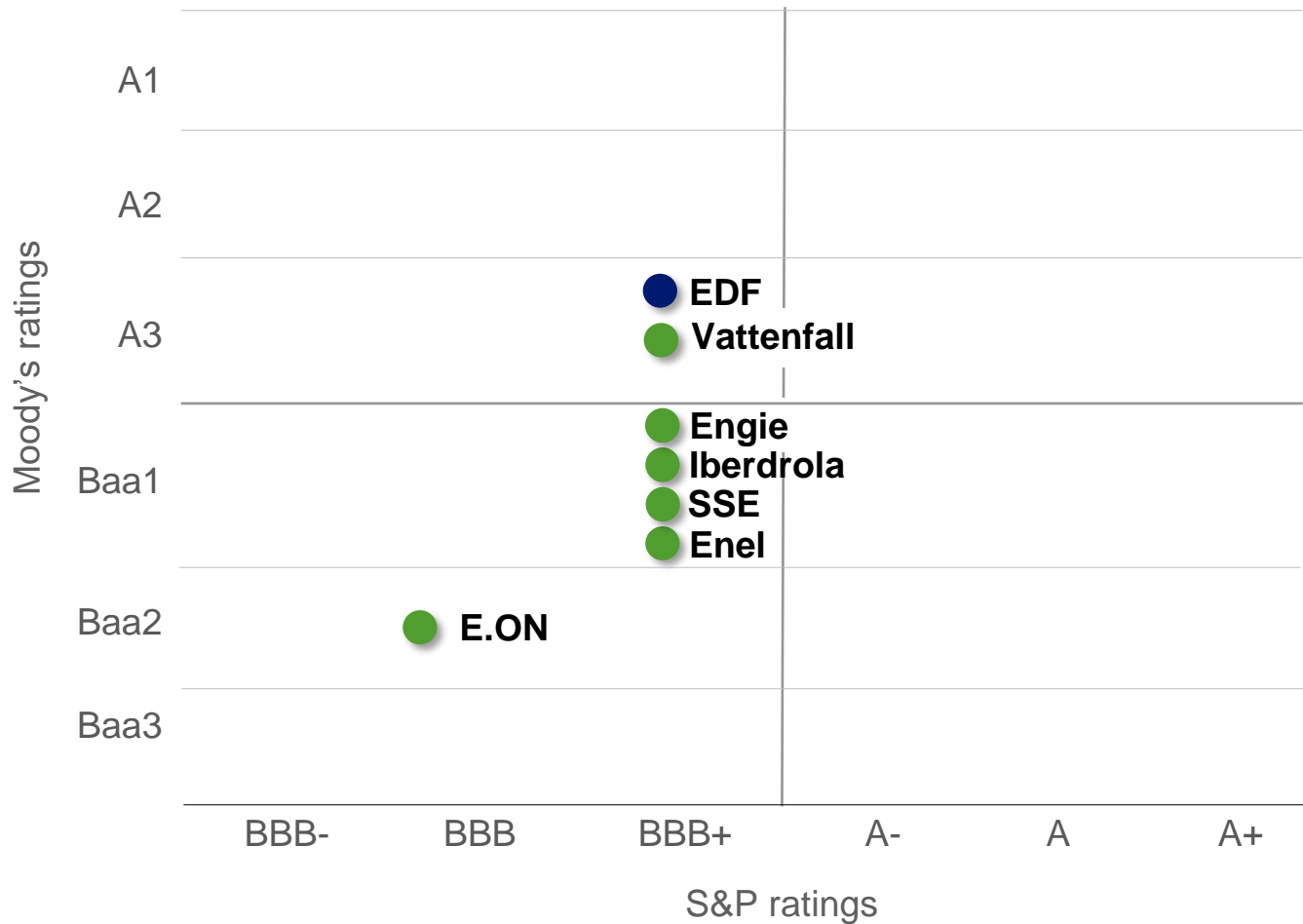
## Hybrid securities snapshot following new issues (in millions of euros) <sup>(1)</sup>



(1) Exchange rate as of transaction time



# COMPARATIVE CREDIT RATINGS



	S&P ratings	Moody's ratings	Fitch ratings
EDF	BBB+ stable <sup>(1)</sup>	A3 negative <sup>(2)</sup>	A- negative <sup>(3)</sup>
Engie	BBB+ stable	Baa1 stable	A- stable
Vattenfall	BBB+ stable	A3 stable	n.d.
SSE	BBB+ stable	Baa1 negative	BBB stable
Iberdrola	BBB+ stable	Baa1 stable	BBB+ stable
Enel	BBB+ stable	Baa1 stable	A- stable
E.ON	BBB stable	Baa2 stable	BBB+ stable
Uniper	BBB stable	n.d.	n.d.
RWE	n.d	Baa2 stable	BBB+ stable

Sources: rating agencies as of 28/07/2021

(1) Update of the rating and outlook of EDF Group by S&P on 10 March 2021

(2) Update of the rating and outlook of EDF Group by Moody's on 24 April 2020

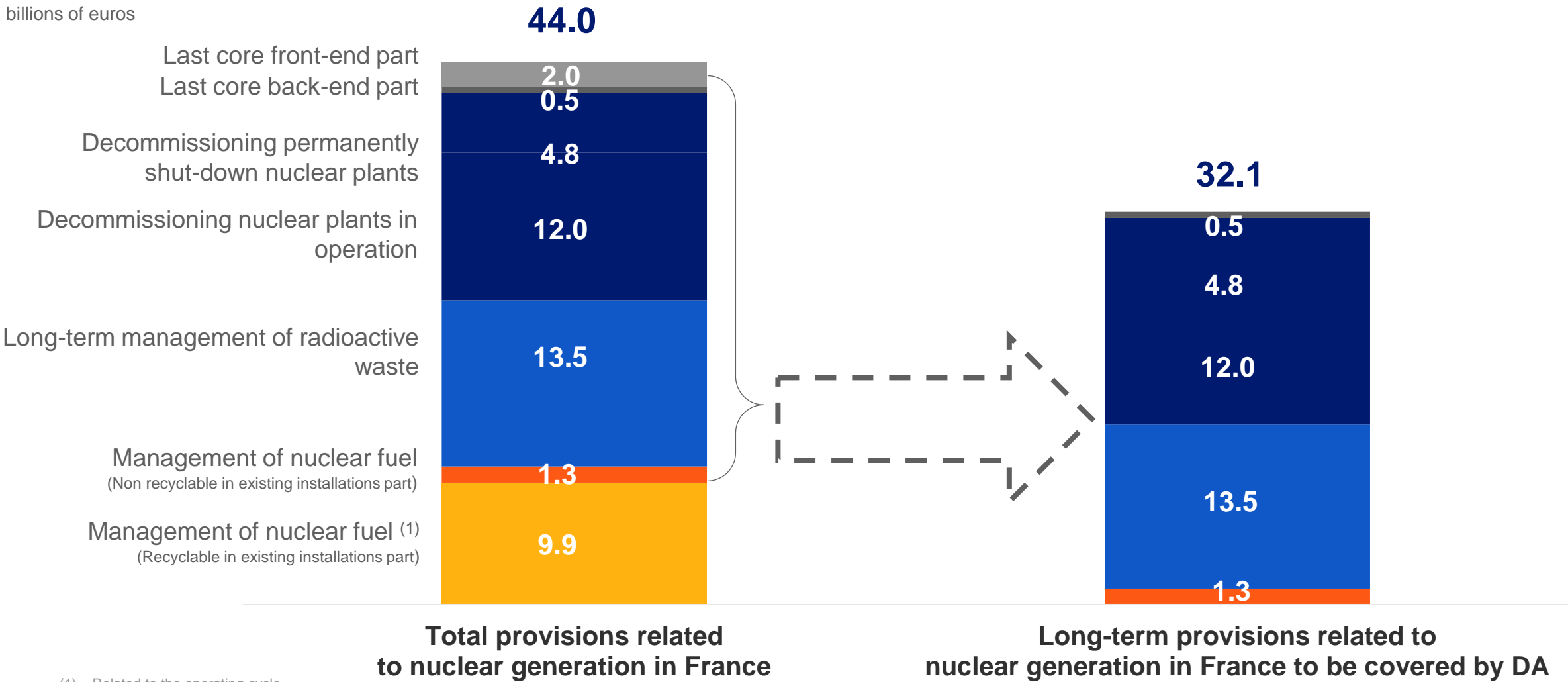
(3) Update of the rating and outlook of EDF Group by Fitch on 19 July 2021



