EDF : A global leader in renewable energy

Bruno Bensasson
EDF Group Senior Executive VP, in charge of Renewable Energies and CEO of EDF Renewables
EDF: A GLOBAL LEADER IN RENEWABLE ENERGY

Renewable net installed capacity: 32 GW

Capacity by technology:
- Wind: 8.0 GW (32.1 GW net)
- Hydro: 22.3 GW
- Solar: 1.5 GW
- Other: 0.3 GW

Balanced capacity mix with 32 GW in operation:
- Capacities in operation: 22.3 GW of hydropower and 8 GW of wind and 1.5 GW of solar PV

Hydropower: “DNA” of EDF
- #1 hydropower producer in EU
- More than 400 production sites in the world

A Global leader in wind and solar energy
- 1.6 GW of gross capacities commissioned in 2018
- 4 GW currently under construction (2.1 GW of wind and 1.9 GW of solar)

Selective group investment plan
- Over 2G€ gross investments p.a. over 2017-2020 period

Data as of 30 June 2019. Net installed capacities, corresponding to consolidated data according to EDF’s percentage ownership in Group companies, including associates and joint ventures.
STRATEGY CAP 2030: A GROUP INDUSTRIAL PLAN SETTING AN AMBITIOUS TARGET FOR RENEWABLE ENERGY

50 GW net installed capacities by 2030

- Wind & PV
- Other RE
- Hydro
- Annual growth – wind and PV

- +0.7 GW/y
- +1.4 GW/y

2015: 23
2018: 23
2030: 24-26

BA 136 Rosières-en-Haye, France – 115 MWp
Cabo Leones, Chile – 115 MW
THE SOLAR POWER PLAN & THE ENERGY STORAGE PLAN: A CONCRETE COMMITMENT TO THE ENERGY TRANSITION

- Develop 30% of additional solar photovoltaic market share in France between 2020 and 2035
- Develop 10 GW of new storage facilities in Europe by 2035, in addition to the 5 GW operated today

France is the 5th largest solar potential in Europe

<table>
<thead>
<tr>
<th>In less than 10 years</th>
<th>To invest in the period 2018-2035</th>
<th>R &amp; D budget (x2) dedicated to storage by 2020</th>
<th>Of investments in start-ups related to storage by 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 G€</td>
<td>8 G€</td>
<td>70 M€</td>
<td>15 M€</td>
</tr>
<tr>
<td>To invest with financial partners</td>
<td>to invest in the period 2018-2035</td>
<td>R &amp; D budget (x2) dedicated to storage by 2020</td>
<td>Of investments in start-ups related to storage by 2020</td>
</tr>
<tr>
<td>30 000 ha</td>
<td>A cost of batteries divided by 5</td>
<td>In less than 10 years</td>
<td>Of investments in start-ups related to storage by 2020</td>
</tr>
<tr>
<td>Needed for the development of 30 GW solar PV</td>
<td>~30 GW</td>
<td>In less than 10 years</td>
<td>Of investments in start-ups related to storage by 2020</td>
</tr>
<tr>
<td>French multiannual energy plan project (PPE) targets</td>
<td>PV capacity additions by 2028</td>
<td>In less than 10 years</td>
<td>Of investments in start-ups related to storage by 2020</td>
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EDF RENEWABLES

**Growth driven by generation business**
- Electricity output: 15.2TWh (+15% org.)
- Driven in particular by output from projects commissioned in 2017, some of which sold end-2018

**Slightly lower contribution from DSSA business**

**Increase in development costs to support the business’ growth**
- Gross capacity commissioned in 2018: 1.6GW (o/w 0.9GW in solar)
- Gross portfolio of projects under construction at end-December 2018: 2.4GW (o/w 1.2GW onshore wind and 1.2GW solar)

<table>
<thead>
<tr>
<th>In M€</th>
<th>2017</th>
<th>2018</th>
<th>Δ%</th>
<th>Δ% Org.(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>751</td>
<td>856</td>
<td>+14.0</td>
<td>+4.1</td>
</tr>
<tr>
<td>O/w Generation EBITDA</td>
<td>741</td>
<td>903</td>
<td>+21.9</td>
<td>+15.0</td>
</tr>
</tbody>
</table>

