2017 FACTS & FIGURES
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Detailed information regarding these uncertainties and potential risks are available in the reference document (Document de référence) of EDF filed with the Autorité des marchés financiers on 15 March 2018, which is available on the AMF’s website at www.amf-france.org and on EDF’s website at www.edf.com.

EDF does not undertake nor does it have any obligation to update forward-looking information contained in this presentation to reflect any unexpected events or circumstances arising after the date of this presentation.
B E F O R E S T A R T I N G…

W H A T ’ S N E W ?

- A focus on Group projects’ implementation in the framework of the strategic plan CAP 2030
- A zoom on the share capital increase
- And a detailed overview of some Group’s subsidiaries: ÉS, Dalkia, Citelum

R e a d i n g  s u g g e s t i o n s

- To help you understand the terms used, you will find a glossary at the end of the document
- Moreover, you will find throughout the document some "Did you know?" take away boxes, which enlighten a specific content
- Many other information are available in our Reference Document, which you can download under:

N a v i g a t i o n  s u g g e s t i o n s

- To help you navigate through this document, hypertext links have been incorporated
- Thus, a click on the EDF logo will bring you back to the main table of contents (page 5)
- The name of the chapter can be found at the bottom of each page.
  A click on the name of the chapter will bring you back to the beginning of this part
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EDF GROUP’S NET INSTALLED CAPACITY BY COUNTRY IN 2017

The Group is driving its transformation forward based on an energy mix that combines nuclear and renewable power. In France, it is implementing an industrial strategy of extending the operating life of nuclear power plants beyond 40 years by investing €45 billion in the Grand Carénage programme for the period 2014-2025. Elsewhere, its subsidiary EDF Énergies Nouvelles is developing positions in new markets: South Africa, Brazil, Chile, India and China.

134,896 MWe
- 75,046 MWe
- 32,105 MWe
- 27,745 MWe

Europe 124,248 MWe
- 75,013 MWe
- 26,735 MWe
- 24,495 MWe

Data consolidated according to EDF’s percentage ownership in Group companies, including associates and joint ventures.

Source: Performance 2017

N.B. The values correspond to the first decimal or integer closest to the sum of the precise values, taking into account rounding.

(1) Including small hydropower plants in France and assets in overseas France
(2) Excluding 20MW of energy storage capacity and 70MW of EDF Énergies Nouvelles biogas production capacity

Including nuclear
Fossil-fired and gas
(including cogeneration)
Renewables
(including hydropower)
EDF GROUP’S NET GENERATION BY COUNTRY IN 2017

The Group’s operating performance was marked mainly by a decrease in nuclear output in France, where generation was affected by technical unavailabilities and the extension of outages to conduct maintenance work on several reactors. In the UK, although nuclear output was slightly down, the result confirmed good performance following a record high level in 2016. In hydropower, unfavorable hydrological conditions led to a reduction in output.

- **Europe 567,048 GWh**:
  - France (1) 444,351 GWh
  - United Kingdom 76,553 GWh
  - Spain 289 GWh
  - Portugal 422 GWh
  - Greece 518 GWh
  - Germany 939 GWh
  - Switzerland 4,426 GWh

- **Africa 351 GWh**

- **Americas 34,159 GWh**
  - United States 25,390 GWh
  - Mexico 527 GWh

- **Asia 14,014 GWh**
  - China 9,165 GWh

- **South Africa 325 GWh**

(1) Including small hydropower plants in France and assets in overseas France
(2) Capacity of the power plants owned by subsidiaries EDF Polska, Kogeneracja and Zielona Gora sold on 13/11/2017. The capacity of these plants is adjusted to zero, but the power generated is included on a pro rata basis for the period they remained under EDF ownership
(3) Data consolidated according to EDF’s percentage ownership in Group companies, including associates and joint ventures.

N.B. The values correspond to the first decimal or integer closest to the sum of the precise values, taking into account rounding.

Source: Performance 2017

Excluding EDF Énergies Nouvelles biogas production

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7
EDF GROUP 2017 KEY FIGURES

Operational figures as of end 2017

- ~ 35.1 million customer accounts worldwide
- 129.3GWe\(^1\) worldwide installed capacity, of which
  - 73.0GW nuclear
  - 25.4GW thermal
  - 30.9GW hydro and other renewable energies
- 580.8TWh generated worldwide\(^2\), of which
  - ~77% nuclear
  - ~10% hydro\(^3\) and other renewable energies
  - ~8% gas
  - ~5% thermal excluding gas
- ~152,000 employees, of which ~38,900 in French distribution, ~40,300 in French generation and engineering and ~14,000 at EDF Energy

Financials (as of end 2017)

- Sales: €69.6bn
- EBITDA: €13.7bn
- Net income excluding non-recurring items\(^4\): €2.8bn
- Net financial debt: €33.0bn
- Ratings: A- negative (S&P) / A3 stable (Moody’s) / A- stable (Fitch)

Extra-financial ratings

- Robeco Sam: overall score of 84/100
- FTSE4Good: score of 4.6/5 in 2016 (vs 4.5/5 in 2015)
- Carbon Disclosure Project: Leadership level, A- (vs A in 2016)
- Sustainalytics: score of 82/100 (vs 78 previously), Leader of Utilities sector

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\(^1\) Consolidated capacities of EDF group
\(^2\) Output from fully consolidated entities
\(^3\) Hydro output after deductions of pumped volumes is 39.8TWh in 2016 and 33.8TWh in 2017
\(^4\) Net income excluding non-recurring items is not defined by IFRS, and is not directly visible in the consolidated income statement. It corresponds to the Group net income excluding non-recurring items and net changes in fair value on Energy and Commodity derivatives, excluding trading activities, net of tax
GROUP INDUSTRIAL PLAN: CAP 2030

CAP 2030

3 priorities

CUSTOMER FOCUS
To create new, competitive decentralised solutions, new personalised energy services and smart grids

LOW-CARBON GENERATION
To rebalance the energy generation mix by accelerating the development of renewable energy and guaranteeing the safety and performance of existing and new-build nuclear facilities

INTERNATIONAL DEVELOPMENT
To expand into new geographical areas by developing our low-carbon solutions in growth countries while bolstering our positions in Europe

1 transformation programme

ACCOUNTABILITY PERFORMANCE

SIMPLIFICATION

DIGITAL INNOVATION

Driven by human ambition

EDF, an efficient and responsible electricity company that champions low-carbon growth
CAP 2030: AMBITIOUS OBJECTIVES ON 3 STRATEGIC AXES

<table>
<thead>
<tr>
<th>CUSTOMER PROXIMITY</th>
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<tbody>
<tr>
<td>Create new, competitive decentralised solutions, new personalised energy services and smart grids</td>
</tr>
<tr>
<td>- Deploy new digital services for retail customers</td>
</tr>
<tr>
<td>- Support the development of new uses of electricity (electric vehicles, buildings, etc.)</td>
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<tr>
<td>- Accelerate R&amp;D on storage, photovoltaics, electric mobility and new networks</td>
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</tbody>
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<table>
<thead>
<tr>
<th>LOW-CARBON GENERATION</th>
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<tbody>
<tr>
<td>Achieve a new balance for the generation mix by accelerating the development of renewables and guaranteeing the safety and performance of existing and new-build nuclear facilities</td>
</tr>
<tr>
<td>- Double the installed capacity of the Group’s renewable energy and hydropower fleet: from 28GW in 2014 to 50GW in 2030</td>
</tr>
<tr>
<td>- Develop 30GW of photovoltaic solar in France between 2020 and 2035</td>
</tr>
<tr>
<td>- Extend the lifespan of the existing French nuclear fleet beyond 40 years</td>
</tr>
<tr>
<td>- Extend lifespan of the existing British nuclear fleet(1)</td>
</tr>
<tr>
<td>- Commission up to 10 EPRs by 2030(2) in France, the United Kingdom and internationally</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERNATIONAL DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanding into new geographical areas by developing our low-carbon solutions in growth countries while bolstering our positions in Europe</td>
</tr>
<tr>
<td>- Triple the Group’s international activities by 2030</td>
</tr>
<tr>
<td>- Become the benchmark in 3 to 5 emerging markets, and ensure a significant presence in a dozen countries to support their energy transition</td>
</tr>
<tr>
<td>- Develop energy services activities and engineering services internationally</td>
</tr>
</tbody>
</table>

(1) Since the acquisition of British Energy by EDF, the operating life of the RAG plants has been extended by 8 years on average. For more information, see p. 80
(2) Partially financed by the Group
THE SOLAR POWER PLAN(1): ACCELERATION OF THE SOLAR MARKET IN FRANCE TO ACHIEVE CLIMATE PLAN GOALS

Solar photovoltaic power: internationally recognised expertise

EDF will draw on its industrial and financial capabilities to accelerate the development of photovoltaic solar power in France:

- 30GW of solar capacity in France between 2020 and 2035
- €25bn of investment needs, financed principally by partnerships
- Development of a robust and competitive solar market

EDF is France’s top-ranked renewable energy producer, with more than 20GW of hydro, wind and PV capacity
Leader in distributed solar energy in France, with over 20,000 installations completed
Commercial success of self-consumption offering

More than 1.7Gp installed around the world
More than 1GWP currently under construction

Toul-Rosières (France, 115MWP)

Annual growth rate

~ 1.5GW
2020 - 2025

~ 2GW
2026 - 2030

~ 2.5GW
2031 - 2035

(1) For more information about the Solar Power Plan, please see the heading "Renewables", p. 108
SELF-CONSUMPTION BY EDF ENR: SUPPORTING CUSTOMERS IN GREEN ENERGY CONSUMPTION

An innovation supporting the energy transition

Residential customers

more than 18,500 installations with residential customers

Business customers

more than 3,000 installations with businesses and local authorities

Co-owners, social-housing providers

Partnerships with many constructors

Launch of the "Notre soleil et nous" offer in 2017

Mon Soleil & Moi® for residential customers

- Soleilenligne®: the dedicated website
- Offer consisting of tailor-made solutions (on roofs, in gardens, on terraces and do-it-yourself kits)
- Self-consumption with batteries offer
- 7,000 sales since the launch of the offer

Did you know?

In 2017, more than 11,000 photovoltaic self-consumption facilities were connected by Enedis, representing close to 60% of the year's connections for small producers.
THE STORAGE PLAN: A TARGET TO BECOME THE LEADER OF THE EUROPEAN SECTOR BY 2035

Storage has a critical role to play in the energy transition, alongside energy efficiency, nuclear and renewables. As a pioneer in this area, the Group is already involved in the main storage technology applications, including batteries and Pumped-Storage Hydroelectricity.

EDF’s goal is to develop **10GW of additional storage** around the world by 2035, **on top of the 5GW already operated by the Group**

Representing an **investment** of **€8 billion**\(^{(1)}\) during the 2018-2035 period

EDF’s ambitions are focused on **all electricity storage markets**

- **To help ensure the smooth running of a balanced electricity system**
- **For residential customers, businesses and local communities**
- **To facilitate access to electricity in developing countries**

**Increasing its R&D and its innovation capacity**

- **Investment in research into storage** for the power system of **€70m** for the 2018-2020 period
- **€15m**, a third of EDF Nouveaux Business’ investment in the next two years, allocated to projects and start-ups linked to electricity storage and flexibility

**New projects delivered within the next 12 months**\(^{(2)}\)

- The launch of **at least three battery projects** to improve the performance and balance of the power system
- The extension of the services offering for access to electricity via solar panels and batteries to Ghana, after the success enjoyed in Côte d’Ivoire (15,000 installations so far)

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\(^{(1)}\) Through equity investments and partnerships

\(^{(2)}\) Please refer to the press release published by EDF on 27 March 2018
EDF NOUVEAUX BUSINESS: EDF GROUP’S START-UP INCUBATOR

Build the EDF Group of tomorrow with today’s employees

Taking action: from concepts to business model

Create growth drivers for the EDF group

New offers and new innovative and competitive services for customers

€40m to invest into 10 STARTUPS AND PROJECTS in 2 years

Build internal-external ecosystems in strategic areas

SUSTAINABLE MANAGEMENT OF THE REGIONS

PERFORMANCE OF PRODUCTION TOOLS

DECENTRALISED ENERGY SYSTEMS

INHABITANT SERVICES

Work like a start-up at the service of start-ups

- Identifying and supporting entrepreneurs
- Incubating internal and external projects
- Calls for projects in all business activities
- Equity investments in start-ups and/or joint ventures
- Investment via capital risk funds:
  - Electranova (1 then 2)
  - Other funds (including McRock, Paris Saclay, Robolution, Supernova, etc.)

Several investments already made by end-2017

perfesco
agregio
store & forecast
NEOT?
CAPITAL
metroscope
zinium
Hoppy
EDF’s R&D supports the departments and subsidiaries of the EDF group on a daily basis with 2 missions:

- Improve performance in all activities today
- Prepare for the future by working on breakthrough technologies

R&D also conducts research for clients outside the EDF group through partnerships or orders.

EDF’s R&D covers all the business areas and activities in the energy sector. In coherence with the Cap 2030 project, it has oriented its research around 4 broad themes:

Customers and regions
- Develop and test new energy services

Competitiveness of energy systems in France and abroad
- Prepare the electricity grids and networks of tomorrow

Nuclear and renewable energies
- Consolidate and develop competitive and low-carbon generation mixes

Partnerships
- Support the development of the Group internationally by developing research partnerships

EDF’s R&D in 2017

- 1,940 employees in France
- 121 PhD students
- 160 teacher-researchers
- 9 research centres:
  - 3 in France and 6 internationally (Germany, United Kingdom, China, United States, Singapore and Italy)
- 14 joint laboratories with partners
- more than 300 partnerships worldwide (universities, research institutes, academic partners)
- 604 patented innovations protected by 1,855 property titles in France and abroad
- €546 million budget in 2017
R&D mobilises its energy experts for the benefit of the EDF group entities and subsidiaries, as well as external customers. It relies on more than 70 platforms for testing, measurement and simulation, among the most modern and effective in the world, in all areas of the energy sector.

R&D also provides its customers with expertise in large-scale digital simulation software and supercomputers. EDF’s R&D has a computing capacity of 1,800 tflops, making it one of the largest players in this field.

R&D also shares its knowledge and expertise through training courses taught by EDF researchers within ITECH.

3 research priorities
- The electricity transition
- The climate transition
- The digital and societal transition

EDF has decided to create its largest R&D centre in the heart of Paris-Saclay, which will ultimately bring together 20% of research in France.
R&D INNOVATES TO PREPARE FOR THE FUTURE

R&D Inside: contributing to some of EDF Group’s major achievements

- **OFFSHORE WIND POWER**
  Study of foundations, flotation solutions, interconnections and site selection

- **SOWEE CONNECTED STATION**
  Development of algorithms

- **STORAGE**
  Battery frequency adjustment

- **INTELLIGENT CHARGING**
  of electric vehicles

- **VVPRO PREPRA**
  Using virtual reality to help plan work in a nuclear power plant

- **EDF CITY PLATFORM**
  Support tool for decision-making in urban planning

**Did you know?**

Since 2011, the **Innovation Hub** team has identified 6,000 start-ups in the energy field in France and abroad, and offers the Group’s businesses and subsidiaries around 50 demos a year.
EDF SINCE 1946

Nationalisation of the electricity and gas sectors
Creation of EDF as an EPIC by the Law of 8 April 1946

Start of the international development, first in South America, then in Europe with the UK (from 1998 onwards), Germany (2001) and Italy (2005)

Development of the French industrial base, including hydro and nuclear facilities

Launch of the commercial-scale nuclear program

Development in France

On 20 November 2004, EDF becomes a French SA


Structural changes in the EDF group

IPO in 2005 and creation of RTE to guarantee non-discriminatory access to the market

March 2017: indirect sale of 49.9% of RTE to Caisse des Dépôts and CNP Assurances

March 2017: around €4bn of share capital increase

March 2014: acquisition by EDF of Dalkia's activities in France

Disposal of participations in Be ZRT (Hungary) and Estag (Austria)

December 2017: Acquisition of 75.5% of Framatome capital (ex-New NP, entirely owned by Areva NP)

January 2017: Sale of Démász subsidiary activities (Hungary)

November 2017: disposal of EDF Polska’s assets

April 2014: delegation to Exelon of the operational management of the nuclear reactors owned by CENG

Signature of final contracts for Hinkley point C EPR construction project in UK

April 2014: buy-out of EDF Énergies Nouvelles

Disposal of EnBW and of the UK networks

Edison’s takeover

2014

March 2014: acquisition by EDF of Dalkia’s activities in France

2015

Disposal of participation in Be ZRT (Hungary) and Estag (Austria)

2016

March 2017: around €4bn of share capital increase

2017

March 2017: indirect sale of 49.9% of RTE to Caisse des Dépôts and CNP Assurances

1946

1963

1990

1999

2004

2005

2009

2010

2011

2012

2014

2015

2016

2017

(1) Please refer to the press release published by EDF on 31 March 2017
(2) For more information see p. 23
(3) Please refer to the press release published by EDF on 2 January 2018
(4) Please refer to the press release published by EDF on 14 November 2017

EDF GROUP
## COMPOSITION OF THE BOARD OF DIRECTORS AND OF ITS COMMITTEES AS OF 15/03/2018

### Audit Committee
- Chaired by a director appointed by the General Shareholder’s Meeting
- 3 other directors appointed by the General Shareholders’ Meeting
- 4 directors elected by the employees

### Nuclear Commitments Monitoring Committee
- Chaired by an independent director appointed by the General Shareholders’ Meeting
- 3 other directors appointed by the General Shareholders’ Meeting
- 2 directors elected by the employees

### Appointment & Remuneration Committee
- Chaired by an independent director appointed by the General Shareholders’ Meeting
- 1 other independent director appointed by the General Shareholders’ Meeting
- 1 Representative of the French State
- 1 director elected by the employees

### Board of Directors
- 11 directors appointed by the General Shareholders’ Meeting
  ✓ 5 on recommendation from the French State
  ✓ 6 independent directors
  ✓ 6 directors elected by the employees
  ✓ 1 Representative of the French State

### Governance and Corporate Social Responsibility Committee
- Chaired by an independent director appointed by the General Shareholders’ Meeting
- 2 other directors appointed by the General Shareholders’ Meeting
- 3 directors elected by the employees

### Strategy Committee
- Chaired by the Chairman and Chief Executive Officer
- 3 other directors appointed by the General Shareholders’ Meeting
- 1 Representative of the French State
- 4 directors elected by the employees

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1. These members meet the criteria of both expertise (article L.823-19 of the French Commercial Code) and independence (code AFEP-MEDEF)
2. During its meeting of 24 January 2018, the Board of Directors changed the name of the Ethics Committee to the Governance and Corporate Social Responsibility Committee and extended the scope of its responsibilities
3. This member meets the criteria of independence (code AFEP-MEDEF)
# BOARD OF DIRECTORS MEMBERS AS OF 15/03/2018

<table>
<thead>
<tr>
<th>Directors appointed or reappointed at the General Shareholders’ Meeting of 21 November 2014</th>
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<tbody>
<tr>
<td>• Jean-Bernard LÉVY</td>
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<tr>
<td>• Philippe CROUZET</td>
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<tr>
<td>• Bruno LAFONT</td>
</tr>
<tr>
<td>• Colette LEWINER</td>
</tr>
<tr>
<td>• Laurence PARISOT</td>
</tr>
<tr>
<td>• Claire PEDINI(1)</td>
</tr>
<tr>
<td>• Olivier APPERT, appointed on recommendation of the French State</td>
</tr>
<tr>
<td>• Maurice GOURDAULT-MONTAGNE(2), appointed on recommendation of the French State</td>
</tr>
<tr>
<td>• Bruno LÉCHEVIN, appointed on recommendation of the French State</td>
</tr>
<tr>
<td>• Marie-Christine LEPETIT, appointed on recommendation of the French State</td>
</tr>
<tr>
<td>• Michèle ROUSSEAU(3), appointed on recommendation of the French State</td>
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<table>
<thead>
<tr>
<th>Director representing the French State</th>
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<tbody>
<tr>
<td>• Martin VIAL</td>
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<table>
<thead>
<tr>
<th>Directors elected by the employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Christine CHABAUTY</td>
</tr>
<tr>
<td>• Jacky CHORIN</td>
</tr>
<tr>
<td>• Marie-Hélène MEYLING</td>
</tr>
<tr>
<td>• Jean-Paul RIGNAC</td>
</tr>
<tr>
<td>• Christian TAXIL</td>
</tr>
<tr>
<td>• Maxime VILLOTA</td>
</tr>
</tbody>
</table>

(1) Appointed as director with decision taking effect at the end of the General Shareholders’ Meeting of 12 May 2016

(2) Co-optation by the Board of Directors on 20 September 2017. This co-optation will be submitted to the approval of the General Shareholders’ meeting of 15 May 2018

(3) Appointed on a provisional basis by the Board of Directors of 30 September 2016. Ratification of the appointment at the General Shareholders’ Meeting of 18 May 2017
EDF GROUP EXECUTIVE COMMITTEE

1. Jean-Bernard LÉVY Chairman and CEO
2. Marc BENAYOUN Group Senior Executive Vice President in charge of Gas and Italy
3. Bruno BENSASSON Group Senior Executive Vice President in charge of Renewable Energies
(1)
4. Christophe CARVAL Group Senior Executive Vice President in charge of Human Resources
5. Xavier GIRRE Group Senior Executive Vice President in charge of Finance
6. Véronique LACOUR Group Senior Executive Vice President in charge of Transformation and Operational Effectiveness
7. Henri LAFONTAINE Group Senior Executive Vice President in charge of Customers, Services and Regional Action
8. Marianne LAIGNEAU Group Senior Executive Vice President in charge of International Division
9. Cédric LEWANDOWSKI Group Senior Executive Vice President in charge of Innovation, Strategy and Planning
10. Dominique MINIÈRE Group Senior Executive Vice President in charge of Nuclear and Thermal Power Plants Division
11. Simone ROSSI Group Senior Executive, Vice President, Chief Executive Officer of EDF Energy
12. Pierre TODOROV Group Senior Executive Vice President, Group General Secretary
13. Xavier URSAT Group Senior Executive Vice President in charge of New Nuclear Projects and Engineering
14. Alexandre PERRA, Executive coordinator to the Chairman and Chied Executive Officer, Government Relations

(1) Appointment to the Executive Committee effective since 16 April 2018. For more information, please refer to the press release of 30 March 2018.
EDF: SHAREHOLDING STRUCTURE AS OF 31/12/2017

By law, the French State must hold at least 70% of EDF’s share capital.

Institutional and retail investors: 15.18%
EDF employees: 1.2%
Treasure shares: 0.12%
French State: 83.5%

EDF employees

<table>
<thead>
<tr>
<th>Shares</th>
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<tbody>
<tr>
<td>Number of shares</td>
<td>2,927,438,804</td>
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<tr>
<td>Number of shares outstanding</td>
<td>2,924,008,788</td>
</tr>
<tr>
<td>Number of treasure shares</td>
<td>3,430,016</td>
</tr>
<tr>
<td>French security identification no. (ISIN code)</td>
<td>FR0010242511</td>
</tr>
<tr>
<td>Main index</td>
<td>CAC Next 20, Euro Stoxx Utilities, Stoxx Europe 600 Utilities, Euronext 100</td>
</tr>
<tr>
<td>Listing</td>
<td>Paris (Euronext Paris)</td>
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</tbody>
</table>

Pursuant to article L 225-123 of the French Commercial Code, as amended by the Act n°2014-384 of 29/03/2014, the so-called “Loi Florange”, all fully-paid shares that have been held in registered form for at least 2 years in the name of the same shareholder will automatically entitle their holder to double voting right. These provisions have taken effect on 3 April 2016. As of 31 December 2017, the French State holds 83.50% of EDF’s share capital and 83.60% of EDF’s voting rights.

(1) On 15 January 2018, the French State entered into a share allotment agreement with Bpifrance, an industrial and commercial undertaking (EPIC), whereby it allotted 389,349,361 EDF shares to the latter, or 13.3% of the capital and 8.46% of the voting rights. They will act together and have to consult each other before every Shareholders’ Meeting of EDF. Bpifrance undertook not to transfer, pledge or otherwise dispose of the shares.
EDF: SHARE CAPITAL INCREASE OF MARCH 2017

**Key figures**

- On 30 March 2017, EDF undertook a cash capital increase with preferential subscription rights for existing shareholders
- The total gross amount of the increase (including the issue premium) was €4,017,905,375.40 and 632,741,004 new shares were issued at the unit issue price of €6.35. This total amount comprises:
  - €316m increase in the share capital
  - €3,702m gross increase in the issue premium
- Issue expenses (net of taxes) are charged to the issue premium
- Following the subscription period, which ended on 21 March 2017, total subscription orders amounted to approximately €4.9bn, representing a subscription rate of 121.8%
- The total market demand (excluding the French State) amounted at approximately €1.9bn, representing 186% of available amount for the investors (approximately €1bn)

**Objective of the operation**

- The proceeds of the capital increase will be used mainly to finance the Group’s development operations between 2017 and 2020, in accordance with CAP 2030 strategy, as well as to strengthen the Group’s financial flexibility

**French State Subscription**

- In accordance with its commitment, the French State subscribed for an amount of €3bn or approximately 75% of the capital increase, and after this operation held 83.10% of EDF’s share capital
EDF: A LISTED COMPANY WITH THE FRENCH STATE AS MAJOR SHAREHOLDER

EDF as a state-owned company: legal and contractual framework

- EDF’s chairman and CEO is appointed by decree of the President of France on recommendation of the Board of Directors
- In accordance with article 13 of the French Constitution, the chairman and CEO is appointed based on the candidates’ interviews and the opinion of the relevant permanent committees of the French National Assembly and Senate
- Since the Shareholders’ Meeting of November 2014, the Board of Directors can be composed of 3 to 18 members, including members appointed by the Shareholders’ Meeting(1), a State representative(2), and one-third of employees’ representative elected in accordance with the provision of the Act of 26 July 1983
- Any decision related to financials, investments, acquisitions and disposals, or related to the compensation of corporate officers must be approved by the French State (the Decree of 9 August 1953 and the Order of 20 August 2014)
- The company faces numerous financial controls by different authorities: State Inspector, Cour des Comptes (Government Audit Body), Finance Inspection
- The French State Shareholdings Agency (APE) represents the State as a shareholder
- The main contracts are reviewed by the EDF Markets Committee, whose role is to ensure the regularity of the conditions for the award of major contracts. This responsibility was abolished by the decree of 4 May 2017 repealing the decree of 18 January 1949, which fixed the list of companies for which market committees would be established

EDF as listed company: corporate governance

- EDF has to abide by listed companies laws and specific standards of a public sector entity
- Internal rules of its Board of Directors are similar to those of other listed companies
- In accordance with the law no. 2011-103 of 27 January 2011 relative to the balanced representation of women and men on Boards of Directors and Supervisory Boards and to professional equality, the Board of Directors of EDF, as of 15/03/2018 has 7 female members, i.e. a proportion of 41.7% women in relation to the members of the Board taken into account to calculate this percentage in accordance with AFEP-MEDEF Code (excluding directors that represent the employees). EDF has achieved in the course of the 2016 fiscal year the proportion of 40% women on the Board of directors, as required by the law in 2017.
- EDF adheres to the consolidated AFEP-MEDEF Code (revised in November 2016) which is the corporate governance code to which the company refers, in accordance with the French commercial code, subject to the specific laws and regulations applicable to EDF:
  - The Governance and Corporate Social Responsibility Committee(3) reports annually on the functioning of the Board of Directors and proposes areas for improvement. Furthermore, every 3 years, this evaluation is conducted by a specialist external consultant under the supervision of the the Governance and Corporate Social Responsibility Committee(3)
  - The Board of Directors has created five dedicated committees to review and prepare certain projects before their submission to the Board of Directors
- EDF is compliant with internal control procedures COSO(4)

---

1. If need be upon recommendation from the State, in accordance with article 6 of the Order of 20 August 2014
2. Appointed by the Minister of Economy amongst State agents, in accordance with article 4 of the Order of 20 August 2014
3. The Governance and Corporate Social Responsibility Committee was known as Ethics Committee until 24 January 2018
4. Committee Of Sponsoring Organizations of the Treadway Commission
EDF’S INTERACTION WITH THE FRENCH STATE SHAREHOLDING AGENCY (APE)

The French State Shareholding Agency (APE) is a national department controlled by the Minister of Economy and Finance. It performs the function of the State shareholder by safeguarding the State’s patrimonial interests and the management of its investments. As such, it proposes and implements the decisions and policies of the French State with the related ministries.

Its main objectives consist of:

- Reviewing the appropriateness and financial health of the company
- Representing the French Government as a shareholder
- Facilitate relationship between the company and the French Government

As a result, the APE has expressed the following requirements to public sector enterprises. They have to:

- Designate points of contact persons for the APE
- Prepare a scorecard reporting for the APE on the main financial and qualitative data
- Organise regular meetings, at least once a year to present the company strategy and financial performance
- Inform the APE of any investment operation, or any specific audit mission
OTHER REGULATORY BODIES WITH AN IMPACT ON EDF’S ACTIVITIES

The French Nuclear Safety Authority (ASN)

The ASN helps monitor nuclear safety and radiation protection and informs the public in these areas. Its activity is focused on several main missions:

- Regulation through the submitting of opinions to the French government on draft decrees and ministerial orders, and by the regulatory decisions of a technical nature that it adopts

- The individual authorisations it grants for the operation of the plants, in particular the authorisations for restarting after the reactor stoppages

- Monitoring of facilities through on-site, scheduled or unannounced regulatory inspections (approximately 400 per year, more than 450 in 2016), including through periodic compliance and safety reviews necessary for the continuation of a plant’s operation

The CRE (French Nuclear Safety Authority)

The CRE ensures the proper functioning of the electricity and gas markets for the end-customers in compliance with the energy policy. The regulation fields include:

- Energy networks
  - Access to regulated networks and their operation and development
  - Independence of network operators

- Energy markets
  - Monitor deals on energy and CO₂ markets
  - Monitor retail markets (for instance, making proposals for regulated tariffs’ evolution)

- Regulated tariffs
  - As per the provisions of the French Energy Code, the CRE henceforth is in charge of proposing the evolutions of all the regulated electricity sale tariffs
OTHER CONTROL PROCEDURES INVOLVING EDF

EDF may be subject to State audit procedures, in particular through economic and financial evaluation assessment and through verifications by the French General Finance Inspectorate (Inspection Générale des Finances).

The company’s accounts and management, and where applicable, those of its directly-held majority subsidiaries are under the control of the Cour des Comptes (National Audit Court). Thus have been published on the Cour des comptes website:

- Report on EDF’s international strategy
- Report on the management of the Électricité de Strasbourg group
- Report on working hours in the Group’s main entities
- Summary proceedings with the Minister for the Ecological and Inclusive Transition and to the Minister of Economy and Finance on the assessment of the implementation of Regulated Access to Historic Nuclear Power (ARENH)

EDF must also undergo the audit procedures performed by the French Parliament.
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<tbody>
<tr>
<td>EDF GROUP</td>
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<tr>
<td>CORPORATE RESPONSIBILITY</td>
<td>28</td>
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<tr>
<td>COUNTRY PROFILE</td>
<td>39</td>
</tr>
<tr>
<td>EDF GROUP MAIN BUSINESSES</td>
<td>51</td>
</tr>
<tr>
<td>FINANCE</td>
<td>168</td>
</tr>
<tr>
<td>MARKET DATA</td>
<td>235</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>253</td>
</tr>
</tbody>
</table>
The materiality analysis identifies the relevant issues that may have an impact on the company’s performance and ranks them according to their potential impact on the company and its environment. The materiality matrix\(^1\) was created on the basis of documentary studies, interviews and workshops conducted with about a hundred people. The external stakeholders included internationally-recognised and qualified individuals, as well as representatives of the Group’s main stakeholders (administrative authorities, public officials, shareholders, banks, customers, partners, subcontractors, suppliers, NGOs). Internally, members of the Executive Committee have been involved in the drafting process, as well as managers from the main departments and subsidiaries of the Group. The matrix was examined in a meeting of the EDF stakeholders panel and the Sustainable Development Board\(^2\), and then validated by the Executive Director of Innovation, Strategy and Planning.

The great majority of these updated issues are the subject of specific attention in the context of the Corporate Social Responsibility Goals and are detailed in the Reference Document.

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\(^1\) In accordance with the definition of the principle of materiality, as it appears in Article 225 of the Grenelle 2 Law, the AA 1000 assurance standard, the GRI G4 guidelines, ISO 26000 standard and the IIRC framework on integrated reporting

\(^2\) This concerns a panel of external EDF stakeholders which contributes to challenging Group issues submitted to it.
SIX AMBITIOUS CORPORATE SOCIAL RESPONSIBILITY GOALS SET THE ROADMAP FOR THE GROUP TO DELIVER CAP 2030

A commitment to change and to working as closely as possible with customers and regions, at the heart of the energy transition and climate issues

- Major and prior commitments, with results reported by the Group\(^{(1)}\) every year

<table>
<thead>
<tr>
<th>Category</th>
<th>Goal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIMATE CHANGE</td>
<td>To go beyond the requirements of the 2°C target set by COP 21, by drastically reducing our CO(_2) emissions</td>
</tr>
<tr>
<td>PERSONNEL DEVELOPMENT</td>
<td>To adopt industrial groups’ best practices in terms of human development: health &amp; safety, gender diversity, and social advancement</td>
</tr>
<tr>
<td>FUEL POVERTY</td>
<td>To offer all vulnerable people information about and support with energy use and energy benefits</td>
</tr>
<tr>
<td>ENERGY EFFICIENCY</td>
<td>To innovate through digital energy efficiency solutions to enable all customers to use energy better</td>
</tr>
<tr>
<td>DIALOGUE &amp; CONSULTATION</td>
<td>To systematically organise a process of transparent and open dialogue and consultation for every new project around the world</td>
</tr>
<tr>
<td>BIODIVERSITY</td>
<td>To launch a positive approach to biodiversity, not limited to understanding and reducing the impacts of our activities in the long run but having a positive effect on biodiversity</td>
</tr>
</tbody>
</table>

\(^{(1)}\) 2017 Reference document, Chapter 3 – Environment and societal Information – Human resources
CO₂ EMISSIONS UNDERGO A STRUCTURAL DECREASE

The reduction in CO₂ emissions is the result of a long-term, low-carbon industrial policy with the closure of coal-fired power plants and the improving of the efficiency of thermal power plants and the environmental performance of the power generating fleet.

- Double the installed capacity of the renewable energy fleet throughout the world: going from 28GW in 2014 to 50GW in 2030

Group’s renewable energy fleet at the end of 2017

Data consolidated according to EDF’s percentage ownership in Group companies, including investments in associates and joint ventures

<table>
<thead>
<tr>
<th>Year</th>
<th>France – Generation and supply activities</th>
<th>EDF France – Regulated activities</th>
<th>EDF Group in Europe</th>
<th>EDF Group worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>22</td>
<td>529</td>
<td>77</td>
<td>82</td>
</tr>
</tbody>
</table>

(1) The 2017 data includes the emissions of EDF Polska assets (~3GW) that were sold in November 2017. The disposal of the thermal assets in Poland will result in nearly 22% decrease of the EDF group’s carbon footprint (vs Group’s emissions in 2017)

(2) CO₂ emissions stemming from electricity and heat generation, fully consolidated in accordance with IFRS financial standards.
REMAINING A BENCHMARK EMPLOYER (1/2)

To meet its industrial challenges, EDF must remain a socially-responsible and engaged employer, a leader in terms of the professionalism and involvement of its employees, by developing their skills and the diversity of their profiles. The Group also seeks to set an example in terms of social innovation by promoting a participative approach and making it easier to share good practice, in order to ensure long-term performance.

The health and safety of its own employees and its sub-contractors’ employees is an absolute priority. Both in France and internationally, EDF, as an integrated Group, acts in accordance with its values, by requiring all its staff to show integrity and respect for fundamental rights.