# PROVISIONS RELATED TO NUCLEAR GENERATION IN FRANCE

## PART TO BE COVERED BY DEDICATED ASSETS

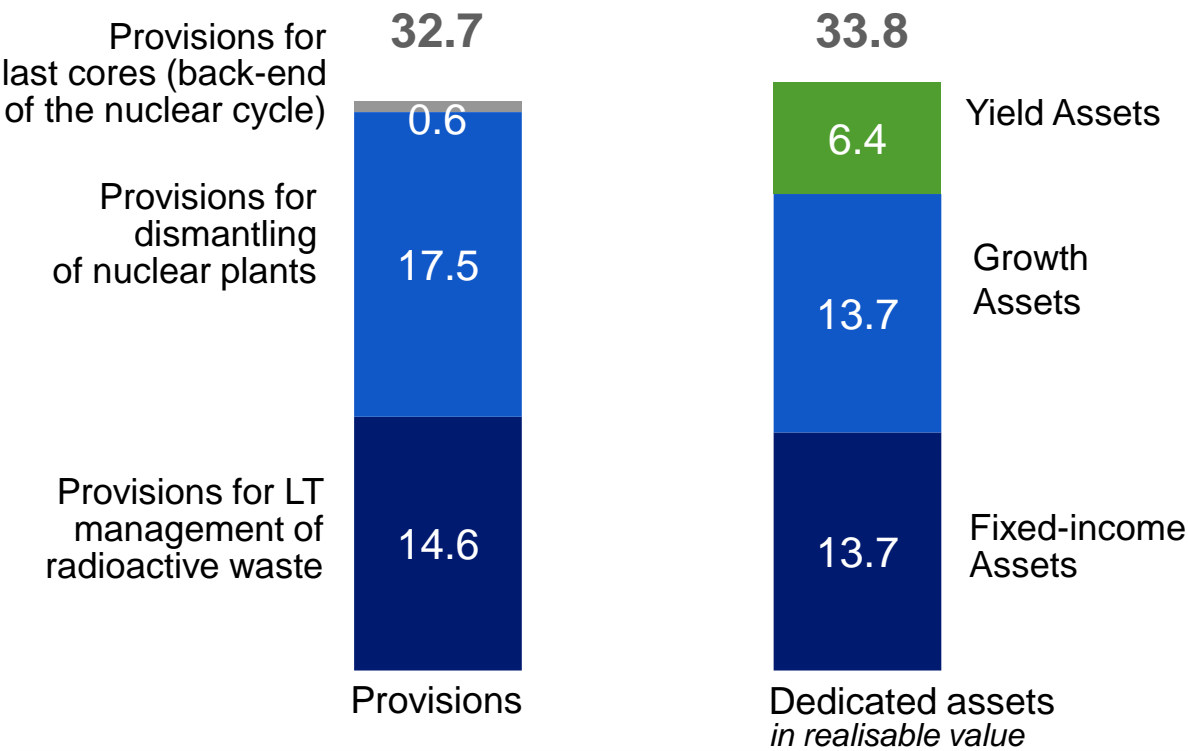
In billions of euros





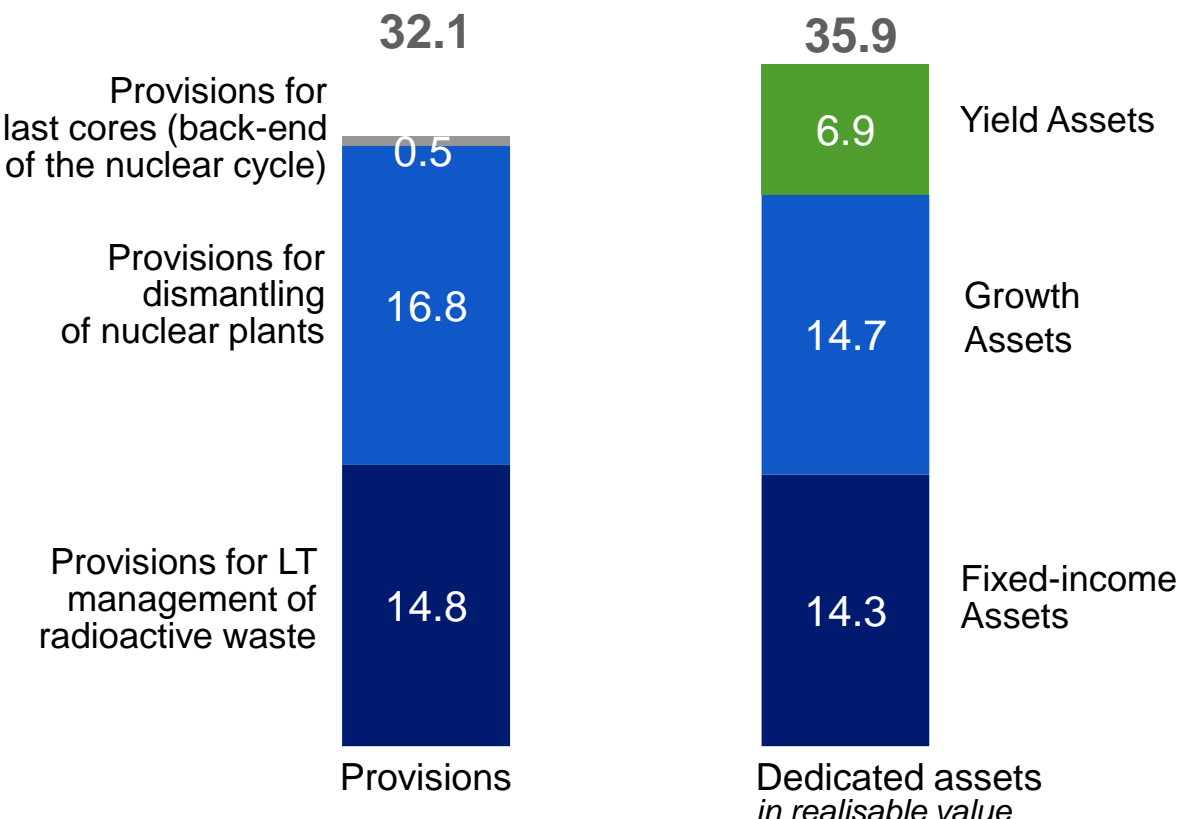
# EDF SA DEDICATED ASSETS

In billions of euros



31/12/2020

- At 31 December 2020, the regulatory degree of coverage is 103.6%
- No allocation to DAs to be made in 2021 in respect of 2020 owing to a coverage rate of over 100%, in accordance with the regulation applicable since 1 July 2020



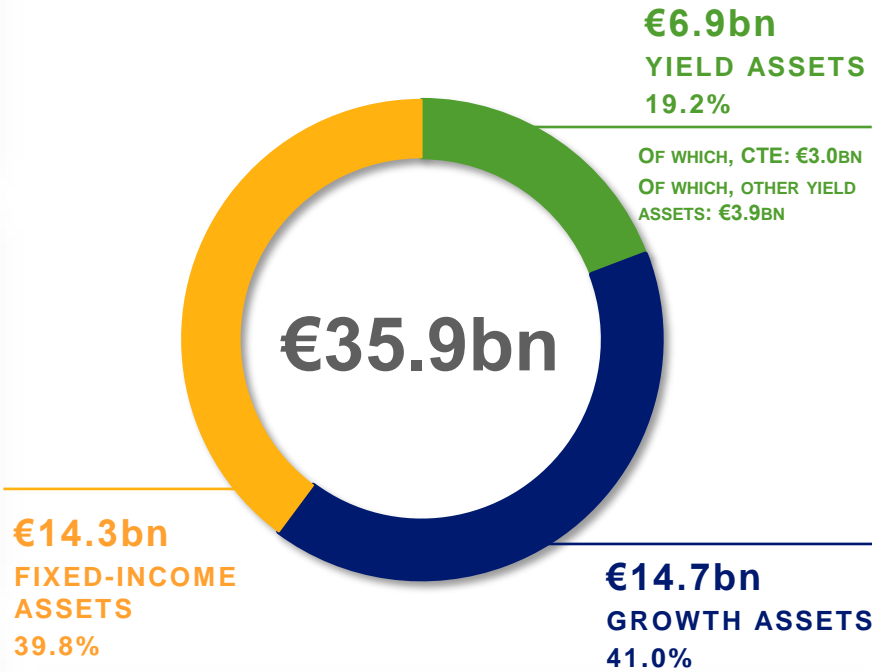
30/06/2021

- At 30 June 2021, the regulatory degree of coverage is 111.8%



# PERFORMANCE OF EDF SA DEDICATED ASSETS (1)

<div>YIELD ASSETS:</div> <div>+7.5%</div>	<p>The performance of yield-generating assets, comprising <b>real estate and infrastructure assets</b>, is composed of <b>dividends</b> received, in line with expectations, and the <b>change in the realisable value</b> of holdings in the half-year period. This solid performance (+7.5%) resulted from effective sector and geographical <b>diversification</b></p>
<div>GROWTH ASSETS:</div> <div>+14.4%</div>	<p>Due to an <b>upturn on the listed markets</b>, the growth assets pocket registered an overall performance of +14.4%, driven principally by listed equities, which <b>outperformed their indexes</b> for every geographical pocket (except the Asia Pacific zone): moderately in Europe (+0.3%) and much more substantially for emerging countries (+1.1%).</p> <p>The large portion of “value” funds was a creator of value overall, while the overweighting on the US dollar affected performance.</p>
<div>FIXED-INCOME ASSETS:</div> <div>-0.5%</div>	<p><b>Fixed-income assets</b> were negatively impacted by the uptrend in rates, mainly government bonds, from an exceptionally low level. The strong performance of credit markets, and the selection and reduced sensitivity of the portfolio, served to limit the decrease in value</p>



H1 2021 PERFORMANCE: 6.9% (1)

Performance +6.4% on an annualised basis since early 2004

(1) Pre-tax, non-annualised performance

A new strategic allocation was defined in 2018 to improve the adequacy of the profile of dedicated assets to the long-term nature of the disbursements to be covered (Growth assets: 40%, Fixed-income assets: 30%, Yield assets: 30%). The targets of the new allocation will be met progressively, as investments are made, entailing a gradual rebalancing from fixed-income assets to yield assets



# EDF INVEST, THE INVESTMENT PLATFORM FOR NON-LISTED ASSETS

## MANAGEMENT OF DEDICATED ASSETS ...

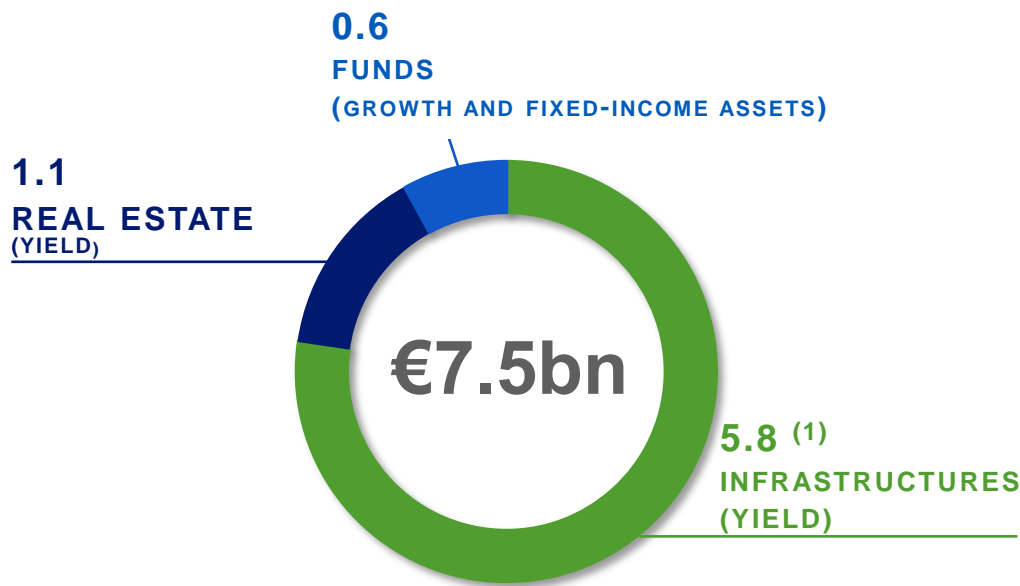
- EDF Invest is the **unlisted investment arm of EDF's Dedicated Assets** ; this portfolio amounts to **€7.5bn at 30 June 2021**
- The contribution of unlisted assets is the key to improve the Dedicated Assets return / risk profile and the perspective of long-term management is consistent the liabilities to be covered
- Among Dedicated Assets, unlisted assets contribute to yield assets, growth assets and fixed-income assets, invested in underlying Infrastructure, Real Estate and other Funds portfolios