GROUP RENEWABLES(3)

<table>
<thead>
<tr>
<th>In M€</th>
<th>2017</th>
<th>2018</th>
<th>Δ%</th>
<th>Δ% Org.(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA(3)</td>
<td>1,587</td>
<td>2,133</td>
<td>+34</td>
<td>+35</td>
</tr>
<tr>
<td>Net investments</td>
<td>(1,458)</td>
<td>(1,220)</td>
<td>-16</td>
<td></td>
</tr>
</tbody>
</table>

**EBITDA**
- Strong performance in French hydro generation

**Net investments**
- In 2018, significant acquisitions in offshore wind (NNG project under development in Scotland, development rights in the US) and significant sale of a non-controlling stake in UK wind farms
- In 2017, the acquisition of Futuren for 281 million €

(1) Organic change at comparable scope and exchange rates
(2) Significant sale in H1 2018 in the UK, but which does not impact EBITDA from DSSA activities as the EDF Group retains control.
(3) For the renewable energy generation optimised within a larger portfolio of generation assets, in particular relating to the French hydro fleet after deduction of pumped volumes, sales and EBITDA are estimated, by convention, as the valuation of the output generated at spot market prices (or at purchase obligation tariff) without taking into account hedging effects, and include the valuation of the capacity, if applicable.
EDF-R GROWTH RELIES ON A SUSTAINABLE BUSINESS MODEL, LEVERAGING KEY COMPETITIVE ADVANTAGES

An integrated player, active across the entire value chain, with the ability to develop highly competitive projects with high returns

KEY SKILLS...

Operational excellence and ability to:
- Identify and secure sites,
- Perform engineering activities,
- Optimize procurement,
- Structure financing,
- Build local partnerships
- Offer the « right » price in competitive processes,
- Build plants on time and on budget,
- Operate and maintain assets with the target availability.

... FOR A GROWTH BASED ON A SUSTAINABLE BUSINESS MODEL

A strong and diversified international presence

Partnerships, giving growth opportunities and a good knowledge of local markets

Ability to create additional value with a selective asset rotation program

Operational excellence and ability to:
EDF-R GROWTH IS FOSTERED BY A SIGNIFICANT PORTFOLIO OF PROJECTS IDEALLY POSITIONED TO CAPTURE GROWTH

A wind and solar pipeline of around 34 GW...

...ideally positioned for growth

4 GW of capacities in construction
30 June 2019

NB: the pipelines are indicated for EDF Renewables and includes capacities in construction

EDF Renewables: A global leader in renewable energy

Source: IEA, Renewables 2018
EDF-R GROWTH IS STRUCTURED AROUND HIGH VALUE CREATION REQUIREMENTS AND STRONG TRACK RECORD

A SELECTIVE DEVELOPMENT POLICY… … TO DELIVER ATTRACTIVE IRR SPREADS(1) ABOVE WACC

- 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

(1) Average performance based on a profitability analysis (scope: 79% of installed capacity, 103 plants, 6.2GW net, 14 countries)
WITH OVER 3.8GW SOLD SINCE 2013, DSSA(1) IS AT THE CORE OF EDF RENEWABLES’S BUSINESS MODEL

EDF Renewables has an excellent DSSA track record

DSSA: a self-funding and value accretive business model

CONSISTENT ROTATION OF OPERATIONAL ASSETS (EDF RENEWABLES NET CAPACITY SOLD)

E  D  F  R  e  n  w  e  r  s  h  a  s  a  n  e  x  c  e  l  l  e  n  t  D  S  S  A  t  r  a  c  k  r  e  c  o  r  d

CUMULATIVE ASSET ROTATION 2013 TO DATE

DSSA ACTIVITIES ARE AN IMPORTANT PART OF EDF EN’S BUSINESS MODEL

Rest of the world

Europe

North America

KEY BENEFITS OF DSSA

DSSA consists of the disposal of certain fully-structured projects (typically in operation and financed)

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)
OPPORTUNISTIC M&A TO ACCELERATE GROWTH: THE LUXEL ACQUISITION EXAMPLE

A significant pipeline of projects c. 900 MWp gross capacity under development, 100% solar in France