5 fundamental values of the “Human Ambition” supported by CAP 2030

- Developing a digital culture and new ways of working
- Making people accountable and simplifying working procedures
- Developing and adapting skills
- Transforming the recognition model
- Being the leader in health and safety field

2017 Group headcount

- 152,033 employees
- 44% EDF SA
- 26% Enedis
- 10% Edison
- 8% EDF Energy
- 10% Dalkia + Citelum
- 3% Autres

Being a benchmark employer in terms of employee commitment and social performance

- A pioneer “Corporate Social Responsibility” agreement (signed in 2005 and extended in 2009)
- 6 “Corporate Responsibility Objectives” set up in 2016, notably including the 2nd goal: “integrating the best practices of industrial groups in terms of human development: health & safety, gender equality and internal social advancement”

(1) This figure does not include the employees (2,265) of the subsidiaries in Eastern Europe which were sold in 2017, neither those of Areva NP (nearly 14,000) which became Framatome since its acquisition in December 2017

(2) Citelum, Électricité de Strasbourg, SOCODEI, CHAM, EDF Énergies Nouvelles, EDF PEI, G2S, EDF Luminus, EDF T and other subsidiaries abroad
REMAINING A BENCHMARK EMPLOYER (2/2)

Having both a local footprint and an international profile
- 152,033 employees in the Group of which 39,529 female workforce (26%)
- Recruitment volumes maintained at a high level (> 9,000)
- Focus on internal mobility rather than external recruitment

EDF remains a benchmark employer:
In 2017, EDF is ranking:
- 5th place in the survey "preferred employer of the French"
- The "EDF recruits" page of the website continues to attract every year approximately 3 million visitors
- 6,404 work-study trainees within the Group in 2017

Managing transformation with agility and accountability

New methods of knowledge transfer:
- Enhanced digital training: virtual and augmented reality, simulators, MOOC, serious games, e-learning modules, …
- The Chocolaterie, in-house incubator, hosted over 6,000 persons and contributed to the deployment of the projects thanks to innovative methods such as the “Design Thinking” or business projects development

Development of managerial training by GMU (Université Groupe Management)
- Extended access to the e-learning platform: 29,000 managers entitled
- Training of more than 1,500 managers in 2017 through about 50 courses proposed. In 2017, this platform saw the provision of more than 23,000 training hours particularly and accordingly set up the deployment of CAP 2030 via the organisation of set-up courses to explain its aims
- Training of approximately 1,000 Group’s executive and talents in 2017

Modernisation of mobility support tools and assist with career paths:
- “Cart'Emploi”, a site geolocation tool showing available positions
- Introduction of a unique space dedicated to the professional path, mobility and training
- Intranet “profiles”, now allowing every employee to showcase all their experience and skills
- “Mobileasy” platform, proposing digital services aimed at helping employees with each phase of their mobility project, and promoting the matching of supply of and demand for skills

84% of Group employees attended at least one training course in the year

<table>
<thead>
<tr>
<th>Company</th>
<th>Attendance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF SA</td>
<td>88%</td>
</tr>
<tr>
<td>EDF Energies Nouvelles</td>
<td>78%</td>
</tr>
<tr>
<td>Enedis</td>
<td>73%</td>
</tr>
<tr>
<td>DALKIA</td>
<td>80%</td>
</tr>
<tr>
<td>CITELUM</td>
<td>96%</td>
</tr>
<tr>
<td>EDF ENERGY</td>
<td>96%</td>
</tr>
<tr>
<td>EDISON</td>
<td>79%</td>
</tr>
<tr>
<td>EDF Luminus</td>
<td>76%</td>
</tr>
</tbody>
</table>
THE HEALTH AND SAFETY OF EMPLOYEES: AN ABSOLUTE PRIORITY

A health and safety policy at Group level

Issued in January 2014, this policy is applicable

- to all companies controls by the EDF group, in all countries in which EDF operates
- to both EDF’s employees and its subcontractors’ employees working on its facilities and premises

The CAP 2030 programme’s strategic health and safety objectives:

- To eradicate deadly accidents
- To reduce the number of accidents
- To combat the absenteeism

The key ambition for the coming years is implemented in all the companies of the Group in order to:

- Make health and safety one of the Group’s major commitments and an essential component of its culture
- Place managers at the heart of the deployment of health & safety policy
- Make all employees accountable on a daily basis
- Protect and promote the health of all: employees, service providers, clients and local people

Results in line with the ambition

Frequency rate\(^{(1)}\)

- Frequency rate involving the employees in the Group which confirms in 2017 the result of 2016, the best results obtained by the Group to this day

<table>
<thead>
<tr>
<th>Year</th>
<th>Employee accident frequency rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>3.1</td>
</tr>
<tr>
<td>2015</td>
<td>3.2</td>
</tr>
<tr>
<td>2016</td>
<td>2.7</td>
</tr>
<tr>
<td>2017</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Health and safety training

- EDF profit-sharing criteria on the proportion of employees who have followed some form of training in health, security and risk prevention

In 2017: nearly 9,800 training courses were realised through e-learning on prevention of musculoskeletal disorders (TMS) and on safety culture.

Did you know?

The EDF group has signed the charter “for a more safe road” proposed by the Road Prevention (la Prévention Routière). This engagement completes the health&safety week of the Group in October 2017 and confirms the mobilisation of the company to prevent the total set of risks relating to the work, and also to occasional travels, including for personal reasons.

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\(^{(1)}\) Number of occupational accidents that led to an absence from work of more than one day, recorded over the current year and per million hours worked.
Biodiversity

The EDF group has been addressing biodiversity issues for over 50 years. In France, EDF owns 41,000 hectares of land on the mainland and 20,000 hectares in the overseas departments, as well as close to 50,000 hectares of water reservoirs. CSR Goal no. 6, committed to for the whole Group, concerns the entire life cycle of the installations, from the project study stage, construction and operation through to the end of the life of installations; it spans the whole length of the value chain, including procurement policies and relationships with suppliers and sub-contractors. Moreover, this commitment is part of the ISO 14001 certified Environmental Management System (EMS). It is structured on the basis of three goals:

- developing knowledge of natural environments and the potential impact of Group activities on these ecosystems
- preserving biodiversity, while protecting or restoring natural spaces
- informing employees and local residents, raising awareness, and dialogue with scientific communities and associations.

<table>
<thead>
<tr>
<th>Categories of protected areas according to IUCN</th>
<th>France Mainland (incl. Corsica)</th>
<th>Overseas</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>34</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>18</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>III</td>
<td>190</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>IV</td>
<td>79</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>V</td>
<td>142</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>VI</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Natura 2000</td>
<td>310</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Areas rich in biodiversity</td>
<td>532</td>
<td>24</td>
<td>5</td>
</tr>
</tbody>
</table>

Data collected in 2016.

<table>
<thead>
<tr>
<th>IUCN Categories of Threatened Species</th>
<th>Global Red List</th>
<th>National Red List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainland France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>6</td>
<td>88</td>
</tr>
<tr>
<td>EN</td>
<td>22</td>
<td>260</td>
</tr>
<tr>
<td>VU</td>
<td>53</td>
<td>29</td>
</tr>
<tr>
<td>Overseas &amp; French Islands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>13</td>
<td>72</td>
</tr>
<tr>
<td>EN</td>
<td>12</td>
<td>144</td>
</tr>
<tr>
<td>VU</td>
<td>29</td>
<td>43</td>
</tr>
</tbody>
</table>


Data collected in 2017.
WATER: A RESOURCE UNDER CONTROL, AN INTERNATIONAL COMMITMENT

Low Group exposure to water stress

France is witnessing a fall in the temperature sensitivity of its thermal plants as old coal- or oil-fired plants near rivers are shut down. New thermal power stations are now built by the sea (Martigues CCGT plant), or equipped with air cooling (Blénod 5 and industrial commissioning of the high performance Bouchain CCGT plant), which reduces their dependence on water.

Almost 99% of water withdrawn is returned to the environment. In accordance with local discharge regulations, the Group’s companies take the necessary measures to comply with water quality and temperature requirements, and take immediate corrective action in the event of non-compliance.

Innovating towards sustainable water use

The EDF Group has been committed since 2013 to preserving water resources in all its activities and, since 2015, to publishing its “water footprint”

<table>
<thead>
<tr>
<th>Year</th>
<th>Water consumed/thermal production in (l/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1.06</td>
</tr>
<tr>
<td>2016</td>
<td>1.03</td>
</tr>
<tr>
<td>2017</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Breakdown of water withdrawn by type of water (%)

- **Sea water**
- **Brackish or estuary water**
- **Fresh water**

![Cooling towers at the Saint Laurent des Eaux nuclear plant on the banks of the Loire](image)
A RIGOROUS MONITORING SUPPORTED BY AN EXTERNAL VERIFICATION

- **Certification**: 98.4% of Group sales covered by the ISO 14001 certification

- **Certification ISO 14001 new 2015 standard**: the head of the EDF group and of EDF SA certified without reserve for the 2014-2017 period

- **Third party verification**: since 2005, the Group undergoes a voluntary process whereby the quality of its social and environmental indicators is verified by Statutory Auditors

### 2005 & 2006
- "Agreed-upon procedures" level of verification

### 2007 - 2010
- "Limited assurance" verification on a selection of indicators

### 2011 & 2012
- "Mixed assurance" verification
  - reasonable on carbon and workforce
  - limited on other indicators

### 2013 – 2017
- Attestation of that the CSR information is presented in the Reference Document
- Formed opinion on the fair presentation of CSR Information with:
  - a reasonable assurance on carbon and workforce
  - a limited assurance on other indicators

Voluntary progressive approach until the obtaining of a Mixed Assurance

- Compliance with the Grenelle II law
- Continuation of the voluntary procedure
NON-FINANCIAL RATINGS

- Maintaining in major international non-financial indices: DJSI World member for the 2nd year, Leadership level at CDP Climate Change, member of all Euronext VigeoEiris indices
- Continued progress in EDF’s non-financial rating by all agencies

<table>
<thead>
<tr>
<th>EDF confirmed at DJSI World in 2017</th>
<th>EDF confirms its Leadership level, member of CDLI France and Bénélux 2017 (Climate Disclosure Leadership Index)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronze Class of Sustainability Yearbook 2018, 5th of 98 Electric Utilities</td>
<td>Overall Annual Score</td>
</tr>
<tr>
<td>2016</td>
<td>2016</td>
</tr>
<tr>
<td>EDF score</td>
<td>87%</td>
</tr>
<tr>
<td>Average Electricity sector score</td>
<td>52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FTSE4Good</th>
<th>EDF confirmed at DJSI World in 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF member of the FTSE4Good Index</td>
<td>EDF confirmed at DJSI World in 2017</td>
</tr>
<tr>
<td>Group admission confirmed en 2017</td>
<td>Bronze Class of Sustainability Yearbook 2018, 5th of 98 Electric Utilities</td>
</tr>
<tr>
<td>EDF= 2nd company in its sector</td>
<td>Overall Annual Score</td>
</tr>
<tr>
<td>EDF rated 4.6/5 in 2016 (vs 4.5/5 in 2015)</td>
<td>2016</td>
</tr>
<tr>
<td>EDF is one of the five global nuclear operators meeting the stringent criteria developed and overseen by the FTSE4Good Policy Committee</td>
<td>Performance and transparency</td>
</tr>
</tbody>
</table>

EDF member of all Euronext Vigeo indices: World 120, Europe 120, Eurozone 120 et France 20

EDF is one of the five global nuclear operators meeting the stringent criteria developed and overseen by the FTSE4Good Policy Committee

The Group maintains a high level of performance with its confirmation at the DJSI and the leadership level at the CDP

Ratings updated in 2017 (except VigeoEiris and FTSE4Good: last updated in 2016)
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<tr>
<td>APPENDICES</td>
<td>P. 253</td>
</tr>
</tbody>
</table>
EDF is active on the whole electricity value chain, from generation to sales and optimisation/trading. The activities can be split into:

- **Unregulated activities**: generation and supply, optimisation and trading
- **Regulated activities**, with RTE\(^{(1)(2)(3)}\) (transmission) and Enedis\(^{(3)}\) (distribution). EDF’s activities in Corsica and the French overseas departments and municipalities are managed by the Island Energy Services (SEI) and are regulated, as well as the activities of the subsidiary ÉS (Électricité de Strasbourg)\(^{(4)}\)

EDF owns the largest nuclear fleet worldwide, o/w 58 operating plants in France.

RTE\(^{(1)(2)}\) and Enedis are subsidiaries of EDF but are operationally independent (legal unbundling), within the meaning of the provisions of the French Energy Code.

EDF also plays a holding role through the 100% control of EDF International (which controls the greater part of EDF stakes in international subsidiaries) as well as interests in various companies, including:

- **EDEV** (o/w EDF Énergies Nouvelles, Dunkerque LNG, Électricité de Strasbourg, Citelum, etc.)
- **Dalkia** (energy services provider)
- **EDF Trading** (market operator for the Group)

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### Installed capacity and output in 2017\(^{(1)}\)

<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>MW</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>63,130</td>
<td>69</td>
</tr>
<tr>
<td>Hydro(^{(2)})</td>
<td>19,767</td>
<td>21</td>
</tr>
<tr>
<td>Thermal(^{(3)})</td>
<td>9,436</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total(^{(4)})</strong></td>
<td>92,334</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^{(1)}\) EDF SA data for mainland France. For EDF group data in France (including EDF EN), see p. 6 and 7

\(^{(2)}\) Excl. Corsica and the French overseas department, i.e. 440MW in 2017

\(^{(3)}\) Excl. Corsica and the French overseas department, i.e. 1,629MW in 2017

\(^{(4)}\) Excl. wind capacities of 12MW and including tidal capacity of 240MW

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>TWh</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>379.1</td>
<td>88</td>
</tr>
<tr>
<td>Hydro(^{(1)})</td>
<td>37.1</td>
<td>8</td>
</tr>
<tr>
<td>Thermal(^{(2)})</td>
<td>16.1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>432</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Output before deduction of pumped volumes excluding Corsica and the French overseas department (i.e. 1.3TWh in 2017). The electricity consumption needed for the operation of STEPs amounted 7TWh in 2017, resulting in total output after deduction of pumped volumes of 30.1TWh. Including generation from the tidal power on the Rance river of 0.5TWh

\(^{(2)}\) Excl. Corsica and the French overseas department, i.e. 4.7TWh in 2017

### EBITDA 2017

<table>
<thead>
<tr>
<th>€bn</th>
<th>EBITDA (2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unregulated (Generation &amp; supply)</td>
<td>4.876</td>
</tr>
<tr>
<td>Regulated</td>
<td>4.898</td>
</tr>
</tbody>
</table>

---

\(^{(1)}\) RTE is consolidated under equity method

\(^{(2)}\) The 31 March 2017 EDF finalised the sale to Caisse des Dépôts et CNP Assurances of 49.9% stake in the ad-hoc company holding 100% of RTE since December 2016

\(^{(3)}\) Subsidiaries managed with complete independence, within the meaning of the provisions of the French Energy Code

\(^{(4)}\) For more information on the ÉS activities, please see the p.128
MARKET DEVELOPMENT IN FRANCE

Implementation of the NOME law of 7 December 2010 to foster competition on the French market

French market deregulation chronology

Nationalisation of the electricity and gas sector pursuant to the Law of 8 April 1946
28 October 2014: publication of the decree that defines the new tariff construction method by costs stacking (ARENH price, cost of supply of the complementary purchases, on wholesale power markets, electricity networks and commercial costs, plus a normal rate of return)
1st November 2014: average rise in tariffs by costs stacking of +2.3% in 2014
1946
1999
2011
2012
2013
2014
2016
2017

At 1st January 2012, ARENH price has been set at €42/MWh
For a transitory expected period of 3 years, the ARENH price is set up by Ministerial order, after a CRE consultation

1 July 2011: NOME law entered into force guarantying to EDF’s competitors, for a 15-year transitory period, a regulated and limited access to EDF’s historical nuclear generation capacity (ARENH) to supply their end customers located in France. The available global energy volume cannot exceed 100TWh\(^{(1)}\) per year

After the issuance of the decree setting the cost based accounting methodology, fixing of the ARENH price following the CRE proposal, by Ministerial order who will only have an opposition right

Regulated electricity sales tariffs (TRV):
31 December 2015: end of Yellow and Green regulated tariffs
1st January 2016: The CRE is henceforth in charge of proposing the evolution of the regulated tariffs

Capacity market mechanism:
1st January 2017: the French capacity mechanism became effective\(^{(2)}\)

ARENH:
14 November 2016: decree relating to the evolution of the ARENH framework agreement to fix the modalities of anticipated resignation by suppliers. Clarification of the “monotonie clause” by the decree of 21 March 2017

(1) Excluding supply losses
(2) For more information on the capacity auctions in France and on the impact on EDF’s EBITDA, please see p. 139-141

COUNTRY PROFILE FRANCE
UNITED KINGDOM – COUNTRY PROFILE

Key points

Main entity: EDF Energy, one of the UK’s largest energy companies and the largest producer of low carbon electricity\(^{(1)}\).

3 principal activities:

1. **Customer business**: managing power and gas supply and customer service activities for residential and business customers (5.2 million residential customer accounts at the end 2017)

2. **Generation**: 15 reactors on 8 nuclear power stations (20% owned by Centrica), 2 coal-fired power stations (o/w one coal-fired and OCGT), 1 CCGT and 36 wind parks (operated by EDF Energy Renewables)

3. **Nuclear New Build business**: in charge of EPR Hinkey Point C (3.2GW) power plant construction project and of EPR Sizewell C (3.2GW) power plant project development in partnership with CGN, as well as developing proposals for a new nuclear station HPR1000 (“Hualong”) of CGN at Bradwell

The Group is also active in oil and E&P in the North Sea through EDF Production UK (a subsidiary of Edison).

Strategy:

- Transition to a lower-carbon economy through generation of safe, reliable and affordable low-carbon electricity. Equally, meeting of customer’s needs in an efficient, simple and responsible way, enabling customers to control their energy usage

- In customer-facing business, EDF Energy aims to be the energy partner of choice, doing things better, faster and cheaper, and making energy easy for customers by applying digital technologies and innovation. Helping customers to make the most of their energy consumption and production, whilst providing excellent service and convenience

- In generation, EDF Energy seeks to create value through continued operational excellence of existing assets and by developing a portfolio of new investments. Leading the revival of nuclear new build in the UK and extending the lifetime of existing nuclear plants, when safe and commercially viable

- Through EDF Energy Renewables, continuing to develop new renewable energy projects and exploring options for flexible assets (such as the 49MW battery project at West Burton B)

2017 supply market share

<table>
<thead>
<tr>
<th>Source: Elexon Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Gas supply: ~28TWh</td>
</tr>
<tr>
<td>~9%(^{(2)})</td>
</tr>
</tbody>
</table>

2017 key figures

<table>
<thead>
<tr>
<th>Installed capacity (GW)</th>
<th>Output (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear(^{(3)})</td>
<td>8.9</td>
</tr>
<tr>
<td>Gas</td>
<td>1.3(^{(4)})</td>
</tr>
<tr>
<td>Fossil-Fired excl. gas(^{(5)})</td>
<td>4.0</td>
</tr>
<tr>
<td>Renewables(^{(6)})</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>14.4</td>
</tr>
</tbody>
</table>

Did you know ?

**EDF Energy** Blue Lab applies the benefits of a start-up to help accelerate innovation for customers

**Dalkia and EDF Energy** have created a JV to help businesses explore and develop solutions that deliver energy, carbon and cost savings. During 2017, this JV bought Imtech, an energy services company.

---

\(^{(1)}\) Source: Elexon Reporting

\(^{(2)}\) BEIS data of December 2017. Gas share is for residential market only. This equates to 5% of total market i.e. residential and business demand

\(^{(3)}\) Including Centrica’s 20% stake

\(^{(4)}\) Including 1MW of Barkantine CHP

\(^{(5)}\) Coal capacity represents transmission entry capacity. Net power including biomass

\(^{(6)}\) When EDF Energy holds more than 50% of assets, the capacities shown are 100% of the installed capacity and generation output. Renewable output excluding biomass
The Italian energy markets is strategic for EDF due firstly to their major significance in the European gas and electricity markets, secondly to their connection to the French markets and the key position in the Mediterranean basin.

**Edison**
- The Group owns 97.446% of Edison’s share capital, which is a major player in the Italian gas and electricity markets, and the 3rd largest producer at the national level. Edison’s main activities are:
  - Electricity generation and sales
  - Hydrocarbon production, procurement and sales. Edison’s gas supply portfolio is mainly based on long-term contracts
  - Gas storage through Edison Stocagio, 100% subsidiary of Edison
  - Gas distribution (through Infrastrutture Distribuzione Gas SpA)
  - Gas infrastructures: partnership in pipeline construction projects, among which ITGI-Poseidon (50%), IGB (50%) and EastMed (50%)
  - Energy services, through the new Market Division for Energy Services which regroups the activities of Fenice as well as those of Edison Energy Solutions. The energy efficiency services are offered abroad by Fenice in Spain, Poland and Morocco.
- On 1st April 2016 Fenice (100%-held subsidiary of EDF) became part of Edison. This company is specialised in environmental services: heat and electricity generation, operation and maintenance of energy assets, treatment of solid and liquid industrial waste and environmental engineering. The projects are developed in the form of partnerships or performance contracts with customers
- The holding company between Edison and EDF Énergies Nouvelles holds 30% of E2i Energie Speciali srl (E2i), a company created in 2014 in partnership with the F2i fund. E2i holds 594MW of renewable assets (contributed 82% by Edison and 18% by EDF EN Italia) and transfers 100% of the energy generated to Edison, which uses it for integrated management of its production portfolio. At the end of 2016, E2i won a public auction for eight wind farms projects (165MW, of which 153MW benefiting from a subsidised tariff), currently under construction
- In February 2018 Edison completed the acquisition of Gas Natural Vendita Italia which manages the sales of natural gas and electricity on the Italian market (a portfolio of around 420,000 residential customers and 15,000 SMEs)

**EDF Renewables** is present in the Italian market, with 424.2MW gross wind and 76.9MW gross photovoltaic power

---

**2017 Group key figures in Italy**

<table>
<thead>
<tr>
<th></th>
<th>Capacity (GW)</th>
<th>Output (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal (1)</td>
<td>4.800</td>
<td>17.340</td>
</tr>
<tr>
<td>Hydro (1)</td>
<td>1.134</td>
<td>2.215</td>
</tr>
<tr>
<td>Other renewable (1)</td>
<td>0.607</td>
<td>1.067</td>
</tr>
<tr>
<td><strong>Total (1)</strong></td>
<td><strong>6.541</strong></td>
<td><strong>20.622</strong></td>
</tr>
</tbody>
</table>

(1) Incl. Generation and services of energy efficiency

**Generation fleet is made up of 89 hydropower plants, 18 thermal power plants, 33 wind farms, 5 photovoltaic power plants and 1 biomass plant**

**EBITDA 2017 in Italy = ~6.6% of the EDF Group’s EBITDA**

**0.4Gm3 of gas output in Italy (2) (out of 2.1Gm2)**

**1.9 m of barrels of petrol output in Italy (i.e. 47%)**

(2) Including output from Croatia imported into Italy

**21.3Gm3 of gas sold to end customers**

O/w 34% to the thermoelectric sector (including Edison’s own internal needs) and 11% to the residential sector

**15.1Gm3 of natural gas imports** by Edison, i.e. 22% of the country’s natural gas imports

**60 concessions and exploration permits in Italy**

**45 concessions and exploration permits abroad**

**36.5 bcm equivalents in reserves**
The Benelux region features important interfaces with the Franco-German power marketplace and projects for new links with Germany and with Great Britain are also being examined. Benelux also constitutes an important node in the European gas market because of its numerous import and transit infrastructures, such as the Zeebrugge hub and the Dunkirk LNG terminal nearby.

**Main entities:**

- **EDF Luminus**
  - EDF majority shareholder (68.63%), through EDF Belgium
  - 2nd largest player in the Belgian energy market with 10% of the national generation capacity. Total electricity output of 6,709GWh in 2017
  - Leader in onshore wind farms in Belgium with 376MW
  - EDF Luminus owns de 10.2% (419MW) of Tihange 2 and 3, and of Doel 3 and 4 nuclear power plants. EDF Luminus also has 100MW drawing rights on the French Chooz B nuclear power plant
  - The company employs 1,807 persons o/w 986 working in services subsidiaries. The largest subsidiary is ATS that has 646 employees
  - In 2017, the market share of sales to end customers was about 20%
  - In 2017: Taking control of Newelec, a multidisciplinary company, allowing to offer integrated comprehensive solutions for power and heating facilities to industrial clients in Wallonia. The company also acquires Insaver company which offers the services of photovoltaic panels installation, insulation and batteries for residential customers in Flanders.

- **EDF Belgium**: wholly-owned by EDF, it holds 50% of the Tihange 1 nuclear plant (i.e. 481MW, equivalent to 2% of Belgian generation capacity)

- **Sloe Centrale B.V.** (Netherlands): 2 CCGT units of 435MW, owned at 50% with PZEM N.V.

**EBITDA 2017 in Belgium corresponds to 31.7% of “Other international” segment of Group’s EBITDA**

EDF Luminus ranked among Top Employers in Belgium for the 5th consecutive year

Did you know?

In 2017, EDF Luminus erected 28 wind turbines for a total capacity of 75.4MW, which is a record for the country’s sector.
Electricity

In North America the Group has
- More than 5.3GW of installed capacity
- Around 36GW of installed capacity managed on behalf of third parties

Activities in North America:
- Renewable energies: EDF Renewables(1), with 4GW net installed capacity, mainly located in the US, and close to 10GW managed through O&M (operation and maintenance) contracts
- Trading: EDF Trading operates in the Northern American markets for electricity (including financial transmission rights) and gas. EDF Trading activities also include trading of RECs(2), biogas, carbon emissions and credits and weather derivatives
- Nuclear: EDF Inc has 49.99% stake in 3 nuclear power plants operated by Exelon (the largest nuclear operator in the US), with a total installed capacity of 4GW (i.e. 2GW in quote-part of the EDF group’s participation)

Energy services

- Renewables: EDF Renewables(1) manages about 10GW through operation and maintenance contracts on its own or on behalf of third parties
- Trading: EDF Energy Services (100% subsidiary of EDF Trading North America) provides management and optimisation services for thermal, wind, PV and hydro power generators
- Local management of energy and energy efficiency: Dalkia operates via its subsidiary - Tiru in Canada, DK Energy US and Groom Energy Solutions in the United States (the acquisition of the latter was completed in September 2016)
- Lighting: Citelum provides integrated public lighting systems with turnkey solutions

Energy supply

- Electricity and gas supply: EDF Trading, through its EDF Energy Services subsidiary, is a Top 10 retail supplier in North America, offering all environmental products, natural gas and electricity to large commercial and industrial users. In 2017, EDF Energy Services expanded its business footprint and its customer base and is now licensed to do business in every power deregulated market and most gas markets

R&D

- EDF Innovation Lab: located in Silicon Valley, this R&D and Innovation team identified in 2016 the company Off Grid Electric (OGE), EDF’s partner in the supply of competitive off-grid solar energy in the Ivory Coast

Did you know?

On 21 November 2017, Citelum signed a contract with the city of Albuquerque (New Mexico) to convert more than 20,000 streetlights to LED, implement an Internet of Things (IoT) architecture and deploy a central management system. Through this contract, Citelum USA is committed to reducing energy consumption and maintenance costs for a 15-year period, as well as providing better lighting and services

(1) In April 2018, EDF Énergies Nouvelles’s international subsidiaries were rebranded EDF Renewables (please refer to EDF EN’s press release of 12 April 2018)
(2) Renewable Energy Certificates
A strong and diversified presence in North America

The EDF group has operations in 42 out of 50 states and in 5 out of 10 Canadian provinces

Since 12 April 2018, the activities of wind and solar power, the O&M projects in the USA, as well as the projects in Mexico and Canada are lead by EDF Renewables. The projects in the Québec province in Canada are under the brand of EDF Renouvelables.
EDF Norte Fluminense power plant

The Group wholly owns EDF Norte Fluminense which built and operates the Norte Fluminense CCGT power station of 827MW installed capacity and sells principally its output to the Light distribution company.

EDF Norte Fluminense has a 51% stake in Compagnie Energétique de Sinop (CES), which is responsible for the construction and future operation of Sinop’s hydropower facilities (400MW) scheduled for commercial operations commissioning in the end-2018.

EDF Energies Nouvelles is present in Brazil since February 2015, following the acquisition of 80% of the portfolio of Ventos da Bahia. In October 2016, EDF Énergies Nouvelles entered the solar PV energy market with the acquisition from Canadian Solar Inc. of the Pirapora project (399MWc).

EDF is also present in Brazil via Edison (its Iberitermo subsidiary operates a CCGT plant of 226MW), as well as via Citeluz (a subsidiary of Citelum specialising in street lighting).

Boléro solar power plant (Atacama desert)

EDF Chile, a subsidiary created in 2014, is jointly developing, with its partners AME (Andes Mining Energy) et the American company Cheniere, a “gas-to power” project combining construction, operation and maintenance of a CCGT power plant (approximately 600MW) and of a storage infrastructure and a LNG Floating Storage Regasification Unit (FSRU)(1). The Group has a 45% shareholding in the two project companies (Penco-Lirquén LNG terminal and El Campesino power plant).

EDF Chile signed in the end of 2017 a binding agreement for acquisition of 750MW of active generation capacity (gas and peak demand) in 50/50 partnership with AME, to support the development of its renewables energy business.

EDF Énergies Nouvelles is present in Chile with 3 assets under operation: Bolero photovoltaic farm (146MWC in the Atacama desert, in 50/50 partnership with Marubeni), Santiago Solar photovoltaic farm (115MWC, 50/50 jointly owned with AME) and the Cabo Leones I project (115 MW in 50/50 partnership with Iberéolica).

Citelum has 13% of Chilean public lighting market share.

(1) The project suffered a setback when the Chilean Supreme Court, in a decision on 30 January 2017, revoked the permit for the Penco Lirquen regasification terminal. At this stage, various measures have been taken to further the Group’s expansion into electricity generation in Chile, including re-starting the process to obtain a permit.

LATIN AMERICA – AREA PROFILE

BRAZIL

Chile

COUNTRY PROFILE SOUTH AMERICA

47
CHINA – COUNTRY PROFILE

Key points

- The EDF Group is one of the largest foreign investors in the electricity sector in China, with interests in thermal power plants with a total net capacity of 2,000MW(1).
- EDF has signed partnerships to develop in the fields of nuclear energy, energy services, renewable energies, engineering services and R&D, through its centre created in Beijing in 2011.
- As the first foreign company to invest in a project to build and operate a nuclear power plant in China, EDF owns 30% of shares of TNPJVC, which aims to finance, build, commission and operate two EPR nuclear reactors(2).
- EDF owns 49% of FPC, a joint-venture with a subsidiary of Datang, which built and operates the “ultra-supercritical” coal-fired power plant of Fuzhou. This technology ensures better performance (~44% for Fuzhou) and a limited environmental impact. The first unit was commissioned in late 2015 and the second in April 2016.
- EDF Énergies Nouvelles acquired in July 2016 a majority share (80%) in UPC Asia Wind Management (AWM), which develops and builds wind power projects in China. At the end of 2017, EDF holds an interest in 6 wind farms (including 2 under construction) for a net installed capacity of 143.6MW(1).
- In May 2016, EDF and Datang signed an agreement to create a JV (65% owned by EDF) for the construction and operation of the Sanmenxia (Henan) urban heating network. The network went into operation in November 2016.
- In January 2018, EDF signed two 30-year concession contracts to build and operate a heating network powered by a biomass cogeneration power plant in Lingbao (Henan) and a cooling network for the air conditioning of hotels located in a tourist area in Sanya (Hainan).

Thermal and nuclear generation capacity

<table>
<thead>
<tr>
<th>Thermal Power Plant</th>
<th>Country</th>
<th>Capacity</th>
<th>EDF's Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSPC</td>
<td>China</td>
<td>3,060MW</td>
<td>19.6%</td>
</tr>
<tr>
<td>TAEHANG</td>
<td>China</td>
<td>2 x 1,750MW</td>
<td>30%</td>
</tr>
<tr>
<td>Fuzhou (FPC)</td>
<td>China</td>
<td>2 x 1,000MW</td>
<td>49%</td>
</tr>
</tbody>
</table>

Did you know?

EDF led the design, construction and commissioning of the Daya Bay nuclear power plant (2 x 1,000MW) and assisted the Chinese group CGN in the construction of the Ling Ao power plant (4 x 1,000MW). Today, EDF provides support to the CGN group in the operation of its entire fleet.

Notes:
(1) Data in proportion to EDF’s equity
(2) For more information on the Taishan 1&2 EPR project, see p. 59
(3) For more information on the Hinkley Point C EPR project, see p. 61
(4) SC = “supercritical” technology, USC = “ultra-supercritical” technology
The EDF group’s activities in the area are focused on the development of the electricity sector, particularly through involvement in projects for the design, construction and operation of new plants (thermal and hydro power) in countries offering IPP\(^{(1)}\) type opportunities, in the field of renewable energies, smart cities and innovation.

### Vietnam
- EDF owns 56.25% of Mekong Energy Company (MECO, in JV with Sumitomo and Tepco), the company owning Phu My 2.2 (a CCGT of 715MW, i.e. ~2% of the installed capacity of the country). This is the first IPP\(^{(1)}\) project financed exclusively by foreign investors in Vietnam.
- In March 2018, the Vietnamese government approved the EDF group as consortium leader responsible for a CCGT power plant construction project (2GW) in Son My\(^{(2)}\).

### Laos
- The EDF group holds a 40% stake in NTPC, which owns the hydropower complex Nam Theun 2 (1,070MW, i.e. ~25% of the installed capacity of the country). NTPC company operates the power plant on a 25-year concession contract concluded with the government of Laos.

### India
- In March 2018, the EDF group and the Indian company NPCIL signed an Industrial Way Forward Agreement for the implementation by NPCIL of 6 EPRs at the Jaitapur site in India. Jaitapur is set to be the biggest nuclear project in the world, with a total capacity of around 10GW.
- Via its subsidiary EDF International Networks, the Group won in 2016 a contract for 75,000 smart meters from the New Delhi Municipality Council.
- EDF Énergies Nouvelles is present in India in solar energy (as of beginning 2018, 207MWp in operation in a 50/50 partnership with Total EREN). EDF Énergies Nouvelles is moving into onshore wind energy, since 2016, with the acquisition of 50% stake in SITAC Wind Management and Development, an Indian wind energy company. Beginning 2018, 164MW are under operation (5 projects) and 100MW under construction. Each of them is subject to a 25 year-term power sales contract, signed with GUVNL, a local electricity distribution company.

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1. IPP: Independent power producer
2. For more information, please refer to the press release of 27 March 2018.
The Group wishes to develop on the continent of Africa by assisting countries with high-energy demand, on a selective basis appropriate to each geographical region, and by building sustainable and multi-industry partnerships. EDF is also intensifying its action in the supply of competitive off-grid energy.

South Africa
- Since 2007, EDF has a subsidiary in Johannesburg, initially established with a view to preparing the relaunching of the South African nuclear programme but also active in the preparation of the gas-to-power project as well as the sales of services relating to engineering in Southern Africa.
- EDF Energies Nouvelles also gained a foothold in the wind power market since 2011 and operates 108MW via its 80%-held subsidiary InnoWind.
- Since 2002, EDF provides with photovoltaic kits for the households in rural areas of KwaZulu-Natal and in the Eastern Cape through its subsidiary KES (EDF-Total-Calulo).

Morocco
- EDF has formed preferred partnerships with ONÉE (1), electricity distribution authorities, and industrials of the country. The Group is present in the country via EDF Maroc since 1997, EDF EN Maroc (2) since 2012 and EDF Fenice Maroc since October 2016.
- EDF Energies Nouvelles, in partnership with Mitsui & Co, is developing the 150MW Taza wind farm whose 1st stage of 90MW is being completed. Furthermore, EDF Énergies Nouvelles, via its Futuren subsidiary, operates a 50MW wind farm with the development project of repowering and extension to reach 300MW capacity.

Senegal
- EDF assisted Sénélec (3) for rehabilitation of 110MW (4) of its thermal generation fleet. Since mid-2017, EDF International Networks operates two contracts relating to remote control of the national distribution network, as well as to reduction of non technical losses.
- The Group is also present in Senegal since 2011 through the ERA company, operator of the rural electrification concession covering 25% of the country.

Cameroon
- EDF develops the Nachtgal hydropower project (420MW), in partnership with the State of Cameroon (30%) and the IFC (World Bank Group, 30%). In July 2016, the Nachtgal Hydro Power Company (NHPC) was created to assist with the project, which will, on commissioning, be the largest generation resource in the country. On 20 April 2017, NHPC and the Minister of Water and Energy signed the concession agreement for the generation of electricity (cf. the press release of the company). The investment decision is scheduled for mid-2018.

Ivory Coast
- EDF is developing the "Biovéa" project for a biomass electricity power plant (2 x 23MW) in partnership with SIFCA, an Ivorian agro-industrial group in West Africa, and with Meridiam. This project is included into the Ivorian State’s development master-plan. An agreement on the transfer price of the generated energy was signed end-2017 and negotiations are underway in order to reach a concession agreement in the middle of the year. The investment decision is envisaged in H1 2019.
- In August 2016, EDF created a local subsidiary to support its development strategy.
- EDF deploys its "off grid" decentralised energy offering for rural and peri-urban homes, through ZECI company, created in October 2016 in partnership with the US company Off Grid Electric (OGE). The ambition of this first company is to provide power to almost 2,000,000 people by 2020 in the Ivory Coast, with a plan to quickly extend such initiative to other countries in the region and to develop the offer on a large scale.

Ghana
- EDF deploys its off-grid energy offer for rural and peri-urban homes, through ZEGHA company, created in December 2017 in partnership with the US company Off Grid Electric (OGE) on the ZECI model.

Did you know?
The off-grid energy offering of decentralised solar power ZECI in the Ivory Coast provides the installation and maintenance of individual solar kits. They include solar panels which are easy to install, backed up by batteries for the storage of electricity, and which can be paid for merely by the use of a mobile phone.