## ... FOR A DIVERSIFIED PORTFOLIO

- EDF Invest **aims at raising the amount of the non-listed assets** portfolio up to the **reference target fixed in the Strategic allocation defined in June 2018**
- In the first half of 2021, EDF Invest continued its investment in **smart meters in the UK** and made new **real estate investments in France and Germany**

## PORTFOLIO BREAKDOWN AT 30 JUNE 2021

In billions of euros



(1) Including CTE for €3bn



# 2021 HALF-YEAR RESULTS

OPERATIONAL DATA & MARKETS





INSTALLED CAPACITY AS OF 30 JUNE 2021

<i>(in GW)</i>	Total net capacities of EDF Group, including shares in associates and joint ventures		Investments in associates and joint ventures	Consolidated capacities of EDF Group	
Nuclear <sup>(1)</sup>	72.3	56 %	2.2	70.1	59 %
Hydro <sup>(2)</sup>	22.5	18 %	1.0	21.5	18 %
ENR	11.7	9 %	3.2	8.5	7 %
Gas	12.6	10 %	0.3	12.3	10 %
Fuel oil	3.9	3 %	0.3	3.6	3 %
Coal <sup>(3)</sup>	5.2	4 %	2.0	3.2	3 %
<b>Total</b>	<b>128.1</b>	<b>100 %</b>	<b>8.9</b>	<b>119.2</b>	<b>100 %</b>

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

(1) Taking into consideration the shutdown of Dungeness B nuclear power plant in the UK

(2) Including sea energy: 0.24GW in 2020 and 2021

(3) Taking into consideration the shutdown of Le Havre coal power plant



# ELECTRICITY OUTPUT

Output from fully consolidated entities

<i>(in TWh)</i>	H1 2020		H1 2021	
Nuclear	198.4	76 %	206.3	77 %
Hydro <sup>(1)</sup>	28.4	11 %	26.9	10 %
ENR	10.1	4 %	10.8	4 %
Gas	20.3	8 %	20.6	7 %
Fuel oil	2.3	1 %	2.5	1 %
Coal	1.1	0 %	1.7	1 %
<b>Group</b>	<b>260.6</b>	<b>100 %</b>	<b>268.9</b>	<b>100 %</b>

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  
 (1) Hydro output includes tidal energy for 267GWh in H1 2020 and 278GWh in H1 2021. Hydro output after deduction of pumped volumes is 25.2TWh in H1 2020 and 24.2TWh in H1 2021



# HEAT OUTPUT

Output from fully consolidated entities

(in TWh)	H1 2020		H1 2021	
ENR <sup>(1)</sup>	3.1	20 %	3.2	21 %
Gas	10.0	64 %	10.9	72 %
Fuel oil	0.1	1 %	0.1	1 %
Coal	0.4	3 %	0.5	3 %
Others <sup>(2)</sup>	1.8	12 %	0.4	3 %
<b>Group</b>	<b>15.6</b>	<b>100 %</b>	<b>15.0</b>	<b>100 %</b>

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

(1) Category corresponding to installations operating with woody biomass, landfill gas, sewage incineration, sewage treatment plant gas and biogases

(2) Category combining part of the heat generation by incineration non classified as RE, gas mine and the recovery of heat and electricity from other industrial processes



# RENEWABLE OUTPUT

Output from fully consolidated entities

<i>(in TWh)</i>	H1 2020		H1 2021	
Hydro <sup>(1)</sup>	28.4	74 %	26.9	71 %
Wind	9.0	23 %	9.4	25 %
Solar	0.6	1 %	1.0	3 %
Biomass	0.6	1 %	0.5	1 %
<b>Total electricity Group</b>	<b>38.5</b>	<b>100 %</b>	<b>37.8</b>	<b>100 %</b>
<b>Total heat Group</b>	<b>3.1</b>	<b>100 %</b>	<b>3.2</b>	<b>100 %</b>

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

(1) Hydro output includes tidal energy for 267GWh in H1 2020 and 278GWh in H1 2021. Hydro output after deduction of pumped volumes is 25.2TWh in H1 2020 and 24.2TWh in H1 2021



CO<sub>2</sub> EMISSIONS <sup>(1)</sup>

CO<sub>2</sub> emissions from fully consolidated entities

Emissions from the heat and power generation by segment <sup>(2)</sup>	In kt				In g/kWh	
	H1 2020		H1 2021		H1 2020	H1 2021
France – Generation and supply activities	1,442	11 %	2,564	18 %	7	14
France – Island regulated activities <sup>(2)</sup>	1,435	11 %	1,488	11 %	506	481
Dalkia	3,208	24 %	3,312	24 %	199	211
United Kingdom	1,794	14 %	1,323	9 %	69	57
Italy	3,012	23 %	2,722	19 %	268	263
Other international	2,327	18 %	2,655	19 %	272	234
<b>Group <sup>(3)</sup></b>	<b>13,235</b>	<b>100 %</b>	<b>14,078</b>	<b>100 %</b>	<b>48</b>	<b>50</b>

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

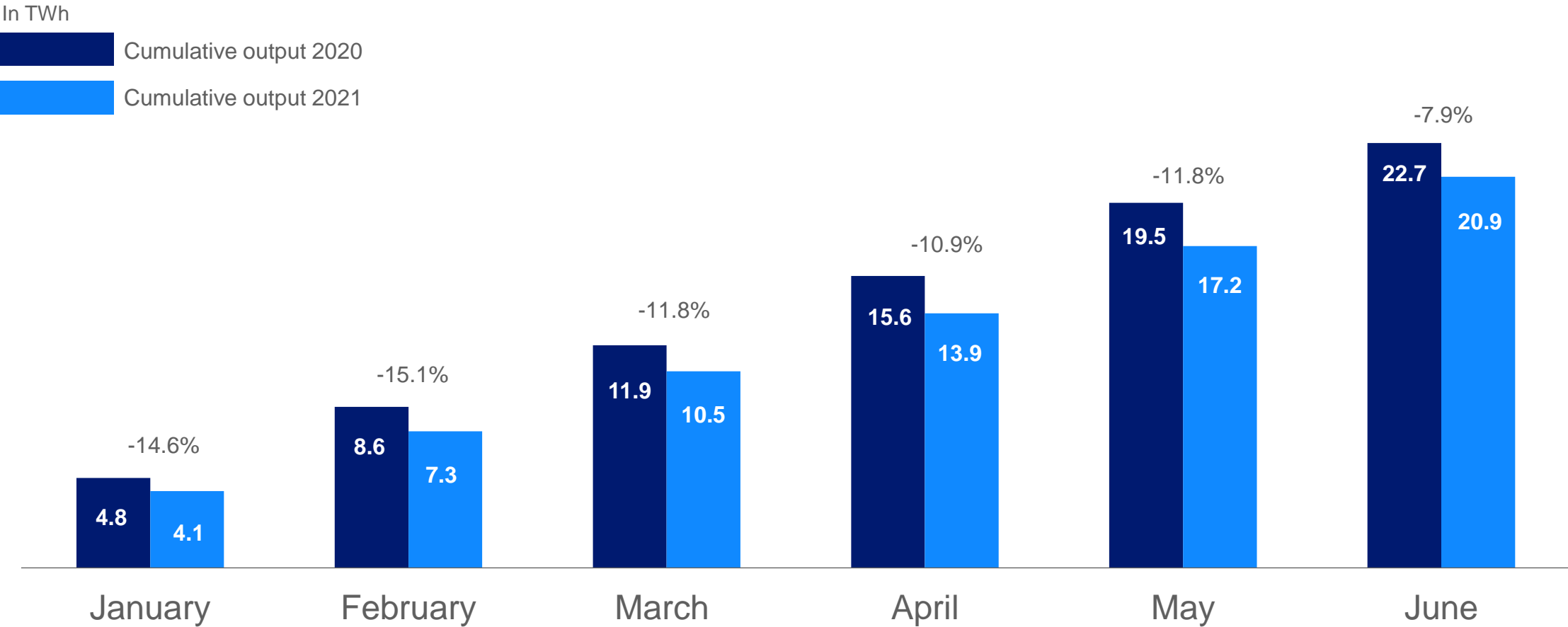
(1) Including direct CO<sub>2</sub> emissions, excluding life cycle analysis (LCA) of fuel and production means

(2) Power generation in ZNI: « Zones non interconnectées » corresponding to overseas departments and Corsica - (mainly island territories) and Electricité de Strasbourg (ES)

(3) Framatome contributes to 18kt CO<sub>2</sub> in H1 2020 and 13kt CO<sub>2</sub> in S1 2021. The direct CO<sub>2</sub> emissions from "Others activities" segments are not significant compared to Group total emissions



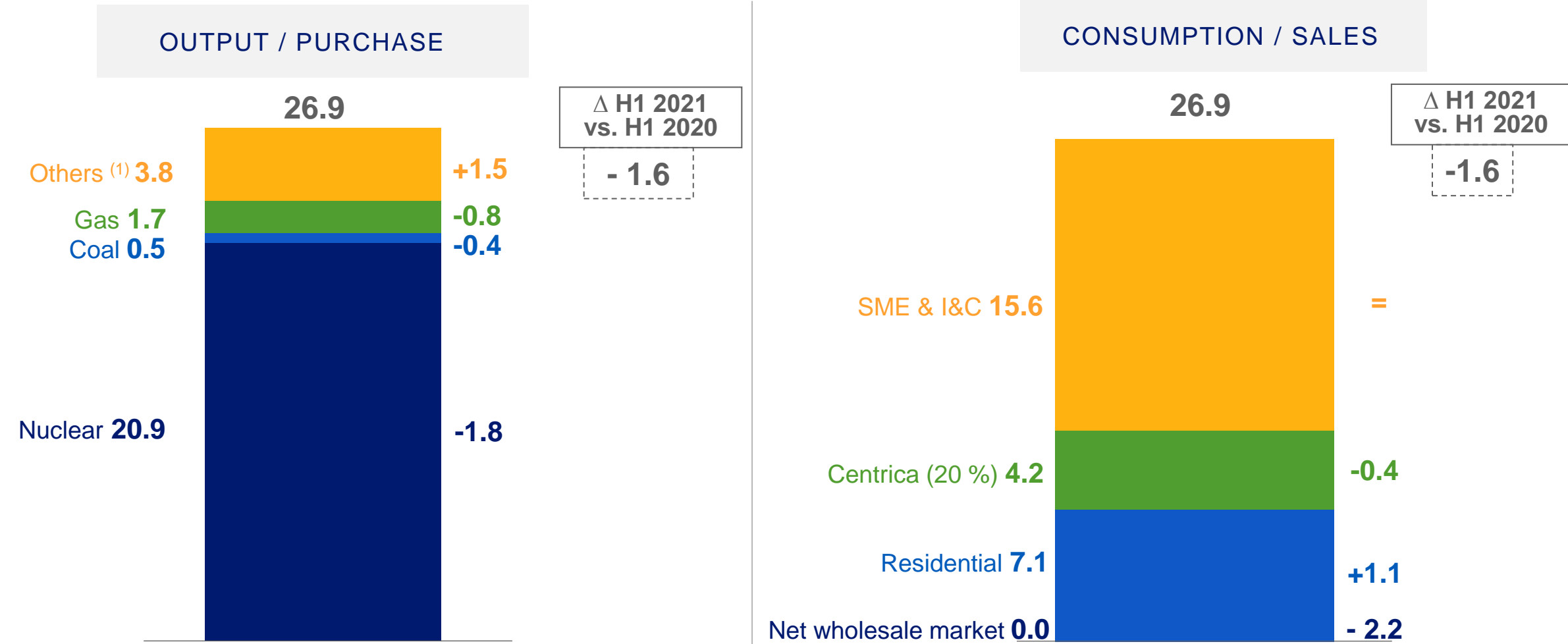
# UNITED KINGDOM: HALF-YEAR NUCLEAR OUTPUT