A fully integrated player:
- Development
- Construction
- Operation and Maintenance

A renowned team specialized in development and operation of solar projects in France

Pipeline of projects and solar farms in operation mainly located in the South of France

~1 GWp gross capacity in operation or under development in France
WITH 15GW UNDER MANAGEMENT, EDF-R CAPITALIZES ON A STRONG O&M EXPERTISE CREATING VALUE FOR THE WHOLE CHAIN

4 key principles

- Competition with turbine manufacturers, particularly O&M contract renewals
- M&A and DSSA\(^{(1)}\): 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 towards turbine manufacturers and third party investors
- Early project optimisation (development, construction…)
- Increased knowledge for tender preparation
- Real time supervision, continuous innovation and predictive maintenance programs

\(^{(1)}\) Development and sale of structured assets (DSSA)
INNOVATION PLAYS A KEY ROLE IN FOSTERING EDF-R GROWTH: THE NOOR MIDELET EXAMPLE

Noor Midelet

Key Project Facts

- With a capacity of 800 MW, this innovative hybrid solar project gathers concentrated solar power (CSP), photovoltaic technologies (PV) and batteries. The hybridization of these technologies is a world first.
- The combined operation of photovoltaic and CSP technologies increases the plant's output to produce a flexible, dispatchable and competitive electricity for the Moroccan grid until five hours after sunset
- A robust consortium structured around key players in renewables energy market bringing together world leaders expertise: EDF Renewables, Masdar and Green of Africa.
- Location: 20km north of the town of Midelet in central Morocco, in the high plains surrounding the Moulouya River and between the Middle and High Atlas Mountain

Key Dates

- May 2019: EDF R consortium awarded
- YE 2019: construction launch
- 2022: commissioning target
MAJOR PROJECTS TO STEP UP THE GROWTH PACE IN OFFSHORE SECTOR

**French tenders**: 4 projects representing 2GW of combined capacity

- Offshore wind farms of **Saint-Nazaire, Fécamp and Courseulles-sur-Mer** (over 1.4GW of combined capacity)
  - Highly valuable partnerships with Enbridge and wpd
  - Total investment costs of c. 6G€
  - **Saint-Nazaire construction launched**, Fécamp and Courseulles-sur-Mer construction expected to start soon
- Offshore wind farm of Dunkirk (nearly 600 MW)
  - Highly valuable partnership with Enbridge and Innogy
  - Competitive tariff (44 €/MWh) confirming technology maturity

**International development**: a pipeline representing up to 3GW of combined capacity

- **United Kingdom**: acquisition of the offshore Neart na Gaoithe wind project, currently under development (450 MW)
- **China**: partnership with China Energy Investment Corporation (CEI) to jointly deliver two offshore wind projects (Dongtai IV and V, 500 MW)
- **United States**: acquisition of a lease to develop off-shore wind projects along the New Jersey coast
**ONSHERE WIND 2019 HIGHLIGHTS**

**France:** a strong delivery dynamic, underpinned by a solid development

- 300 MW in construction and near-construction
- 134 projects under development

**Global development: major wind projects in EDF-R key countries**

- **India:** EDF Renewables and SITAC Group signed a 25-year PPA covering 300 MW of wind project
- **Saudi Arabia:** The EDF Renewables-Masdar consortium was awarded a 400 MW wind project. Dumat will be Saudi Arabia’s first wind farm and the most powerful in the Middle East.
- **Canada:** acquisition of Milligan 1, a 300 MW wind project in Nebraska
- **Germany:** acquisition of a significant pipeline of 300 MW wind projects under development from Altus AG, a major player in the German wind energy sector
ANTICIPATING AND SEIZING NEW TRENDS WILL BE A CRITICAL SUCCESS FACTOR TO CREATE DURABLE VALUE

- **New Route to Market opportunities**: growing *merchant exposure* and *corporate PPAs market*

- **Technological improvements**: digital optimization, floating offshore, etc.

- **Emergence of storage**: to complement renewable energy sources, hybrid projects

- **Microgrids**: for off grid users or users with poor connection, also including distribution

- Making the most of these new trends from an *early stage* would be an invaluable asset for value creation
Thank you