[1] Morocco’s national electricity and water office
[2] In 2018, rebranded EDF Renouvelables (please refer to EDF EN’s press release of 12 April 2018)
[4] This project management assistance contract was completed on 30 September 2016
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EDF GROUP MAIN BUSINESSES

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  - THERMAL POWER
  - REGULATED ACTIVITIES (NETWORKS)
  - OPTIMISATION & TRADING
  - CUSTOMER SOLUTIONS
  - ENERGY SERVICES
  - GAS

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

EDF, the world’s leading nuclear operator\(^{(1)}\)

- **58** reactors
- **1** Reactor under construction
- France / 63.1GW

EDF, global expertise

EDF manages the entire lifecycle of nuclear generation facilities: design, operation and decommissioning

- **EDF is the world’s leading nuclear operator**\(^{(1)}\) with a standardised nuclear fleet of 58 reactors in France and 15 reactors in Great Britain
- **EDF is investing to continue the operation, safely**, of its reactors beyond 40 years, a guarantee of the competitiveness of electricity generation in France
- **Construction of EPR-type reactors** throughout the world (France, China, Great Britain) and development of an optimised version of the EPR (EPR 2) for the renewal of the nuclear fleet by 2030
- **EDF is present in the French and international markets for the decommissioning of nuclear power plants and radioactive waste treatment facilities**

**To operate the existing nuclear fleet beyond 40 years**, EDF plans to invest €45 billion\(^{(2)}\) over the period 2014-2025, as part of the “Grand Carénage” programme

- **The integration of Framatome**\(^{(3)}\), originating from the AREVA NP subsidiary, into the EDF group and the pooling of EDF and Framatome engineering teams in a joint subsidiary Edvance\(^{(4)}\), are the major milestones in the re-engineering of the French nuclear sector, for **new projects in France and abroad**
- **EDF and its subsidiary Cyclife have won their first contracts on the international markets of nuclear decommissioning and waste treatment**\(^{(5)}\).

\(^{(1)}\) AIEA (Agence Internationale de l’Énergie Atomique), Nuclear power reactors in the world, 2017 edition

\(^{(2)}\) In 2013 euros (or €48 billions in current euros)

\(^{(3)}\) Please refer to Framatome’s press release of 4 January 2018

\(^{(4)}\) On 17 May 2017, the EDF group’s Board of Directors approved the creation of the company Edvance, bringing together EDF’s and AREVA NP’s engineering expertise around the nuclear island

\(^{(5)}\) Please refer to the press releases published by EDF on 6 February and 21 February 2018
World nuclear capacity expected to expand over the next quarter century

Today, nuclear power represents ~11% of global output

- The energy market trends towards intensified electrification. The electricity share in total primary demand of energy is to grow from 38% in 2016 to ~41% in 2040(1)
- The share of nuclear power in global output is to stay relatively unchanged between 2016 and 2040, at 10%.

Unique positioning on global new nuclear build growth

- In 2040, IEA(1) expects ~10% of global output to be nuclear power
- In 2020, 3 EPR reactors in operation before 2020

- China / Taishan
- France / Flamanville
- UK / Hinkley Point

- In 2016, EDF also signed two other agreements with CGN concerning studies on two nuclear construction projects in the UK, Sizewell C and Bradwell B(4)
- In 2018, EDF and the Indian company NPCIL signed an Industrial Way Forward Agreement for the implementation by NPCIL of six EPRs at the Jaitapur site in India(5)

- Final contracts signed by EDF, CGN and the UK Government on 29 September 2016
- Commissioning of the first reactor expected in 2025

- Commercial operation expected in 2018 for the 1st Unit and in 2019 for the 2nd Unit(2)
- Fuel loading: objective end of 4th quarter 2018, the start up of the reactor(3)

(1) International Energy Agency’s reference scenario
(2) Please refer to CGN’s press release of 29 December 2017
(3) Please refer to EDF’s press release of 10 April 2018
(4) Please refer to EDF’s press release of 29 September 2016
(5) Please refer to EDF’s press release of 10 March 2018
EDF Group (EDF SA, Framatome, Edvance) drives the French nuclear sector with the following goals:

- Make project delivery and management more effective by harnessing each company’s core strengths and the synergies expected from Framatome’s integration into EDF group and the pooling of the EDF and Framatome engineering teams as part of the joint subsidiary Edvance
- Enhance the competitiveness and appeal of our technologies and services through complementary expertises
- Provide development opportunities for the French nuclear sector by ensuring ever greater engineering and business expertise in integrated projects

A promising market and active projects on every continent
FRAMATOME, A MAJOR INTERNATIONAL PLAYER IN THE NUCLEAR INDUSTRY

An international presence

Benchmark supplier in the nuclear industry

- Designer and supplier of nuclear steam supply system and nuclear equipment, services and fuel for high levels of safety and performance

- 6 business areas
  - **Installed base**: Maintenance and engineering services for existing nuclear fleets and fleets under construction
  - **Fuel**: Develop, design, license and manufacture fuel assemblies and associated services
  - **Large Projects**: Contribute to new build construction projects
  - **Components**: Design and produce heavy and mobile equipment for the nuclear island
  - **Instrumentation & Control**: Design and manufacture of instrumentation and control solutions for the safety of the nuclear boiler
  - **Engineering and Design Authority**: Development, design and licensing of boilers and associated services

The rapprochement of EDF and Framatome will allow the Group to improve efficiency and performance

- **€3.1bn** in sales\(^{(1)}\)
- **€15bn** order book\(^{(1)}\)
- **58 sites** in **19 countries**\(^{(1)}\)
- **14,000 employees**\(^{(1)}\)

\(^{(1)}\) Data provided at Framatome terminals, end of 2017
EPR, A SAFE AND HIGH-PERFORMING REACTOR

Safety
- Accident probability reduction (factor 10)
- External hazard protection (shell able to resist an airplane crash)
- Evolutionary design (core catcher)

Performance
- Annual generation boosted of 36%
- Efficiency improvement (+3pts)
- Increased availability (91%)

Radioprotection
- At least 40% cut in collective annual exposure

Environment
- Very important reduction in radioactive waste and gaseous and liquid discharges
NUCLEAR NEW BUILD: FLAMANVILLE 3 EPR

- Construction progress as of 30 April 2018
  - Main civil engineering work completed
  - Progress of electromechanical erection of 96%
  - Control room and first part of pumping station transferred to the teams that will operate the reactor

- Nuclear Safety Authority's (ASN) final opinion on the compliance of the Flamanville 3 EPR reactor vessel: On 10 October 2017, the ASN stated that the anomaly of the composition of the steel of the vessel’s bottom and closure head “does not compromise the commissioning of the reactor pressure vessel, provided that specific checks are carried out during operation of the installation. As the feasibility of these checks cannot at present be confirmed for the closure head, the ASN considers that the current closure head cannot be used beyond 2024.”

- Progress of the plant system performance tests in accordance with the roadmap
  - March 2017: beginning of the system performance tests
  - End of July 2017: end of nuclear circuit cleaning operations of the primary circuit called “chasses en cuve”
  - August 2017: start of the “open vessel” functional testing period
  - From 18 December 2017 to 6 January 2018: “cold functional tests” (filling the primary circuit of water) including successful realisation of the water tightness test of the primary circuit of the reactor (to a pressure, which was significantly higher than under operations conditions)(2)
  - 3 April 2018: end of the reactor building underwent pressure tests, known as the “container test”

- On 10 April 2018, EDF announced that it detected quality deviations on some of the welding of the pipes of the secondary coolant system of the Flamanville EPR and decided to carry out additional controls. Following the current checks and the licencing process by the ASN, EDF will be able to specify whether the project requires an adjustment to its timetable and its costs(3). Additional controls on the welds and report are currently underway

- Tight budget and calendar subject to the ASN administrative authorisation timeframe
- As of 10 April 2018:
  - Construction cost target: €2015 10.5bn(4)
  - Start of “hot functional tests” (test of equipment under temperature and pressure conditions similar to operation conditions): July 2018 target
  - First fuel loading: objective end-4th quarter 2018, then start-up of the reactor
  - Ramp up 2019: connection to the grid in the 2nd quarter and then 100% capacity in the 4th quarter

---

(1) Source: ASN – Note d’information of 10 October 2017
(2) Please refer to the press releases published by EDF on 9 October 2017 and on 8 January 2018
(3) Please refer to the press release published by EDF on 10 April 2018
(4) Excluding interim interests
### HINKLEY POINT C: GENERAL INFORMATION ON THE PROJECT

<table>
<thead>
<tr>
<th><strong>Location</strong></th>
<th>Bridgwater, Somerset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td>Two EPR reactors</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>3,276MWe (2 x 1,638MWe)</td>
</tr>
<tr>
<td><strong>Operating life</strong></td>
<td>60 years+</td>
</tr>
<tr>
<td><strong>Responsible Designer</strong></td>
<td>EDF</td>
</tr>
<tr>
<td><strong>Principal contractors</strong></td>
<td>Areva, GE/Alstom, Bouygues Laing O’Rourke, KierBam</td>
</tr>
<tr>
<td><strong>Contract for difference</strong></td>
<td>CfD strike price fixed over 35 years: £2012,92.50/MWh or £2012,89.50/MWh (indexed to British inflation) if a positive FID is taken for Sizewell C</td>
</tr>
<tr>
<td><strong>Investors’ participation</strong></td>
<td>EDF Energy: 66.5%; CGN: 33.5%</td>
</tr>
<tr>
<td><strong>Economic benefits</strong></td>
<td>25,000 jobs on site during construction, with 5,600 people on site at peak construction – 4,500 jobs in France</td>
</tr>
</tbody>
</table>
HINKLEY POINT C: PROJECT PROGRESS

Construction phase follows as the final contracts are signed

- EDF signed contracts with the UK Government and Chinese partner CGN in London on 29 September 2016, sealing the final investment decision taken by the EDF Board on 28 July 2016. EDF’s share is 66.5% and CGN’s 33.5%
- Following the signature of final contracts, the project has moved into the build phase for construction. In 2017:
  - The pour of First Nuclear Safety Concrete for power station galleries (the galleries are a network of connected tunnels which will carry cabling and are some of the first permanent structures on the site)
  - The start of the construction of the site campus accommodation
  - The handover of the design studies for the Pre-Stressing Gallery (PSG) from the Engineering Command Centre to the Delivery Command Centre
  - The handover of design studies for the foundation of the Pump House to the Delivery Command Centre
- Cancellation of the guarantee of the IPA (Infrastructure and Projects Authority) on 5 February 2018 as requested by EDF

2018 targets

- Start of construction of Unit 1 pre-stressing gallery, pumping station, final design handover of Nuclear Island raft and completion of the jetty
- Finalisation of the design

---

EDF's share is 66.5% and CGN’s 33.5%.

Clarifications on Hinkley Point C project on 3 July 2017

- First nuclear safety concrete of the building of Unit 1 scheduled for mid-2019, provided that the final design, which is on a tight schedule, has been completed by the end of 2018.

Project completion costs estimated at £19.6 billion in 2015 sterling(2), an increase of £1.5 billion(3) in 2015 sterling, compared to the initial cost, subject to the implementation of the action plans necessary to achieve this objective.

- Risk of deferral of delivery (COD) estimated at 15 months for Unit 1 and 9 months for Unit 2. The materialisation of this risk would entail an additional cost of around £0.7 billion in 2015(2) sterling.

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(1) Please refer to press release published by EDF on 3 July 2017
(2) Excluding interim interests and excluding forex effect versus the reference exchange rate for the project 1 Sterling = 1.23 Euro
(3) Additional costs net of action plans
## Construction progress at end of April 2018

### Unit 1
- Fuel loaded in the vessel in April 2018

### Unit 2
- Continuation of electromechanical erection
- End of secondary circuit assembly
- Realisation of the modifications on the command control

## Next steps reported by CGN

### Unit 1
- Start-up expected in 2018\(^{(1)}\)

### Unit 2
- End of electromechanical erection, start of system performance testing
- Start-up expected in 2019\(^{(1)}\)

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\(^{(1)}\) Source: CGN press release of 29 December 2017
The EDF Group has been involved in civil nuclear cooperation between France and India since 2010, within the framework of bilateral agreements signed between France and India. Jaitapur is the flagship project of this collaboration. 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.

Acting as head of the French nuclear power sector, EDF entered into exclusive negotiations with NPCIL in 2016 and in the same year it issued its first technical-commercial proposal for the development and construction of six EPRs. Jaitapur is located in the state of Maharashtra and will be the largest nuclear power site in the world. EPR reactors - with a generating capacity of around 1,600MW per unit - are particularly suitable for a country undergoing rapid growth and equipped with a mature electricity system such as in India.

On Saturday, 10 March 2018, Jean-Bernard Lévy, EDF Chairman and CEO, and Satish Kumar Sharma, Chairman and MD of Nuclear Power Corporation of India Limited (NPCIL), the government-owned Indian energy company, signed an Industrial Way Forward Agreement for the implementation of six EPR reactors at the Jaitapur site in India. Jaitapur is set to be the biggest nuclear project in the world. The agreement defines the project’s industrial framework, the roles and responsibilities of the partners, as well as a planned timetable for the next steps.

**EDF will act as supplier of the EPR technology.** EDF will undertake all engineering studies and all component procurement activities for the first two reactors. For the other four units, the responsibility for some purchasing activities and studies may be assigned to local companies. EDF will also provide NPCIL with its valuable experience in the construction of EPR reactors.

**In its capacity as owner and future operator of the Jaitapur Nuclear Power Plant, NPCIL shall 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 will assist NPCIL during the construction phase.
71.6%\(^{(1)}\) of French power generation in 2017

58 reactors in operation with a capacity of 63,130MW

19 sites

A unique technology, PWP (Pressurised Water Reactors), 3 series:

- 900MW 34 reactors 31GW with an average age of 36 years
- 1,300MW 20 reactors 26GW with an average age of 29 years
- 1,450MW 4 reactors 6GW with an average age of 17 years

Did you know?

The whole fleet in operation today has been built using the same technology (PWR). This standardisation allows for operational synergies and greater efficiency. EDF is responsible for the design, building and operation of the reactors and considers the safety of its facilities as an absolute priority.

\(^{(1)}\) The total French electricity output reached 529.4TWh in 2017 (Bilan électrique 2017 of RTE)
OPERATING PRINCIPLES OF A PRESSURISED WATER REACTOR (PWR)

Nuclear power plant without air cooling

Fuel building
houses a pool in which the spent fuel waiting to be transferred for reprocessing is stored, and the new fuel waiting to be loaded into the reactor.

Reactor building
houses all the equipment needed to allow nuclear power to transform water into steam in steam generators. This is called the “primary” circuit. The steam is sent to the turbine in the machine room.

Auxiliary nuclear building
houses all the circuits that ensure a reactor’s safe operation.

Pumping station
collects the sea water used to cool part of the circuits.

Condenser
At the turbine outlet, the steam from the cooling circuit is transformed back into water by means of a condenser containing cold water from the sea or a river. The cold water withdrawn from the environment never comes into contact with other water circuits. This is called the “cooling” circuit.

Transformer
raises the voltage of the electricity generated by the alternator so that it can be transmitted through very high voltage lines.

Machine room
houses the turbo-alternator generator that uses the steam produced in the reactor building by the steam generators. This steam rotates a turbine that drives a generator. The generator produces the electricity.
THE FRENCH NUCLEAR FLEET: OPERATING CYCLE

The outages cycle of nuclear reactors

- **900MW:** 28 reactors 12 months cycle
  
  6 reactors 18 months cycle

- **1,300MW:** 20 reactors 18 months cycle

- **1,450MW:** 4 reactors 18 months cycle

Types of planned outages

- Two types of planned outages are alternated at the end of each generation campaign:
  - Ordinary outage for refueling only (ASR): unloading spent fuel and refueling fresh fuel. **Standard period ~35 days**
  - Partial inspection (PI): refueling and maintenance. **Standard period ~70 days**, varying according to programs for maintenance work
  - 10-year inspections (VD): **standard period ~110 days**, varying according to programs for safety upgrades and maintenance work
  - Regulatory obligations (safety tests and various controls), adapting safety to latest standards, maintenance work
  - Detailed examination of the main components relating to the safety of the facility (reactor vessel, containment building) and realisation of the upgrades aimed to reinforce the safety level of the facility
FRENCH CONSUMPTION PATTERN PARTICULARLY SEASONAL

2017 monthly consumption in main European countries

- French consumption with high seasonal variations between summer and winter:
  - Between 30 and 35 TWh/month during summer
  - Between 40 and 60 TWh/month during winter

Consumption pattern seasonal in France

Source: ENTSO-E
A SEASONAL SCHEDULE OF PLANNED OUTAGES

- A minimum number of planned outages during winter
- Necessary balance between 12-month and 18-month generation cycles

2017 Year: number of reactors in planned outage per week seen from the 1st January 2017

The planning refers to a specific instant t
The **Kd**, or “availability factor”, represents the available energy over the maximum theoretical energy corresponding to the maximum capacity all along the year. The winter **Kd** is the availability factor measured between the 1st of December and the 14th of February of the next year, when the consumption reaches its maximum levels.

The **Ku**, or “utilisation factor”, is the produced energy over the available energy. It reflects environmental, social and regulatory constraints, the consumption profile of customers, the supply of system services and the optimisation.

**Kp = Kd x Ku**

The multiplication of the Kd and the Ku leads to the **Kp**, or “load factor”, defined as the generated energy compared to the maximum theoretical energy.

---

**Did you know?**

- **Kd hiver** (%)
  - 2005: 92.9
  - 2006: 90.1
  - 2007: 89.9
  - 2008: 92.4
  - 2009: 94.6
  - 2010: 92.3
  - 2011: 91.5
  - 2012: 92.9
  - 2013: 93.4
  - 2014: 93.4
  - 2015: 93.4
  - 2016: 92.9
  - 2017: 90.2

(*) from 1st December (N) to 14 February (N+1)

(1) Excluding the outages for regulatory reasons such as outages relating to the irregularities found at Creusot factory, that are included in Ku factor
CHANGE IN LOAD FACTOR AND NUCLEAR OUTPUT

**Annual load factor of nuclear fleet**

Load factor (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Load Factor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>77.6</td>
</tr>
<tr>
<td>2006</td>
<td>77.4</td>
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<tr>
<td>2007</td>
<td>75.3</td>
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<tr>
<td>2008</td>
<td>73.8</td>
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<tr>
<td>2009</td>
<td>73.0</td>
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<td>2010</td>
<td>76.1</td>
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<td>2011</td>
<td>73.0</td>
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<tr>
<td>2012</td>
<td>75.2</td>
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<td>2013</td>
<td>75.4</td>
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<tr>
<td>2014</td>
<td>70.5</td>
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<tr>
<td>2015</td>
<td>69.2</td>
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<tr>
<td>2016</td>
<td>68.6</td>
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<tr>
<td>2017</td>
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**Net nuclear output (PWR(1) fleet)**

TWh

<table>
<thead>
<tr>
<th>Year</th>
<th>Nuclear Output (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>429</td>
</tr>
<tr>
<td>2006</td>
<td>428</td>
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<td>2007</td>
<td>418</td>
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<td>2016</td>
<td>379</td>
</tr>
<tr>
<td>2017</td>
<td>370</td>
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</table>

(1) Pressurised Water Reactor
FRENCH NUCLEAR FLEET: QUALITY ASSURANCE ANOMALIES IN AREVA’S(1) MANUFACTURING FILES

AREVA’s(1) quality control audit launched in 2015 has highlighted irregularities in the manufacturing files for the parts forged in the Creusot Forge factory. The affected files had been marked at the time with one or two bars, which is why they are called “barred files”.

Mid-October 2016, EDF informed the ASN that it had completed the characterisation of the “barred files” relating to the reactors in operation and confirmed that the 88 identified irregularities had no impact on the safety of the reactors in question.

- Regarding the Fessenheim 2 reactor, the noted irregularity involves the forging file for the lower part of a steam generator. In order to undertake additional investigations, EDF shut down this reactor on 13 June 2016 in advance of its planned outage. After completion of the investigations, the elements of analysis were transmitted to the ASN in July 2017. They confirm the integrity of the steam generator and its ability to operate safely. On 12 March, the ASN confirmed that this steam generator was fit for service and compliant(2) with the regulation. The generation unit No. 2 restarted on 9 April 2018.

Beyond the “barred files”, AREVA(1) has launched an analysis programme on “non-barred files”, corresponding to all the manufacturing records of components since the beginning of the manufacturing at this forge factory, of which c.1,600 concern the currently operating fleet. EDF has committed to submit to ASN for each reactor, after completion of analysis both by EDF and AREVA(1), a summary report for the components used, two months ahead of its restart.

- As of 30/04/2018, EDF has sent summary reports relating to 32 reactors. The ASN is examining these files, in line with the planning of the refueling outages of the reactors. To date, the ASN has confirmed that the components in question of 19 reactors are able to operate in a fully safe mode. These reactors have been allowed to restart by the ASN after their refueling outages.

- For the other files, the first step of identifying the findings is now complete. The analysis of these findings, which has been carried out for more than 70% of the files, confirms that to date, none of these findings is likely to call into question the fully safe operation of the concerned reactors.

The comprehensive review of the manufacturing files of the Creusot Forge factory will continue until 31 December 2018.

On 25 January 2018, Framatome received the green light from the ASN and EDF to resume manufacturing of forged parts for the French nuclear fleet at its Le Creusot site(3).

---

(1) As of 4 January 2018, New NP, a subsidiary of AREVA NP, becomes Framatome, a company whose capital is owned by the EDF group (75.5%), Mitsubishi Heavy Industries (MHI - 19.5%) and Assystem (5%). Please refer to the press release published by Framatome on 4 January 2018
(2) Please refer to information note published by the French Nuclear Satey Authority on 12 March 2018
(3) Please refer to the press release published by Framatome on 25 January 2018
Safety

- 2017 was a record year (historic low) in terms of Automatic Reactor Trips (ART)

Radiation protection

- Very satisfactory results in 2017 with the continued reduction of individual dosimetry of the most exposed employees

Safety

- 2017 is a record year in terms of accident frequency rate (Tf)\(^{(1)}\), with a global Tf (EDF employees and contractors) at 2.2

Environment

- Very satisfactory results were obtained in terms of the environment in 2017

\(^{(1)}\) Number of accidents with work stoppage per 1 million hours worked
2017: a good year in terms of safety and radiation protection

Number of automatic reactor outages\(^{(1)}\)

**2017: lowest historical result**

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<tbody>
<tr>
<td>Value</td>
<td>61</td>
<td>58</td>
<td>56</td>
<td>53</td>
<td>31</td>
<td>41</td>
<td>40</td>
<td>30</td>
<td>32</td>
<td>34</td>
<td>31</td>
<td>38</td>
<td>28</td>
<td>22</td>
</tr>
</tbody>
</table>

**Average annual collective dose/reactor**

- **Man Sv/u\(^{(3)}\)**
- **2017:** 0.61

**Accident frequency rate (AFR)\(^{(2)}\)**

**2017: lowest historical result**

- **Contractors:** 2.7
- **EDF:** 1.6

**Individual dose\(^{(4)}\)**

- **In 2017, none of the persons received a dose superior 14 mSv**

---

\(^{(1)}\) Automatic reactor outage is a safety and protection system of a reactor. This is an important indicator in terms of safety which measures the quality and rigour of reactors’ operation.

\(^{(2)}\) Number of accidents with work stoppage per 1 million hours worked.

\(^{(3)}\) Man Sievert per unit.

\(^{(4)}\) Maximum monthly number of persons who received a dose of between 14 and 17 mSv/12 months. Regulatory limit is 20 mSv/12 months.
**GRAND CARÉNAGE: CONTINUING OPERATION OF THE POWER PLANTS BEYOND 40 YEARS FOR A COMPETITIVE ENERGY MIX (1/2)**

By integrating all of the investments for the French nuclear fleet, the “Grand Carénage” programme responds to three major challenges:

- **The renewal and replacement of major components at the end of their technical lifetime, in particular the steam generators.** These are the *exceptional maintenance* operations.

- **The integration of safety improvement changes:** safety and “post Fukushima” reviews. These are the changes required for the safety improvements, including the “post-Fukushima” changes.

- **The demonstration of equipment qualification after 40 years.** These are studies or tests to ensure that “qualified” equipment, that is, those capable of operating under particularly difficult conditions, retain this capability after 40 years of operation.

An operational programme 4 years after its launch:

- The 3rd ten-year inspections for the 1,300MW series began in 2015 and will be completed by 2025.

- More than 3/4 of the 4th ten-year inspections for the 900MW series will be completed by 2025, the first of which will take place at Tricastin in 2019.

Nuclear power plant in Saint Laurent des Eaux, intervention in the machine room as part of the *Grand Carénage*. 
Continuing the operation of the power stations beyond 40 years means preparing the future of the generation fleet by making the most of existing installations and leaving options open for the future.

- **Technical capacity** of the plants to operate beyond 40 ans, supported by international benchmarks for similar technologies (in 2016, 45 of the 65 Pressurised water reactors (PWR) in the United States had received authorisation to operate beyond 40 years).

- In 2016, the EDF group approved the extension from 40 to 50 years of the depreciation period of the 900MW series PWR nuclear fleet (except Fessenheim) accounted as of 1st January 2016.

- **Controlled total costs**: €55bn\(^{(1)}\) for the period 2014-2025, revised to €45bn\(^{(1)}\) thanks to an optimisation of the project, allowing a reduction and a postponement beyond the Grand Carénage horizon.

- **Gradual renewal and modernisation activities** during the 2nd, 3rd and 4th ten-year inspections of the 1,450MW, 1,300MW and 900MW series respectively, with the purpose of extending their operational lifespan beyond 40 years.

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\(^{(1)}\) 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 €2013,100bn for the 2014-2030 period, the investment-expenditures estimated at €2013,74.73bn should be distinguished from the operating expenditures estimated at €2013,25.16bn. Within the €2013,74.73bn of investment expenses between 2014 and 2030, €2011,55bn 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.
Air cooling towers exchange surface replacement
Fire alarms renovation
Replacement of main transformer units
Modernisation of instrumentation and control
News buildings for project teams
Training campus
Salle des machines
Station blackout diesel generator
Steam generators replacement
Local Crisis Centre
Turbine renovation
Condenser renovation
Alternator rotors renovation and alternator stators replacement
GRAND CARÉNAGE : MAIN INDUSTRIAL SITE WORKS 2014-2025
### Steam generators
- 3 SG/900MW reactor
- 4 SG/1,300MW reactor

At the end of 2017, the steam generators were replaced with 28 reactors of 900MW series. For the remaining 6 generation units, the steam generators will be replaced between 2019 and 2030. For the 1,300MW series, the replacements will be spread over the next 25 years.

### Alternator stators

The alternator stators were renovated on 45 units, for a total of 49 units to renovate. The replacement will continue until 2019.

### Main transformers (3 poles/reactor)

116 main transformer poles out of 173 have been replaced. The replacement will continue until 2024.
TEN-YEAR INSPECTIONS FOR FRENCH THE NUCLEAR FLEET (1)

In 2019, there will be one 3rd and one 4th 10-year inspections of 900MW reactors

In 2020, there will be one 3rd and two 4th 10-year inspections of 900MW reactors.

In 2020, there will be one 3rd and two 4th 10-year inspections of 900MW reactors.

Forecast data as of 16 February 2018

Of which 3rd 10-year inspection (1,300MW) of Paluel 2 started in 2015 and the 3rd 10-year inspection (900MW) of Gravelines 5 started in 2016

Of which 3rd 10-year inspection (900MW) of Cruas 2 started in 2017, excluding 3rd 10-year inspection continuation (1,300MW) of Paluel 2 started in 2015

(1) Forecast data as of 16 February 2018

(2) Of which 3rd 10-year inspection (1,300MW) of Paluel 2 started in 2015 and the 3rd 10-year inspection (900MW) of Gravelines 5 started in 2016

(3) Of which 3rd 10-year inspection (900MW) of Cruas 2 started in 2017, excluding 3rd 10-year inspection continuation (1,300MW) of Paluel 2 started in 2015
Did you know?

An AGR differs in many respects from a PWR. Whereas the AGR design is unique to the UK, the PWR design is the most common reactor type in the world.

An AGR has a graphite moderator helping to control the reaction. The reactor is encased in a steel-lined pre-stressed concrete pressure vessel several meters thick which also acts as a biological shield. The steam generator in which water is heated is situated inside the pressure vessel. An AGR uses enriched uranium dioxide encased in a stainless steel pin for its fuel and CO₂ as its coolant.

A PWR is contained inside a steel pressure vessel filled with pressurised water which acts as the moderator and coolant. The fuel used is enriched uranium dioxide and is contained in zirconium alloy tubes.

[1] Source: Best available estimates as of January 2018, based on BEIS data
KEY CHARACTERISTICS OF EDF ENERGY’S NUCLEAR FLEET

A nuclear fleet with an average age of 33 years
- Total power generation capacity of 8.9GW
- An output of 63.9TWh in 2017

Nuclear safety is the over-riding priority
- Adequacy of each station confirmed at each statutory outage by the Office for Nuclear Regulation (ONR) that has to provide consent to restart after each outage
- Periodic safety review (PSR) undertaken every 10 years, also requiring ONR acceptance

Delivering life extensions
- Life extension subject to review of safety, technical and economic factors
- The lives of the AGRs(2) have been further extended by an average of 8 years (relative to the planned closure dates at British Energy’s acquisition in 2009)
- It is anticipated that Sizewell B PWR(2) can be extended by 20 years

(1) Availability factor
(2) For more information about EDF Energy’s nuclear fleet and about the AGR and PWR technologies RAG and REP, see p. 78

Output (TWh)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kd(1)</td>
<td>72%</td>
<td>63%</td>
<td>73%</td>
<td>78%</td>
<td>79%</td>
<td>72%</td>
<td>77%</td>
<td>83%</td>
<td>82%</td>
</tr>
</tbody>
</table>

(1) Availability factor
(2) For more information about EDF Energy’s nuclear fleet and about the AGR and PWR technologies RAG and REP, see p. 78
EDF ENERGY NUCLEAR POWER STATIONS LIFETIMES

Hartlepool / Heysham 1 were extended by 5 years in 2010 and a further 5 years in 2016, Hunterston / Hinkley by 7 years in 2012, Heysham 2 / Torness by 7 years in 2016 and Dungeness by 10 years in 2015.

An average eight-years extension across the AGR\(^{(1)}\) fleet (relative to planned closure dates at British Energy acquisition in 2009)

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\(^{(1)}\) For more information about EDF Energy's nuclear fleet and about the AGR and PWR technologies RAG and REP, see p. **78**
CONTINUOUS IMPROVEMENT IN OPERATING CONDITIONS

Number of automatic reactor trips

Industrial safety accident rate\(^{(1)}\)

Average annual collective dose per reactor

Individual annual dose above 15mSv

\(^{(1)}\) Number of accidents with work stoppage (lost time injuries and restricted time injuries) per million hours worked: ISA (Industrial Safety Accidents) and CISA (Contractor Industrial Safety Accidents) indicators
STAGES OF THE NUCLEAR FUEL CYCLE IN FRANCE
EDF NUCLEAR PLANTS BEING DISMANTLED IN FRANCE

1 pressurised-water reactor (PWR)

1 heavy-water reactor (REL)

6 natural uranium/graphite gas reactors (NUGG)

1 fast-neutron reactor (FNR)

(1) MAD/DEM decree: decree on the final shutdown and dismantling (Décret de Mise à l’Arrêt Définitif et Démantèlement)
(2) INBE decree: decree on nuclear spent fuel storage facility (Installation Nucléaire de Base d’Entreposage) (partial dismantling authorisation of a nuclear facility)
THE PLANT DISMANTLING CYCLE: 3 KEY STEPS

- **Final shutdown**
  - The first phase consists in unloading the fuel and draining all systems (after which 99.9% of the on-site radioactivity has been eliminated), followed by decommissioning (dismantling of decommissioned non-nuclear installations)

- **Dismantling excluding the reactor building**
  - The second phase starts after the obtaining of the decree on final shutdown and dismantling (MAD/DEM) and consists in dismantling all equipment and buildings (with the exception of the reactor building), as well as the packing and removing of all waste to appropriate storage facilities

- **Dismantling of the reactor building**
  - This final phase corresponds to dismantling of the reactor vessel, the demolition of the buildings and the soil remediation

The duration of a Pressurised Water Reactor (PWR) is 15 years starting from the decree on the final shutdown and dismantling (MAD/DEM). The duration of the operations may vary for other technologies (NUGG, LWR, FNR) according to the complexity of works that have to be realised.
THE FIRST PRESSURISED WATER REACTOR UNDER DECOMMISSIONING: CHOOZ A

Commissioned in 1967 and in operation until 1991, Chooz A is the first Pressurised Water Reactor (PWR) to be decommissioned. On 8 March 2017, the site entered its final phase for the segmentation of the reactor vessel.

• Closure of the facility, removal of fuel and emptying of main circuits

• Obtaining of the final shutdown decree allowing the first dismantling operations

• Preparatory work for the dismantling

• Dismantling of the non-nuclear and nuclear parts of the facilities, excluding the reactor “cave”

• Dismantling of the reactor “cave”, excluding the reactor vessel

• Preparatory work for the dismantling of the reactor vessel

• Dismantling of the reactor vessel

• Soil cleaning actions

• End of dismantling

Dismantling of the internal vessel components, December 2017
# Radioactive Waste Management (1/2)

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Example</th>
<th>Position/Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very-Low-Level Waste</strong> (VLLW)</td>
<td>They come from the decommissioning of nuclear installations (concrete, scrap, piping, etc.)</td>
<td>On the surface at the Morvilliers storage centre managed by ANDRA&lt;sup&gt;(1)&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Short-Lived Intermediate- and Low-Level Waste</strong> (SL-ILW and LLW)</td>
<td>They come from maintenance works (tools, clothes, dismantled parts, etc.); waste from the processing of liquid and gaseous effluents of operating plants; other deconstruction waste</td>
<td>On the surface at the Soulaines storage centre, managed by ANDRA&lt;sup&gt;(1)&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Long-Lived, Low-Level Waste</strong> (LL-LLW)</td>
<td>They essentially are graphite waste from the dismantling of first generation plants</td>
<td>At the production site waiting for a special subsurface storage (from 15 to 200m) to be built. Project under study</td>
</tr>
<tr>
<td><strong>Long-Lived Intermediate-Level Waste</strong> (LL-ILW)</td>
<td>Metallic structures of the assemblies separated during the processing of spent fuel, other dismantling waste</td>
<td>At the production site then at the ICEDA storage facility (Installation d’Entreposage et de Conditionnement des Déchets Activés), as early as its commissioning mid-2019, while awaiting for the deep geological waste storage Cigéo&lt;sup&gt;(2)&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>High-Level Waste</strong> (HLW)</td>
<td>Non-recyclable material from the processing of spent fuel</td>
<td>Temporarily stored in dedicated installations in La Hague site of ORANO, while awaiting for the deep geological waste storage Cigéo&lt;sup&gt;(2)&lt;/sup&gt;. Beginning of the pilot industrial phase in 2026</td>
</tr>
</tbody>
</table>

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<sup>(1)</sup> National Agency for Radioactive Waste Management (Agence Nationale pour la Gestion des Déchets Radioactifs)

<sup>(2)</sup> For more information about Cigéo, please see p.88
RADIOACTIVE WASTE MANAGEMENT (2/2)

**UNITS IN DECOMMISSIONING**
- Rubble, scrap metal, pipes
- Technological and filtration waste
- Operating, maintenance and decommissioning waste
- Graphite from 1st generation gas cooled reactors
- Metal components belonging to the reactor core
- Metallic structures from spent fuel assemblies
- Spent fuel fission products

**UNITS IN OPERATION**
- Drums, big bags or bins
- Drums, metal, plastic or concrete boxes
- Concrete containers
- Concrete boxes
- Concrete containers
- Steel containers
- Steel containers

**PACKAGING**
- Surface disposal in Andra Modane Repository (Aube)
- Surface disposal in Andra Soulacqre Repository (Aube)
- Near surface disposal (Gipuzcoa) Under study by Andra
- Storage facility (CEDA) To be commissioned in 2019
- Deep geological disposal (Cigéo) Project being studied by Andra
CIGÉO – A DEEP-STORAGE INDUSTRIAL CENTRE

- French deep-storage project for Long-lived Intermediate-level and High-level radioactive waste, generated mainly by the existing French nuclear facilities (nuclear power industry, research, defense, etc.). Such waste represents 3% of the total volume of radioactive waste and is alone responsible for 99% of waste radioactivity
- The French law of 28 June 2006 tasked the National Agency for Radioactive Waste Management (ANDRA) with designing, constructing and operating Cigéo
- The authorisation request of the Cigéo creation will be submitted mid-2018. It plans the site to be located in eastern France, on the border between the Meuse and Haute-Marne, near the ANDRA underground laboratory (Bure)

The principle of reversible storage in deep geological strata

- Principle adopted by the French Law of 28 June 2006 as the only safe solution for the long-term management of this type of waste, without shifting the burden onto future generations. This choice was preceded by 15 years of research, assessments (including by the National Review Board and the Nuclear Safety Authority) and a public debate
- The principle of reversibility for the entire duration of the operation (at least 100 years) in order to adapt Cigéo to possible changes

Secure and robust facilities that are adaptable on two levels

- On the surface: facilities to receive and prepare waste shipments, and to undertake excavation work and the progressive construction of underground structures
- Below ground: galleries located about 500 meters deep in a stable and impermeable layer of argillaceous rock, chosen for its containment properties over very long periods
- Scalable architecture of the underground facilities during operation, depending on feedback and available technologies
Following the acquisition of the English and Swedish assets of Studsvik holding company, in 2016, a subsidiary “Cyclife” was created to centralise the Group’s activities on nuclear decommissioning and waste treatment for the French and international market.