# UNITED KINGDOM: UPSTREAM / DOWNSTREAM ELECTRICITY BALANCE

(In TWh)





# GREAT BRITAIN CAPACITY AUCTION RESULTS FOR EDF ENERGY (1)

All capacity agreements for 1 year unless otherwise stated

	Clearing price £/kW/an	Nuclear	Coal	CCGT (2)	OCGT (3)	Battery	Demand-side Response (DSR)
2015 Q4 (2019/2020)	18.0 (2014/2015 prices)	All 16 units (4) (7.6GW)	0 unit	All 3 units (1.2GW)	All 2 units (37MW)	N/A	N/A
2016 Q4 (2020/2021)	22.5 (2015/2016 prices)	All 16 units (7.9GW)	3 of 8 units (1.8GW)	All 3 units (1.2GW)	All 2 units (38MW)	1 unit (5) (47MW)	N/A
2018 Q4 (2021/2022)	8.4 (2016/2017 prices)	All 16 units (7.9GW)	0 unit	All 3 units (1.2GW)	0 unit	N/A	5 units (32.1MW)
2020 Q3 (2022/2023)	6.4 (no indexation)	12 units (5.9GW)	0 unit	All 3 units (1.2GW)	0 unit	N/A	0 unit
2021 Q1 (2023/2024)	16.0 (2018/2019 prices)	8 units (4.0GW)	0 unit	All 3 units (1.2GW)	0 unit	N/A	4 units (21.5MW)
2021 Q1 (2024/2025)	18.0 (2019/2020 prices)	4 units (2.0GW)	0 unit	All 3 units (1.2GW)	0 unit	4 units (60MW)	0 unit

(1) Following a judgement by the General Court of Justice of the European Union which removed the European Commission's State aid approval pf Great Britain's Capacity Market (CM) on 15 November 2018, the UK Government suspended the operation of the scheme. It was subsequently re-approved and reinstalled on 24 October 2019

(2) Combine Cycle Gas Turbine

(3) Open Cycle Gas Turbine

(4) Q4 2015 had a lower total connection capacity for Nuclear units

(5) 15-years capacity agreement for new build battery

N/A: not applicable

*The slide includes capacities for which agreements were awarded (de-rated capacity). For DSR this equates to bidding capacities in the context of auctions*

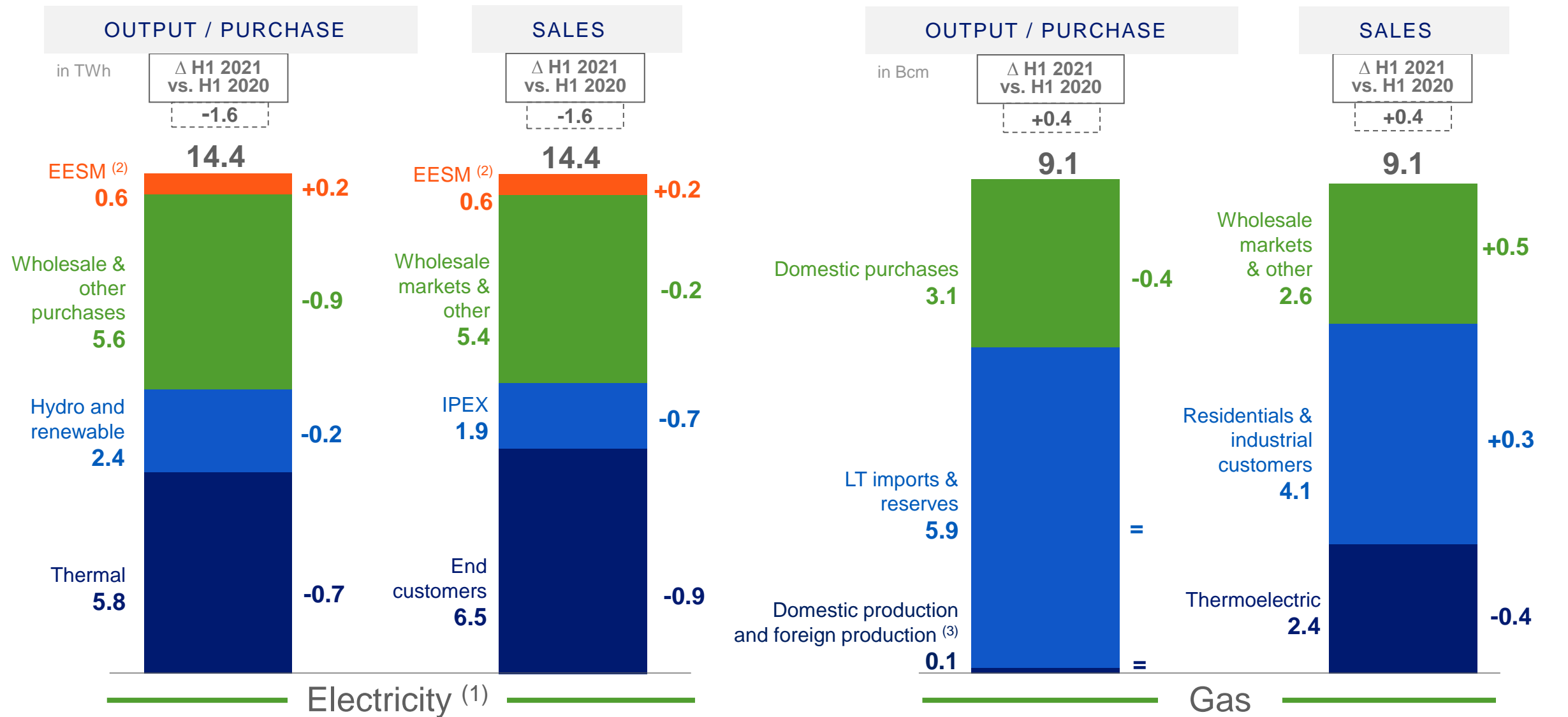


# UK PLANT FLEET: TIMELINE OF CLOSURES AND SHUTDOWNS

List of plants	Technology	Planned closure date	Shutdowns
Dungeness	Nuclear	7 June 2021	Decision has been made to move Dungeness B into the defueling phase as of 7/06. Since 2018, the plant was under extended outage to manage a range of unique, significant and ongoing technical challenges. The final electricity generation in 2018 means the plant ran for 10 years longer than original design life and in line with expectations when it was acquired by EDF in 2009.
Hartlepool	Nuclear	2024	
Heysham 1	Nuclear	2024	
Heysham 2	Nuclear	2030	Unit R7 currently on statutory outage.
Hinkley Point B	Nuclear	No later than 15 July 2022	Both reactors restarted for a six-month operating cycle in April 2021. The next graphite inspection shutdowns are scheduled for September. Subject to the Office for Nuclear Regulation’s (ONR) authorisation, a final operating cycle of 6 months will be carried out before final closure.
Sizewell B	Nuclear	2035 <sup>(1)</sup>	Currently offline for statutory/refuelling outage.
Torness	Nuclear	2030	
Hunterston B	Nuclear	No later than 7 January 2022	Currently online for final 6 month cycle of operation before closure.
West Burton A	Coal	30 Sept 2022	The station will be available, through two of its four 500MW coal units, to meet capacity market commitments and assist with the UK’s security of supply. It will close by 30 September 2022
West Burton B	CCG		Agreement reached with EIG for the sale of the station (and 49MW battery) to complete early-August 2021.

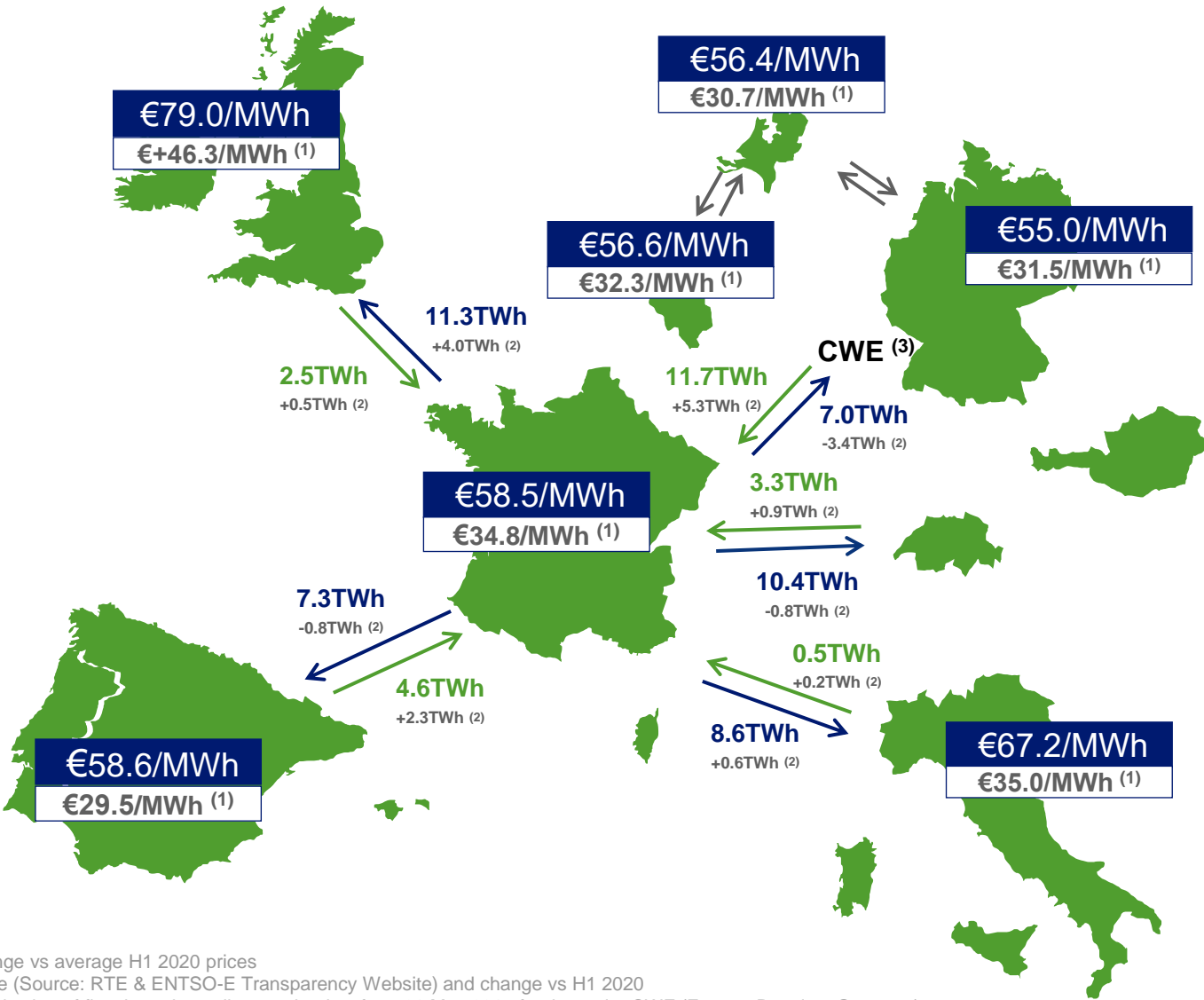


# EDISON: UPSTREAM/DOWNSTREAM ELECTRICITY AND GAS BALANCES





# AVERAGE SPOT PRICES IN H1 2021



The increase resulted from three combined factors:

- Higher demand due to lower temperatures and less restrictive health measures in 2021 than in 2020;
- Considerable rise in gas spot prices owing to low inventories in Europe and strong demand in Asia (with a cold winter and a hot summer);
- Strong increase in CO<sub>2</sub> prices stemming from a favourable political situation, high gas prices, ambitious CO<sub>2</sub> price expectations (some of which as high as €100/t before the end of the year), and the presence of speculators on the market

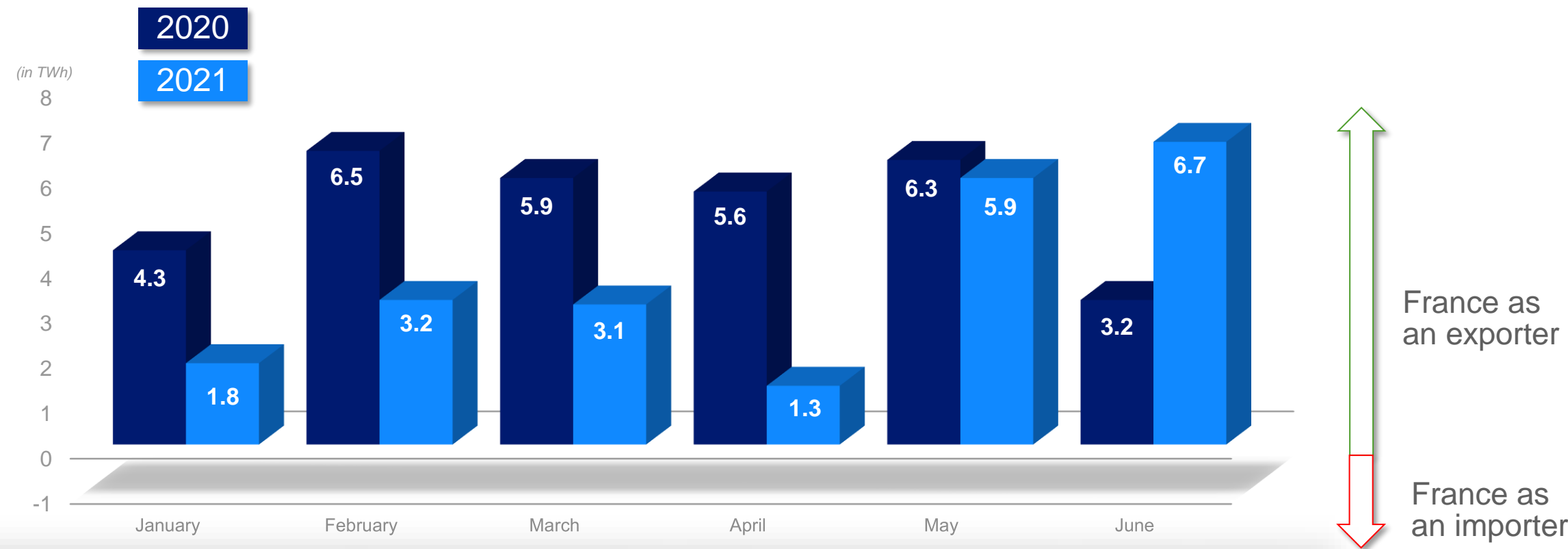
The market coupling has enabled a certain degree of price convergence, though still limited by available interconnection capacities at borders.

Average observed spot market price for H1 2021:

- EPEXSPOT: France & Germany
- N2EX: United-Kingdom
- OMIE: Spain
- GME: Italy (Prezzo Unico Nazionale)
- APX: Netherlands
- BELPEX: Belgium



# CROSS-BORDER ELECTRICITY TRADE BALANCE



France’s export balance stood at 22.0TWh in H1 2021, down 9.7TWh vs. H1 2020. The contraction resulted from a decrease in exports (-0.5TWh) and a strong increase in imports (+9.2TWh). In H1 2021, France was a net exporter across most borders, apart from the CWE <sup>(1)</sup> region, where the net importer balance was 4.7TWh. France was a net exporter across other borders, at 8.0TWh to Italy, 7.1TWh to Switzerland, 2.7TWh to Spain and 8.8TWh to the UK. Compared with H1 2020, the export balance was down sharply to Spain, Switzerland and the CWE <sup>(1)</sup> region (-13.5TWh overall).

Source : RTE until August 2020 et from September 2020 : ENTSO-E data  
(1) - CWE flow-based coupling zone composed of Germany, Belgium, France, Luxembourg and Netherlands, set up in May 2015



FRENCH POWER TRADE BALANCES AT ITS BORDERS

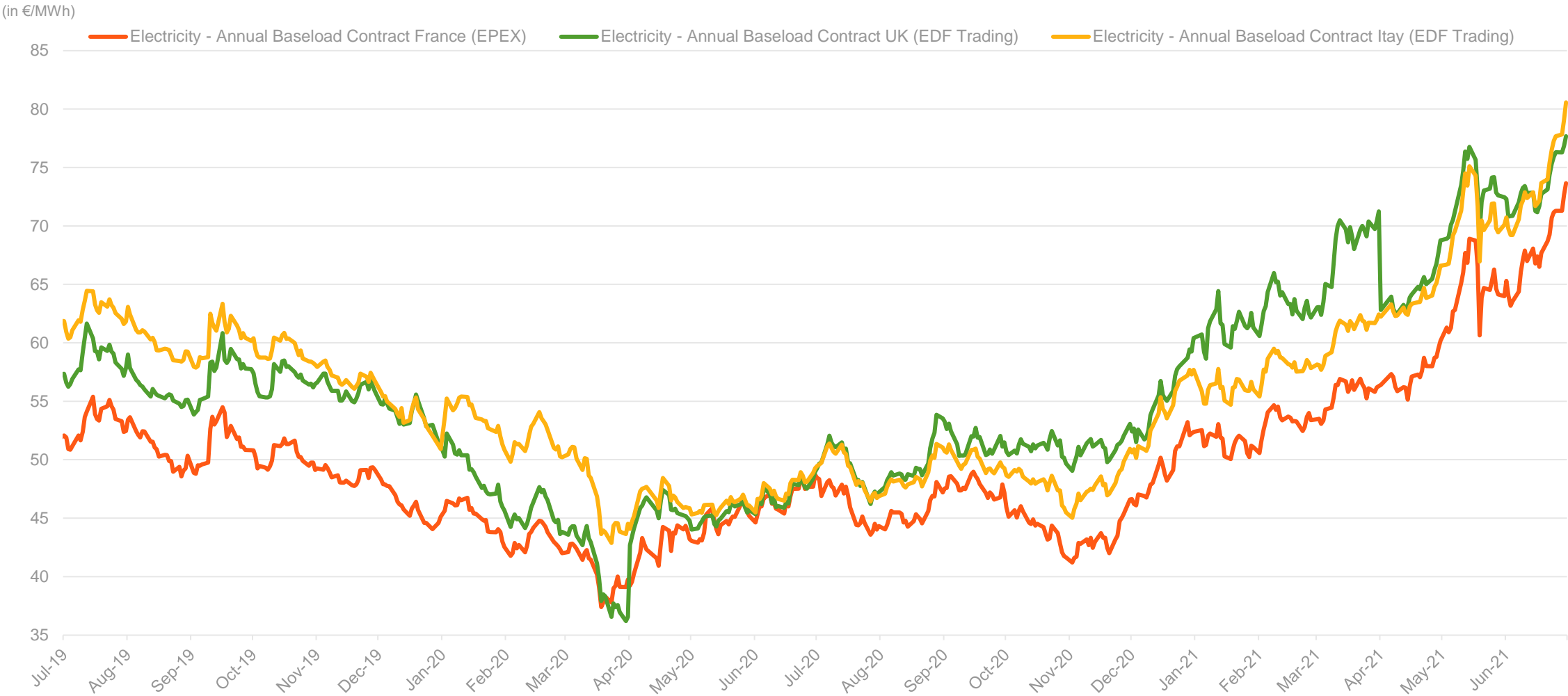
(in TWh <sup>(1)</sup>)