The offerings of Cyclife cover the entire value chain of the decommissioning and waste treatment: preliminary studies, engineering, management, training, etc.

Cyclife owns complementary waste treatment facilities located in 3 countries:

- The low-activity waste processing and packaging centre by smelting or by incineration (Centraco), in France
- Facilities for waste processing by metal recycling, incineration and pyrolysis situated at the Nykoping site in Sweden
- The Workington Metal Recycling Facility (MRF) in Workington, the UK

**EDF waste treatment assets**

**UK**
- Metal waste treatment (clean up, cutout): 2,500 t/year
- ~ 20 employees

**Sweden**
- Smelting: 5,000 t/year
- Incineration: 600 t/year
- Pyrolysis: 50 t/year
- ~ 85 employees

**France**
- Smelting: 3,500 t/year
- Incineration: 5,000 t/year
- ~ 230 employees

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(1) After transaction – maximum authorised capacities
EDF GROUP MAIN BUSINESSES

- NUCLEAR
- RENEWABLES
- THERMAL POWER
- REGULATED ACTIVITIES (NETWORKS)
- OPTIMISATION & TRADING
- CUSTOMER SOLUTIONS
- ENERGY SERVICES
- GAS

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EDF’S LEADERSHIP IN RENEWABLES ACTIVITIES IS A STRONG PLATFORM FOR GROWTH

International presence

Capacity by technology

Hydro 23GW
Wind 7.6GW
Solar 1.2GW
Other 0.3GW

32.1 GW

Upcoming growth plans

Balanced capacity mix with 32GW in operation

Hydropower: “DNA” of EDF

SELECTIVE GROUP INVESTMENT PLAN

Over €2bn gross investments p.a. over 2017-2020 period

Leaders in Europe with a growing development pipeline

Capacities in operation: 23GW of hydropower and 9GW of other renewable energies

Data as of end-2017. Net installed capacities, corresponding to consolidated data according to EDF’s percentage ownership in Group companies, including associates and joint ventures.
EDF GROUP’S NET RENEWABLE GENERATION BY COUNTRY IN 2017

The EDF group is an active player in the energy transition and, with over 50TWh produced in 2017, the largest producer of renewable energy in Europe, due mainly to its hydropower output. The share of sun and wind power in the Group’s generation mix is continuously on the increase and now represents 3% (2.5% in 2016).

MAIN BUSINESSES

RENEWABLES

N.B. The values correspond to the first decimal or integer closest to the sum of the precise values, taking into account rounding.

(1) Including assets in overseas France
(2) Generation of 183MW from the biomass power plants owned by the subsidiaries EDF Polska and Kogeneracja sold on 13/11/2017
(3) Generation of 18.2MW from the biomass power plants owned by EDF Énergies Nouvelles, sold in early 2017
(4) Generation of 0.1MW from the solar power plant owned by Edison
(5) Excluding EDF Énergies Nouvelles energy storage and EDF Énergies Nouvelles biogas production

Data consolidated according to EDF’s percentage ownership in Group companies, including associates and joint ventures. Source: Performance 2017
THE MAIN SOURCE OF RENEWABLE POWER IN FRANCE

Net Renewable installed capacity(1) of the Group in France

- Hydro 20.3GW
- Other Renewables 1.8GW
- 22.2 GW

- 433 plants in France, average age of 73 years
- Covering the different kinds of hydropower facilities:
  - Run-of-river / Pondage water / Reservoirs (lake-supplied) / Pumped storage / Tidal power

UNIQUE STORAGE VALUE, CRITICAL FOR THE ELECTRICITY SYSTEM

Estimated weekly flexibility needs(2)

- Hydropower France provides ~14GW of storage
  - Reservoirs: 8.8GW
  - Pumped storage: 4.2GW
    - Including the 1.8GW Grand'Maison facility, the largest European storage asset
- Only sizeable & cost competitive electricity storage technology

AMONG THE MOST FLEXIBLE AND REACTIVE GENERATION MEANS

Response time to reach full capacity of dispatchable units

- Allows quick adjustments to within-day fluctuations in the supply-demand balance
  - Consumption peaks
  - Non forecasted loss of generation capacity
- Hydropower is the most significant contributor to ancillary services

(1) Power generation capacity, in proportion of the share the EDF group held in each asset
(2) Source: RTE (Bilan prévisionnel 2014)
DIFFERENT TYPES OF HYDROPOWER FACILITIES

EDF disposes of numerous hydropower facilities, able to meet base-load and peak demand, designed to optimise the use of water resources

- **Run-of-river**
  - No storage capacity
  - Energy generation depends solely on the current water condition

- **Pondage water**
  - Average sized water reserve, intended for an occasional use during the week or the day
  - Generation is concentrated at peak hours

- **Reservoirs**
  - Large storage capacity
  - Influence on downstream power plants (located in mountain ranges) which calls for a management of valley stations

- **Pumped storage (STEP)**
  - Water is pumped from a downstream reservoir to an upstream one to create a reserve available during off-peak hours
  - Water is then turbined from the upstream reservoir to the downstream one during periods of high demand

- **Tidal power**
  - The tidal power plant of the Rance river uses the tides and sea currents to power the turbines and thus generate electricity (renewable)
EDF’S HYDROPOWER FLEET IN FRANCE

Installed capacity ~20GW\(^{(1)}\)

- Reservoirs: 8.8
- Pondage: 3.6
- Run-of-river: 3.1
- Step: 4.2
- Tidal\(^{(2)}\): 0.24

~20GW

≈ 20% of the overall EDF’s generation capacity in France

Average producible hydropower output\(^{(3)}\): ~43.4TWh

- Reservoirs: 15.8
- Pondage: 8.8
- Run-of-river: 17.2
- Step: 1.1
- Tidal\(^{(2)}\): 0.5

~43.4TWh

≈ 10% of the average EDF output in France

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\(^{(1)}\) Excluding Corsica and overseas departments, equivalent to 440MW

\(^{(2)}\) The tidal power plant of the Rance generates electricity by using the up and down movement of the tides

\(^{(3)}\) Gross average producible hydropower output: maximum quantity of energy that can be generated from the water sources (rain, snow) over one year, on average on the 1960-2010 period
PRODUCIBLE HYDROPOWER OUTPUT\(^{(1)}\) DEPENDENT ON THE WEATHER

1989: lowest producible hydropower output in the last 30 years
1994: highest producible hydropower output in the last 30 years

(1) Producible hydropower output: maximum quality of power that can be produced from hydraulic sources (rain, snow) over a given period of time.
DEVELOP HYDROPOWER IN FRANCE AND ABROAD

Currently, 95% of France’s hydropower potential is being used. EDF is committed to developing its hydropower activities in order to increase their power and availability. EDF's expertise is also recognised internationally.

France

- **Romanche-Gavet (Isère)**: increase in hydro output

  Launched in the Romanche valley, near Grenoble, the Romanche-Gavet site consists of replacing six old plants with a single 90MW underground plant that is more efficient and better integrated into its environment. The new plant will ultimately generate 560GWh/year, or 30% more than the current six plants. Better integrated into the landscape, the new hydropower development at Romanche-Gavet will also be more respectful of the environment and will restore ecological continuity over more than 10 km. On 14 December 2017, the EDF group completed the digging of a 10 km gallery that will connect the Livet dam to the future Romanche-Gavet hydro plant. The gallery, which is as long as the Mont Blanc tunnel, was the largest of its kind under construction in France. The end of the construction is scheduled for 2020.

- **La Coche (Savoie)**: construction of the most powerful production unit in France

  EDF is building the most powerful production unit in France at La Coche: 240MW. This production unit, which will be completed in 2019, will increase the capacity of the existing development by 20% and produce additional 100GWh each year.

International

- **Sinop (Brazil)**: construction of a 400MW dam

  EDF, through its subsidiary EDF Norte Fluminense, acquired on 11 December 2014, a 51% stake in Compagnie Énergétique de Sinop (CES). The other two shareholders are Eletronorte (24.5%) and CHESF (24.5%), subsidiaries of the Eletrobras group. Construction of the dam began in the spring of 2014, and commercial commissioning is scheduled for late 2018. The development includes a dam, a plant equipped with 2 groups of 200MW per unit that will be among the largest generation groups using this technology in the world, and a 500kV evacuation line. The project also includes an important environmental and social component.
THE RENEWAL OF HYDROPOWER CONCESSIONS

In 1993, under the “Sapin” Law to fight corruption, all public service delegations, including concessions, must go through a call for tenders procedure, unless there is a monopoly or if the public service is entrusted to a public institution. Given the preferential right provided for by the 1919 Law, its status as public institution and its monopoly on the electricity sector, EDF had its concessions renewed by mutual agreement until the beginning of the 2000s. Since 2004, with the conversion of EDF into a public limited company, hydropower concessions now falls within the scope of the Sapin law, but a right of preference is always recognised by law to the outgoing concessionaire.

2006/2008: The preferential right granted to the outgoing concessionaire was eliminated by the Water and Aquatic Environments Act in 2006. The Borloo Decree, which organised the publicity and competitive tendering procedure applicable to the renewal of hydropower concessions, was adopted on 26 September 2008

17 August 2015: adoption of the Energy Transition to Green Growth Law reflecting in particular the reflections made by the State on the competitive bidding process and including the following provisions:

• Possible grouping of concession contracts forming a “series of facilities that are hydraulically linked”

• Possible creation of semi-public hydroelectric companies (SEM) made up of a private-sector operator selected through a tender and a public Division (State, local authorities, etc.), each of which holds at least 34% of the shares

• Possible extension of certain concession contracts in return for investments (works) by operators where these upgrades are necessary in order to reach national energy policy targets

22 October 2015: Formal notice sent to the French State by the European Commission (EC) on the grounds that the concentration of concessions with EDF would harm competition on the retail electricity market

12 April 2017: The State notified to the European Commission (General Division Growth - “GROW”) on 12 April 2017 a project for the extension of the concessions of the Truyère valleys in return for investments. This file is still under study.
EDF ÉNERGIES NOUVELLES: NET INSTALLED CAPACITY AS OF 31 DECEMBER 2017

Wind installed (MW)
Solar installed (MWp)
Wind and solar under construction (MW)

Gross
Installed capacity: 11,787MW
Capacity under construction: 1,876MW
Total: 13,663MW

Net
Installed capacity: 7,819MW
Capacity under construction: 1,090MW
Total: 8,909MW

Other technologies
Installed: 190MW
Under construction: 25MW

Source: EDF Énergies Nouvelles
Note: MWp: Megawatt peak (measure of the power under laboratory lighting and temperature conditions)
EDF EN : A LEADING RENEWABLES PLAYER WITH STRONG TRACK RECORD

EDF Group’s platform for the development of new renewables

- Strengthened positioning in offshore wind
- Entry into Morocco, and South Africa

Entry into Brazil and Chile
- First merchant solar PV project

Entry into China
- Strong development in distributed solar PV (US: groSolar acquisition, France: “Mon Soleil & Moi” self-consumption offering launched)

EDF Énergies Nouvelles’ international subsidiaries rebranded EDF Renewables(1)

EDF Group takes 100% of EDF EN
- Entry into Mexico and Israel

Strong development of Operation & Maintenance activities
- Entry into India

EDF EN commissioned its first PV + storage project (Toucan, French Guyana)

Acquisition of Futuren
- Collaboration with Masdar for the largest solar PV plant in the region of Middle-East & Northern Africa (DEWA 3 - 800MW)

EDF Energies Nouvelles’ scope includes all non-hydro renewables activities of the Group, except some assets in Italy (Edison), Belgium (EDF Luminus) and in the UK (50% held by EDF Energy)

(1) For more information please refer to EDF Énergies Nouvelles’s press release of 12 April 2018
EDF EN: A SUSTAINABLE BUSINESS MODEL, LEVERAGING KEY COMPETITIVE ADVANTAGES

KEY COMPETITIVE ADVANTAGES...

- Extensive and diversified international footprint
- EDF brand name with dynamic and flexible structure leveraging on local Group synergies
- Integrated O&M skills and capabilities: operational excellence

... SUPPORTING A MODEL GEARED TOWARDS SUSTAINABLE GROWTH

- Partnerships bringing strong development opportunities and local market knowledge, with reduced balance sheet impact
- An intensified development phase starting 2017, with gradually growing CAPEX and a robust pipeline
- A generator aiming to gradually grow installed capacity and output
- A strong ability to maximise value from selective asset rotation to cover corporate and development costs

An integrated player, active across the entire value chain, with the ability to develop highly competitive projects with high returns
EDF EN: A DEDICATED PLATFORM TO BENEFIT FROM RENEWABLES CAPACITY GROWTH

Net installed capacity x2.9 since 2010

2010 | 2017
---|---
2.7GW | 7.8GW

Significant increase in total output

2010 | 2017
---|---
6.1TWh | 12.9TWh

INTEGRATED OPERATOR ALONG THE VALUE CHAIN

- Development, Construction and Operation
- Operation & maintenance (14GW under management)
- DSSA(1)

LEADING POSITION IN WIND

- 12.9GW developed and built over the last 15 years

(1) Development and sale of structured assets
EDF EN: DEVELOPMENT OF HIGH VALUE CREATION PROJECTS

A SELECTIVE DEVELOPMENT POLICY…

- Rigorous country analysis
- Stringent initial project selection
- Advanced engineering capabilities to estimate projects’ returns
- Unique procurement process with in-depth due diligence of supply chain
- Strict investment decision processes

… TO DELIVER ATTRACTIVE IRR SPREADS\(^{(1)(2)}\) ABOVE WACC

\[ \sim 200 \text{ to } 300 \text{ bps} \]

(1) Average performance based on a review of all projects over €50m CAPEX until mid-2016
(2) Scope EDF EN. Based on estimations at 31 December 2017 of revenues from fully consolidated assets. Includes regulated, quasi-regulated and long-term contracted assets
WITH OVER 3.1GW SOLD SINCE 2013, DSSA\(^{(1)}\) IS AT THE CORE OF EDF EN’S BUSINESS MODEL

EDF EN has an excellent DSSA track record

**CONSISTENT ROTATION OF OPERATIONAL ASSETS (EDF EN NET CAPACITY SOLD)**

- 2013: 0.5 GW
- 2014: 0.7 GW
- 2015: 0.6 GW
- 2016: 1.0 GW
- 2017: 0.3 GW

**CUMULATIVE ASSET ROTATION 2013 TO DATE**

- Rest of the world: 4%
- Europe: 25%
- North America: 71%

**DSSA: a self-funding and value accretive business model**

- **DSSA ACTIVITIES ARE AN IMPORTANT PART OF EDF EN’S BUSINESS MODEL**
- DSSA consists of the disposal of certain fully-structured projects (typically in operation and financed)
- Allows the execution of additional market opportunities with superior returns

**KEY BENEFITS OF DSSA**

- Immediate value crystallisation: Realise premium on capex
- Balance portfolio through asset rotation
- Increase financial flexibility through management of investments
- Increased competitiveness due to lower financing costs due to participation of a co-investor

\(^{(1)}\) Development and sale of structured assets (DSSA)
WITH 14GW GÉRÉS, UNDER MANAGEMENT, O&M EXPERTISE CREATES VALUE FOR THE WHOLE CHAIN

4 key principles

- **Competition with turbine manufacturers**, particularly on contract renewals
- **M&A and DSSA**: improved evaluation of acquisitions and an advantage for asset divestitures
- Better **price positioning** on tenders / auctions and increase of the IRR by operational services
- **Strong credibility** regarding the turbine manufacturers and third party investors
- **Rationalising of projects** by optimising conception and construction
- **Tender preparation**
- **Transparency and a shared goal of improvement** of the production
- **Continuous innovation** and predictive maintenance programs

(1) Development and sale of structured assets (DSSA)
EDF EN: BUILDING A GROWING EXPERTISE IN STORAGE, BOTH IN CENTRALISED AND IN DISTRIBUTED PROJECTS

**Utility - Scale**
- Short term balancing
  - Mc Henry 20MW / 8MWh (frequency regulation)
  - West Burton B 49MW (frequency regulation)
- Renewable integration
  - Toucan I 3MW (load shifting)

**Current organisation**
- Developer & Investor
  - Engineering, Energy Management System (EMS)
- Project development, EPC, commercialisation

**Behind-the-meter**
- Commercial & industrial
  - Self-consumption
    - Awarded for 7 projects 2MW (PV + storage)

**Residential**
- Self-consumption
  - Mon Soleil & Moi® (PV + storage)
  - Notre Soleil & Nous (PV + storage)

**EDF EN projects**
- Awarded for 7 projects 2MW (PV + storage)

**GEographic focus**
- United States
- France
- United Kingdom
- Spain
- India
- United States
- France

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N.B. : 1. Other projects commissioned at EDF group level include: Pegase (1MW, load shifting), NiceGrid (1MW, load shifting), Les Renardières (1 MW, frequency regulation), VENTEAA (2MW, multiple applications)

(1) In April 2018, EDF Énergies Nouvelles’ international subsidiaries were rebranded EDF Renewables (please refer to EDF EN’s press release of 12 April 2018)
EDF EN: A SIGNIFICANT PIPELINE OF RENEWABLE PROJECTS

Wind Pipeline: 15.3GW(1)

PV Pipeline: 7.2GWp(1)

A wind and solar pipeline of around 22.5GW

Source: EDF, EDF Énergies Nouvelles. Data as of end-2017
Note: pipelines are indicated for EDF EN and include capacity under construction
(1) Of which 1,664MW and 100MWp in China
THE SOLAR POWER PLANE: PHOTOVOLTAIC SOLAR POWER

**Challenges**

- In addition to small and medium-sized power plants on the ground and on roofs, necessity to deploy large solar power plants on the ground (savings on construction costs, optimised operation & maintenance costs, implementation of more efficient and innovative technical solutions)
- Between 25,000 and 30,000 hectares of land must be identified
- Tender process on larger solar power plants using large bank loans, partnerships and power purchase agreements

**Resources deployed by the EDF group**

- Mobilisation of the Group supply chain as well as industrial and financial partners
- Use of internal resources and acceleration of development effort
- Identification of suitable land from EDF portfolio of land assets
- Cooperation with public authorities to access large sites

- **30GW** of solar capacity in France between 2020 and 2025
- **~€25bn of investment needs**
- EDF equity investment optimised via the financing structure and the search for partnerships
- **1st estimate of the equity commitment of EDF:** ~ €200m/year, from 2020
ACQUISITION OF FUTUREN: A MAJOR RENEWABLE PLATFORM

387MW of gross capacity under operation and a pipeline of 467MW of onshore wind in 4 countries

Asset portfolio\(^{(1)}\)

- 332 MW of net installed capacity
- 442 MW\(^{(1)}\) of gross installed capacity and under construction
- 467 MW of projects
- 232 MW managed for 3rd parties

Strategic rationale

- Additional growth in asset base and development pipeline in France
- Growth opportunities in onshore wind repowering and third party management businesses in Germany
- Stronger positions in Italy and Morocco

With wind assets in France, Germany, Italy and Morocco

Futuren contributes perfectly to EDF EN’s geographical and technological roadmap

---

\(^{(1)}\) Data as of end-2017
\(^{(2)}\) 387MW of gross installed capacity and 55MW (3 projects in France) under construction
Successful value creation through a strategic partnership in the 3 first French offshore wind projects

Eolien Maritime France portfolio
- 3 offshore wind projects in France
- Over 1.4GW of combined capacity

Highly valuable partnership with Enbridge

Total investment costs of c. €6bn
- Efficiency increases with economies of scale

Optimised financial structure
- Partnering up to share funding, development and construction risks
- Equity method

Innovation in floating offshore

Innovative pilot awarded in France in November 2016
- Floating foundations allow for higher load factors as they can be placed in particularly windy areas previously untapped
- Contract awarded to EDF EN for the installation of three 8-MW turbines on floating foundations in the Faraman area (off Fos-sur-mer)
# Offshore Wind Power: The Blyth Project in the United Kingdom

<table>
<thead>
<tr>
<th><strong>Capacity</strong></th>
<th>41.5MW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Turbine type</strong></td>
<td>5 x 8.3MW MHI Vestas</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>~6 km from the coast</td>
</tr>
<tr>
<td><strong>Depth of water</strong></td>
<td>~38 m</td>
</tr>
<tr>
<td><strong>Ground conditions</strong></td>
<td>Sand, silt and clay</td>
</tr>
<tr>
<td><strong>Interconnection lines</strong></td>
<td>~11 km at sea and 1.5 km on land</td>
</tr>
<tr>
<td><strong>Foundation weight</strong></td>
<td>15,000 tons</td>
</tr>
<tr>
<td><strong>Electricity generation</strong></td>
<td>Supply of electricity to 34,000 British homes</td>
</tr>
</tbody>
</table>

### Key dates
- **FID:** January 2016
- **Start of construction:** June 2016
- **Turbine installation:** September 2017
- **Start of electricity generation:** October 2017
EDF GROUP MAIN BUSINESSES

- NUCLEAR  P. 52
- RENEWABLES  P. 90
- THERMAL POWER  P. 112
- REGULATED ACTIVITIES (NETWORKS)  P. 117
- OPTIMISATION & TRADING  P. 129
- CUSTOMER SOLUTIONS  P. 142
- ENERGY SERVICES  P. 155
- GAS  P. 164
ADJUSTMENT OF THERMAL POWER TO EDF’S LOW CARBON STRATEGY

Modernisation of the EDF’s fleet in mainland France to improve its technical and environmental performance

- Final shutdown of fuel oil production units: two units in Aramon on 1 April 2016, four in Porcheville and one in Cordemais in spring 2017. The last fuel oil plant in EDF’s French fleet (Cordemais 3) was shut down on 31 March 2018

- Commissioning of four combined-cycle gas turbines (CCGT) between 2011 and 2016 to replace the coal-fired power plants that were shut down. CCGTs emit half as much CO₂ per kWh generated, three times less nitrogen dioxide, very little sulphur and virtually no dust

- On-going reconversion project on coal-fired plants for change towards renewable and low-carbon fuels. On-going tests aim to allow the coal-fired plants burn on cocombustion

- Thermal represents 20% of the EDF group’s net installed capacity(1). The share of thermal in the energy mix of the Group varies from one country to another: in 2017, it reached ~ 4% of electricity generation in France(2) and ~ 84%(3) in Italy.

Did you know?

The EDF group’s thermal fleet as of end-2017(1):

~ 25GW installed in the world

~ 13GW of coal-fired and fuel oil power plants

~ 12GW Of gas plants (including cogeneration)

Note: As of 31 March 2018 the thermal fleet of the Group represents 21.5GW of which ~9.4GW of coal-fired and fuel oil power plants

---

(1) Consolidated capacity of the EDF’s group as of end-2017
(2) Excluding Corsica and overseas departments (4.7TWh in 2017)
(3) Of which 16,469GWh in generation and 871GWh in Energy Efficiency services to customers
EDF THERMAL PLANT FLEET IN MAINLAND FRANCE

~ 5.4GW\(^{(1)}\) (excluding overseas departments and Corsica) divided as follows:

- **Coal-fired plants**
  - Three 580MW units

- **Combined-Cycle Gas turbines (CCGT)**
  - Four CCGTs totalling 1,932MW

- **Combustion turbines (TAC)**
  - Thirteen TACs totalling 1,843MW

(1) As of 01/04/2018
AN INDUSTRIAL PROJECT FOR A BETTER ENVIRONMENTAL PERFORMANCE

Atmospheric emissions of EDF SA's fleet in mainland France

In 2017, thanks to modernising of the thermal generation fleet:

- The CO$_2$ specific emissions of EDF's generation fleet in mainland France have decreased by 40% since 2000

- The total amount of SO$_2$, NO$_X$ and dust specific emissions of the EDF's thermal generation fleet in mainland France have decreased by 90% since 2005.

(1) Specific emissions: pollutants' quantity brought to a standard value: g/kWh for this case
EDF enhances its expertise and know-how in thermal power by developing the sale of services to third parties. Its offer extends over the entire value chain of electricity generation facilities, from feasibility studies to decommissioning. Among the main operations in 2017:

- **Qatar Project**: assistance and project management for the construction of substations and lines
- **Saudi Arabia**: consulting and setting up a computer system for e-monitoring
- **Mauritius**: construction of a CCG plant
- **Senegal**: technical assistant and supervision operation and maintenance of the Sendou plant
- **Morocco**: contract for the extension of the lifespan of the coal-fired units for TAQA
- **United Arab Emirates**: support provided to DEWA in a fuel turbine development project in Alaweer
- **Egypt and Cambodia**: study and supervision (dispatching)
- **Mongolia**: interconnection study contract between Russia and China through Mongolia
ENEDIS\(^{(1)}\): HIGH VISIBILITY ON GROWTH AND RETURNS FROM REGULATED ACTIVITIES

**LEADING DISTRIBUTION PLAYER IN EUROPE**

- ~36m delivery points
- 376 TWh electricity distributed
- ~1.4m kms of lines
- ~38,900 employees

**2017 KEY FIGURES\(^{(2)}\)**

<table>
<thead>
<tr>
<th></th>
<th>In millions of Euros</th>
<th>2016</th>
<th>2017</th>
<th>Δ%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td>13,835</td>
<td>14,023</td>
<td>+1.4</td>
</tr>
<tr>
<td>EBITDA</td>
<td></td>
<td>4,047</td>
<td>3,993</td>
<td>-1.3</td>
</tr>
<tr>
<td>Net income excl. non-recurring items</td>
<td></td>
<td>1,015</td>
<td>791</td>
<td>-22.1</td>
</tr>
<tr>
<td>Gross operating investments(^{(3)})</td>
<td></td>
<td>3,462</td>
<td>3,767</td>
<td>+8.8</td>
</tr>
</tbody>
</table>

---

\(^{(1)}\) Enedis is an independent subsidiary of EDF under the provisions of the French energy code

\(^{(2)}\) Local data

\(^{(3)}\) Including Linky, project led by Enedis
ENEDIS\(^{(1)}\): QUALITY OF DISTRIBUTION IN FRANCE

- Criteria B\(^{(2)}\) excluding exceptional events and excluding RTE: 65 minutes in 2017
- Criteria B\(^{(2)}\) including all causes (TCC): 92 minutes\(^{(3)}\) in 2017

\[\text{Cumulated average duration in minutes of outages per low customers voltage}\]

Criteria B including all causes
Criteria B excl. exceptional events and excl. RTE

In cumulated minutes

\[\text{Cumulated average duration (in minutes) of outages per low customers voltage}\]


\(0\)\(\quad 60\)\(\quad 120\)\(\quad 180\)

\(^{(1)}\) Enedis, independent subsidiary of EDF under the provisions of the French energy code
\(^{(2)}\) Cumulated average duration in minutes of outages per low customers voltage
\(^{(3)}\) 3 exceptional weather events in the 1st quarter: Egon in Normandy and the Hauts de France regions, the succession of Kurt, Leiv and Marcel in Nouvelle-Aquitaine and Zeus from the tip of Brittany to the Mediterranean
TARIFF FOR USING THE PUBLIC ELECTRICITY TRANSMISSION AND DISTRIBUTION NETWORKS (TURPE) GENERAL PRINCIPLES

- TURPE is based on general principles...
  - “Postage stamp”: network access pricing is dependent on distance
  - Tariff equalisation: the same rates apply throughout the national territory
  - No discrimination: tariffs reflect the costs generated by each category of users
  - Time-seasonality: tariffs are designed to encourage customers to limit their consumption during peak periods

- ... complemented by criteria to best meet the expectations of stakeholders
  - Efficiency: the tariff signal leads users to modify their behaviour and encourages the reduction of costs over the long term
  - Readability: level of complexity appropriate to the type of user and the voltage level considered
  - Consistency: the different options offered to the same user must reflect the costs with the same degree of detail
  - Feasibility: tariffs must be able to be implemented
  - Progressivity: a change in tariffs must generate progressive effects
From a financial perspective, the TURPE must comply with Article L341-2 of the French Energy Code, which stipulates that “the tariffs for using the public transmission network and the public distribution networks are calculated in a transparent and non-discriminatory manner, in order to cover all the costs borne by the operators of these networks to the extent that these costs correspond to those of an efficient network operator”.

TURPE 5 is structured in this line around the hedging of operating expenses and capital charges, and in a differentiated manner for transport and distribution, with two separate resolutions from the regulator.

**TURPE includes provisions for incentive regulation** (bonus/malus for technical objectives, in addition to required OPEX), but also secures financial trajectories through the “CRCP”\(^{(1)}\) mechanism.

---

\(\text{(1)}\) CRCP: "Compte de Régularisation des Charges et des Produits", Income and expenses adjustment account. This is a non-accounting tool that can be used to cover any ex post facto discrepancies, on clearly identified expense and revenue items, between the realisations and the forecasts taken into account for the preparation of the tariff.

\(\text{(2)}\) RAB: Regulated Asset Basis

\(\text{(3)}\) WACC: Weighted average cost of capital
PUBLIC ELECTRICITY NETWORK ACCESS TARIFF (TURPE)\(^{(1)}\): KEY DATES

- CRE\(^{(2)}\)'s decisions on TURPE 5 Transport and Distribution were published in the Official Journal of 28 January 2017
- TURPE 5 Transport and Distribution became effective simultaneously on 1\(^{st}\) August 2017
- The CRE\(^{(2)}\) published the ruling on supplier commission on 26 October 2017: Setting of compensation from 01/01/2018 for passthrough for Enedis\(^{(3)}\)
- In its decision of 9 March 2018, the Council of State pronounced a non retroactive partial cancellation of TURPE 5 (of TURPE 5 Distribution\(^{(4)}\)) which will be effective as of 1 August 2018: the CRE’s resolution remains valid until 31 July 2018, the following years will be impacted by the new tariff resolution of the CRE. TURPE 5 Transmission is not affected by this cancellation

---

17 November 2016
CRE decision on TURPE after consulting with the Supreme Council of Energy

28 January 2017
Publication of TURPE 5 deliberations in the Official Journal

3 February 2017
Submission of a motion to the Council of State seeking the overturning of CRE’s rulings on TURPE 5

1\(^{st}\) August 2017
TURPE 5 HTB and HTA/BT become effective

26 October 2017
CRE ruling on supplier commission amending the TURPE 5 HTA/BT ruling

9 March 2018
Partial cancellation of TURPE 5 Distribution

---

\(^{(1)}\) TURPE: Tarif d'utilisation des réseaux publics d'électricité (public electricity network access tariff)
\(^{(2)}\) CRE: Commission de Régulation de l’Énergie
\(^{(3)}\) Enedis, an independant EDF subsidiary as defined in the French Energy Code
\(^{(4)}\) As regards the methods for taking into account, in the calculation of the tariffs, charges relative to the invested capital to enable the financing of the development of these networks
### REGULATED ASSET BASE IN FRANCE

#### TRANSMISSION

- **Regulated Asset Base as of 01/01/2018**
  - NBV of fixed assets<sup>(1)</sup> = €14.1bn

#### DISTRIBUTION

- **Regulated Asset Base as of 01/01/2018**
  - NBV of fixed assets<sup>(1)</sup> = €50bn
  - Regulated equity<sup>(2)</sup> = €5.6bn
  - NBV of Linky = €1bn

#### Nominal remuneration rate before corporate taxe

- **6.125%**
  - 2.6%
  - 4.1%
  - 7.25%
  - 3% / - 2%<sup>(4)</sup>

#### Change

- **Indexation CPI + K<sup>(1)</sup>**
  - + 1.4% at 01/08/2016
  - + 6.76% at 01/08/2017

- **Change in tariff**
  - +2.71% at 01/08/2017

---

<sup>(1)</sup> CPI: Consumer price index covering all of France excluding tobacco of year Y-1. K: CRCP reconciliation term, within a range of +/-2% (CRCP: The CRCP mechanism (Compte de Régularisation des Charges et des Produits) corrects for the differences between forecast and actual expenses and products, from one year to another)

<sup>(2)</sup> Excluding financial assets and assets under construction and after regulatory restatement of investment subsidies. Under TURPE 3, tariffs included only industrial D&A’s. Under Turpe 4, provision for renewal as well as all D&A’s are included

<sup>(3)</sup> Difference between NBV of fixed assets and the sum of specific concession accounts, provisions for renewal, investment subsidies and where appropriate, financial loans

<sup>(4)</sup> Incentive premium / penalties during the deployment phase
TURPE 5 TRANSMISSION (TRANSPORT): AVERAGE FIGURES FOR 2017-2020

Capital charges adopted by CRE

- Compensation of assets in progress at 4.6%: 57 million Euros
- RAB remunerated at 6.125%: 891 million Euros
- Coverage of the RTE\(^{(1)}\) amortisation trajectory: 861 million Euros

Business Opex: CRE incentive based on RTE\(^{(1)}\) proposal: 1,889 million Euros

System Opex: cost coverage

- Interconnections and CRCP: (397) million Euros

Total authorised revenue adopted by CRE: 4,298 million Euros

In millions of Euros

Source: French Energy Regulation Commission (CRE)

\(^{(1)}\) RTE is an independent subsidiary of EDF under the provisions of the French energy code.
TURPE 5 DISTRIBUTION: 2018 FIGURES

**In millions of Euros**

- **Capital charges adopted by CRE**: 4,321
- **Equity charges Linky**: 250
- **Equity charges except Linky**: 4,070
- **Business Opex: CRE incentive on Enedis proposal**: 4,694
- **System Opex: cost coverage**: 4,663
- **Linky CRL and CRCP clearance**: (296)
- **Total authorised revenue adopted by CRE**: 13,382

---

Source: French Energy Regulation Commission (CRE)

(1) Best vision corresponding to the CRE’s decision on TURPE 5 of 17/11/2016 for 2018 year, while awaiting for a new CRE’s decision for the period post 1st August 2018 which will precise the new values following the 09/03/2018 decision on partial cancellation of TURPE 5 by the French State Council

(2) Enedis is an independent subsidiary of EDF under the provisions of the French energy code
**LINKY(1): PREDICTABLE REGULATED RETURNS AND POSITIVE CASH FLOWS FROM 2022**

**AT THE HEART OF NEW NETWORK SERVICES FOR BETTER PERFORMANCES**

- > 8m customers equipped with the Linky meter at end-2017
- ~ 34m clients equipped by end-2021
- ~ €4.5bn investments over 2014-2021
- A specific 20-year tariff (regulation model with dedicated RAB)

**SIGNIFICANT LINKY EBITDA CONTRIBUTION FROM 2022**

2014 – 2020 investment pattern

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment (€bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>0.1</td>
</tr>
<tr>
<td>2015</td>
<td>0.1</td>
</tr>
<tr>
<td>2016</td>
<td>0.3</td>
</tr>
<tr>
<td>2017</td>
<td>0.6</td>
</tr>
<tr>
<td>2018</td>
<td>0.9</td>
</tr>
<tr>
<td>2019</td>
<td>0.9</td>
</tr>
<tr>
<td>2020</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Linky – Return**

- 7.25% pre-tax nominal return rate
- + 3% additional premium(2)

Key points as of 31/12/2017

- Project meets targets for cost, time and system performance
- In particular, the project achieved the first milestone of the incentive regulation on the deadlines set by CRE, with a 16.9% rate of delivery points equipped with a Linky communicating meter at end of 2017
- 150,000 terminals are equipped with a concentrator
- The installation rate is approximately 27,000 meters/day, in line with the trajectory of the forecast

---

(1) Linky is a project led by Enedis, independent subsidiary of EDF under the provisions of the French energy code
(2) +3% / -2% incentive premium / penalties depending on cost control, fulfilment of deadlines and system performance, during the deployment phase
# ELECTRICITY SMART METERING REGULATORY FRAMEWORK IN FRANCE, GREAT BRITAIN AND ITALY

<table>
<thead>
<tr>
<th>Deployment responsible entity</th>
<th>Great Britain</th>
<th>Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>France</strong>(1)</td>
<td>Distributors</td>
<td>Energy Suppliers</td>
</tr>
<tr>
<td><strong>Targets</strong></td>
<td>34 million meters (deployment rate of 90%) to be installed by 2021. Incentive-based regulation focusing on 3 parameters (installation schedule, costs management and service quality) with bonuses and penalties</td>
<td>Take “all reasonable steps” to achieve 100% of residential and small business customers by end of 2020. Material fines for non-compliance with milestones and targets. 53 million meters(2) to be installed, and ‘In-Home-Displays’ must be offered to customers</td>
</tr>
<tr>
<td><strong>Project status</strong></td>
<td>Start of the large-scale deployment in December 2015. Over 8 million customers equipped with Linky meter at end-2017</td>
<td>10m smart meters (1st generation) installed nationally by end 2017. Transition to second generation smart meters expected during 2018, which will use central communication systems.</td>
</tr>
<tr>
<td><strong>Remuneration</strong></td>
<td>Tariff model, based on OPEX coverage and on a specific RAB remuneration, applicable for the whole life of assets, until 2040</td>
<td>Government assumes net costs will be recovered via competitive energy tariffs and expects national benefits of c.£17bn. Project estimated discounted cost of c.£11bn</td>
</tr>
</tbody>
</table>

(1) For more information on France, please see p. 126
(2) Electricity and gas meters
ÉLECTRICITÉ DE STRASBOURG

ÉS is an Alsatian energy producer which is committed to long-term energy and economic performance of its territory through its four activities:

- **Electricity distribution** (Strasbourg Électricité Réseaux)
  - 14,000 kilometres of lines (including 700 kilometres in HVB) in more than 400 Alsatian municipalities having conceded their distribution network
  - 535,000 delivery points

- **Supply of energies** (ÉS Énergies Strasbourg)
  - 520,000 customers for electricity and 110,000 for gas (residential customers, businesses and communities)
  - associated services (corrective maintenance, digital services), as well as support services for residential customers in home renovation and construction

- **Energy services** (ÉS Services Énergétiques)
  - realisation and operation of energy services installations for local governments, homes, healthcare, the tertiary sector and industry
  - operation of the three large Eurométropole heat networks and 2,500 thermal installations

- **Renewable energy generation**
  - Deep geothermal energy: 400GWh generated, 2 installations in service (Rittershoffen 24MW th, Soultz-sous-Forêts 1.7MW e) and a cogeneration project in progress
  - Biomass: through its majority stake in ÉS Biomasse, commissioning of a cogeneration plant (70GWe of electricity and 112GWe of heat)

118 years of local anchorage

1899
- Creation of ÉS
1927
- The city of Strasbourg sells its shares to EDF
1954
- EG Laufenbourg, a Swiss shareholder with a 14% stake, sold its shares to EDF, which now holds more than 88% of the capital
2008
- Acquisition of the local historical gas supplier from SEM Réseau GDS (Gaz de Strasbourg brand)
2012
- Development of the marketing activity (ÉS Énergies Strasbourg)
2016
- ES becomes ENR producer
  - Deep geothermal plants at Rittershoffen (heat) and Soultz/Forêts (electricity)
  - Biomass cogeneration at Strasbourg
2017
- Launch of the Illkirch Graffenstaden geothermal project

~€803 million in sales
~€65 million in net income
EDF GROUP MAIN BUSINESSES

- NUCLEAR P. 52
- RENEWABLES P. 90
- THERMAL POWER P. 112
- NETWORKS P. 117
- OPTIMISATION & TRADING P. 129
- CUSTOMER SOLUTIONS P. 142
- ENERGY SERVICES P. 155
- GAS P. 164
The main role of the optimiser is to:

- **ensure the balancing** between EDF’s upstream and downstream resources in France,
- **secure and maximise the gross electricity margin** of the “generation-supply” entity by constantly seeking the best opportunities to buy or sell on the wholesale markets.