		H1 2020							H1 2021						
		Jan.	Feb.	March	April	May	June	Total	Jan.	Feb.	March	April	May	June	Total
United Kingdom	exports	1.0	1.2	1.4	1.3	1.4	1.0	7.3	1.7	1.9	2.0	1.7	2.0	2.0	11.3
	imports	0.3	0.1	0.2	0.3	0.5	0.5	2.0	0.3	0.5	0.5	0.6	0.3	0.3	2.5
	balance	0.8	1.1	1.2	0.9	0.9	0.5	5.4	1.4	1.4	1.5	1.1	1.7	1.7	8.8
Spain	exports	1.6	1.4	1.2	1.2	1.6	1.2	8.2	1.3	0.4	1.0	1.2	1.6	1.7	7.3
	imports	0.6	0.2	0.4	0.4	0.3	0.4	2.3	0.8	1.4	0.9	0.8	0.4	0.3	4.6
	balance	1.0	1.2	0.8	0.8	1.3	0.8	5.9	0.5	-1.0	0.2	0.4	1.1	1.4	2.7
Italy	exports	1.9	2.1	1.8	0.6	1.0	0.5	8.0	1.1	1.6	1.5	1.0	1.7	1.6	8.6
	imports	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.1	0.1	0.2	0.0	0.0	0.5
	balance	1.9	2.1	1.8	0.6	1.0	0.3	7.7	1.0	1.5	1.4	0.9	1.7	1.6	8.0
Switzerland	exports	2.2	2.2	2.1	1.8	1.6	1.3	11.2	1.9	1.9	1.9	1.6	1.6	1.6	10.4
	imports	0.6	0.3	0.3	0.3	0.2	0.6	2.4	0.7	0.5	0.4	0.8	0.5	0.4	3.3
	balance	1.6	1.9	1.8	1.5	1.4	0.7	8.8	1.2	1.4	1.5	0.9	1.1	1.1	7.1
CWE <sup>(2)</sup>	exports	0.9	1.3	1.8	2.5	2.3	1.7	10.5	0.7	1.4	0.9	0.6	1.6	1.8	7.0
	imports	1.8	1.1	1.4	0.7	0.6	0.9	6.4	3.0	1.4	2.4	2.7	1.3	1.0	11.7
	balance	-0.9	0.2	0.4	1.8	1.7	0.8	4.0	-2.2	0.0	-1.5	-2.0	0.3	0.8	-4.7
TOTAL	exports	7.6	8.2	8.3	7.4	7.9	5.9	45.2	6.8	7.1	7.3	6.2	8.5	8.7	44.6
	imports	3.4	1.7	2.3	1.8	1.6	2.6	13.4	5.0	3.9	4.2	5.0	2.6	2.0	22.6
	balance	4.3	6.5	5.9	5.6	6.3	3.2	31.8	1.8	3.2	3.1	1.3	5.9	6.7	22.0

Source: RTE  
(1) Rounded to the nearest tenth  
(2) CWE flow-based coupling zone composed of Germany, Belgium, France, Luxembourg and Netherlands, set up in May 2015