**Upstream resources:** generation fleet, long-term electricity purchasing contracts, purchases on wholesale markets, contractual demand-side response capacity

**Downstream markets:** sales to end customers, long-term supply contracts, sales on wholesale markets, sales to competitors in France (ARENH)

The optimiser minimises costs, manages inventories arbitrates on the wholesale market (through EDF Trading)

The supply-demand balance is forecasted over different time horizons
EDF TRADING, ACCESS PLATFORM TO WHOLESALE ENERGY MARKETS

EDF Trading operates on all wholesale markets, in Europe and worldwide

EDF Trading offers a full range of services and products on the wholesale markets: primary energy supply, management of means of generation, transport and storage capacity arbitrage, forward purchases/sales

As an exclusive market operator, EDF Trading maximises the value of the assets of EDF group entities and implements their financial hedging strategy

EDF Trading extends its services to all EDF group customers, large companies and industrial customers, as well as to many producers and suppliers of energy

Well positioned with a broad geographical presence

One of the largest suppliers of gas and electricity in North America

A major player in the European gas and electricity market

Growing development of international trade in the Pacific Basin

Did you know?

In 2017, EDF Trading:
- sells its coal trading business to JERA Trading, which was created in partnership with JERA Inc.
- signs a framework agreement with JERA for extension of the partnership to LNG optimisation assets
- has optimised the access of EDF to the Dunkirk LNG terminal on its first operation year.
For each moment, the optimiser schedules the operation of available means of generation, mobilising them according to the merit order of variable costs until the estimated demand is met.

Before using the market, each producer determines the resources required to meet a given level of demand. It classifies them from the least expensive to the most expensive.

It then determines the marginal cost, the variable cost of the most expensive means of generation called to meet the supply/demand balance of its own portfolio.

Given this marginal cost, it determines the sales and purchases volumes.

Spot power price (day ahead) is based on the marginal cost that forms the intersection of the supply of all producers with the overall demand to meet.

Variable generation cost (€/MWh)

- Peak (thermal, disruptions)
- « Reservoir" (hydro)
- « Must-run" (hydro run-of-river)
- CCGT
- Coal
- Nuclear

Market price

Capacité (GW)

(1) Variable costs: operating costs proportional to the generated energy, fuel costs, CO₂, costs of injection into the grid.
COST OPTIMISATION – SCHEDULING OF GENERATION FACILITIES BASED ON VARIABLE COSTS

Stack chart of generation facilities

Example of one high consumption day in winter in France

Every day, the optimiser sets up for the next day the functioning tool of the generation facilities, reflecting their dynamic constraints

Did you know?

The merit order is a way of ranking available sources of energy, especially electrical generation, in ascending order of their short-run marginal costs of generation, so that those with the lowest marginal costs are the first ones to be brought online to meet demand, and the plants with the highest marginal costs are the last to be brought on line.
The optimiser, via EDF Trading, accesses the wholesale markets, which can take different forms:

- OTC (over the counter) bilateral agreements: direct trade with counterparty
- Regulated/market exchanges: pooling of supply and demand by a market organiser and settlement of trades (Epexspot in France, Belpex in Belgium, etc.)

The wholesale market is possible over different time periods, and allows the optimiser to secure income against unforeseen circumstances:

- Medium-term: purchases or sales of annual products for the years Y+1/Y+2/Y+3
- Short-term: same principle with purchases/sales today for the next day (spot) or over the next few hours of the day
- Intermediate products (monthly and quarterly products over two to three coming quarters and months, and weekly products over two to three coming weeks) also exist.
The regulated access to historic nuclear power (ARENH) mechanism entered into effect in 2011 to allow alternative suppliers who so request, for the supply to end customers, and network operators for their losses, to benefit from a supply “under economic conditions equivalent to those for EDF resulting from the use of its nuclear power plants” through an annual product, which may be requested twice a year (in November and May), within the limit of an annual ceiling of 100TWh (excluding network losses).

The Energy Regulation Commission (CRE) is responsible for managing the mechanism and calculating the fees of which it informs the alternative suppliers individually, and EDF in an aggregated manner.

The ARENH price has been fixed at €42/MWh since 1 January 2012\(^{(1)}\). Since 2017, the delivered product includes 1MW of capacity guarantees per megawatt of subscribed ARENH.

The decree of 14 November 2016 changed the ARENH framework agreement signed by each supplier with EDF in order to incorporate provisions related to the implementation of the capacity mechanism and to regulate the terms of early termination by suppliers. This change thus made it possible to avoid the termination at 31 March 2017, by termination of the framework agreements, of deliveries started on 1 January 2017.

Suppliers now have the option of terminating their framework agreement in the following cases:

- a change in the ARENH price by more than 2%
- a substantial amendment to the framework agreement
- a change in the ARENH regulations affecting the purchaser substantially and unfavourably

The decree of 21 March 2017 clarified the uniform pricing clause (“clause de monotonie”), specifying its application in two situations not described initially, in which, before the current delivery period, a supplier has no agreement or when it has not submitted an ARENH request. This change thus made it possible to avoid the termination at 30 June 2017, by a resetting of the subscriptions, of deliveries started on 1 January 2017 and to therefore maintain their annual basis.

\(^{(1)}\) Order of 17 May 2011
ARENH: ANTICIPATED CHANGES TO THE MECHANISM

In their reply letter(1) to the summary proceedings of the Cour des Comptes (National Audit Court) on 22 December 2017, the Ministers of Energy and the Economy recognised the **asymmetrical nature of ARENH in favour of alternative suppliers** (ARENH allows alternative suppliers to hedge against a rise in prices, whereas EDF may not hedge against a fall in these prices).

They stated that they are considering a change in the terms for submitting ARENH requests, in accordance with two recommendations of the Cour des comptes, in order to:

- facilitate the requests from alternative suppliers during the year preceding the delivery of the quantities of energy;
- give more visibility to the stakeholders.

In March 2018, the Ministry of Ecological and Solidarity Transition held a consultation on a change in the terms of ARENH subscriptions.

The planned change consists of spreading out ARENH requests over the 14 months preceding the delivery of the quantities of energy so that the requested quantities correspond to the supply needs of the constituted customer portfolio. This reinforcement of the link between ARENH subscriptions and the use of these quantities of energy for the supply of end customers aims at preventing the risk of having the mechanism used for purposes other than that of making French consumers benefit from the competitiveness of the existing nuclear fleet.

A more structural reform remains necessary, however, to ensure a balanced regulatory framework for the existing nuclear fleet in particular with regard to the remuneration of the production affected by the ARENH and its asymmetrical nature. In their reply to the Cour des comptes(1), the ministers stated: “a medium-term change in the ARENH mechanism [seems] to us to be a viable option.”

(1) Made public on 15 March 2018.
ARENH: VOLUMES ALLOCATED TO ALTERNATIVE SUPPLIERS

Maximum total requested volumes of competing suppliers from EDF: 125TWh (including 25TWh for network losses sourcing)

No volume sold in 2016

Volumes sold in 2017: 82.2TWh

Forecasted volumes for 2018:

- 46.9TWh for H1
- 47.7TWh for H2

Source: CRE

(1) The ARENH volumes to be delivered evolved in the first half of 2015 due to the termination of the framework agreement with 4 suppliers

(2) 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.)
PURCHASE OBLIGATION AND SALE ON WHOLESALE MARKET

Public service mission: EDF and the LDCs\(^{(1)}\) must buy electricity generated by certain electricity generation facilities (or pay them an "additional remuneration") whose development the French government would like to encourage, at rates set by the government (by decree or through tenders).

Pursuant to Article L. 121-7 of the French Energy Code, EDF is compensated for the additional costs resulting from the purchase obligations (PO) on the basis of a reference to prices from wholesale electricity markets, known as “avoided cost” (compensation).

Starting from 1 January 2017, the costs of managing these contracts are also compensated.

EDF-Purchase obligations:

According to the CRE ruling of 16 December 2014, the energy of purchase obligations is resold on the markets:

- the near certain component (i.e. predictable over the medium term) directly by tenders under transparent and non-discriminatory conditions
- the variable component (i.e. predictable for the day ahead) on EPEX Spot via EDF Trading (in the dedicated book).

Since the capacity mechanism has been set up, EDF has in charge the certification of the facilities under the purchase contract and resells these capacities at the auctions (nearly 6GW).

\[^{(1)}\] Local distribution company

\[^{(2)}\] Excluding Corsica and French overseas departments
### Suppliers’ obligation

- **Calculation of the obligation**

### Demand for capacity certificates

- **Verification of certificates held vs. peak consumption**

### Capacity (generation, demand-side response)

- **3 hours Loss of load expectation standard**

### Trade of certificates

- **Offer of capacity certificates**

### Capacity price

- **Control of effective capacity availability**

### Availability commitment

- **Ex-post calculation of each supplier’s obligations and the actual availability of certified facilities**

- **Provision of information on supply and demand for certificates**

---

**Established by the NOME law, approved by the European Commission on 8 November 2016**

- Final rules issued by order on 29 November 2016
- Objective: to remunerate the means of generation and load shedding useful to security of supply
- Definition of the criterion of security of supply by the public authorities: 3h of shedding on average per year

**Operated by RTE**

- Definition of calculation methods and identifying peaks
- Issue of capacity certificates, controls and management of capacity registry and settlement of gaps

---

**Source:** DGEC, RTE
CAPACITY MECHANISM IN FRANCE: STANDARD CALENDAR

### Main Businesses

**Optimisation & Trading**

### Capacity Mechanism in France: Standard Calendar

<table>
<thead>
<tr>
<th>Year - 4</th>
<th>Year - 1</th>
<th>Delivery Y Year</th>
<th>Year + 1</th>
<th>Year + 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification of existing capacities</td>
<td>Certification of new capacities (including demand-side response)</td>
<td>RTÉ controls the effective availability of the certified capacity</td>
<td></td>
<td>Financial settlement of deviations for capacity not available</td>
</tr>
<tr>
<td>Capacity certificates market for year Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity auctions organized by EPEX Spot</td>
<td>1 auction in year Y</td>
<td>1 auction in year Y+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 auctions on the 4 years before the delivery year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous over-the-counter exchanges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation by suppliers of peak-load shedding measures in their customer portfolio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated amount of obligations of suppliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Source:** RTE
## CAPACITY MARKET IN FRANCE: IMPACT FOR EDF

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity auctions</th>
<th>Volume of certified capacities</th>
<th>EBITDA impact</th>
</tr>
</thead>
</table>
| 2017 | Market Reference Price (PRM): €10/kW (EPEX session on December 2016)  
Prix of the session of April 2017: €10.42/kW | 76GW | + €580m\(^{(1)}\)  
Cumulative impacts on regulated sales tariffs\(^{(2)}\), offers at market prices and purchases/sales on the wholesale markets |
| 2018 | Market Reference Price (MRP): €9.34/kW (sessions of November and December 2017)  
Session of 26 April 2018: €9.37/kW | 77GW | The 2018 MRP will apply to the billing of the vast majority of our customers on market-price contracts in 2018 and has been be incorporated into the new February 2018 schedules for customers on regulated tariffs\(^{(3)}\) |
| 2019 | Price of the 1\(^{st}\) auction: €13/kW (Dec. 2017)  
Price of the 2\(^{nd}\) auction: €18.5/kW (March 2018) and €18.24/kW (April 2018)  
Market Reference Price: will be set as the arithmetic average of the 7 EPEX auctions, to be held prior to 01/01/2019 | 75GW | In 2019, most of the customers on market-price will be mainly invoiced on the basis of the 2019 price of the capacity auctions. The 2019 MRP should be incorporated into the changes of the new schedules for customers on the 2019 regulated tariffs |

Part of this capacity cannot be directly priced. In particular, the ARENH subscriptions have a negative impact on capacity income insofar as the Arenh product at €42/MWh includes the delivery of capacity guarantees by EDF

- At end-2017, EDF transferred 10.8GW of capacity certificates to suppliers having subscribed to ARENH for 2018

\(^{(1)}\) Takes into account the sales on the 2018 Capacity Guarantees market realised by EDF in the last two sessions in 2017  
\(^{(2)}\) The MRP of the 2017 capacity of €10/kW was included in the tariff bareme of July 2017  
\(^{(3)}\) Please refer to the deliberation of the CRE of 11 January 2018
EDF GROUP MAIN BUSINESSES

- NUCLEAR
- RENEWABLES
- THERMAL POWER
- REGULATED ACTIVITIES (NETWORKS)
- OPTIMISATION & TRADING
- CUSTOMER SOLUTIONS
- ENERGY SERVICES
- GAS

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A RECOGNISED, INNOVATIVE AND DIGITAL CUSTOMER RELATIONSHIP

25.4 million customer accounts, almost 30.9 million sites\(^{(1)}\)

In the electricity market, nearly 310TWh marketed in 2017. Market shares of ~ 85% B2C and ~65% B2B

In the gas market, more than 30TWh marketed in 2017, representing a market share of 6.1%\(^{(1)}\)

High customer satisfaction in France

BUSINESSES AND PROFESSIONALS  LOCAL AUTHORITIES  RESIDENTIAL CUSTOMERS

Satisfied customers

89%  92%  9 out of 10 customers after a contact with EDF

For the 2\(^{nd}\) consecutive year, EDF was awarded the 1\(^{st}\) “Prix du Podium” in Customer Relations BearingPoint Kantar TNS.

Close customer relations based on personalised, human and digital services

- 5,000 customer advisers serving customers
- 300 “inclusion” advisers
- Sales teams in 8 Regional Directorates serving Businesses and Local Authorities
- All teams based in France, close to customers

Did you know?

Since the end of 2016, Sowee company has marketed its connected Station to private users. It is an object and application specially designed to manage energy consumption, optimise comfort, and control everyday connected objects remotely. Combined with the Sowee natural gas and electricity range, the connected Station allows Sowee customers to use a service to monitor their individual gas and electricity heating to the nearest euro or degree and monitor their energy consumption every day.

A continuous evolution of our offers and services: to innovate both for and with our customers

(1) Excluding Corsica and overseas
Energy offers tailored to customer expectations

Electricity supply offers tailored to customer expectations: the regulated sales tariff and new market offerings in 2017

- The “Gamme Vert Electrique” already includes 3 offerings:
  - Vert Électrique
  - Vert Électrique Week-end (for customers equipped with Linky)
  - Vert Électrique Auto (for customers with an electric vehicle)

- Gas supply offers that have been enriched this year with:
  - Avantage Gaz Durable, incorporating carbon offsetting
  - Avantage Gaz Connecté, integrating the management of the individual boiler

Enriched services and support reduce consumption

- A range of troubleshooting assistance, which was expanded in 2017: “Electricity and gas” troubleshooting option, “Home” option (electricity, gas, plumbing, locksmith, etc.) and “Equipment” option (appliances, hi-fi, etc.). EDF continues to market its “Assurénergie” offer

- Customer support dedicated to energy savings:
  - a personalised annual report
  - energy saving tips
  - Électriscore, a new platform for comparing electrical appliances
  - the website Prime Directe EDF to receive financial assistance for renovation work and a “EDF Home Solutions Partners” network

Innovative digital solutions

- The e.quilibre solution allows customers to monitor and control their electricity and gas consumption, in particular in comparison with similar households

- The solution was filled out in 2017 by a daily news feed for customers equipped with Linky. Current daily consumption is visible in euros and kWh, and suggestions are offered
EDF CUSTOMER SOLUTIONS IN FRANCE: BUSINESS MARKET (COMPANIES, PROFESSIONALS AND LOCAL AUTHORITIES)

EDF helps companies, professionals and local authorities become more competitive and attractive

Energy offers for all consumption profiles
- Electricity and gas supply offers tailored to every customer segment: from tailor-made offers to the specific offers by sector of activity or by level of consumption
- New sectoral offers are proposed this year: Matina and Estivia
- EDF is encouraging its customers to optimise their consumption by offering different prices for peak and off-peak hours, or between summer and winter hours
- All customers have the opportunity to choose a Renewable Energy option, which guarantees renewable electricity production

An extended range of services to cover every need
- Services to facilitate contract management: electronic billing, electronic billing flows, consolidated billing
- A Troubleshooting assistance offer for a quick and efficient response to electrical, gas and plumbing issues
- Services to monitor, control and manage the consumption of one or more sites: “SuiviConso”, monitoring consumption over the internet (“Suivi Internet”), gas or electricity consumption analysis (“AnalyseConso”), Energy audit, Energy Optimisation, all the way up to supporting the implementation of energy management systems by EDF experts

Digital solutions continue to evolve
- The Customer area has been enriched by a specific dashboard for professionals. Feelpro analyses customer consumptions and compares them with customers in the same line of business. personalised advice can be offered
- 2017 saw the testing of Mr EDF Bot Entreprises, a chat bot that answers questions about billing, account balances, collection dates, etc.

Specific support for local authorities and social housing lessors
EDF has developed offers tailored to the needs of local authorities and decentralised public institutions: offers and services for sustainable cities (energy policy, renewable energies, lighting, mobility); or helping fight against energy poverty. Specific options are also proposed to social-housing lessors to improve the energy efficiency in social housing: the “Load Amount” (with energy savings certificates)

173TWh sold
1.6 million customers
17.1TWh sold

(1) Excluding Local Distribution Companies (Entreprises Locales de Distribution, or LDCs)
ELECTRICITY BUSINESS OF EDF IN FRANCE

In TWh

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local authorities, companies and professionals</td>
<td>355.0</td>
<td>319.9</td>
<td>309.7</td>
</tr>
<tr>
<td>(not at historical tariffs and including transitional offer for 3.5TWh)</td>
<td>70.4</td>
<td>146.6</td>
<td>145.4</td>
</tr>
<tr>
<td>Residential customers</td>
<td>133.8</td>
<td>133.9</td>
<td>127.7</td>
</tr>
</tbody>
</table>

Portfolio change in particular due to the end of regulated tariffs above 36kVA at end 2015

(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 from 2016
EDF IN FRANCE: ELECTRICITY BUSINESS – HISTORICAL TARIFFS SPLIT BY COLOUR

In TWh

Sales to end customers for 2017\(^{(1)(2)}\)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Blue tariff</th>
<th>Green and Yellow tariffs(^{(4)})</th>
<th>LDC(^{(3)}) transfer price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential customers</td>
<td>127.7</td>
<td>0.3</td>
<td>8.8</td>
</tr>
<tr>
<td>Local authorities, companies and professionals (not at historical tariffs)</td>
<td>36.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local authorities, companies and professionals (at historical tariffs)</td>
<td>145.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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\(^{(1)}\) Rounded to the nearest tenth
\(^{(2)}\) Including EDF’s own consumption
\(^{(3)}\) Local Distribution Companies (LDCs)
\(^{(4)}\) Of which Yellow tariff for 0.1TWh and Green tariff for 0.3TWh - tariffs lower than 36 kVA that persist beyond 2015
In 2017, tariffs (excluding taxes) changed on the 1 August:

- +1.7% on average for residential customers and +1.7% on average for small companies (Blue tariff)
- These changes include an increase in network tariffs (TURPE) effective 1 August: +3.9% for distribution

Source: CRE deliberation report of the Committee of 6 July 2017, which has redefined 2016 levels

(1) Half-rounded figures
FRANCE: COMPONENTS OF THE COST STACKING METHOD FOR THE BLUE TARIFF

1. **ARENH**
2. **Market complement - Energy**
3. **Market complement - Capacity**
4. **Supply costs**
5. **Normal margin on supply activity**
6. **TURPE**

- **Cost calculated according to average consumption characteristics and observed forward market prices**
- **Capacity obligation mechanism requiring suppliers to have capacity guarantees as from 2017 covering their customers’ peak consumption**
- **Commercial costs of a supplier at least as efficient as EDF in the business of supplying electricity to those customers having subscribed contracts under regulated tariffs**
- **Margin earned on electricity supply activity**:
  - Remuneration of risks associated with supply which are not covered by other cost items
  - WCR coverage
  - Return on capital employed in electricity sales

The 28 October 2014 decree states that the regulated tariffs are determined by the addition of these different components “subject to the costs supported by EDF and LDCs for supplying electricity under regulated tariffs being taken into account”

Source: Decree no. 2014-1250 of 28 October 2014 modifying the decree no. 2009-975 of 12 August 2009 on regulated tariffs
ENERGY SAVING CERTIFICATES SYSTEM

Implemented in 2006, confirmed in 2015
- Response to requirements of the European Directive on energy efficiency
- Article 30 of the energy transition law for Green Growth: a new EEC obligation for households suffering from energy poverty, in addition to the traditional EEC obligation

Enhanced targets, new ambitions
- A 2 May 2017 decree sets the national obligation levels for the 4th period 2018-2020 to 1,600TWhc
  - Ambitious doubling of these levels compared to the 3rd period 2015-2017 (700TWhc for the “standard” obligations and 150TWhc for the obligations that are to benefit households in situations of energy poverty)
  - Including 400TWhc for the benefit of households that suffer from energy poverty and 1,200TWhc of obligation of classic CEE

Involved parties
- An obligation imposed on energy suppliers to achieve energy savings for customers called “obligated parties”
  - Electricity, gas, heating, refrigeration, domestic fuel and automotive fuel
- Actively promote energy efficiency to their customers
  - Households, local authorities, social housing landlords or business/professionals

Mechanism
- EDF is the first supplier with the largest obligation and intervenes in several areas
  - Financial incentive for energy renovations in accommodation (individuals, social housing landlords, building management companies), and of professional customers and local communities
  - Aids to control energy consumption, advice on energy savings and efficient technologies
  - Financing national programs (for example: ADVENIR on electric vehicles, FEEBat on the training on craftsman, Habiter mieux of ANAH to fight against energy poverty)
CUSTOMER SOLUTIONS IN THE UK: EDF ENERGY

Residential customers

- Highly competitive market with ~60 suppliers\(^1\), 21% of market share gained by small and medium suppliers (end October 2017)
- During 2017, EDF Energy supplied 12.4TWh of electricity and 27.8TWh of gas for the domestic segment
- As at 31 December 2017, EDF Energy had 3.2 million electricity accounts and 2.0 million gas accounts on this segment
- 2\(^{nd}\) place among Major Suppliers was maintained in the Citizen’s Advice Complaints (domestic) League Table
- EDF Energy continues to achieve high levels of customer satisfaction assisting a high level of recommendations (Advisor Recommendation score of +56)
- 67% of transactions completed by customers using digital self-service. Digital Net Ease Score of 4 out of 5 achieved in digital transition
- Standard Variable tariff (SVT) increase announcements have been made in 2017 by all major suppliers. In 2018, EDF Energy has announced a change of its SVT effective from 7 June\(^2\), The introduction of a cap has now been confirmed by the Government from February 2018, though details are not available at present.

Business customers

- In 2017, the non-domestic segment supplied a total of 31.4TWh of electricity, 1.9TWh to 198,471 small business customers (“SME”) and 29.5TWh to medium and large business customers (“I&C”) accounts
- All opportunities for 2017 delivery have been successfully renewed at anticipated margins including extensions of Scottish Procurement (SP) and Royal Mail Group, retention of Tesco, B&Q (and gain of Screwfix), Jaguar Land Rover and Veolia.

Innovation

- Blue Lab, is an internal accelerator team, that brings concepts to market through a rapid development approach. A high focus is on the Internet of Things (IoT) with multiple applications being developed, one such project has been the introduction of self-service via Amazon Alexa with a linked tariff bundle providing Amazon hardware
- Blue Lab has also developed a number of products aimed at helping business customers understand and improve their energy efficiency, including PowerNow and PowerReport
- In addition Blue Lab has founded two spin-off projects - PowerShift, which aims to be a platform for aggregating and commercialising demand side response as well as Hoppy, a novel Home Services, energy and home media marketplace

EDF Energy: fairness and convenience for customers; efficient operations; innovation (digital technology & smart metering)

- >340,000 smart-meters installed by EDF Energy for its customers in 2017

\(^{1}\) OFGEM data
\(^{2}\) For more information please see EDF Energy’s press release of 12 April 2018
CUSTOMER SOLUTIONS IN ITALY: EDISON

- Edison, through its 100% controlled company Edison Energia is involved in the electricity and gas supply to Italian customers
- The Italian retail market is not completely liberalized but the removal of the regulated market could be implemented from 2H 2019(1)

Business market (B2B)
- Edison is a leader in the B2B market both in power and gas
- Very fragmented and competitive market
- Market share of 7% for power and 23% for gas

Retail market (B2C)
- Late 2008: Edison entered the retail free market in power and gas, positioning itself as the new real alternative to incumbents (Enel, Eni, ex-Municipalities)
- Strong growth in the retail market from 2008 to 2013. Since 2014: increase of customer base quality (>65% SDD payments and >50% electronic bill)

- “Edison World”: the customers pays the wholesale price (power and gas) in addition to a small monthly fee. It’s a modular offer, in which the customer can add to the purchase of commodity one or more options (i.e. home assistance, smart living, energy monitoring,..)
- Edison Energy Control(5): device which enables families to supervise, through a data reader and a digital platform, their energy spending in real time
- Smart living: a single Hub and single App to manage and optimise the utilisation of a very high number of connected devices. It’s an open solution compatible with most of the connected devices available on the market and with a high level of automation
- My Sun: a new innovative service that combines a photovoltaic system with a storage and eliminates the cost of the electric bill up to ten years.

<table>
<thead>
<tr>
<th>POWER SALES IN 2017</th>
<th>GAS SALES IN 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.9TWh</td>
<td>6.5bcm(2) o/w</td>
</tr>
<tr>
<td></td>
<td>2.0bcm resellers</td>
</tr>
<tr>
<td></td>
<td>4.5bcm business</td>
</tr>
<tr>
<td>2.1TWh</td>
<td>414Mcm(3)</td>
</tr>
<tr>
<td>572,858 customers(4)</td>
<td>486,458 customers(4)</td>
</tr>
</tbody>
</table>

(1) Law still under discussion
(2) Billion of cubic meters
(3) Million of cubic meters
(4) Data at end 2017 in delivery points
(5) Already launched in 2013
EDISON: ACQUISITION PROJECT OF GAS NATURAL’S ASSETS IN ITALY (1)

- An important expansion of Edison’s customer portfolio, in line with the Group’s strategic goals
- Fit with Edison retail portfolio and operations
  - Customer portfolio: significant size and good quality (low churn rate and good payment record)
  - Mostly gas regulated customers, with optimal geographical fit, strengthening Edison’s position in the south of the country
- Development of significant scale synergies

**Customer portfolio evolution**

In thousands of sites served

<table>
<thead>
<tr>
<th></th>
<th>Edison</th>
<th>Edison + Gas Natural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential – gas</td>
<td>462</td>
<td>1,059</td>
</tr>
<tr>
<td>Residential – electricity</td>
<td>433</td>
<td>183</td>
</tr>
<tr>
<td>Business</td>
<td>164</td>
<td>1,543</td>
</tr>
<tr>
<td>Total</td>
<td>1,059</td>
<td>1,543</td>
</tr>
</tbody>
</table>

+ 46%

**Geographic distribution of contracts**

(residential customers, in thousands)

- Edison: 442
- Gas Natural: 25
- Edison: 229
- Gas Natural: 37
- Edison: 186
- Gas Natural: 233
- Edison: 25
- Gas Natural: 131
- Edison: 13
- Gas Natural: 41

(1) The acquisition of Gas Natural Vendita Italia was completed on 22 February 2018
CUSTOMER SOLUTIONS IN BELGIUM: EDF LUMINUS

Under its brand name “Luminus”, EDF Luminus supplies electricity and gas to more than 1.7 million(1) residential and professional customers and local authorities.

Strong development of innovative energy solutions for residential customers: sales of B2C services more than tripled compared to 2014, reaching ~70,000 services sold in 2017. At the end of December, the B2C portfolio of services exceeded 179,000 contracts for the following services:

- “Comfort” services in the event of unforeseen damages to housing during inclement weather
- Installation and maintenance of boilers
- Sale and management of an intelligent thermostat (Netatmo)

Strengthening of the foothold in the country and an expanded service offer thanks to the recent acquisitions of four complementary actors in the supply of energy services: Dauvister, Rami services, ATS, Vanparijs, Newelec and Insaver.

In 2017, EDF Luminus continued to enrich its range of services offered to B2B customers with the takeover of Newelec, a multidisciplinary company offering complete integrated electricity solutions and heating to industrial customers in Wallonia. It also acquired Insaver, which offers installation services for photovoltaic panels, insulation and batteries to residential customers in Flanders.

Its subsidiary EDF Luminus Solutions, created in 2016, helps respond to B2B customer needs by offering them energy efficiency solutions based on an energy performance contract. Dalkia has become co-shareholder of EDF Luminus Solutions with a 49% stake.

More than 1.7 million delivery points

- ~96% B2C
- ~4% professionals and local authorities

Stable market share of ~20%

19% gas and 20% electricity in a difficult market marked by very high customer turnover

An excellent level of customer satisfaction: The maximum score of 5 stars in the comparative evaluation of the Flemish regulator VREG for 16 consecutive quarters

Did you know?

EDF Luminus installed 18 fast charging stations on Q8 locations and 7 other on Decathlon sites, in Belgium, within the framework of the European fast charging network Unit-E, which will total 300 at term.

(1) In delivery points
EDF GROUP MAIN BUSINESSES

- NUCLEAR P. 52
- RENEWABLES P. 90
- THERMAL POWER P. 112
- NETWORKS P. 117
- OPTIMISATION & TRADING P. 129
- CUSTOMER SOLUTIONS P. 142
- ENERGY SERVICES P. 155
- GAS P. 164
ENERGY SERVICES

The Group’s ability to provide a comprehensive response to professional customers and local communities

The EDF group is a leading provider of energy services in France. The current context of the fight against global warming, economic pressure, legislation requiring the limiting of CO₂ emissions, and the development of local renewable energy are all paradigms that legitimise and demonstrate the value of the solutions created by the Group and in particular its energy services subsidiaries.

EDF Energy Solutions ensures the value of all of the Group expertises covering the whole energy chain: energy consulting, carrying out works (or their financing), energy management via the latest connected and innovative facilities, the operation and maintenance of technical installations and the management of equipment.

The EDF group works on sectors as diverse as heating networks, smart lighting, decentralised low-carbon generation, energy management and sustainable mobility.

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Did you know?

EDF has set itself the goal of doubling its turnover by 2025 for energy services aimed at businesses and local authorities and to achieve €11bn by 2030.

To establish its position in this field, EDF has launched, in June 2017, EDF Solutions Énergétiques, a new banner that highlights its expertise and the skills boasted by its subsidiaries, by boosting the profile of each of its brands(1)

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(1) For more information please see the press release of 20 June 2017
WIDE RANGE OF EXPERTISE IS REAL STRENGTH FOR THE GROWTH OF THE GROUP

Through its subsidiaries, the EDF group has strong expertise in the field of energy services:

Dalkia
- Leader in energy services in France
- 3 business activities: heating networks, energy services for buildings and industrial utilities
- ~€4bn of sales
- >15,450 employees
- Active in France, Poland, Russia, Ireland and UK

Citelum
- Smart lighting and associated connected services expert
- Smart and low consumption lighting, public transport management, management of security and communication equipment
- ~€0.3bn of sales
- >2,500 employees
- Active mainly in Europe and America

Edison – Market Division for Energy Services
- Comprehensive technical and financial solutions to ensure the quality and efficient technical operation of industrial facilities
- Energy performance contracts
- Energy services for industrial sites and public sector
- Environmental services: audits, engineering, monitoring, water and waste management
- Active in Italy, Poland, Spain and Morocco

SODETREL
- Recharging infrastructure with the deployment of charging stations for electric vehicles, supervision and implementation of standards, technical operation and maintenance
- Services: real time monitoring of the fleet (supervision); user services such as consumption and bills monitoring, remote maintenance
- Electric fleet management
- On-board energy
SERVICE OFFERING FOR CUSTOMERS IN THE BUSINESS AND PUBLIC SECTORS

Energy management and financial solutions

The EDF Group has developed its offering in energy solutions for its professional customers around five primary service lines.

- Industrial utilities management services with multi-site customer support: compressed air, steam, cold, etc.
- Local energy generation solutions: cogeneration, combined cycle, etc.
- Design, installation and supervision of charging infrastructures of electric vehicles
- Rental and battery fleet management (buses and trucks)
- Fleet management (companies and local authorities)
- Urban lighting, public transport management, security, associated connected services (user information, communication, etc.)
- Comprehensive offers with energy performance commitment including: engineering & design, financing & customised contract management, operation & maintenance, carrying-out works, energy management
- Energy services to buildings and industry:
  - Thermal engineering: boiler, environmental conditioning, cold, etc.
  - Electrical engineering: low-, medium- and high-voltage lines, etc.
  - Process fluids: steam, compressed air, etc.
- Large comprehensive refurbishment public projects (building, energy generation, thermal engineering, electrical engineering, energy management systems, etc.) with performance commitment
- New urban heating networks projects or expansion/refurbishment and operation/maintenance of existing heating networks at renewal of the public service operation contract (DSP)\(^{(1)}\)
- Local renewable energy generation plants:
  - Household waste-to-energy projects
  - Production of solid recovery fuel
  - Production by anaerobic digestion of agricultural biomass and local waste
    - Biomass
    - Geothermal energy

\(^{(1)}\) DSP: Délégation de Service Public
A leader in energy services in France, Dalkia has been helping regions accelerate their sustainable energy performance for 80 years.

Presence at each stage of the value chain: from decentralised generation to demand-side management.

Innovation and digital technologies helping development:

- New DESC: Integrating artificial intelligence to improve the DESC (Dalkia Energy Savings Centers) and allow customers to save more energy.
- Goal of 100% of connected customers by 2022.

EDF’s ambition is to develop significant positions in energy services, thanks to the know-how and expertise of Dalkia and its subsidiaries.
DALKIA: TAILOR-MADE SOLUTIONS IN FRANCE AND ABROAD

Speciality subsidiaries

- Cesbron
  The city of Angers has chosen Cesbron for the cold generation of its new ice rink in the heart of Saint-Serge ZAC district

- Optimal Solutions

International subsidiaries

- United Kingdom
  - TIRU UK
  - EDF Energy Services
  - IMTECH UK

- Russia
  - Fenice Rus

- Poland
  - ZEC Katowice
  - Matex Controls

Some examples

- CESBRON
  The city of Angers has chosen Cesbron for the cold generation of its new ice rink in the heart of Saint-Serge ZAC district

- OPTIMAL SOLUTIONS
  The Energy Performance Contract will allow the Ministry of the Armed Forces to renovate 84 buildings at the Lann-Bihoué naval air station in Brittany with guaranteed results: 41% energy savings and 67% CO₂ reduction

- UK - IMTECH
  Installation of electrical and mechanical systems at the new Madison tower in London

- Poland - ZEC Katowice
  Energy renovation of the Sosnowiecz district (works and connection to the heating network)
Smart and efficient lighting reference, Citelum has developed a whole range of connected services to meet the new challenges of its public and industrial customers: energy saving, security, mobility, attractiveness, sustainable development, etc.