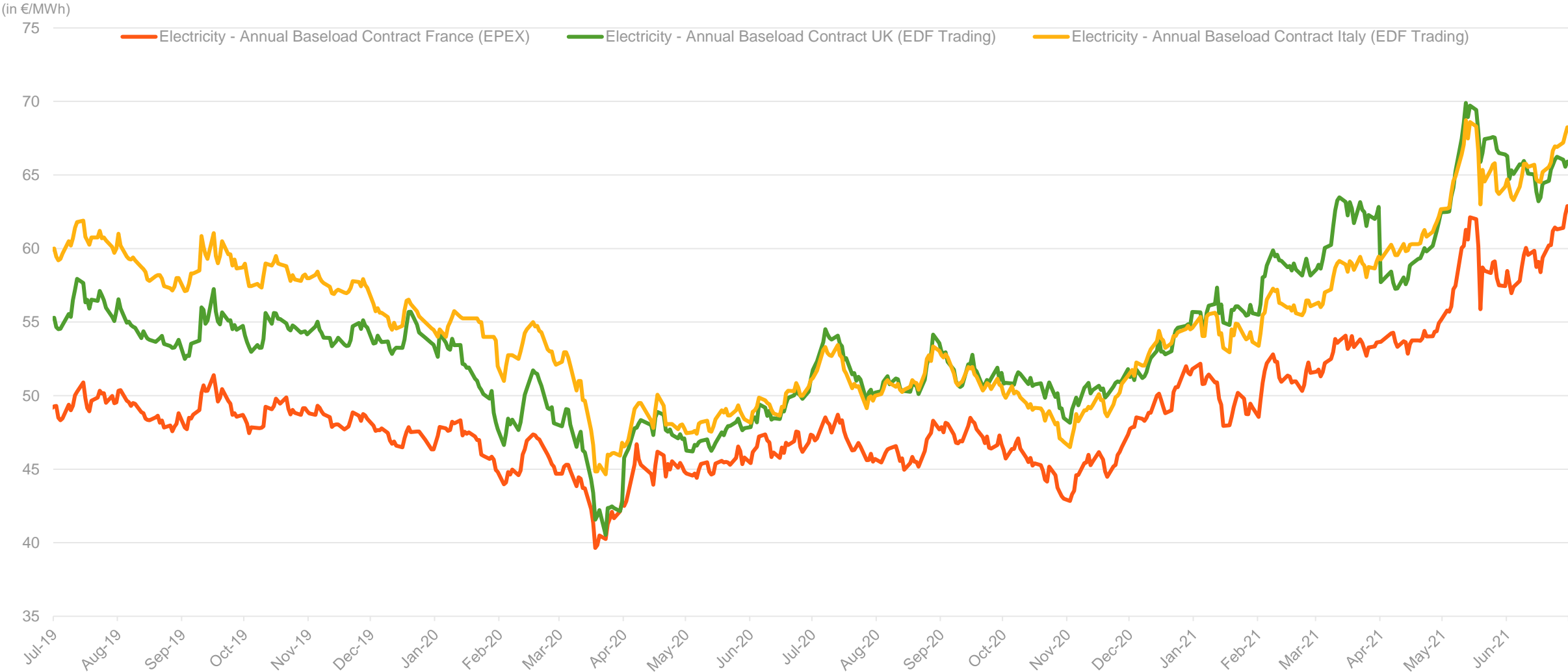


# FORWARD ELECTRICITY PRICES IN FRANCE, THE UK AND ITALY (Y+1) FROM 01/07/2019 TO 30/06/2021



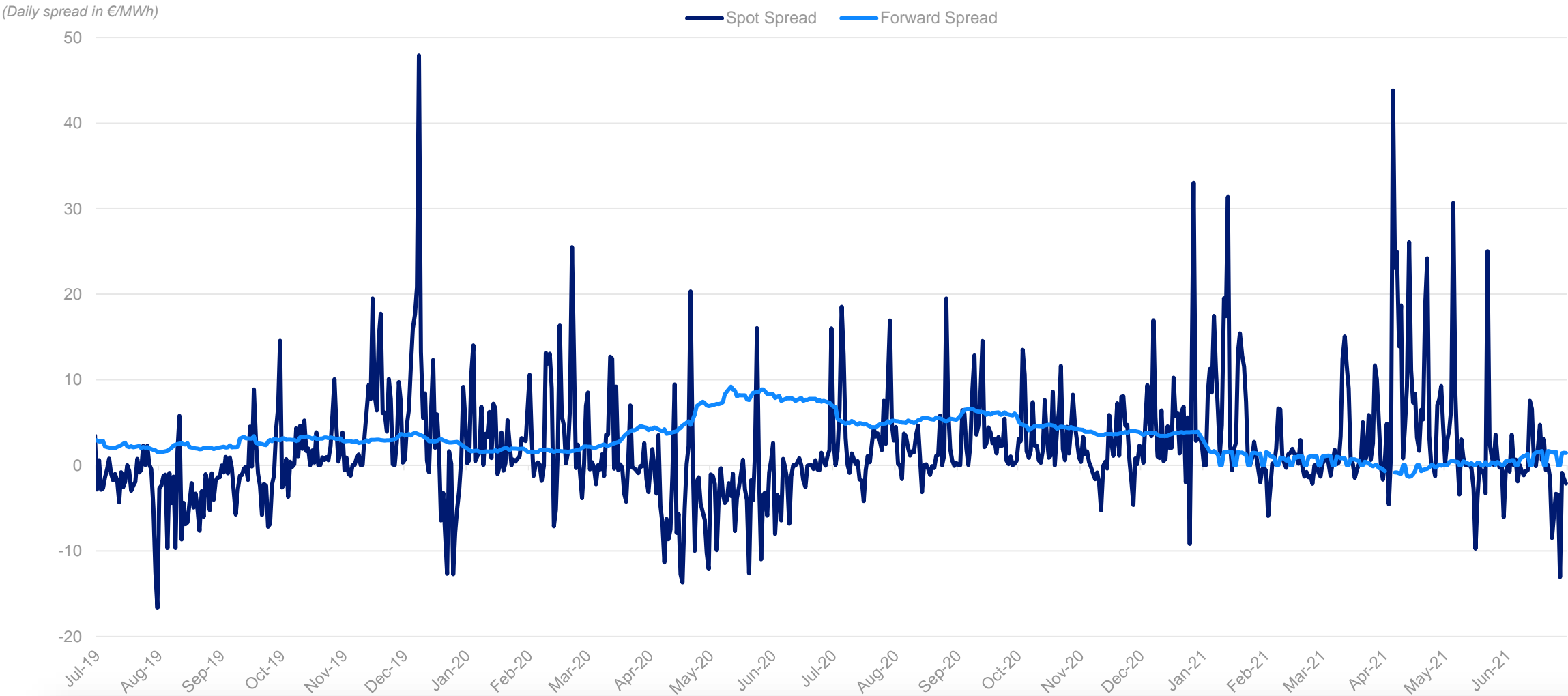


# FORWARD ELECTRICITY PRICES IN FRANCE, THE UK AND ITALY (Y+2) FROM 01/07/2019 TO 30/06/2021





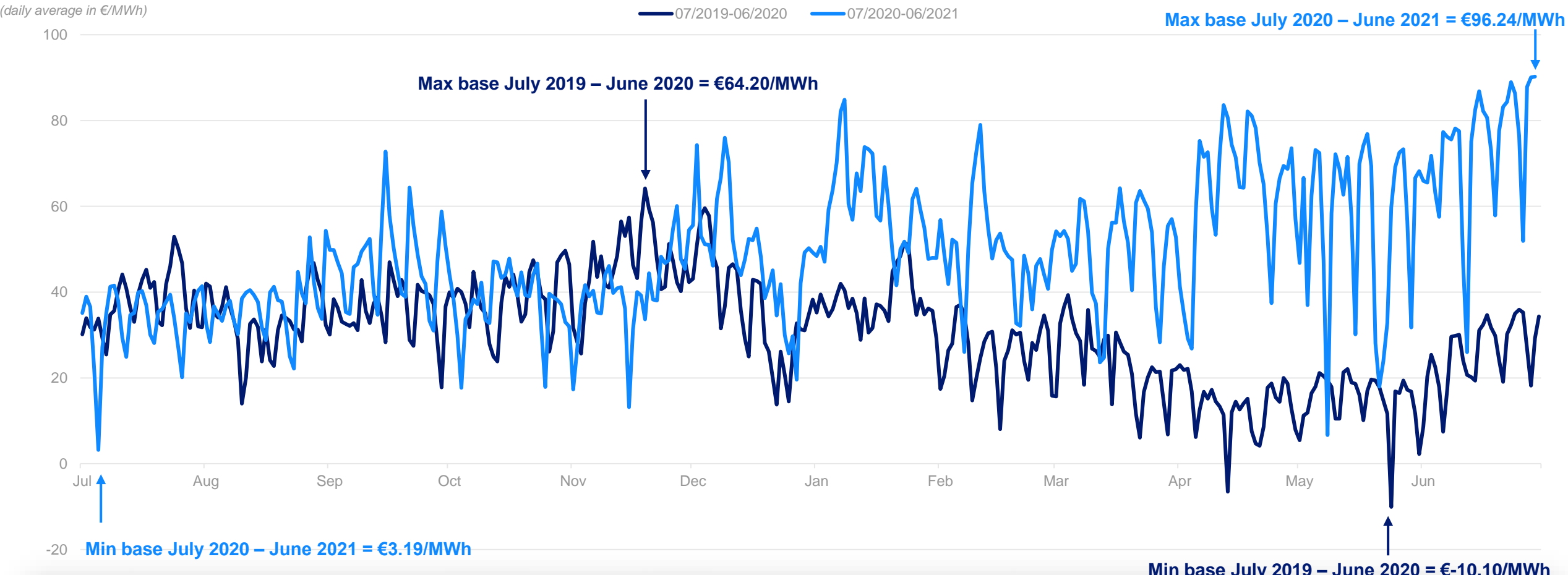
# FRANCE/GERMANY SPREAD FROM 01/07/2019 TO 30/06/2021



Note: Over the period, the France/Germany spread reached its minimum on 31 July 2019 at €-16.67/MWh, and its maximum on 8 December 2019 at €47.92/MWh



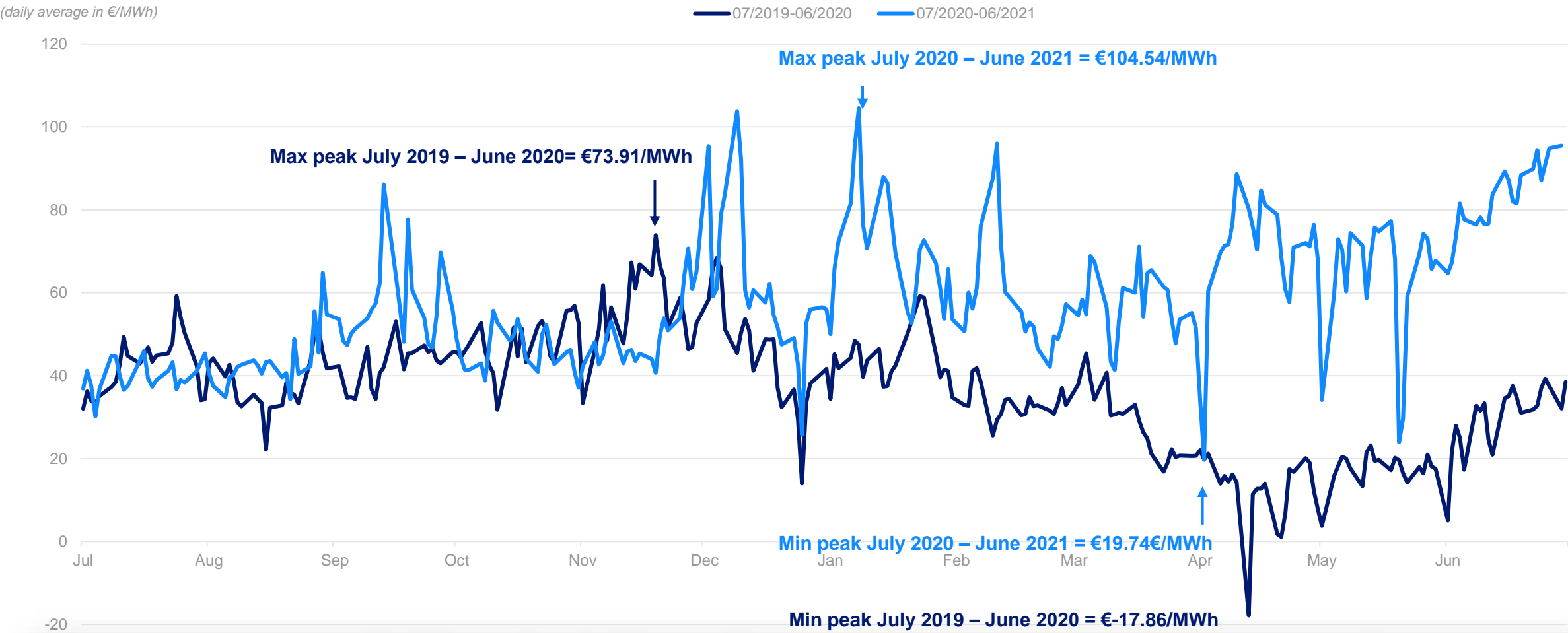
# FRANCE: BASELOAD ELECTRICITY SPOT PRICES



Baseload electricity spot prices came out at an average €58.5/MWh in H1 2021 (+€34.8/MWh vs. H1 2020). The spot price spread relative to 2020 was greater in the second quarter (+€45.9/MWh on average) than in the first quarter (+€23.6/MWh on average). This resulted from three factors: a strong rise in commodities prices (gas, coal and CO<sub>2</sub> for the entire period), increased demand (+17.6TWh vs. H1 2020) owing to less restrictive health measures in Q2 2021 than in 2020, an average 1.6°C decrease in temperatures vs. H1 2020, and a 1.4TWh decline in wind power generation, offset by an increase in the use of fossil-fuel resources (+2.6TWh).



# FRANCE: PEAKLOAD ELECTRICITY SPOT PRICES



Peakload electricity spot prices averaged €67.1/MWh in H1 2021 (+€39.1/MWh vs. H1 2020). As with baseload prices, the increase can be attributed to the rise in commodities prices and demand, and to the decline in renewable generation over the period (except for a slight increase in solar generation). This sharp increase can be attributed to low peakload prices in H1 2020 owing to the lockdown and lower temperatures in H1 2021 than in H1 2020.



# COAL PRICES (Y+1) FROM 01/07/2019 TO 30/06/2021



**Coal prices** for next-year delivery in Europe stood at an average US\$73.8/t in the first half of 2021 (+30.4% or +17.2\$/t compared to the first half of 2020), continuing the upward movement begun in 2020. A large number of weather events and incidents at generation sites since the start of the year (in Colombia, South Africa, Russia and Australia) resulted in a downturn in exports lasting several weeks, and thus a lower supply. Also, China’s economic recovery, a cold winter and particularly low stocks in China prompted market tensions in Asia. The increase in coal prices in Asia had a knock-on effect on the European markets, which also experienced some waves of cold weather and a post-Covid economic recovery.



# BRENT PRICES <sup>(1)</sup> FROM 01/07/2019 TO 30/06/2021

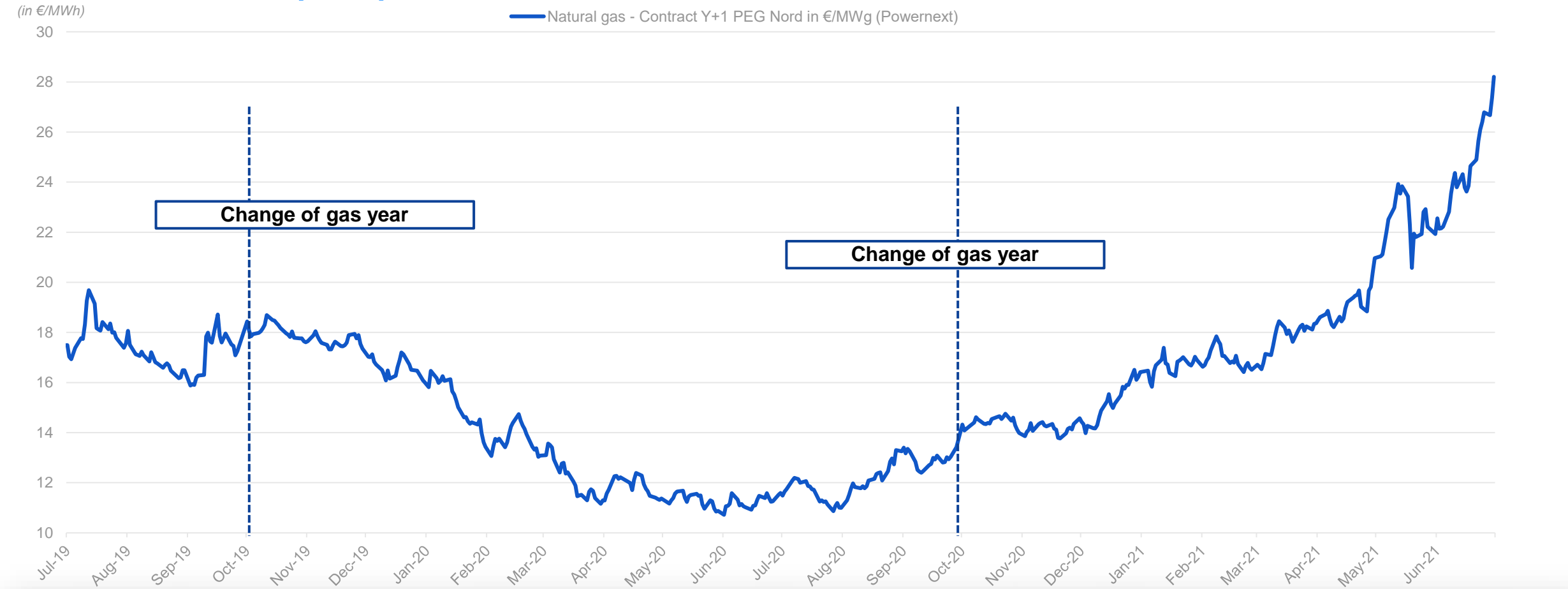


Oil prices stood at an average US\$65.2/bbl for the first half of 2021 (+54.9% or +US\$23.1/bbl compared to the same period of 2020). The price per barrel was generally higher year-on-year over the whole period, sustained by the agreements reached between OPEP+ members for a gradual adjustment of supply, in anticipation of an economic recovery in the various consumer countries. The introduction of the American Rescue Plan in the United States at the start of the year, and the acceleration of vaccination programmes throughout the world, also contributed to oil price increases.