Projects and expertise across the value chain, from design to operation

An innovation pole based on:

- Reliable technological partners: manufacturers in lighting, security, mobility, IoT, etc. sectors, start-ups
- the collaborative platform for urban space management, MUSE®

CITELUM: SMART LIGHTING AND CONNECTED SERVICES

- 25 years of international experience
- 2.5 million managed light points
- 1,000 references including Copenhagen, Mexico, Dijon
- 100% subsidiary of EDF

MUSE® PLATFORM

- Inventoring, geolocation, urban equipment tracking
- Fast and efficient management of maintenance and operations
- Monitoring the operation and consumption of equipment
- Communication between decision-makers, maintenance services and civil society

MUSE® in numbers

- 2,500 users
- Present in 12 countries
- 100 hosted sites
- 1.7m connected objects and urban equipments (light points, traffic lights, cameras, sensors, etc.)

Citelum Services

- Intelligent lighting, interior lighting, artistic lighting, etc.
- Video protection, traffic light and speed radars, warning systems, etc.
- Tricolour light signalling, intelligent parking, electric vehicle charging solutions, access points, etc.
- Air and noise sensors, variable message signs, WiFi, LiFi, etc.
CITELUM: REFERENCES WORLDWIDE

Many contracts won...

- **Dijon 1er smart metropolis in France**, in consortium with Bouygues Énergie et Services: contract for the design, implementation, operation and common maintenance of 24 municipalities with an energy efficiency commitment of 65%. Design of a centralised control room to manage all equipment and urban events from the MUSE platform®

- **Albuquerque (United States)**: lighting infrastructure inventory, light plan, LED retrofit of 20,000 light points with a commitment of 58% energy savings over 15 years. Maintenance management with MUSE®

- **Perugia (Italy)**: LED retrofit of 31,075 luminous points, as part of the Consip Luce 3 agreement, and installation of a Smart City infrastructure with video protection connected services, changing message signs, weather stations, etc.

And also Montreuil (together with Satelec), Château-Renault in France, Illescas (near Toledo) in Spain, Cremona, Pavia in Italy, Frederiksberg, Hillerød in Denmark, Maipú, Independencia in Chile, Hotel Ikonik in Mexico, Sobral in Brazil, etc.

... but more in progress

- **France**: Sète, Nice, Montélimar, Nîmes, Provins, Lunéville, etc.

- **Spain**: Toledo, Lleida, Almería, Sant Cugat del Vallès

- **Mexico**: Mexico City, Puebla, Guanajuato, etc.

- **Brazil**: Teresina, São Luis
EDF GROUP’S OTHER ACTIVITIES IN ENERGY SERVICES

Reference player for electric mobility

Specialist in the maintenance and repair of heating and hot water generation equipment

Services and maintenance of high-voltage and medium-voltage equipment and substations

Expertise and solutions in energy eco-efficiency in the Bas-Rhin department

Design and commercialisation of solar photovoltaic solutions

Financing eco-efficiency systems in Europe

Commercialisation of an innovative system that can provide better control of the variability of intermittent renewable energy

Energy management for energy efficiency and demand-side response

The Customer Division (Direction Commerce) proposes to its businesses and local authorities customers support in energy efficiency by experts (audits, advice)

Specialist of industrial energy efficiency solutions and broad spectrum environmental services

EDF Fenice became part of Edison on April 1, 2016(1), and with Energy Solutions represents Market Division for Energy Services, a division created in 2016 within Edison. EDF Fenice Iberica consolidated its “Global Energy Partner” business model in 2016 and set up a subsidiary in Morocco.

In addition to the outsourced management of industrial utilities, EDF Fenice Poland also has the administrative concessions necessary to supply customers connected to its distribution networks and also provides associated environmental services (potable water, waste treatment and liquid effluents).

(1) The Russian subsidiary of Fenice was sold to Dalkia in September 2016
EDF is well positioned all along the gas value chain

**Commerce**
- Dual-fuel offers (electricity and gas) and value added services to clients

**Trading**
- Supply of EDF’s gas fired power plants
- Seeking arbitrages and optimising supply strategies

**Storage**
- Control the cost of flexibility and regulated activity in Italy
  - Examples: Cellino, Collalto and San Potito & Cotignola (Italy), Etzel storage (Germany)

**Supply**
- 4 long term gas import contracts in Italy and 1 in France

**Infrastructures**
- Development of import infrastructures to secure diversification of gas supply sources
- Operations start of Dunkirk LNG Terminal in 2017

**Exploration & Production**
- Partnerships with oil and gas companies, using Edison’s expertise
  - 105 concessions and exploration permits
  - 224 Mboe hydrocarbons reserves
  - Example: Abu Qir gas field in Egypt

*MAIN BUSINESSES GAS*
Gas supply contracts

- The total volume of EDF's long-term gas contracts is 15.4bcm/year\(^{(1)}\), of which 14.4 bcm imported by Edison

### Supplying country: Norway
- **Counterpart:** Statoil
- **Delivery:** Pipe
- **Quantity\(^{(1)}\):** 1Bcm/y
- **Expiration:** 2020

### Supplying country: Russia
- **Counterpart:** Promgas
- **Delivery:** Pipe
- **Quantity\(^{(1)}\):** 2Bcm/y
- **Expiration:** 2019

### Supplying country: Qatar
- **Counterpart:** RasGas II
- **Delivery:** LNG
- **Quantity\(^{(1)}\):** 6.4Bcm/y
- **Expiration:** 2034

### Supplying country: Algeria
- **Counterpart:** Sonatrach
- **Delivery:** Pipe
- **Quantity\(^{(1)}\):** 2Bcm/y
- **Expiration:** 2019

### Supplying country: Libya
- **Counterpart:** Eni NA
- **Delivery:** Pipe
- **Quantity\(^{(1)}\):** 4Bcm/y
- **Expiration:** 2028

\(\textit{\textsuperscript{(1)} Annual contracted quantities}\)
## Downstream customer portfolio in Europe @ Dec.31, 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of customers</th>
<th>TWh sold</th>
<th>Market share</th>
</tr>
</thead>
<tbody>
<tr>
<td>France (EDF SA)(1)</td>
<td>1.4 million</td>
<td>30.1</td>
<td>6.1%</td>
</tr>
<tr>
<td>Italy (Edison)</td>
<td>~0.5 million</td>
<td>73.1</td>
<td>15%</td>
</tr>
<tr>
<td>UK (EDF Energy)(2)</td>
<td>~2.0 million</td>
<td>27.8</td>
<td>5%</td>
</tr>
<tr>
<td>Belgium (EDF Luminus)</td>
<td>~0.6 million</td>
<td>13.6</td>
<td>18%</td>
</tr>
</tbody>
</table>

EDF is present on the European gas market for over 10 years, with ~4.5m clients and ~150TWh sold

Dual fuel offer with value added services

(1) Excluding Corsica and the French overseas department
(2) Excluding Northern Ireland
**HISTORICAL FINANCIALS: EBITDA**

**EBITDA growth**

In millions of Euros

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Euros</td>
<td>14,156</td>
<td>14,939</td>
<td>15,998</td>
<td>16,099</td>
<td>17,279</td>
<td>17,601</td>
<td>16,614</td>
<td>13,742</td>
</tr>
</tbody>
</table>

**2017 Group EBITDA by segment**

- France – Regulated activities\(^{(1)}\) 36%
- France – Generation and supply activities 35%
- International 3%
- EDF EN 5%
- Italy 7%
- UK 8%
- EDF Trading and other 4%
- Dalkia 2%
- EDF EN 5%

\(^{(1)}\) Regulated activities: Enedis, ÉS and island activities; Enedis, an independent EDF subsidiary as defined in the French energy code

*Note: presented figures are pro forma data from one year to another, but are not restated consistently throughout all years.*
HISTORICAL FINANCIALS: NET INCOME

Evolution of Net income excluding non-recurring items

In millions of Euros

Net income excluding non-recurring items = Net income Group share excluding non-recurring items

Note: presented figures are pro forma data from one year to another, but are not restated consistently throughout all years
HISTORICAL FINANCIALS: INVESTMENTS AND OPEX

Change in net investments\(^{(1)}\) since 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Change in Net Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>11,953</td>
</tr>
<tr>
<td>2011</td>
<td>11,724</td>
</tr>
<tr>
<td>2012</td>
<td>14,742</td>
</tr>
<tr>
<td>2013</td>
<td>11,893</td>
</tr>
<tr>
<td>2014</td>
<td>12,190</td>
</tr>
<tr>
<td>2015</td>
<td>13,453</td>
</tr>
<tr>
<td>2016</td>
<td>12,801</td>
</tr>
<tr>
<td>2017</td>
<td>16,003</td>
</tr>
</tbody>
</table>

Opex\(^{(2)}\) organic change\(^{(3)}\) from 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Change in Operating Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2.5%</td>
</tr>
<tr>
<td>2012</td>
<td>3.1%</td>
</tr>
<tr>
<td>2013</td>
<td>1.1%</td>
</tr>
<tr>
<td>2014</td>
<td>0.9%</td>
</tr>
<tr>
<td>2015</td>
<td>-1.4%</td>
</tr>
<tr>
<td>2016</td>
<td>-2.0%</td>
</tr>
<tr>
<td>2017</td>
<td>-1.5%</td>
</tr>
</tbody>
</table>

Note: presented figures are pro forma data from one year to another, but are not restated consistently throughout all years.

\(^{(1)}\) Total net investments (as defined for each year) excluding disposals of strategic assets

\(^{(2)}\) Aggregate of personnel expenses and other external expenses

\(^{(3)}\) Data published with organic change at constant scope and exchange rates. For 2017: at comparable consolidation scope and exchange rates. At constant pension discount rates. Excluding change in operating expenses of the service activities.
HISTORICAL FINANCIALS: DEBT

Net debt and net debt/EBITDA evolution

- 2010: 34,389
- 2011: 33,285
- 2012: 39,168
- 2013: 33,433
- 2014: 34,208
- 2015: 37,395
- 2016: 37,425
- 2017: 33,015

Debt maturity and coupon evolution

- Average coupon: 2010 = 4.40%, 2011 = 4.30%, 2012 = 3.70%, 2013 = 3.80%, 2014 = 3.29%, 2015 = 2.92%, 2016 = 2.73%, 2017 = 2.95%

(1) Pro forma after allocation of the CSPE deficit to dedicated assets on 13 February 2013 and substraction of €2.4bn from the dedicated assets portfolio, enabling 100% coverage of nuclear liabilities that are eligible for dedicated assets.
HISTORICAL FINANCIALS: DIVIDEND

Dividend payout ratio since 2010

2010 | 2011 | 2012 | 2013 | 2014 | 2015(1) | 2016 | 2017
---|---|---|---|---|---|---|---
53.6% | 60.4% | 55.0% | 56.5% | 58.0% | 56.0% | 60.0% | 60.0%

Dividend per share since 2010

In € per share

---|---|---|---|---|---|---|---
0.57 | 0.58 | 0.57 | 0.58 | 0.68 | 0.68 | 0.57 | 0.57 | 0.53 | 0.4 | 0.9 | 0.46(2)
1.15 | 1.15 | 1.25 | 1.25 | 1.25 | 1.25 | 1.10 | 1.10 | 0.31 | 0.15 | 0.15

(1) Payout ratio applied to the Net result excluding non-recurring items adjusted for interest payments on hybrid issues booked in equity and after deduction of Cigéo extra-cost
(2) At its 15 February 2018 meeting, EDF’s Board of Directors decided to propose the payment of a €0.46 per share dividend for the 2017 fiscal year at the General shareholder’s meeting of 15 May 2018. This would correspond to a payout ratio of 60% of net income excluding non-recurring items (adjusted for the remuneration of hybrid bonds accounted for in equity)
Date applied by the Group: 1\textsuperscript{st} January 2018

Analysis undertaken resulted in the absence of significant changes in the current accounting treatments, with the following exceptions:

- Gas and electricity delivery: the delivery component of an energy supply contract is currently included in sales revenue by all Group entities that supply electricity or gas ("principal" position). Under IFRS 15, the analyses of the regulatory framework and applicable contracts led to modify this qualification for France and Belgium ("agent" position) but to maintain it for United Kingdom and Italy. This new qualification will reduce revenue and in correlation purchases of delivery (included in fuel and energy purchases) by the same amount on the following sectors: France – Generation and Supply and France-Regulated activities (for gas delivery); Other International / Belgium (for gas and electricity delivery)

- Currently, the Group's operating segment reporting presents revenues on electricity delivery in the “France – Regulated Activities” segment, as inter-segment sales. When IFRS 15 is applied, these revenues will be presented as external sales

- Energy purchases and sales on the market as part of optimisation activities: Contracts analyses led the Group to consider that accounting for optimisation transactions on a net basis provides a more relevant reflection of their economic substance. Some Group entities (Edison – "Italy" segment, EDF Luminus – “Other International” segment, Dalkia – “Other activities” segment) have so far reported such operations on a gross basis, recognising revenue together with energy purchases

In both situations, revenue reduction will be offset by a decrease in Fuel and energy purchases with no impact on EBITDA

\(^{(1)}\) Exact title of the standard: "Revenue from Contracts with Customers"
IFRS 9 ON FINANCIAL INSTRUMENTS

Date applied by the Group: 1st January 2018

The main impacts will concern financial assets held in the form of stakes in investment funds, and to a lesser degree equity instruments (shares)

- In application of IAS 39, these assets are classified as available-for-sale financial assets and measured at fair value in the balance sheet, with changes in fair value recorded in other comprehensive income (OCI); unrealised gains and losses recognised in OCI while the asset is held are transferred to profit and loss upon its derecognition (gains/losses on available-for-sale financial assets)

- Under IFRS 9, for stakes in investment funds\(^{(1)}\), unrealised gains or losses will be recorded directly in the Group’s income statement, creating a risk of high volatility on the financial income. The impact of volatility would be excluded from "Net income excluding non-recurring items". Unrealised gains and losses as of 31st December 2017 will be frozen in the retained earnings as of 1st January 2018, with no further transfer to profit and losses upon derecognition

- Based on a detailed analysis for each type of investment, the equity instruments portfolio will be classified either as fair value through profit and loss (similar to stakes in investment funds), or at fair value in OCI with no further transfer of gains and losses to the income statement

- A major part (€15.9bn as of 31st December 2017) of the financial assets affected by these changes belongs to the portfolio of dedicated assets held to cover future expenses for the back-end of EDF’s nuclear cycle in France, the Group acting as a long-term investor. Gains on disposals of investments currently accounted for in the financial income, allowing to partially offset unwinding expenses of nuclear provisions covered by financial assets, will be replaced afterwards by volatile changes in fair value

\(^{(1)}\) Stakes in investment funds are qualified as debt instrument. Detailed analyses for each type of instrument have shown that the cash flows associated with this portfolio do not consist entirely of payments of principal and interests ("SPPI test"), contrary to standard bonds
# IFRS 15 AND 9: IMPACT ON 2017 MAIN AGGREGATES

<table>
<thead>
<tr>
<th></th>
<th>2017 published</th>
<th>2017 adjusted</th>
<th>∆</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>69.6</td>
<td>64.9</td>
<td>-4.7</td>
</tr>
<tr>
<td>EBITDA</td>
<td>13.7</td>
<td>13.7</td>
<td>-</td>
</tr>
<tr>
<td>Financial income</td>
<td>-2.2</td>
<td>-1.9</td>
<td>+0.3</td>
</tr>
<tr>
<td>Net income excluding non-recurring items</td>
<td>2.8</td>
<td>2.3</td>
<td>-0.5</td>
</tr>
<tr>
<td>Net income – Group Share</td>
<td>3.2</td>
<td>3.4</td>
<td>+0.2</td>
</tr>
<tr>
<td><strong>Equity – Group share</strong></td>
<td>41.4</td>
<td>41.4</td>
<td>-</td>
</tr>
<tr>
<td>Net financial debt</td>
<td>33.0</td>
<td>33.0</td>
<td>-</td>
</tr>
<tr>
<td>Net financial debt / EBITDA ratio</td>
<td>2.4</td>
<td>2.4</td>
<td>-</td>
</tr>
</tbody>
</table>

Above adjustments are given for information purpose, and do not represent expected impacts for 2018 nor following years:

- Concerning Revenue (IFRS 15), these figures are sensitive to delivery volumes, which notably depend on weather conditions and on the level of demand, as well as delivery tariffs, and to optimisation transactions volume, which is by nature very variable from year to year.

- The impact on the Group’s financial income (IFRS 9) at 31 December 2017, all other things being equal, would have been around +€349 million. It comprises: non-recognition of unrealised gains and losses existing as of December 31st, 2016 that were realised in 2017 (-€800M), currently included in Group’s Net income excl. non-recurring items; and recognition of 2017 changes in fair value (including the effect of foreign exchange hedges), which represent the annual volatility (+€1,149m)
IFRS 16 LEASES

Date applied by the Group: 1st January 2019

Under the new standard, all leases other than short-term leases and leases of low-value assets (<$5,000) have to be recognised in the lessee’s balance sheet in the form of a right-of-use asset (“Right of Use” or ROU), with a corresponding financial liability. Consequently, instead of rent expenses (in Other external expenses included in EBITDA), amortisation costs and financial expenses will be recorded.

ROU and debt measurement are based on fixed rental payment, taking into account the lease term (including renewal/termination options whose exercise is deemed reasonably certain), discounted using contract implicit interest rate or incremental borrowing rate.

- The Group is currently estimating precisely the impact of the 1st application of IFRS 16 on the balance sheet.
- As a result of this work, the Group intends to apply the “modified” retrospective method (IFRS 16.C5.b), with no impacts on Group’s equity as of 1st January 2019.
HIGHLIGHTS 2017

STRENGTHENING OF THE BALANCE SHEET AND DEPLOYMENT OF THE PERFORMANCE PLAN

- Capital increase and 2015-2017 dividends in shares: ~€9bn
- Asset disposals of €6.2bn over 2017 fiscal year: 80% of the 2015-2020 target reached at the half-way mark (i.e. €8.1bn)
- Reduction of Opex(1) and optimisation of the WCR: targets reached one year early

ACCELERATION IN WIND AND SOLAR ENERGY

- Growth in net installed capacity (+23%, i.e. +1.6GW)\(^{(2)}\) to 8.8GW, and in generated electricity (+13% to 13.8TWh)\(^{(3)}\)
- EDF EN's portfolio of projects under construction: 1.9GW gross
- EDF EN's pipeline: 22.5GW (+22%)
- Acquisition of Futuren (onshore wind power) and OWS (maintenance in offshore wind power)
- EDF's Solar Plan in France: 30GW over the period 2020-2035

STRATEGIC PRIORITIES CONFIRMED

- Signing of the acquisition of Gas Natural Vendita Italia in Italy (expected closing date at the end of February 2018) and acquisition of Imtech in the United Kingdom
- Commercial offensive: new offers “Vert Electrique” and rapid adjustment of commercial costs in a context of heightened competition in France

STRENGTHENING OF THE FRENCH NUCLEAR INDUSTRY

- Acquisition of Framatome - refocused as a designer & supplier of nuclear steam supply systems
- Resumption of the manufacturing of forged components at the Creusot site approved by the ASN
- Creation of Edvance: bringing together of EDF and Framatome’s engineering teams in order to improve efficiency and increase competitiveness
- Progress on track on the Flamanville 3 project

FIRST POLITICAL AND REGULATORY CHANGES

- Implementation of the capacity market in France in 2017 and authorisation received by the European Commission in Italy and in Belgium in 2018
- Simplification announced of the regulatory framework for the development of renewable energies in France
- Reform of the European Union’s CO2 emissions trading (scheme ETS)
- In France, postponement of the 2025 target on reducing the share of nuclear power ahead of the PPE (multi-year energy plan).

---

(1) Sum of personnel expenses and other external expenses. At comparable consolidation scope and exchange rates. At constant pension discount rates. Excluding change in operating expenses of the service activities
(2) Capacity representing the share owned by the Group
(3) Generation by entities accounted for using the full consolidation method
PERFORMANCE PLAN AHEAD OF SCHEDULE

- **OPEX**
  - Reduction of operating expenses\(^{(1)}\): -€0.7bn vs 2015
  - Initial target achieved one year ahead of schedule

- **Working Capital Requirement**
  - WCR down by €1.9bn over 2015-2017
  - Target exceeded one year ahead of schedule

- **ASSETS DISPOSAL PLAN**
  - ~€8.1bn\(^{(2)}\) of asset disposals delivered
  - More than 80% of plan delivered halfway

- **CAPEX**
  - Net investments\(^{(3)}\): €12.0bn including stepping up of renewables

---

\(^{(1)}\) Sum of personnel expenses and other external expenses. At constant scope and exchange rates. At constant actuarial discount rate. Excluding change in operating expenses of service activities

\(^{(2)}\) Impact on net financial debt

\(^{(3)}\) Net investments including Linky, new developments and 2015-2020 disposal plan. The Linky project is being led by Enedis, an independent EDF subsidiary as defined by the French Energy Code.
# 2017 Financial Targets Delivered

<table>
<thead>
<tr>
<th>Initial targets</th>
<th>Updated targets</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBITDA</strong>: €13.7bn – €14.3bn</td>
<td><strong>EBITDA</strong>: €13.4bn – €14.0bn</td>
<td><strong>€13.7bn</strong></td>
</tr>
<tr>
<td>Net financial debt/EBITDA ≤2.5x</td>
<td>Net financial debt/EBITDA ~2.5x</td>
<td><strong>2.4x</strong></td>
</tr>
</tbody>
</table>

**Dividend proposal of €0.46/share, or a payout ratio of 60%**

---

(1) Adjusted for the remuneration of hybrid bonds accounted for in equity
# SIMPLIFIED INCOME STATEMENTS

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales</strong></td>
<td>71,203</td>
<td>69,632</td>
</tr>
<tr>
<td>Fuel and energy purchases</td>
<td>(36,050)</td>
<td>(37,641)</td>
</tr>
<tr>
<td>Other external expenses</td>
<td>(8,902)</td>
<td>(8,739)</td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>(12,543)</td>
<td>(12,456)</td>
</tr>
<tr>
<td>Taxes other than income taxes</td>
<td>(3,656)</td>
<td>(3,541)</td>
</tr>
<tr>
<td>Other operating income and expenses</td>
<td>6,362</td>
<td>6,487</td>
</tr>
<tr>
<td><strong>EBITDA</strong></td>
<td>16,414</td>
<td>13,742</td>
</tr>
<tr>
<td>IAS 39 volatility</td>
<td>(262)</td>
<td>(355)</td>
</tr>
<tr>
<td>Net depreciation and amortisation</td>
<td>(7,966)</td>
<td>(8,537)</td>
</tr>
<tr>
<td>Net increases in provisions for renewal of property, plant and equipment operated under concessions</td>
<td>(41)</td>
<td>(58)</td>
</tr>
<tr>
<td>(Impairment)/reversals</td>
<td>(639)</td>
<td>(518)</td>
</tr>
<tr>
<td>Other income and expenses</td>
<td>8</td>
<td>1,363</td>
</tr>
<tr>
<td><strong>EBIT</strong></td>
<td>7,514</td>
<td>5,637</td>
</tr>
<tr>
<td>Financial income</td>
<td>(3,333)</td>
<td>(2,236)</td>
</tr>
<tr>
<td><strong>Income before taxes of consolidated companies</strong></td>
<td>4,181</td>
<td>3,401</td>
</tr>
<tr>
<td><strong>Net income – Group share</strong></td>
<td>2,851</td>
<td>3,173</td>
</tr>
<tr>
<td><strong>Net income excl. non-recurring items</strong>(^{(1)})</td>
<td>4,085</td>
<td>2,820</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Excluding non-recurring items & IAS 39 volatility
2017 RESULTS: SALES AND EBITDA BY REPORTING SEGMENT

2017 sales\(^{(1)}\)

- \(\text{€69.6bn}\)

- 43% France – Generation and supply activities
- 19% France – Regulated activities
- 11% United kingdom
- 12% Italy
- 9% Other international
- 6% Other activities

2017 EBITDA

- \(\text{€13.7bn}\)

- 36% France – Generation and supply activities
- 35% France – Regulated activities
- 11% United kingdom
- 8% Italy
- 7% Other international
- 3% Other activities

\(^{(1)}\) The presented percentages are based on sales excluding inter-segment eliminations.
## CHANGE IN SALES

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>2016</th>
<th>Forex</th>
<th>Scope</th>
<th>Organic growth</th>
<th>2017</th>
<th>∆% org.(2)</th>
<th>∆% org.(3) excl. tariff adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>France – Generation and supply activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35,191</td>
<td>-</td>
<td>-</td>
<td>415</td>
<td>35,606</td>
<td>+1.2</td>
<td>+4.1</td>
</tr>
<tr>
<td><strong>France – Regulated activities(4)</strong></td>
<td>15,728</td>
<td>-</td>
<td>-</td>
<td>168</td>
<td>15,896</td>
<td>+1.1</td>
<td>+1.3</td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td>9,267</td>
<td>(608)</td>
<td>105</td>
<td>(76)</td>
<td>8,688</td>
<td>-0.8</td>
<td>-0.8</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>11,125</td>
<td>-</td>
<td>(5)</td>
<td>(1,180)</td>
<td>9,940</td>
<td>-10.6</td>
<td>-10.6</td>
</tr>
<tr>
<td><strong>EDF EN</strong></td>
<td>1,169</td>
<td>(12)</td>
<td>81</td>
<td>42</td>
<td>1,280</td>
<td>+3.6</td>
<td>+3.6</td>
</tr>
<tr>
<td><strong>Dalkia</strong></td>
<td>3,600</td>
<td>-</td>
<td>230</td>
<td>221</td>
<td>4,051</td>
<td>+6.1</td>
<td>+6.1</td>
</tr>
<tr>
<td><strong>International</strong></td>
<td>5,286</td>
<td>55</td>
<td>(547)</td>
<td>28</td>
<td>4,822</td>
<td>+0.5</td>
<td>+0.5</td>
</tr>
<tr>
<td><strong>EDF Trading and other</strong></td>
<td>2,965</td>
<td>(2)</td>
<td>(143)</td>
<td>(338)</td>
<td>2,482</td>
<td>-11.4</td>
<td>-11.4</td>
</tr>
<tr>
<td><strong>Inter-segment eliminations</strong></td>
<td>(13,128)</td>
<td>-</td>
<td>-</td>
<td>(5)</td>
<td>(13,133)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Group</strong></td>
<td>71,203</td>
<td>(567)</td>
<td>(279)</td>
<td>(725)</td>
<td>69,632</td>
<td>-1.0</td>
<td>+0.4</td>
</tr>
</tbody>
</table>

(1) Breakdown of sales across the segments, before inter-segment eliminations
(2) Organic change at constant scope and exchange rates
(3) Organic change at comparable scope and exchange rates excluding 2016 positive effect related to regulated sales tariff adjustment for the period from 1 August 2014 to 31 July 2015 following the French State Council’s decision of 15 June 2016
(4) Regulated activities: Enedis, ÉS and island activities; Enedis, an independent EDF subsidiary as defined in the French energy code
CONTINUED DECREASE IN OPERATIONAL EXPENSES

Savings achieved\(^{(1)}\) in 2017

- Purchases: ~€250m
- Personnel expenses: ~€180m

2016-2017 Cumulated contribution: €0.7bn\(^{(1)}\)

By nature
- Purchases 89%
- Personnel expenses 11%

By geography
- France 85%
- International & other activities 15%

Initial target of €0.7bn\(^{(1)}\) achieved one year in advance

\(^{(1)}\) At constant scope, exchange rates and pension discount rate. Excluding change in operating expenses of service activities
Number of 10-year inspections per year\(^{(1)}\)

<table>
<thead>
<tr>
<th>Year</th>
<th>900MW Series</th>
<th>1,300MW Series</th>
<th>1,450MW Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2018</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2019</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2020</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**2018-2020 outlook**

\(\Rightarrow\) **2018**: output assumption >395TWh
- Expected improvement in the availability of the fleet
- Ongoing outages extended (Fessenheim 2, Paluel 2, Belleville 2)
- Residual extension risk related to Creusot files’ investigation completion

\(\Rightarrow\) **2019**: assumption of decline in output
- Increased number of ten-year inspections to seven
- Two “first of a kind” ten-year inspections (first 4\(^{th}\) ten-year inspection on the 900MW series, first 2\(^{nd}\) ten-year inspection on the 1,450MW series)
- Assumption of Fessenheim closure, partially offset by the gradual ramp-up of Flamanville 3

\(\Rightarrow\) **2020**: Six ten-year inspections, in relation with the *Grand Carénage* programme

---

(1) Forecast data as of 16 February 2018
(2) Of which the 3\(^{rd}\) ten-year inspection of Paluel 2 (1,300MW) started in 2015 and the 3\(^{rd}\) ten-year inspection of Gravelines 5 (900MW) started in 2016
(3) Of which the 3\(^{rd}\) ten-year inspection of Cruas 2 (900MW) started in 2017, excluding the pursuit of the 3\(^{rd}\) ten-year inspection of Paluel 2 (1,300MW) started in 2015
### 2017 RESULTS: CHANGE IN GROUP EBITDA

**In €m**

<table>
<thead>
<tr>
<th>Region</th>
<th>2016</th>
<th>2017</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>France – Generation &amp; supply activities</td>
<td>6,156</td>
<td>4,876</td>
<td>-1,280</td>
</tr>
<tr>
<td>France – Regulated activities</td>
<td>5,102</td>
<td>5,102</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>1,713</td>
<td>248</td>
<td>-1,465</td>
</tr>
<tr>
<td>International</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dalkia</td>
<td>861</td>
<td>877</td>
<td>16</td>
</tr>
<tr>
<td>EDF EN</td>
<td>641</td>
<td>649</td>
<td>8</td>
</tr>
<tr>
<td>Italy</td>
<td>711</td>
<td>722</td>
<td>11</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>978</td>
<td>929</td>
<td>-49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,414</strong></td>
<td><strong>13,742</strong></td>
<td><strong>-2,672</strong></td>
</tr>
</tbody>
</table>

**Organic change: -14.8%⁽¹⁾**

⁽¹⁾ Organic change at comparable scope and exchange rates, including impact of -4.8% relating to the 2016 positive impact of regulated sales tariff adjustment for the period from 1 August 2014 to 31 July 2015 following the French State Council’s decision of 15 June 2016.
## 2017 RESULTS: CHANGE IN NET INCOME

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income before taxes of consolidated companies</td>
<td>4,181</td>
<td>3,401</td>
<td>-780</td>
</tr>
<tr>
<td>Income tax</td>
<td>(1,388)</td>
<td>(147)</td>
<td>+1,241</td>
</tr>
<tr>
<td>Share in income of associates and joint ventures</td>
<td>218</td>
<td>35</td>
<td>-183</td>
</tr>
<tr>
<td>Deducting net income from minority interests</td>
<td>(160)</td>
<td>(116)</td>
<td>+44</td>
</tr>
<tr>
<td><strong>Net income – Group Share</strong></td>
<td>2,851</td>
<td>3,173</td>
<td>+322</td>
</tr>
<tr>
<td>Neutralisation of non-recurring items including IAS 39 volatility</td>
<td>1,234</td>
<td>(353)</td>
<td>-1,587</td>
</tr>
<tr>
<td><strong>Net income excl. non-recurring items</strong></td>
<td>4,085</td>
<td>2,820</td>
<td>-1,265</td>
</tr>
</tbody>
</table>
### 2017 RESULTS: SIMPLIFIED BALANCE SHEET OF THE EDF GROUP

**ASSETS**

(In millions of Euros)  

<table>
<thead>
<tr>
<th></th>
<th>31/12/2016</th>
<th>31/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed assets</td>
<td>147,626</td>
<td>156,900</td>
</tr>
<tr>
<td><strong>o/w Goodwill</strong></td>
<td><strong>8,923</strong></td>
<td><strong>10,036</strong></td>
</tr>
<tr>
<td>Inventories and trade receivables</td>
<td>37,397</td>
<td>37,549</td>
</tr>
<tr>
<td>Other assets</td>
<td>66,238</td>
<td>63,648</td>
</tr>
<tr>
<td>Cash and equivalents and other liquid assets</td>
<td>25,159(1)</td>
<td>22,655</td>
</tr>
<tr>
<td>Assets held for sale (excluding cash and liquid assets)</td>
<td>5,220(2)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>281,640</strong></td>
<td><strong>280,752</strong></td>
</tr>
</tbody>
</table>

**LIABILITIES**

(In millions of Euros)  

<table>
<thead>
<tr>
<th></th>
<th>31/12/2016</th>
<th>31/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareholders’ equity (Group Share)</td>
<td>34,438</td>
<td>41,357</td>
</tr>
<tr>
<td>Net income attributable to non-controlling interests</td>
<td>6,924</td>
<td>7,341</td>
</tr>
<tr>
<td>Specific concession liabilities</td>
<td>45,692</td>
<td>46,323</td>
</tr>
<tr>
<td>Provisions</td>
<td>74,966</td>
<td>76,857</td>
</tr>
<tr>
<td>Financial liabilities(3)</td>
<td>61,230</td>
<td>55,670</td>
</tr>
<tr>
<td>Other liabilities</td>
<td>56,281</td>
<td>53,204</td>
</tr>
<tr>
<td>Liabilities linked to assets held for sale (excluding financial liabilities)</td>
<td>2,109(4)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>281,640</strong></td>
<td><strong>280,752</strong></td>
</tr>
</tbody>
</table>

---

(1) Including assets held for sale and loan to RTE  
(2) Including €104m of financial assets affecting financial debt  
(3) Including hedging derivatives and financial debt related to companies held for sale  
(4) Including €1,458m of financial liabilities impacting net financial debt
### 2017 RESULTS: CHANGE IN CASH FLOW (1/6)

<table>
<thead>
<tr>
<th>Item</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBITDA</strong></td>
<td>16,414</td>
<td>13,742</td>
</tr>
<tr>
<td>Non cash items</td>
<td>(1,703)</td>
<td>(1,796)</td>
</tr>
<tr>
<td>Net financial expenses disbursed</td>
<td>(1,137)</td>
<td>(1,209)</td>
</tr>
<tr>
<td>Income tax paid</td>
<td>(838)</td>
<td>(771)</td>
</tr>
<tr>
<td>Other items o/w dividends received from associates and joint-ventures</td>
<td>323</td>
<td>221</td>
</tr>
<tr>
<td><strong>Operating cash flow</strong></td>
<td>13,059</td>
<td>10,187</td>
</tr>
<tr>
<td>∆ WCR</td>
<td>(1,935)</td>
<td>1,476</td>
</tr>
<tr>
<td>Total net investments and acquisitions excluding 2015-2020 disposal plan</td>
<td>(12,802)</td>
<td>(16,003)</td>
</tr>
<tr>
<td>o/w Net investments excluding Linky(^1), new developments and 2015-2020 disposal plan</td>
<td>(11,816)</td>
<td>(11,968)</td>
</tr>
<tr>
<td>Linky(^1) and new developments(^2)</td>
<td>(985)</td>
<td>(4,035)</td>
</tr>
<tr>
<td>2015-2020 assets disposal plan</td>
<td>1,139</td>
<td>6,193</td>
</tr>
<tr>
<td><strong>Cash flow after net investments and WCR change</strong></td>
<td>(539)</td>
<td>1,853</td>
</tr>
</tbody>
</table>

\(^1\) Linky is a project led by Enedis, independent subsidiary of EDF under the provisions of the French energy code

\(^2\) New developments: in particular the acquisition of Framatome (€1,868m), UK NNB projects and offshore wind
## 2017 RESULTS: CHANGE IN CASH FLOW (2/6): WCR\(^{(1)}\) CHANGE

<table>
<thead>
<tr>
<th>Description</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive effect of cash collection relating to 2016 tariff adjustment</td>
<td>814</td>
</tr>
<tr>
<td>Weather conditions effect in France</td>
<td>228</td>
</tr>
<tr>
<td>WCR(^{(1)}) optimisation plans</td>
<td>422</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
<tr>
<td><strong>2017 WCR(^{(1)}) change</strong></td>
<td>+ 1,476</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Working Capital Requirement
2017 RESULTS: CHANGE IN CASH FLOW (3/6): TARGET OF WCR\(^{(1)}\) OPTIMISATION PLANS EXCEEDED

Gains achieved in 2017

- RECEIVABLES: ~€100m
  - Billing and recovery
- INVENTORIES: ~€300m
  - Fuel
  - Spare parts

2015-2017 cumulated contribution: €1.9bn

- Receivables 34%
- Inventories 61%
- Other 18%

By nature

By geography

France 46%
International 36%
Other 5%

€1.8bn target of cash flow optimisation over 2015-2018 exceeded at the end of 2017

\(^{(1)}\) Working Capital Requirement

In €m

**Investments**(1): +€151m

**New developments excluding Framatome**: +€1,182m

**2016**

12,802

- **Renewable & Services**: +347
- **Regulated activities France**: -88
- **Nuclear**: +548
- **Other**: -656

**Including the acquisition of Futuren**

**2017**

16,003

- **Framatome**: +1,868
- **Other**: 4,035(2)

**2017**

11,968(1)

**Net investments excluding Linky, new developments and 2015-2020 assets disposal plan**

(1) Net investments excluding Linky, new developments and 2015-2020 assets disposal plan

(2) Linky and new developments
2017 RESULTS: CHANGE IN CASH FLOW (5/6): 80% OF THE DISPOSAL PLAN DELIVERED HALFWAY

**Realised operations in 2017**

- EDF Démász sold to ENKSZ
- 49.9% of CTE capital, the entity holding 100% of RTE shares, sold to Caisse des Dépots and CNP Assurances
- EDF Polska’s assets sold to PGE
- Around 200 real estate assets sold to Tikehau Capital
- Edison’s gas and real estate assets sold

**Plan’s progress**

- Upcoming disposals: 19%
- Realised disposals: 81%
- ~€8.1bn (1)

---

(1) Impact on net financial debt

Disposal target of €10bn through 2015-2020 delivered at 80% halfway
## 2017 RESULTS: CHANGE IN CASH FLOW (6/6)

<table>
<thead>
<tr>
<th>In €m</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow after net investments and WCR change</td>
<td>(539)</td>
<td>1,853</td>
</tr>
<tr>
<td>Dedicated assets</td>
<td>10</td>
<td>(1,171)&lt;sup&gt;(1)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cash flow before dividends</td>
<td>(529)</td>
<td>682</td>
</tr>
<tr>
<td>Dividends paid in cash</td>
<td>(454)</td>
<td>(326)</td>
</tr>
<tr>
<td>Interest payments on hybrid issues</td>
<td>(582)</td>
<td>(565)</td>
</tr>
<tr>
<td><strong>Group cash flow</strong></td>
<td>(1,565)</td>
<td>(209)</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Mainly regulatory allocation of €1,095m in compliance with ministerial letter of 10 February 2017
INVESTMENTS: FROM GROSS TO NET\(^{(1)}\)

In millions of Euros

<table>
<thead>
<tr>
<th>Description</th>
<th>Value (in millions of Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross financial investments</td>
<td>14,747</td>
</tr>
<tr>
<td>Mainly acquisition of Framatome</td>
<td></td>
</tr>
<tr>
<td>Subsidies, interest and DSSA</td>
<td>-1,883</td>
</tr>
<tr>
<td>Other</td>
<td>+57</td>
</tr>
<tr>
<td>Net investments excluding 2015-2020 disposal plan</td>
<td>16,003</td>
</tr>
<tr>
<td>Disposal plan</td>
<td>-6,193</td>
</tr>
<tr>
<td>Net investments</td>
<td>9,810</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Net investments including Linky, new developments and assets disposals
NET INVESTMENTS INCLUDING ACQUISITIONS EXCLUDING 2015-2020 DISPOSAL PLAN

In billions of Euros

2016

€12.8bn

2017

€16.0bn

(1) Mainly Italy, United Kingdom and Taishan
NET INVESTMENTS INCLUDING ACQUISITIONS EXCLUDING 2015-2020 DISPOSAL PLAN

**2016**

- **France – Regulated activities**: 28%
- **United Kingdom**: 11%
- **Italy**: 4%
- **Other international**: 5%
- **Other activities**: 7%

**Total**: €12.8bn

**2017**

- **France – Regulated activities**: 24%
- **Framatome**: 12%
- **Other activities**: 9%
- **Other international**: 3%
- **Italy**: 3%

**Total**: €16.0bn
EDF GROUP: FLOW CHART

Distribution of Islands activities (Electricité de Strasbourg)

FRANCE - REGULATED ACTIVITIES

Enterprise value

- Associates (ex. Dedicated assets)
- Minority Interests (Enterprise Value at 100%)
- Net Debt
- Perpetual Subordinated Bonds
- Long-term provisions (nuclear, pensions)
- Dedicated Assets

FRANCE - GENERATION AND SUPPLY ACTIVITIES

Reactors and Services

Other activities

Equity Value

International

UK

Italy

Constellation 50%
ALPIQ 25%
Taishan 30%

(1) Simplified flow chart
(2) Stakes with sizeable non controlling interests
(3) Please refer to the slide “Dedicated Assets Performance” on p. 229
MAIN INVESTMENTS’ VALUE CREATION

EXISTING NUCLEAR LIFE EXTENSION

Grand Carénage

NEW NUCLEAR BUILD

Hinkley Point C
- Project completion costs estimated at £2015 19.6bn(2) of which EDF share is 66.5%

RENEWABLES (EXC. OFFSHORE)

On-shore wind and PV
- Diversified development pipeline (2/3 wind 1/3 solar, 1/3 Europe, 1/3 US, 1/3 other countries)

ENEDIS INVESTMENTS (EXC. LINKY)

Enedis investments excluding Linky
- 2018-2021 net investments of €12bn

LINKY

Linky
- €4.5bn for the 2014-2021 deployment period
- Fully regulated over 20 years: Linky-dedicated RAB
- Revenues differed until 2022 remunerated at 4.6% before tax

Expected increased IRR(1) by 10Y life extension (exc. Fessenheim)

IRR at ~8.2%-8.5%(3)

Historical IRR spread: ~200-300bps above WACC(4),(5)

TURPE 5 HTA/BT regulation with 4.1% remuneration of Regulated Equity and 2.6% remuneration on Regulated Asset Basis (RAB)

Pre-tax nominal return rate of 7.25% with up to 3% incentives / -2% penalties(6)

(1) IRR computed on the cash-flows of a 50Y life fleet (excluding Fessenheim) comparing to a 40Y life fleet
(2) Excluding interim interests and excluding forex effect versus the reference exchange rate for the project 1 Sterling = 1.23 Euro
(3) IRR calculated at the exchange rate of the July 2017 project (1 pound sterling = 1.16 euro). Any change in the exchange rate could impact this rate
(4) Average performance based on a review of all CAPEX projects above 50 million euros until mid-2016
(5) Scope EDF EN. Based on estimations at 31 December 2017 of revenues from fully consolidated assets. Includes regulated, quasi-regulated and long-term contracted assets
(6) Incentive premium/penalties during the deployment phase
2018 TARGETS CONFIRMED

OPERATIONAL PERFORMANCE

- **DECREASE IN OPEX**
  - €800m vs 2015

- **EBITDA**
  - €14.6bn – €15.3bn
  - ~0

- **CASH FLOW**
  - Excluding Linky, new developments and 2015-2020 assets disposal plan
  - Excluding eventual interim dividend for the 2018 fiscal year

BALANCE SHEET AND FINANCIAL STRUCTURE

- **ASSETS DISPOSAL PLAN SINCE 2015**
  - ~€10bn

- **TOTAL NET INVESTMENTS EXCLUDING ACQUISITIONS AND 2015-2020 ASSETS DISPOSAL PLAN**
  - O/w net investments excluding Linky, new developments and 2015-2020 assets disposal plan
  - ≤€15bn
  - ~€11bn

- **NET FINANCIAL DEBT / EBITDA**
  - ≤2.7x

- **TARGETTED PAYOUT RATIO BASED ON NET INCOME EXCLUDING NON-RECURRING ITEMS**
  - 50%

---

(1) Sum of personnel expenses and other external expenses. At comparable scope and exchange rates. At constant pension discount rates. Excluding change in operating expenses of service activities.

(2) At comparable exchange rates and “normal” weather conditions, on the basis of a > 395TWh nuclear output in France assumption. At constant pensions discount rates.

(3) Excluding eventual interim dividend for the 2018 fiscal year.

(4) Signed or realised disposals.

(5) Adjusted for the remuneration of hybrid bonds accounted for in equity.
2019 OUTLOOK

FRANCE NUCLEAR GENERATION

- Additional ten-year inspections, o/w 2 “first of a kind”
- Assumption of Fessenheim closure partly offset by the gradual ramp-up of Flamanville 3

DECREASE IN OPEX(1)

- Savings plan reinforcement: €1.1bn vs 2015

MARKET CONDITIONS

- Wholesale market prices expected slightly up in France: end of the effect of hedges executed end 2015/beginning 2016 in the context of very low prices
- Uncertainty on 2019 forward prices and on the ARENH effect

PAYOUT RATIO OF NET INCOME EXCLUDING NON-RECURRING ITEMS(2)

- Confirmation of payout ratio expected starting from 2019: 45 to 50%

---

(1) Sum of personnel expenses and other external expenses. At comparable scope and exchange rates. At constant pension discount rates. Excluding change in operating expenses of service activities.

(2) Adjusted for the remuneration of hybrid bonds accounted for in equity.
### 2016-2018 GROUP EBITDA EVOLUTION

**2016**

€16.4bn

**2017**

€13.7bn

**2018**

€14.6bn – €15.3bn

(1) At comparable exchange rate and “normal” weather conditions, on the basis of a >395TWh nuclear output in France assumption. At constant pension discount rates.

#### Key Factors:

**Increase:***
- Performance plan
- Capacity markets
- Lower nuclear generation in France
- 2016 non-recurring positive impacts
- ARENH and fleet unavailability: buy-backs of missing volumes at high prices
- Challenging market conditions

**Decrease:***
- Strengthened performance plan
- Increase in nuclear generation
- Improved market conditions in France and United Kingdom
- Growth in renewable business
- Development of service activities

---

202
### DEBT AND LIQUIDITY

#### In billions of Euros

<table>
<thead>
<tr>
<th></th>
<th>31/12/2015</th>
<th>31/12/2016</th>
<th>31/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net financial debt</strong></td>
<td>37.4</td>
<td>37.4</td>
<td>33.0</td>
</tr>
<tr>
<td><strong>Net financial debt/EBITDA</strong></td>
<td>2.1x</td>
<td>2.3x</td>
<td>2.4x</td>
</tr>
<tr>
<td><strong>Debt</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>48.5</td>
<td>51.9</td>
<td>47.3</td>
</tr>
<tr>
<td>Average maturity of gross debt (in years)</td>
<td>13.0</td>
<td>13.4</td>
<td>13.7</td>
</tr>
<tr>
<td>Average coupon</td>
<td>2.92%</td>
<td>2.73%</td>
<td>2.95%</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross liquidity</td>
<td>33.7</td>
<td>36.9</td>
<td>34.6</td>
</tr>
<tr>
<td>Net liquidity</td>
<td>22.9</td>
<td>23.4</td>
<td>27.5</td>
</tr>
</tbody>
</table>
A STRONG LIQUIDITY POSITION

Gross liquidity position of €34.6bn composed by:

- €3.7bn of cash and cash equivalents
- €19.0bn of liquid assets
- €11.9bn of credit lines

Net liquidity position of €27.5bn

Breakdown of the liquidity position as of 31/12/2017 excluding credit lines

- Liquid assets: 84%
- Cash & Cash equivalents: 16%
Strong improvement thanks to asset disposals and rights issue

(1) Net investments excluding Linky, new developments and 2015-2020 assets disposal plan

(2) Linky is a project led by Enedis, independent subsidiary of EDF under the provisions of the French energy code

(3) Dividends including hybrid bonds remuneration
## NET FINANCIAL DEBT (2/2)

<table>
<thead>
<tr>
<th></th>
<th>31/12/2015</th>
<th>31/12/2016</th>
<th>31/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial debt</td>
<td>64,183</td>
<td>65,195</td>
<td>56,846</td>
</tr>
<tr>
<td>Derivatives used to hedge debt</td>
<td>(3,795)</td>
<td>(3,965)</td>
<td>(1,176)</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>(4,182)</td>
<td>(2,893)</td>
<td>(3,692)</td>
</tr>
<tr>
<td>Liquid financial assets available for sale</td>
<td>(18,141)</td>
<td>(22,266)</td>
<td>(18,963)</td>
</tr>
<tr>
<td>Loans to RTE</td>
<td>(670)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net financial debt reclassified (IFRS 5)</td>
<td>-</td>
<td>1,354</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net financial debt</strong></td>
<td><strong>37,395</strong></td>
<td><strong>37,425</strong></td>
<td><strong>33,015</strong></td>
</tr>
</tbody>
</table>
GROSS FINANCIAL DEBT AFTER SWAPS

Breakdown by type of rate

- **Floating rate**: 45%
  - 31/12/17

- **Fixed rate**: 55%
  - 31/12/17

Breakdown by currency

- **EUR**: 81%
  - 31/12/17

- **USD**: 4%
  - 31/12/17

- **GBP**: 13%
  - 31/12/17

- **Other(1)**: 2%
  - 31/12/17

(1) Mainly HUF, CHF, PLN, BRL, CAD and JPY
## BREAKDOWN OF BOND DEBTS BY CURRENCY

In millions of Euros, before swaps

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR</td>
<td>1,491</td>
<td>477</td>
<td>1,191</td>
<td>3,454</td>
</tr>
<tr>
<td>JPY</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USD</td>
<td>-</td>
<td>2,685</td>
<td>2,356</td>
<td>-</td>
</tr>
<tr>
<td>CHF</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Of which (in €m eq.)

- **EUR:** 1,491, 477, 1,191, 3,454
- **JPY:** -
- **USD:** - 2,685 2,356 -
- **CHF:** -

### Graph:

- **EUR**
- **GBP**
- **USD**
- **CHF**
- **JPY**
- **Other**
## MAIN OUTSTANDING BONDS AS OF 31 DECEMBER 2017

<table>
<thead>
<tr>
<th>Issue date(1)</th>
<th>Maturity</th>
<th>Nominal amount (millions of currency units)</th>
<th>Currency</th>
<th>Coupon</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/2008</td>
<td>02/2018</td>
<td>1,500</td>
<td>EUR</td>
<td>5.00%</td>
</tr>
<tr>
<td>01/2009</td>
<td>01/2019</td>
<td>2,000</td>
<td>USD</td>
<td>6.50%</td>
</tr>
<tr>
<td>01/2014</td>
<td>01/2019</td>
<td>1,250</td>
<td>USD</td>
<td>2.15%</td>
</tr>
<tr>
<td>01/2010</td>
<td>01/2020</td>
<td>1,400</td>
<td>USD</td>
<td>4.60%</td>
</tr>
<tr>
<td>05/2008</td>
<td>05/2020</td>
<td>1,200</td>
<td>EUR</td>
<td>5.38%</td>
</tr>
<tr>
<td>10/2015</td>
<td>10/2020</td>
<td>1,500</td>
<td>USD</td>
<td>2.35%</td>
</tr>
<tr>
<td>01/2009</td>
<td>01/2021</td>
<td>2,000</td>
<td>EUR</td>
<td>6.25%</td>
</tr>
<tr>
<td>11/2013</td>
<td>04/2021</td>
<td>1,400</td>
<td>EUR</td>
<td>2.25%</td>
</tr>
<tr>
<td>01/2012</td>
<td>01/2022</td>
<td>2,000</td>
<td>EUR</td>
<td>3.88%</td>
</tr>
<tr>
<td>09/2012</td>
<td>03/2023</td>
<td>2,000</td>
<td>EUR</td>
<td>2.75%</td>
</tr>
<tr>
<td>09/2009</td>
<td>09/2024</td>
<td>2,500</td>
<td>EUR</td>
<td>4.63%</td>
</tr>
<tr>
<td>10/2015</td>
<td>10/2025</td>
<td>1,250</td>
<td>USD</td>
<td>3.63%</td>
</tr>
<tr>
<td>11/2010</td>
<td>11/2025</td>
<td>750</td>
<td>EUR</td>
<td>4.00%</td>
</tr>
<tr>
<td>10/2016</td>
<td>10/2026</td>
<td>1,750</td>
<td>EUR</td>
<td>1.00%</td>
</tr>
<tr>
<td>03/2012</td>
<td>03/2027</td>
<td>1,000</td>
<td>JPY</td>
<td>1.09%</td>
</tr>
<tr>
<td>01/2017</td>
<td>01/2027</td>
<td>107,900</td>
<td>EUR</td>
<td>4.63%</td>
</tr>
<tr>
<td>04/2010</td>
<td>04/2030</td>
<td>1,500</td>
<td>GBP</td>
<td>5.88%</td>
</tr>
<tr>
<td>07/2001</td>
<td>07/2031</td>
<td>650</td>
<td>EUR</td>
<td>5.63%</td>
</tr>
<tr>
<td>02/2003</td>
<td>02/2033</td>
<td>850</td>
<td>GBP</td>
<td>6.13%</td>
</tr>
<tr>
<td>06/2009</td>
<td>06/2034</td>
<td>1,500</td>
<td>EUR</td>
<td>1.88%</td>
</tr>
<tr>
<td>10/2016</td>
<td>10/2036</td>
<td>750</td>
<td>GBP</td>
<td>5.50%</td>
</tr>
<tr>
<td>03/2012</td>
<td>03/2037</td>
<td>500</td>
<td>GBP</td>
<td>6.95%</td>
</tr>
<tr>
<td>01/2010</td>
<td>01/2040</td>
<td>850</td>
<td>USD</td>
<td>5.60%</td>
</tr>
<tr>
<td>11/2010</td>
<td>11/2040</td>
<td>750</td>
<td>EUR</td>
<td>4.50%</td>
</tr>
<tr>
<td>10/2011</td>
<td>10/2041</td>
<td>1,250</td>
<td>GBP</td>
<td>5.50%</td>
</tr>
<tr>
<td>01/2014</td>
<td>01/2044</td>
<td>1,000</td>
<td>USD</td>
<td>4.88%</td>
</tr>
<tr>
<td>10/2015</td>
<td>10/2045</td>
<td>1,500</td>
<td>USD</td>
<td>4.75%</td>
</tr>
<tr>
<td>10/2015</td>
<td>10/2045</td>
<td>1,150</td>
<td>USD</td>
<td>4.95%</td>
</tr>
<tr>
<td>09/2010</td>
<td>09/2050</td>
<td>1,000</td>
<td>GBP</td>
<td>5.13%</td>
</tr>
<tr>
<td>10/2016</td>
<td>10/2056</td>
<td>2,164</td>
<td>USD</td>
<td>4.99%</td>
</tr>
<tr>
<td>01/2014</td>
<td>01/2114</td>
<td>1,350</td>
<td>GBP</td>
<td>6.00%</td>
</tr>
</tbody>
</table>

(1) Date of funds reception

Green Bond

Green Bond

Green Bond

(1) Date of funds reception
## GREEN BONDS: PROCEEDS ALLOCATION

<table>
<thead>
<tr>
<th>Issue date</th>
<th>Maturity (in years)</th>
<th>Nominal amount (millions of currency units)</th>
<th>Currency</th>
<th>Allocated funds as of 31/12/2017 (millions of currency units)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Construction of new renewable capacity by EDF EN</td>
<td>Renovation, modernisation and development of existing hydroelectric facilities in metropolitan France</td>
<td>Total (% of raised funds)</td>
</tr>
<tr>
<td>Nov. 2013</td>
<td>7.5</td>
<td>1,400 EUR</td>
<td>1,400</td>
<td>Not included in Use of Proceeds</td>
</tr>
<tr>
<td>Oct. 2015</td>
<td>10</td>
<td>1,250 USD</td>
<td>1,250</td>
<td>Not included in Use of Proceeds</td>
</tr>
<tr>
<td>Oct. 2016</td>
<td>10</td>
<td>1,750 EUR</td>
<td>443</td>
<td></td>
</tr>
<tr>
<td>Jan. 2017</td>
<td>12</td>
<td>19,600 JPY</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Jan. 2017</td>
<td>15</td>
<td>6,400 JPY</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

- **October 2015 Green Bond (USD):** funds allocation finalised during the second semester 2017
  - The funds contributed to the financing of the construction of 7 wind projects in the United States

- **October 2016 Green Bond (EUR):** 40% of the proceeds allocated
  - ~2/3 dedicated to the financing of the construction of 3 wind projects in the United States and Canada
  - ~1/3 dedicated to the financing of over 100 renovation, modernisation and development projects at existing hydropower plants in France

---

(1) Date of funds reception
## GREEN BONDS: AVOIDED CO₂ EMISSIONS

| Issue date | Funds raised | Funds allocated | Projects financed by the Green Bond | Part of the total investments financed by the Green Bond | Gross total capacity of GB funded projects (in MW) | Expected output (in TWh/year) | Expected avoided CO₂ emissions (in Mt/year) |
|------------|--------------|----------------|-------------------------------------|--------------------------------------------------------|--------------------------------------------------|--------------------------------|--------------------------------|-----------------------------|
| **Nov. 2013** | €1.4bn | €1.4bn | 13 EDF EN projects(3) | 59% | 1,755 | 7.0 | 3.29 | 1.82 |
| **Oct. 2015** | $1.25bn | $1.25bn | 7 EDF EN projects(3,4) | 62% | 1,306 | 5.1 | 3.46 | 2.15 |
| **Oct. 2016** | €443m | €235m | 3 EDF EN projects(4) | 67% | 466 | 2.3 | 1.04 | 0.49 |

**Share of Green Bond funded capacity owned by EDF at the end of December 2017:**
- Green Bond No. 1 (November 2013): 53%
- Green Bond No. 2 (October 2015): 53%
- Green Bond No. 3 (October 2016): 97%

---

(1) Sum of the gross impacts of each project funded by the corresponding Green Bond
(2) Sum of the impacts of each project weighted by the share of total investment funded by the corresponding Green Bond
(3) Of which one project received funding from both Green Bonds of November 2013 and October 2015
(4) Of which one project received funding from both Green Bonds of October 2015 and October 2016
(5) Share of investments funded by EDF taken in full, including half of Romanche-Gavet investment amount
(6) Only linked to additional output expected from development investments, including half of the additional output expected from the Romanche-Gavet project
## COMPARATIVE DEBT RATINGS

<table>
<thead>
<tr>
<th>Moody’s ratings</th>
<th>S&amp;P Ratings</th>
<th>Moody’s Ratings</th>
<th>Fitch Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baa1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baa2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baa3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table

<table>
<thead>
<tr>
<th>Company</th>
<th>S&amp;P Ratings</th>
<th>Moody’s Ratings</th>
<th>Fitch Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF</td>
<td>A- negative(1)</td>
<td>A3 stable(2)</td>
<td>A- stable(3)</td>
</tr>
<tr>
<td>Engie</td>
<td>A- negative</td>
<td>A2 stable</td>
<td>A stable</td>
</tr>
<tr>
<td>E.ON</td>
<td>BBB stable</td>
<td>Baa2 Ratings under review</td>
<td>BBB+ Rating watch negative</td>
</tr>
<tr>
<td>Uniper</td>
<td>BBB stable</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Enel</td>
<td>BBB+ stable</td>
<td>Baa2 stable</td>
<td>BBB+ stable</td>
</tr>
<tr>
<td>RWE</td>
<td>n/a</td>
<td>Baa3 Ratings under review</td>
<td>BBB rating watch evolving</td>
</tr>
<tr>
<td>Iberdrola</td>
<td>BBB+ stable</td>
<td>Baa1 stable</td>
<td>BBB+ stable</td>
</tr>
<tr>
<td>SSE</td>
<td>A- stable</td>
<td>A3 stable</td>
<td>BBB+ stable</td>
</tr>
<tr>
<td>Vattenfall</td>
<td>BBB+ stable</td>
<td>A3 stable</td>
<td>BBB+ stable</td>
</tr>
<tr>
<td>Innogy</td>
<td>BBB stable</td>
<td>Baa2 Ratings under review</td>
<td>BBB+ Rating watch evolving</td>
</tr>
</tbody>
</table>

Sources: rating agencies, data as of 9 May 2018
(1) Update of the rating and outlook of EDF Group by S&P on 20 November 2017
(2) Update of the rating and outlook of EDF Group by Fitch on 28 September 2016
(3) Update of the rating and outlook of EDF Group by Moody’s on 7 June 2016
## GROUP PROVISIONS

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>31 December 2016</th>
<th>31 December 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Non Current</td>
</tr>
<tr>
<td>Provisions for back-end nuclear cycle</td>
<td>1,463</td>
<td>20,823</td>
</tr>
<tr>
<td>Provisions for nuclear decommissioning and last cores</td>
<td>208</td>
<td>24,020</td>
</tr>
<tr>
<td>Other provision for decommissioning</td>
<td>63</td>
<td>1,506</td>
</tr>
<tr>
<td>Provisions for employee benefits</td>
<td>1,100</td>
<td>21,234</td>
</tr>
<tr>
<td>Other provisions</td>
<td>2,394</td>
<td>2,155</td>
</tr>
<tr>
<td><strong>Total Provisions</strong></td>
<td><strong>5,228</strong></td>
<td><strong>69,738</strong></td>
</tr>
</tbody>
</table>
GROUP PROVISIONS FOR EMPLOYEE BENEFITS: CHANGE IN NET LIABILITY

In millions of Euros

2017 net expense

1,491

Changes in scope

+151

Translation adjustments and other

+14

Employer’s contribution to funds

-438

Benefits paid

-1,037

Actuarial differences

-1,121

31/12/2016

21,766\(^{(1)}\)

31/12/2017

20,826\(^{(2)}\)

\(^{(1)}\) Including: provisions for employee benefits (€22,334m) and non-current financial assets (−€568m)

\(^{(2)}\) Including: provisions for employee benefits (€21,736m) and non-current financial assets (−€910m)
GROUP NUCLEAR PROVISIONS

In millions of Euros

31/12/2016  31/12/2017

46,514    48,179

Allowances  +578  -1,491  +2,064  +727  -213

Reductions  Net discount rate decrease\(^{(2)}\)

Discount unwinding\(^{(1)}\)  Balance sheet asset effect: +€347m

Other changes

O/w translation adjustments: -€362m

P&L financial expenses: +€380m

---

\(^{(1)}\) Of which France (+€1,505m) and United Kingdom (+€549m)

\(^{(2)}\) Effects of a change in net discount rate for France:
- for provisions with no related assets: impact on P&L
- for provisions with related assets (matching assets and underlying assets): impact on balance sheet
## FRANCE NUCLEAR PROVISIONS

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>31/12/2016</th>
<th>Net allowances</th>
<th>Discounting&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>Other changes&lt;sup&gt;(2)&lt;/sup&gt;</th>
<th>31/12/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total provisions for back-end nuclear cycle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisions for management of spent fuel</td>
<td>10,658</td>
<td>(408)</td>
<td>545</td>
<td>(9)</td>
<td>10,786</td>
</tr>
<tr>
<td>Provisions for waste removal and conditioning&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>-</td>
<td>59</td>
<td>31</td>
<td>636</td>
<td>726</td>
</tr>
<tr>
<td>Provisions for long-term management of radioactive waste</td>
<td>8,966</td>
<td>(177)</td>
<td>556</td>
<td>(531)</td>
<td>8,814</td>
</tr>
<tr>
<td><strong>Total provisions for nuclear dismantling and last cores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisions for dismantling power stations</td>
<td>14,122</td>
<td>(129)</td>
<td>658</td>
<td>269</td>
<td>14,920</td>
</tr>
<tr>
<td>Provisions for last cores</td>
<td>2,287</td>
<td>-</td>
<td>95</td>
<td>5</td>
<td>2,387</td>
</tr>
<tr>
<td><strong>TOTAL FRANCE NUCLEAR PROVISIONS</strong></td>
<td>36,033</td>
<td>(655)</td>
<td>1,885</td>
<td>370</td>
<td>37,633</td>
</tr>
</tbody>
</table>

NB: Regarding the allocation to Dedicated Assets for nuclear provisions coverage, please refer to the slide "Dedicated Assets" on P. 227

<sup>(1)</sup> P&L financial expenses of which: cost of unwinding the discount: +€1,505m and impact of actual discount rate change for provisions with no asset on the balance sheet: +€380m

<sup>(2)</sup> Other changes include the changes in provisions with related assets (assets associated with provisions and underlying assets). These variations are not included in the income statement

<sup>(3)</sup> In 2016, the provision for waste removal and conditioning was included in provisions for long-term radioactive waste management
### NUCLEAR PROVISIONS FRANCE: 2017 CHANGES

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decommissioning costs</strong></td>
<td><strong>Decommissioning costs</strong></td>
</tr>
<tr>
<td><strong>Plants in operation</strong></td>
<td><strong>Plants in operation</strong></td>
</tr>
<tr>
<td>Extensive revision of the cost estimate for the decommissioning of the plants in operation, taking into account the DGEC audit recommendations&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>Update of the evaluation of the decommissioning costs of the plants in operation</td>
</tr>
<tr>
<td>Limited changes of the cost estimate and related provisions: -€0.5bn&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>These annual studies confirm the changes previously made and do not lead to a significant change in the provisions</td>
</tr>
<tr>
<td><strong>Decommissioning costs</strong></td>
<td><strong>Decommissioning costs</strong></td>
</tr>
<tr>
<td><strong>Closed plants</strong></td>
<td><strong>Closed plants</strong></td>
</tr>
<tr>
<td>Update of the evaluation of the decommissioning costs of the 1&lt;sup&gt;st&lt;/sup&gt; generation plants</td>
<td>Annual update studies of the evaluation of the decommissioning costs of the 1&lt;sup&gt;st&lt;/sup&gt; generation plants: no significant change in the provisions</td>
</tr>
<tr>
<td>These annual studies confirm the changes previously made and do not lead to a significant change in the provisions</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; quarter 2017: review by independent experts presented in June to the ASN Commission concerning the solutions chosen by EDF for the decommissioning of the UNGG plants. No doubts raised about the choices made</td>
</tr>
<tr>
<td><strong>Costs on CIGEO storage project</strong></td>
<td>Safety strategy and options files and detailed timetable for 2017-2032 operations transmitted by EDF at the end of December</td>
</tr>
<tr>
<td>Continuation of the design studies&lt;sup&gt;(ANDRA)&lt;/sup&gt;</td>
<td>New ASN audit scheduled in 2018</td>
</tr>
<tr>
<td>Application for the construction of the facilities in 2018 (approval to be received in 2021)</td>
<td>Continuation of the design studies&lt;sup&gt;(ANDRA)&lt;/sup&gt; Application for the construction of the facilities in 2019 (approval to be received in 2022)</td>
</tr>
<tr>
<td></td>
<td>15 January 2018: the ASN issued its opinion on the Cigeo Safety Options File (DOS). In this opinion, ASN requested the study of an alternative storage system for bituminous waste</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> General Division for Energy and Climate (DGEC) Conclusions of the audit made public in January 2016 on the website of the French Ministry for Ecology, Sustainable Development and Energy. The summary of the audit report is available here: [http://www.ecologique-solidaire.gouv.fr/sites/default/files/061015Synth%C3%A9se%20rapport%20audit%20Dampierre_0.pdf](http://www.ecologique-solidaire.gouv.fr/sites/default/files/061015Synth%C3%A9se%20rapport%20audit%20Dampierre_0.pdf)

<sup>(2)</sup> Lower provision for counterparty of underlying assets
Audit mandated and steered by the DGEC\(^{(2)}\), conducted from July 2014 to August 2015, in accordance with the decree of 23 February 2007, following a request from the *Cour des Comptes* (National Audit Court) in its January 2012 public report on nuclear costs

**Main conclusions of the audit\(^{(3)}\)**

- Estimate of €22,322m versus the estimate of €23,537m in the EDF accounts in €2013, at 31/12/2013
- Confirmation of the prudent valuation of the EDF reference estimate and of the relevance of the extrapolation method used by EDF, particularly regarding scale effects
- Confirmation of and complement to the benchmark analyses conducted by EDF, which show that the expenses funded by EDF are in the upper half of international estimates
- The audit result also supports the corresponding evaluation of EDF for the provisions at present value, with the given future inflation and discount rates (€13,220m posted at 31/12/2013)
- The audit recommends calculating the dismantlement provisions based on the "Dampierre 2009" study: EDF has been proceeding on this basis from the close of accounts for the financial year that ended on 31/12/2014

---

\(^{(1)}\) Pressurised Water Reactor

\(^{(2)}\) Directorate General for Energy and Climate of the Ministry of Ecology, Sustainable Development and Energy

\(^{(3)}\) Conclusions of the audit published in January 2016 on the website of the Ministry of Ecology, Sustainable Development and Energy

The French version of the summary audit report can be accessed here: [http://www.ecologique-solidaire.gouv.fr/sites/default/files/061015Synth%C3%A8se%20rapport%20audit%20Dampierre_0.pdf](http://www.ecologique-solidaire.gouv.fr/sites/default/files/061015Synth%C3%A8se%20rapport%20audit%20Dampierre_0.pdf)
PRECISIONS ON THE VALUATION OF THE PWR(1) DISMANTLING COST ESTIMATE

In 2016: reviewing of the PWR decommissioning estimate considering the recommendations of the DGEC ordered audit and the past experience gained from dismantling operations for first-generation reactors (particularly Chooz A)

Implementation of a detailed analytical approach:
- identifying all costs (engineering, construction work, operation and waste processing involved in future decommissioning of reactors) and assessing figures based on detailed timetables for plants decommissioning
- assessment of costs specific to the « first of a kind » unit of each series : “first of a kind” unit 900MW transposed to 1,300MW and 1,450MW
- implementation of the series and mutualisation effects inherent to the France fleet's size and configuration :
  - mutualisation effects: several reactors may share common buildings and facilities on the same site (in France, unlike other countries, there are no single reactors but sites with 2 or 4 and in one case 6 reactors); certain costs are not higher when 2 or 4 reactors are decommissioned on the same site (surveillance costs for example), waste processing in centralised facilities (for example for dismantling major components such as steam generators)
  - series effect (comparable in nature to the effects observed during construction of the fleet): in a fleet using the same technology, many of the studies do not need to be repeated each time, and robots and tooling can be largely reused from one site to another
    - A series effect of approximately 20% is expected between a first-of-a-kind reactor with 2 units and an average reactor with 2 units
- Series and mutualisation effects in particular explain why it is not appropriate simply to compare the average decommissioning cost per reactor between the French fleet and other countries' nuclear fleets.

The implemented approach includes prudence factors:
- the figures only marginally reflect changes in productivity and the learning effect
- the estimate includes an assessment of risks, contingencies and uncertainties

EDF is also continuing to support its analyses through an international comparison, making sure it takes into consideration factors that could distort direct comparisons (differences in scope of cost estimates, national or regulatory contexts, series and mutualisation effects specific to the French fleet, etc.)

The 2017 decommissioning estimate review led to non-significant adjustments
To assess future dismantling costs, EDF uses in particular national and international feedback (from the OECD, IAEA, EU, etc.) accounting for:

- Differences in the estimate scopes
- National and regulatory contexts
- Difficulties in comparing estimates in different monetary units
- The irrelevance of using a comparison based on €/kWe

EDF’s benchmarking shows that the estimate of dismantling costs of French power plants is in the upper end of the funded costs range.

Benchmark elements audited in the DGEC audit:

- The auditors confirmed that restatements are required to make international comparisons, and that direct comparison of cost expressed in € per installed kWe is inappropriate.
- The auditors conducted an independent comparison in men/year that reflects the cost of dismantling, as manpower is a major factor in this activity, and is not sensitive to monetary effects.

In terms of international benchmarking, the DGEC audit concluded that the men/year amounts converge when adjustments to homogenise the scope are performed, and that the French quote offers the highest estimate of overall needs.

---

(1) Pressurized Water Reactor

(2) OECD: Organisation for Economic Co-operation and Development; IAEA: International Atomic Energy Agency; EU: European Union
A direct comparison of nuclear provisions (dismantling and downstream cycle) in EDF’s accounts with German plant operators’ provisions is hindered by the important provisions aggregation reported by German plant operators.

German plant operators’ higher level of dismantling provisions, when compared to their installed base, may be due to several factors:

- **The effect of discounting, as the French fleet is younger**: a 10-year time lag lowers provisions by 25%.
- **Differences in scope**: in Germany, dismantling costs include the costs of building and operating an on-site spent fuel storage building.
- **The series and processes standardisation effect leads to a lower dismantling cost for PWR reactors than for all other types of reactors**.
- **Structural differences in organisation and industrial choices**: German reactors are of various types and are run in a decentralised manner, in contrast to the integrated and standardised fleet in France.
- **Decontamination operations**: in Germany, unlike in France, the legislation makes it possible to decontaminate certain wastes and transport them using conventional channels if the level of activity reached is below the “release threshold”. German operators are encouraged to decontaminate in order to keep from storing nuclear waste, which is very expensive in the absence of an appropriate channel.

EDF’s specific factors explain why its nuclear provisions are lower than some other operators.
A boiling water reactor (BWR) has more areas contaminated by primary circuit water and larger areas generating nuclear waste than a pressurised-water reactor (PWR).
The discount rate determined under the Company’s usual method is 4.1% at 31 December 2017, assuming an inflation rate of 1.5%

<table>
<thead>
<tr>
<th></th>
<th>December 2016</th>
<th>December 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal discount rate</td>
<td>4.2%</td>
<td>4.10%</td>
</tr>
<tr>
<td>Regulatory ceiling rate(1)</td>
<td>4.3%</td>
<td>4.16%</td>
</tr>
<tr>
<td>Inflation</td>
<td>1.5%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

- The decrease in the actual discount rate from 2.7% to 2.6% resulted in a +€727m increase of nuclear provisions in 2017, of which +€380m in financial expenses and +€347m in the increase of asset value in the balance sheet
- The regulatory ceiling was modified by the Order of 29 December 2017 (please refer to the next page)

(1) Calculation based on:
- In 2016, in accordance with the Order of 24 March 2015
- In 2017, in accordance with the Order of 29 December 2017

For more details, please refer to the 2016 consolidated accounts, section 29.1.5, "Discounting of provisions related to nuclear generation and sensitivity analyses"
The discount rate applied for nuclear provisions in France must comply with two regulatory limits, which changed in 2017.