(1) Brent spot price (M+1)



# GAS PRICES<sup>(1)</sup> (Y+1) FROM 01/07/2019 TO 30/06/2021



The **annual gas contract price** for next-year delivery in the PEG Nord zone was an average €19.6/MWh in the first half of 2021 (+55.9% or +€7.0/MWh compared to the first half of 2020). Forward gas prices began the year with a rise, in an economic environment that was optimistic about the end of Covid infections in Asia. Below-normal temperatures in February helped to keep up supply-demand tension on the European market. In March, more below-normal temperatures were forecast and the Suez Canal was blocked for several days, and these factors continued the pressure on prices. In the second quarter, prices marked an upturn driven by the worldwide business recovery and the low level of gas stocks in Europe, which stoked fears for the coming winter. In addition, uncertainties over gas supplies from Russia via the Ukraine or via NordStream 2 continued to cause tension on the European gas market, and competition between European and Asian markets to attract LNG cargo ships intensified due to a hot summer in Asia.



# CO<sub>2</sub> MARKET

The price of CO<sub>2</sub> allowances (EUA <sup>(1)</sup>) in the European Union Emissions Trading Scheme (EU ETS) rose sharply in 2018, from €7 to €25/tCO<sub>2</sub>, in connection with the implementation of the Market Stability Reserve, which planned the gradual absorption of the market surplus

In 2019, the price of the CO<sub>2</sub> quota fluctuated between €18 and €30/t, following the plans to close German coal-fired power plants and on developments at Brexit, which could have relaxed or tightened the market's supply-demand balance, depending on its outcome

In 2020, the price of the quota has confirmed its volatility. It fell to €15/t in March when all markets fell but went above €30/t several times during the year in response to positive ecological political signals. It ended the year on a strong increase, fueled in particular by the European Commission vote on a CO<sub>2</sub> emissions reduction target of 55% by 2030

The quota prices has confirmed its upwards trend since the start of 2021, resulting from three key factors: the EU's ambitious emissions reduction targets, the growing presence of speculators on the carbon market and increases in the gas and coal prices

The price of electricity – set at the level of the marginal cost of generation – is therefore sensitive to variations in the price of CO<sub>2</sub> that influence the cost of generating electricity from gas and coal

Sensitivity of the wholesale price of electricity in France to the price of CO<sub>2</sub>, currently in the order of €0.5/MWh for €1/tonne of CO<sub>2</sub>

(1) EUA : EU allowance



The price of CO<sub>2</sub> emission quotas for delivery in December Y+1 stood at an average €44.3/t for the first half of 2021 (+98.4% or +€22.0/t vs first semester 2020). This price remained very volatile and has followed a robust upward trend since the beginning of the year.

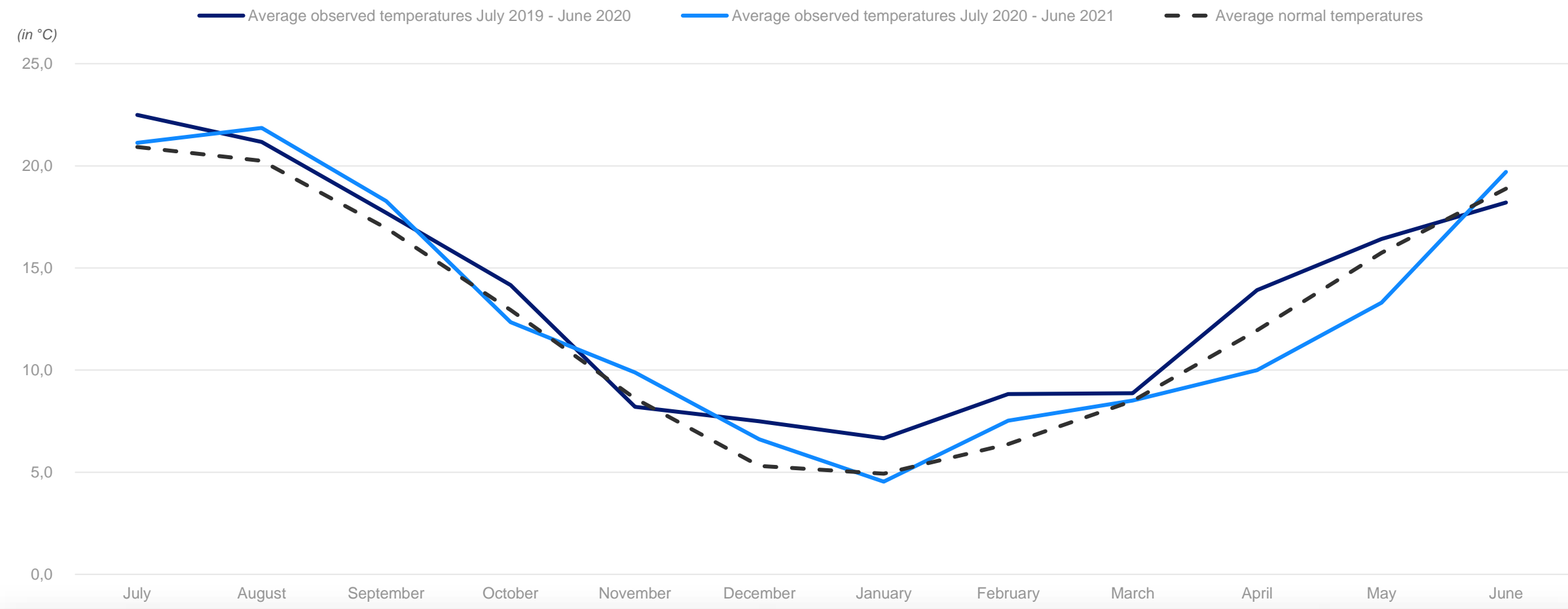
The political environment was favourable for CO<sub>2</sub> emission quota prices at the start of 2021: it was announced in January that the United States would re-join the Paris Agreement, and that allocation of the free quotas normally distributed in February would be delayed. Quota prices also benefited from a favourable market environment from February onwards as more speculative investors arrived on the market.

In April, temperatures were lower than normal and greater use of fossil-fired power plants was necessary.

Finally, following publication of the European Commission's new **"Fit for 55" climate package** in mid-July, the European legislators are due to examine proposals to cut European Union greenhouse gas emissions by 55% compared to 1990 levels (instead of 40% as previously) by 2030. In the proposed reform of the EU carbon market, free quotas and the volumes of quotas in circulation would be drastically reduced, and this could reinforce rises in CO<sub>2</sub> emission quota prices in the future.



# AVERAGE MONTHLY TEMPERATURES <sup>(1)</sup> IN FRANCE

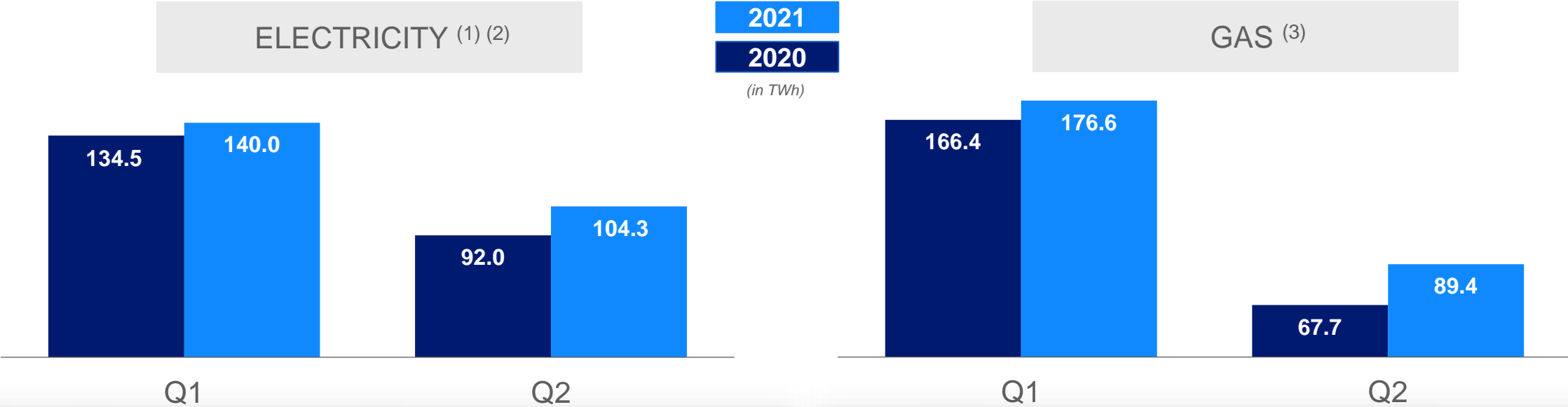


The first half of 2021 saw sharp contrasts in temperatures in France: there was a wave of cold weather in early January and during February, one of the coldest months of May in the last 25 years, and springlike weather in several days of the winter season (late January, late February and late March). The average temperature for the whole six months was 0.5° below normal and 1.6° below the average temperature for the same period of 2020. The first half of 2021 was thus markedly cooler than the first half of 2020, with monthly temperature differentials of more than -3°C in April and May.

Source: Météo France  
(1) Data based on a basket of 32 cities



# FRANCE: ELECTRICITY AND GAS OUTPUT



**Electricity consumption** in France increased by 17.7TWh compared to the first half of 2020. This increase was mainly due to the relatively cooler weather (the average temperature for the half-year was 1.6° lower in 2021 than 2020), which made an estimated contribution of almost 14TWh.

A smaller but also positive relative contribution, estimated at around 5TWh, was made by the restrictions on activity introduced by the government to contain the Covid pandemic. Although they affected all months of the period, the restrictions in 2021 were not as strict as in 2020 (when they came into force from 17 March).

Other factors such as the additional day in February 2020 also affected consumption (whether upwards or downwards), but their influence was minor.

**Gas consumption** in France for the first half of the year rose by 31.9TWh compared to the first half of 2020. This rise was mainly driven by an increase in demand caused by temperatures that were lower than in 2020, and by less strict government restrictions. Periods of cold weather (in mid-February and the first fortnight of April) led to peaks in household consumption, and meanwhile gas consumption by industrial sites registered an average increase as restrictions were relaxed. Finally, the gas requirements for CCG plants were higher overall, especially during episodes of cold weather to meet higher demand for electric heating.

(1) Data unadjusted from weather effect and 29 February, including Corsica

(2) Source 2020-2021: RTE monthly overview – June 2021 : ETR + Corsica consumption

(3) Source: energy monthly data, Service des données et études statistiques, Ministère de la Transition Écologique et Solidaire  
December 2020: GRT gaz and TERECA (ex: TIGF)





# 2021 HALF-YEAR RESULTS

Appendices