Until 2016 (Order of 24 March 2015) the applied discount rate had indeed to remain lower than:

- A regulatory ceiling “equal to the arithmetic average over the 120 most recent months of the constant 30-year rate (TEC 30 years), observed on the last date of the period concerned, plus one point”
- The expected rate of return on assets covering the liability (dedicated assets)

As of 2017 (Order of 29 December 2017) the calculation of the regulatory ceiling changes as follows: the regulatory ceiling is defined until 31/12/2026 as weighted averages of a 1st term fixed at 4.3% and a 2nd term corresponding to the arithmetic average over the last 48 months of the TEC 30 plus 100 points. The weighting assigned to the 1st constant term of 4.3% decreases linearly from 100% at the end of 2016 to reach 0% at the end of 2026.

The provisions of the Order of 29 December 2017 are in line with the terms of the letter of 10 February 2017 in which the Ministers of the Economy and Finance on the one hand and of the Environment, Energy and the Sea on the other hand announced their decision to change the formula for calculating the regulatory ceiling for the discount rate starting in 2017.

Under the new formula, the regulatory ceiling will gradually migrate over 10 years from its level at 31 December 2016 (4.3%) to a level in 2026 equal to the average constant 30-year rate (TEC 30 years) over the four most recent years, plus 100 base points.

The application of the formula as at 31/12/2017 presents a discount rate regulatory ceiling of 4.16%.

### Formula for calculating the regulatory ceiling:

- 2016 = 4.3%
- 2017 = 9/10 x 4.3% + 1/10 x (average 4 years of the TEC 30 + 100 bps)
- 2018 = 8/10 x 4.3% + 2/10 x (average 4 years of the TEC 30 + 100 bps)
- 2019 = 7/10 x 4.3% + 3/10 x (average 4 years of the TEC 30 + 100 bps)
- ...
Based on assumptions made for the TEC 30 in 2018 and 2019, the new formula for calculating the calculation of the regulatory ceiling would likely lead to a discount rate of 3.9% at end-2018, and 3.8% at end-2019.

All things being equal, such a change would generate an increase in provisions (excluding associated income tax effect) estimated at:

- €1,550m at 31/12/2018 (including €1,308m for provisions covered by dedicated assets)
- €775m at 31/12/2019 (including €654m for provisions covered by dedicated assets)

This increase in nuclear provisions, in particular those subject to dedicated assets, does in no way prejudge the direct transposition onto the Group’s Net financial debt of the dates under consideration, given that the amount to be allocated for each year may vary, particularly depending on:

- the profitability of the dedicated assets and the resulting coverage rate (no need to allocate once the coverage rate has reached 110%, which should be achieved after the allocation of €386m to Dedicated Assets in 2018 for 2017)
- the period within which the allocation is made, the regulations allowing ministers to set a maximum period of 3 years to make the allocation (Article 14 of the amended decree of 23 February 2007 and Article L594-5 of the French Environmental Code)
## DISCOUNT RATE OF NUCLEAR PROVISIONS IN FRANCE (4/4)

### SENSITIVITY ANALYSIS TO THE DISCOUNT RATE

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>Sensitivity to the discount rate</th>
<th>Provisions (discounted value)</th>
<th>On balance sheet provisions</th>
<th>On pre-tax earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>+0.20%</td>
<td>-0.20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+0.20%</td>
<td>-0.20%</td>
</tr>
<tr>
<td><strong>Front-end nuclear</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of nuclear fuel</td>
<td>10,786</td>
<td>(221)</td>
<td>238</td>
<td>190</td>
</tr>
<tr>
<td>Provisions for waste removal and conditioning</td>
<td>726</td>
<td>(22)</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Long-term management of radioactive waste</td>
<td>8,814</td>
<td>(497)</td>
<td>562</td>
<td>407</td>
</tr>
<tr>
<td><strong>Dismantling and last cores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For decommissioning permanently shut-down nuclear plants</td>
<td>11,616</td>
<td>(477)</td>
<td>501</td>
<td>7</td>
</tr>
<tr>
<td>For decommissioning nuclear plants in operation</td>
<td>3,304</td>
<td>(125)</td>
<td>135</td>
<td>125</td>
</tr>
<tr>
<td>Last cores</td>
<td>2,387</td>
<td>(85)</td>
<td>90</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>37,633</strong></td>
<td><strong>(1,427)</strong></td>
<td><strong>1,550</strong></td>
<td><strong>742</strong></td>
</tr>
</tbody>
</table>
## DEDICATED ASSETS

In billions of Euros

<table>
<thead>
<tr>
<th></th>
<th>31/12/2016</th>
<th>25.7</th>
<th>25.9</th>
<th>28.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisions for last cores (back-end of the nuclear cycle)</td>
<td>24.4</td>
<td>0.5</td>
<td>0.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Provisions for dismantling of nuclear plants</td>
<td>14.1</td>
<td>5.6</td>
<td>14.9</td>
<td>19.4</td>
</tr>
<tr>
<td>Provisions for LT management of radioactive waste</td>
<td>9.8</td>
<td>4.3</td>
<td>25.7</td>
<td>5.4</td>
</tr>
</tbody>
</table>

### 31/12/2016

- **Dedicated assets in realisable value:** 25.7
- **Financial portfolio and liquid assets:** 15.8
- **CSPE receivable:** 4.3
- **EDF Invest:** 5.6

### 31/12/2017

- **Dedicated assets in realisable value:** 25.9
- **Financial portfolio and liquid assets:** 15.8
- **CSPE receivable:** 0.5
- **EDF Invest:** 14.9

### As of 31 December 2017

- The regulatory coverage ratio for nuclear liabilities eligible for EDF's dedicated assets is 108.5% (112.1% before revision of the assumptions used to estimate the provision at the end of December, in particular the reduction of the discount rate).
- As of 31 December 2016, this ratio was 99.8% (105.3% pro forma after finalising the sale of a portion of the CTE\(^{(1)}\) shares in 2017).

### Regulatory Obligation

- Regulatory obligation to allocate to dedicated assets: in the framework of regulatory obligation as of end-2017, a €386m allocation will be realised in 2018 allowing the coverage ratio to reach 110% pro-forma 31/12/2017. In the framework of regulatory obligation as of end-2016 a €1,095m allocation has been realised in March 2017.

---

\(^{(1)}\) CTE: entity holding 100% of RTE shares
### From Provisions Related to Nuclear Generation in France to Dedicated Assets in 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Financial Year</th>
<th>Provisions Related to Nuclear Generation in France</th>
<th>Provisions Covered by Dedicated Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last core back-end part</td>
<td>0.5</td>
<td>37.6</td>
<td>25.9</td>
</tr>
<tr>
<td>Last core front-end part</td>
<td>1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decommissioning permanently shut-down nuclear plants</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decommissioning nuclear plants in operation</td>
<td>11.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term management of radioactive waste</td>
<td>8.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste removal and conditioning</td>
<td>0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of nuclear fuel (Recyclable in existing installations part)</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of nuclear fuel (Non recyclable in existing installations part)</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total provisions related to nuclear generation in France: 37.6

Provisions related to nuclear generation covered by dedicated assets: 25.9
EDF DEDICATED ASSETS PERFORMANCE

Financial portfolio performance\(^{(1)}\) of +7.7% in 2017, higher than its benchmark (+6.6%)
- The markets were strong in a context of unusually low volatility. The continued over-performance of the portfolio compared to the benchmark index rewarded the light overweight in equities, the outperformance of Japan and Europe asset management, prudent positioning relative to the bonds sensitivity, significantly reduced, and credit exposure, in particular to subordinated bank loans

EDF Invest posted a 2017 performance\(^{(1)}\) of +11.2% excluding RTE and +8.8% in total including RTE
- In March 2017, EDF finalised the sale of a 49.9% stake in CTE holding 100% of RTE since December 2016. The other 50.1% remains allocated to dedicated assets
- Moreover, EDF Invest continues to invest, notably with participations in Central Sicaf (offices and technical buildings rented to Telecom Italia), in the real estate asset Ecowest (Levallois-Perret), in Autostrade per l’Italia (one of the largest concession managers of the roads in Europe) and in Q-Park (one of the main operators of parking in Europe)
- Since their launch in mid-2013, infrastructures and real estates investments have produced an IRR of nearly 11%

The CSPE receivable: €904m was repaid according to the provisional schedule of the principal for 2017 year. The cash from the partial disposals of CTE shares and the CSPE receivable has been gradually reinvested in accordance with the strategic allocation

---

\(^{(1)}\) Full-year performance before tax
\(^{(2)}\) Including a 50.1% stake in company CTE (holding 100% of RTE shares) for a realisation value of €2,705m

As of 31/12/2016, 75.93% of the stake was allocated to the dedicated assets for a realisation value of €3,905m

---

Portfolio breakdown as of 31 December 2017

<table>
<thead>
<tr>
<th>Listed financial portfolio</th>
<th>Shares and equity funds</th>
<th>Shares and bond funds</th>
<th>CSPE receivable</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,115</td>
<td>9,972</td>
<td>9,282</td>
<td>3,349</td>
<td>104</td>
</tr>
</tbody>
</table>

In millions of Euros, in realisable value

Performance in 2017: +6.6%\(^{(1)}\)
Evolution published in the Amending Finance Law 2015 and the Finance Law 2016; entry into force of the new mechanism on 1 January 2016 - continuity in 2017:

- Public energy service charges (electricity and gas) integrated into the State budget are still calculated by the CRE and are divided into two accounts: an “Energy Transition” (CAS) special allocation account and a “Public Energy Service” account of the General Budget
- Publication by the CRE of its ruling of 13 July 2017 regarding actual 2016 charges, reforecasting of 2016 charges and forecasting of the 2018 charges
- Relative to the French Finance Law, the 2017 Amending French Finance Law represents a reduction of €898 million in Special Appropriations Account credits to reflect the downward revision by the CRE of expenses for 2017

The reimbursement of the EDF compensation deficit as presented in the letter from the Ministers of 26 January 2016 was translated into the decree of 18 February 2016 and the orders of 13 May 2016 and of 2 December 2016:

- Confirmation of the receivable owed to EDF and recognized by the State of €5.9bn at the end of 2015, including the new deficits between 2013 and 2015 and the related interests, and of the reimbursement schedule for 2020
- The annuity and related interests (1.72%) will be compensated in priority relative to other EDF charges, in accordance with Article R. 121-33 of the Energy Code
- The 2016 and 2017 annual payments of the financial receivable were repaid by the State in line with the payment schedule

Compensation as from 1 January 2017 for the costs of managing the purchase obligation contracts, in accordance with the principle of full offsetting of the charges borne by the operators

(1) Contribution au Service Public de l’Énergie - Public energy services charges
The CSPE tax is no longer subject to an automatic annual increase. It has been stabilised since 2016 at €22.5/MWh. Since early 2017 it has gone into the General Budget rather than the “Energy Transition” Special Appropriations Account as in 2016.

In 2017, both the “domestic tax on energy products” (TICPE) and the “domestic tax on coal, lignite and coke” contribute to funding the mechanism (40% of TICPE and 10% of TICC).

<table>
<thead>
<tr>
<th>Date</th>
<th>CSPE Tax €/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/01/2013</td>
<td>13.5</td>
</tr>
<tr>
<td>01/01/2014</td>
<td>16.5</td>
</tr>
<tr>
<td>01/01/2015</td>
<td>19.5</td>
</tr>
<tr>
<td>01/01/2016</td>
<td>22.5 (1)</td>
</tr>
<tr>
<td>01/01/2017</td>
<td>22.5 (1)</td>
</tr>
<tr>
<td>01/01/2018</td>
<td>22.5 (1)</td>
</tr>
</tbody>
</table>

(1) Article 14 of the Amending Finance Law for 2015 included in Article 266 C of Customs Code
Article L121-6 of the Energy Code stipulates that the expenses attributable to the public service tasks assigned to the electricity operators are fully compensated by the State.

<table>
<thead>
<tr>
<th>In millions of Euros</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase obligations(^{(1)})</td>
<td>4,278</td>
<td>4,472</td>
<td>4,681</td>
</tr>
<tr>
<td>Other(^{(2)})</td>
<td>2,042</td>
<td>2,038</td>
<td>1,866</td>
</tr>
<tr>
<td><strong>Total CSPE EDF</strong></td>
<td><strong>6,320</strong></td>
<td><strong>6,510</strong></td>
<td><strong>6,547</strong></td>
</tr>
</tbody>
</table>

The public service costs in ZNI\(^{(3)}\) depend on energy and fuel purchases, the cost of replacing old power plants and the volumes of purchase obligations.

The rise in public service costs is mainly due to an increase in purchase obligations costs related to the development of the renewable generation fleet in France; stability of expenditure involved in social policies; less expenditure involved in ZNI\(^{(3)}\).

---

\(^{(1)}\) 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\(^{(3)}\).

\(^{(2)}\) Additional generation costs and purchase obligations in ZNI\(^{(3)}\), the TPN (First Necessity Tariff) and the FSL (Housing Solidarity Fund).

\(^{(3)}\) ZNI: Zones non interconnectées corresponding to overseas departments and Corsica.
**CSPE (4/5): CHANGE IN PURCHASE OBLIGATIONS IN MAINLAND FRANCE FOR EDF**

**Principle:** The compensation mechanism of public energy services charges\(^{(1)}\) offsets the difference between the cost of purchase obligations in mainland France and market prices.

<table>
<thead>
<tr>
<th>Year</th>
<th>Purchase Obligations Amount</th>
<th>Average Spot Price</th>
<th>Cost of Purchase Obligations Valued at Market Prices Based on CRE Methodology</th>
<th>Additional Cost of Purchase Obligations Cost to be Offset by the CSPE(^{(2)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>€5,424M</td>
<td>€34.7/MWh</td>
<td>€1,519M</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>€6,030M</td>
<td>€38.6/MWh</td>
<td>€1,752M</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>€6,199M</td>
<td>€36.7/MWh</td>
<td>€1,727M</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>€6,760M</td>
<td>€45.0/MWh</td>
<td>€2,079M</td>
<td></td>
</tr>
</tbody>
</table>

\(^{(1)}\) The compensation mechanism of public energy services charges also offsets tariff equalization costs in non-interconnected areas, and solidarity arrangements.

\(^{(2)}\) EDF SA excluding island activities.
## CSPE (5/5): IMPACT ON EDF GROUP FINANCIAL STATEMENTS

### Income statement

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<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra-costs/losses</td>
<td>(6,320)</td>
<td>(6,510)</td>
<td>(6,547)</td>
</tr>
<tr>
<td>Impact on “Other Operating Income and Expenses”</td>
<td>6,320</td>
<td>6,510</td>
<td>6,547</td>
</tr>
<tr>
<td>EBITDA</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Financial result (compensation for the cost of carry)</td>
<td>88</td>
<td>100</td>
<td>64</td>
</tr>
</tbody>
</table>

### Balance sheet

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSPE receivable</td>
<td>1,643</td>
<td>1,647</td>
<td>1,140</td>
</tr>
<tr>
<td>CSPE debt</td>
<td>(1,258)</td>
<td>(1,255)</td>
<td>(1,217)</td>
</tr>
<tr>
<td>CSPE Financial receivable(1)</td>
<td>5,875</td>
<td>4,185</td>
<td>3,207</td>
</tr>
</tbody>
</table>

### Cash flow

<table>
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<tr>
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<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash-in on energy billed</td>
<td>6,108</td>
<td>6,357</td>
<td>7,065(2)</td>
</tr>
<tr>
<td>Increase in WCR – CSPE receivable</td>
<td>230</td>
<td>(9)</td>
<td>(497)</td>
</tr>
<tr>
<td>Change in WCR – Receivables and Payables</td>
<td>94</td>
<td>(2)</td>
<td>(459)</td>
</tr>
</tbody>
</table>

---

\(1\) CSPE receivable excluding coverage on dedicated assets - since the beginning of 2017, EDF now holds only 73.6% of the financial debt, the remainder having been securitised with external assignees.

\(2\) Compensation cash-in by EDF from the State in 2017.
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</table>
PROGRAMMATION PLURIANNUELLE DE L’ÉNERGIE (PPE)(1) 2018: PROGRESS OF THE PROCESS

- Revision of the Stratégie Nationale Bas-Carbone(2): the long term goal (“mid-century”) is now carbon neutrality
  - More demanding than the previous objective of a division by 4 of GHG emissions
- Council of Ministers of 7 November 2017: definition of the framing elements of the PPE
  - Priority to the climate issue: the evolution of the electricity mix will have to avoid any additional generation capacity from fossil fuel
  - The 50% nuclear target by 2025 raises "significant difficulties in implementation"
  - Two action plans requested: simplify the development of renewable energies and increase ambition at the lowest cost; improve energy efficiency for buildings and accelerate renovations
  - PPE will define how nuclear fuel recycling may evolve
- Organisation of thematic workshops, allowing stakeholders (government departments, regulators, network operators, professional and trade union organisations, NGOs, companies in the sector) to express their points of view, objectives and expectations
  - During the PPE workshop of 16th January 2018, the public authorities have selected, among the scenarios for 2035 developed by RTE in its forecast report, the two scenarios excluding additional of fossil electricity capacity
  - On 10 April, the DGEC(3) presented a 2050 project scenario SNBC(2) which forecasts a 2050 electricity consumption 25% higher than the current one, electricity representing 50% of the final energy
- Ongoing public debate (19 March – 30 June 2018): "information and controversy" workshops initiated by the CPDP(4), regional meetings initiated by elected representatives, contributive platform on the CPDP(4) website
- The Group is getting organised to present its vision of the stakes involved, present its positions and answer questions from the public

<table>
<thead>
<tr>
<th>2nd half 2017</th>
<th>March – June 2018</th>
<th>Summer 2018</th>
<th>4th quarter 2018</th>
<th>End 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparatory work (including DGEC(3) workshops)</td>
<td>Public debate</td>
<td>1st version of the PPE and the SNBC(2)</td>
<td>Institutional consultations</td>
<td>Finalisation of the PPE and the SNBC(2), publication of the PPE decree</td>
</tr>
</tbody>
</table>

Source: Commission nationale du débat public - French national public debate commission
(1) PPE: Programmation Pluriannuelle de l‘Énergie – Multi-year energy plan
(2) SNBC: Stratégie Nationale Bas-Carbone – low-carbon national strategy
(3) DGEC: Direction Générale de l'Énergie et du Climat - General Direction of Energy and Climate
(4) CPDP: Commission particulière du débat public - Special Commission for Public Debate
MULTI-YEAR ENERGY PLAN (PPE): AN IMPORTANT DATE FOR THE FUTURE OF ENERGY IN FRANCE

As a leader in the French energy sector with a strong desire for dialogue, EDF wishes to participate in the public debate on the PPE.

EDF approaches the debate with 4 convictions:

- Energy efficiency and very low carbon energy are the two levers of the transition.
- France needs to develop renewable energies.
- The nuclear fleet is a major asset to the transition.
- Nuclear and renewable energy are the keys of the electricity system of the future for France.

In the framework of the public debate on PPE, the EDF group defends the need to quickly make pragmatic decisions to guarantee a sustainable nuclear/renewable energy mix, with a growing share of renewable energies, while strengthening the contribution of electricity in the decarbonisation of the economy.
The price of EU CO\textsubscript{2} allowances (EUA) under the EU ETS has increased from €5/tCO\textsubscript{2} to around €13/t since July 2017.

The price rise spread over the time-period during which EU institutions discussed and eventually agreed on a reform of the EU ETS.

The reform creates in particular a Market Stability Reserve, which will reduce the market surplus from ~2.5bn tCO\textsubscript{2} to 400-833mln tCO\textsubscript{2}. This is not expected to rebalance total supply vs demand before the mid-2020s.

However, it will significantly reduce the flow of liquid allowances starting in 2019 as auction volumes will drop by around 45% compared to 2018.

The price surge that started end of February 2018 may be linked to anticipations of a tighter market by certain market participants, including utilities and financial participants.
Based on CRE analysis on generation sectors at the margin, on average, French power prices were set in 2016:

- Directly by nuclear: around 20% of the time
- Directly by gas: around 25% of the time
- Directly by coal: around 5% of the time
- Indirectly by a 50/50 mix of coal and gas (through interconnections and hydro): around 50% of the time

On that basis, certain analysts estimate that, everything else being equal, +€1/tCO₂ in EU allowance (EUA) prices leads to an increase of around +€0.4/MWh for French electricity.

While it is difficult to anticipate the future evolution of EUA prices, it appears that CO₂ prices are starting to reflect sounder market fundamentals and should influence coal-to-gas fuel switching decisions in the context of a tightened relation between European power, coal, gas and CO₂ prices.

In that context, CO₂ could help stabilise power prices in the European Union in the case of a change in coal prices for instance (everything else being equal).
## GREAT BRITAIN CAPACITY AUCTION RESULTS FOR EDF ENERGY

Results from this year’s and previous capacity market auctions:

All capacity agreements for 1 year unless otherwise stated.

<table>
<thead>
<tr>
<th>Date</th>
<th>Nuclear</th>
<th>Coal</th>
<th>CCGT(1)</th>
<th>OCGT(2)</th>
<th>Battery</th>
<th>Demand-Side Response (DSR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Q-1 (2017/2018)</td>
<td>All 16 units (7.9GW)</td>
<td>All 8 units (3.5GW)</td>
<td>All 3 units (1.2GW)</td>
<td>All 2 units (38MW)</td>
<td>N/A</td>
<td>2 units (9.6MW)</td>
</tr>
<tr>
<td>2014 Q-4 (2018/2019)</td>
<td>All 16 units (7.9GW)</td>
<td>7 of 8 units(3) (3.1GW)</td>
<td>All 3 units (1.2GW)</td>
<td>All 2 units (37MW)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2018 Q-1 (2018/2019)</td>
<td>N/A</td>
<td>1 unit (0.4GW)</td>
<td>N/A</td>
<td>N/A</td>
<td>1 unit (10.5MW)(4)</td>
<td>2 units (12.8MW)</td>
</tr>
<tr>
<td>2015 Q-4 (2019/2020)</td>
<td>All 16 units(5) (7.6GW)</td>
<td>0 unit</td>
<td>All 3 units (1.2GW)</td>
<td>All 2 units (37MW)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2016 Q-4 (2020/2021)</td>
<td>All 16 units (7.9GW)</td>
<td>3 of 8 units (1.3GW)</td>
<td>All 3 units (1.2GW)</td>
<td>All 2 units (38MW)</td>
<td>1 unit(6) (47MW)</td>
<td>N/A</td>
</tr>
<tr>
<td>2018 Q-4 (2021/2022)</td>
<td>All 16 units (7.9GW)</td>
<td>0 unit</td>
<td>All 3 units (1.2GW)</td>
<td>0 unit</td>
<td>N/A</td>
<td>5 units (32.1MW)</td>
</tr>
</tbody>
</table>

(1) Combined Cycle Gas Turbine
(2) Open Cycle Gas Turbine
(3) 3 year refurbishing agreements that were reverted to 1 year agreements
(4) Battery further de-rated to 21% from 96%
(5) T-4 2015 had a lower total connection capacity for Nuclear units
(6) 15 year capacity agreement for new build battery
N/A: Not applicable

The slide includes capacities that agreements were awarded for (de-rated capacity)
For DSR this equates to bidding capacities
MARKETS: ELECTRICITY CONSUMPTION
(DATA NOT ADJUSTED FOR WEATHER AND CALENDAR)

In TWh

France

Source: RTE


495 487 479 490 495 465 476 483 482

The United Kingdom

Source: BEIS


342 322 329 318 318 317 303 303 304 298

Italy

Source: Terna


340 331 335 328 318 311 317 314 320
Average observed spot market price for 2017:
- EPEXSPOT: France & Germany
- N2EX: United-Kingdom
- OMIE: Spain
- GME: Italy (Prezzo Unico Nazionale)
- APX: Netherlands
- BELPEX: Belgium

Spot prices rise in 2017, marked by a cold wave in Europe in January and the increase in commodities prices

Market coupling limited by the available capacities at the borders

- Change compared to average prices in 2016
- Average annual NTC (Net Transfer Capacity) as calculated by RTE in January 2017 for 2017
- Implementation of the flow-based coupling mechanism from 21 May 2015 for all CWE (France, Benelux, Germany)
The French cross-border trade balance was 38.0TWh in 2017 (about -1TWh compared to 2016). Exports increased +2.4TWh to 74.2TWh. Imports were up +3.6TWh to 36.2TWh. The balance to the CWE(1) area was 10.9TWh in 2017 (importer position), up 5.6TWh compared to 2016. France remains, however, a net exporter to Switzerland, Italy, Spain and the UK.

Source: RTE
(1) Continental Western Europe (Germany, Belgium, France, Luxembourg and the Netherlands)
In 2017, the average baseload electricity spot price was €45.0/MWh, up €8.2/MWh vs last year. This increase is attributable to a very colder January 2017, coupled with lower availability of the nuclear fleet, a long-lasting drought which impacted hydraulic generation, and an increase in commodities' prices versus 2016.
In 2017, the average peakload electricity spot price was €53.7/MWh, up €8.0/MWh versus 2016.
Note: Over the period, the France/Germany spread reached its minimum on 14 July 2017 at €2.77/MWh, and its maximum on 29 October 2017 at €92.37/MWh.
FORWARD ELECTRICITY PRICES IN FRANCE, THE UK, ITALY AND GERMANY (Y+1) FROM 01/01/2016 TO 31/12/2017

In €/MWh

- Electricity - annual baseload contract France (EEX)
- Electricity - annual baseload contract Germany (EEX)
- Electricity - annual baseload contract April UK in €/MWh
- Electricity - annual baseload contract Italy (EDF Trading)
FORWARD ELECTRICITY PRICES IN FRANCE, THE UK, ITALY AND GERMANY (Y+2) FROM 01/01/2016 TO 31/12/2017

In €/MWh

Electricity - annual baseload contract France (EEX)
Electricity - annual baseload contract Germany (EEX)
Electricity - annual baseload contract 1-April UK in €/MWh
Electricity - annual baseload contract Italy (IPEX)
Coal prices for delivery in Europe in 2018 ended 2017 at $90.3/t, versus $64.4/t at the beginning of the year, up 40.0%. In first-half 2017, the price trended between $60/t and $70/t, to eventually increase. Prices trended at $66.6/t in June and $90.3/t at year-end, attaining their highest level since June 2014, due to different political factors in Australia and meteorological circumstances in Indonesia and Columbia. Regarding demand, the high summer temperatures in China increased the need for electricity, and consequently coal needs in the country. At year-end, prices trended upwards again, driven by a demand crisis related to stockpiling in China.
The price of Brent was $66.9/bbl at end-2017, up $10.1/bbl (+17.7%) vs end-2016. Initial efforts to limit production by the countries which signed the Joint Comprehensive Plan of Action (JCPOA) have been annihilated by increased production in the United States. The high level of American stocks also impacted the price decreases. Secondly, increased production in the United States related to a decrease in shale oil extraction costs, resulted in lower prices. From end-June, the price of Brent recovered after communication – particularly from Saudi Arabia – in favour of expanding and extending the JCPOA until end-2018.
The price of annual gas contracts was down €0.8/MWh at end-2017, with trends consistent with those of oil, to stand at €18.2/MWh. The minimum annual price (€15.7/MWh) was achieved in July. The increase in coal and CO₂ prices also had an impact, with the latter resulting in expected competitiveness in coal producing methods and providing more significant prospects for use for gas methods. The different announcements made by ASN (French authority for Nuclear Safety) in the summer, which concern the nuclear segments have also put pressure on long-term demand for gas and have contributed towards driving prices up.
The price of CO₂ emission certificates for delivery in 2018 reached €8.2/t at end-2017, up €1.6/t versus end-2016. After a slow decline maintained by the low demand until mid-May, the price of emission certificates trended upwards again with the announcement that 2016 CO₂ emission reductions were lower than expected in addition to political signals favouring a higher coal price. From August onwards, the increase in prices was first attributable to a French government announcement on joint reflection work with Germany, for reform aiming to rebalance the emission certificates market. The increase in prices was also attributable to an agreement to protect the market from a massive influx of quotas in the event of Brexit and to announcements made by the ASN, raising fears of an unavailable nuclear fleet, and therefore increased use of thermal fleet. At-end December, the discontinuation of emissions quotas in the primary market has limited supply and driven prices up.
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</tbody>
</table>
FINANCIAL CALENDAR

- 9 May 2018: Q1 2018 sales
- 15 May 2018: General Shareholder’s meeting
- 31 July 2018: 2018 half-year results
A TEAM DEDICATED TO ANALYSTS AND INVESTORS

To understand better the EDF group, you can also visit our web page dedicated to investors and analysts: https://www.edf.fr/en/the-edf-group/dedicated-sections/investors-shareholders

...on which you can download our Kit Investisseur including:

- The Analyst Pack, with all the main financial and extra-financial data in an Excel format

- The Reference Document of year 2017

- All the data relative to our annual results

For more information, our team is available to you at this address: EDF-IRTeam@edf.fr
GLOSSARY (1/5)

**ANDRA**: the French law of 30 December 1991 established a public industrial and commercial body, the French National Radioactive Waste Management Agency (Agence Nationale pour la gestion des Déchets Radioactifs – “ANDRA”), responsible to find, implement and guarantee safe management solutions for all French radioactive waste. The Agency notably runs the storage centers based in the Aube region of France: the industrial facility for grouping, storage and disposal Cires and the waste disposal facility CSA

**APE**: the French State Shareholding Agency is a national department controlled by the Minister of Economy and Finance. Its mission is to act as a shareholder for the French Government in order to develop its assets to maximise the value of its stakes

**Architect-Assembler**: for EDF, the architect-assembler has control over the design and operation of its power plants; the organization of development projects; the schedule for completion and costs of construction; relations with the Nuclear Safety Authority; and the integration of feedback from operational experience. EDF’s role as architect-assembler ensures control over its industrial policy with respect to the design, construction and operation of its fleet of power plants

**ARENH**: Regulated Access to Historical Nuclear Energy

**ASN (Autorité de Sûreté Nucléaire)**: the French Nuclear Safety Authority controls nuclear safety and radioprotection in France, on behalf of the French government, to protect workers, patients, the public and the environmental risks associated with the use of nuclear energy. It is notably in charge of the external control of nuclear facilities in France. The ASN is an independent administrative authority with a staff of more than 300. It is represented at the national level by the General Agency for Nuclear Safety and Radioprotection (or “DGSNR”)

**Clean Dark Spread**: difference between power price and variable generation cost (mainly coal cost and CO₂ cost)

**Combined-Cycle Gas Turbine (CCGT)**: most recent technology for generating electricity in a natural gas-fired plant. A combined cycle is made up of one or more combustion turbines and a steam turbine allowing for an improved yield. The syngas is routed to the combustion turbine, which generates electricity and very hot exhaust gases (effluents). The heat from the exhaust gases is recovered by a boiler, thus producing steam. Part of the steam is then recovered by the steam turbine to generate electricity
Cogeneration: generation technique for combined electricity and heat generation. The advantage of cogeneration is the ability to capture the heat produced by the fuel, whereas in traditional electricity generation this heat is lost. This process also allows the same facility to meet the heating (hot water or steam) and electricity needs of both industrial and local authority customers. This system improves the energy efficiency of the generation process and reduces fuel use by an average of 20%

CRE (Commission de Régulation de l’Energie): created on 30 March 2000. The CRE, an independent body, regulates the process of the energy market opening. It ensures that all of the generators and eligible customers have non-discriminatory access to the network. Within its jurisdiction, this body supervises and authorizes, settles any disputes and, if required, imposes sanctions. Since 2016, the CRE is in charge of proposing the evolution of the regulated tariffs for the sale of electricity

Distribution networks: downstream of the transmission network, medium- and low-tension distribution networks that serve end-users (individuals, Groups, SMEs, SMIs, etc.)

Electricity supply: can be broken down into four types of consumption: “basic” (or “ribbon”) supply of electricity generated and consumed throughout the year; “semi-basic” electricity supply, which is generated and consumed over the winter period; “peak” electricity supply, which corresponds to periods of the year when electricity generation or consumption is significant; and “lace” supply which is a complement to the “ribbon” supply

EPIC: Industrial and Commercial state-owned Company

EPR (European Pressurized Reactor): latest generation of reactors currently under construction (known as generation 3), it is the result of Franco-German cooperation, and offers advanced safety, environmental and technical performance

ETS : Emission Trading System
Fuel cycle: the nuclear fuel cycle encompasses all industrial operations in France and abroad which enable the supply of the fuel to generate energy in a reactor, then to unload and process it. The cycle can be broken down into three stages: 1) upstream: the processing of concentrates from uranium ore, the conversion, enrichment and production of fuel (which takes more than two years); 2) the core of the cycle corresponding to the use of fuel in the reactor: receipt, loading, operation and discharging (which takes three to five years); 3) downstream: pool storage, reprocessing of spent fuel in reactors of recoverable material, vitrification of highly radioactive waste, then temporary storage of the waste before storage

Hydropower generation: maximum power energy that can be produced from hydraulic sources in normal conditions

Interconnection: electricity transmission infrastructure that allows for exchanges of energy between different countries, by connecting the transmission network of one country to that of a neighboring country

LDC: Local Distribution Companies that provide for distribution of gas and electricity to the end-customers on a delimited geographical area

LNG (Liquefied Natural Gas): natural gas turned into liquid form by reducing its temperature to –162°C allowing for a reduction by 600 in its volume

MEDEF: French companies association (“Mouvement des entreprises de France”)

Metering: a system allowing for the recording, at a given network connection point, of the volumes of electricity transmitted or distributed (power, frequency, active and reactive energy)

Midstream: all assets of the gas business, allowing for its availability, transportation and management. These might be infrastructures (gas pipelines, storage facilities, LNG terminals, etc.) or contractual (rights relating to predetermined capacity, procurement contracts, etc.). The midstream segment includes the trading and negotiating activities

National Allowances Allocation Plan: this plan defines the total quantity of greenhouse gas emission allowances that the French state plans to grant for the allowances exchange system for each multi-year period (NAP1 2005-2007, NAP2 2008-2012) and the allocation method used to allocate allowances to the industrial facilities in question
GLOSSARY (4/5)

- **NO\textsubscript{x}:** nitrogen oxide

- **Nuclear safety:** nuclear safety includes all of the technical, organizational and human measures which are intended to prevent accident risks and to limit the effects of an accident, and which are taken at every stage of the life of a nuclear power plant (from design to operation and finally to decommissioning)

- **Nuclear tranche:** electrical generation unit consisting of a nuclear boiler and a turbo-alternator generator. A nuclear tranche essentially consists of its reactor type and the power of its turbo-alternator generator. EDF nuclear plants include two or four tranches, and occasionally six

- **Ofgem:** Ofgem is the Office of the Gas and Electricity Markets in the UK. Its main missions consist of protecting consumers, regulating gas and electricity monopoly companies, helping to secure Britain’s energy supplies by promoting and regulating competitive gas and electricity markets. It also contributes to the drive to curb climate change and promote sustainable development

- **Plant availability:** fraction of power available, out of theoretical maximum energy, counting only technical non-availability. The availability coefficient (Kd) is defined as the ratio between annual actual generation capacity (or amount producible annually) and maximum theoretical generation capacity, where maximum theoretical generation capacity = installed capacity x 8,760h. The Kd, which includes only technical non-availability, i.e. scheduled shutdowns, unplanned outages and testing periods, characterizes a plant’s industrial performance

- **PPA:** Price Purchase Agreement

- **PWR:** in a Pressurized Water Reactor, the primary coolant (water) is pumped under high pressure to the reactor core where it is heated by the energy generated by the fission of atoms. The heated water then flows to a steam generator where it transfers its thermal energy to a secondary system where steam is generated and flows to turbines which, in turn, spin an electric generator. In contrast to a boiling water reactor (BWR), pressure in the primary coolant loop prevents the water from boiling within the reactor
Renewable energies: energies for which generation does not require extinction of the initial resource. They largely derive from geothermal, water, air, fire and solar sources. They include hydro, wind, solar (the energy produced by marine waves and currents), geothermal (energy derived from the heat of the earth’s magma) energies, and bio-mass (energy derived from living matter, particularly wood and organic waste). They often include energy from the incineration of household or industrial waste.

RTE: RTE is the operator of the French electricity transmission system. RTE, a public service company, operates, maintains and develops the high and very high voltage network.

SO\(_2\): sulfur oxide

Storage: storage consists in placing packages of radioactive waste in a facility, ensuring their long-term management, i.e. under safe conditions allowing for long-term risks control.

Storage center: low or medium-level short-life radioactive waste from nuclear plants, the Hague or CENTRACO facilities are sent to ANDRA's Soulaines storage center in the Aube region, which has been operational since 1992. This center has a capacity of 1,000,000cm, and an acceptance capacity of approximately 60 years. Very low-level short-life radioactive waste is sent to ANDRA's Morvilliers storage center (also in the Aube region). This center was commissioned in October 2003 and has an operating life of about 30 years.

Transmission networks: networks providing for the transmission of electrical power at high and very high voltages from the generating sites to the distribution networks or industrial sites directly connected to it; this includes the major interconnection transmission network (400,000 volts and 225,000 volts) and the regional distribution networks (225,000 volts, 150,000 volts, 90,000 volts and 63,000 volts).

Waste: nowadays, the nuclear generation of 1MWh of electricity (equivalent to the monthly consumption of two households) produces around 11g of total waste across all categories. Short-life waste represents more than 90% of the total waste, but contains only 0.1% of the total radioactivity of those 11g.