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CREDIT OPINION
11 February 2020

Update

Rate this Research

RATINGS

Electricite de France

Domicile	Paris, France
Long Term Rating	A3
Type	LT Issuer Rating
Outlook	Stable

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Electricite de France

Update to credit analysis

Summary

Electricite de France's (EDF, the group) credit quality is constrained by (1) its fixed-cost merchant power generation in France and the UK, which exposes it to power price volatility; (2) increasing competition in the French supply market; (3) a significant capital spending programme, which results in negative free cash flow (FCF); and (4) the construction risk associated with the Flamanville nuclear plant in France and the Hinkley Point C (HPC) new nuclear project in the UK.

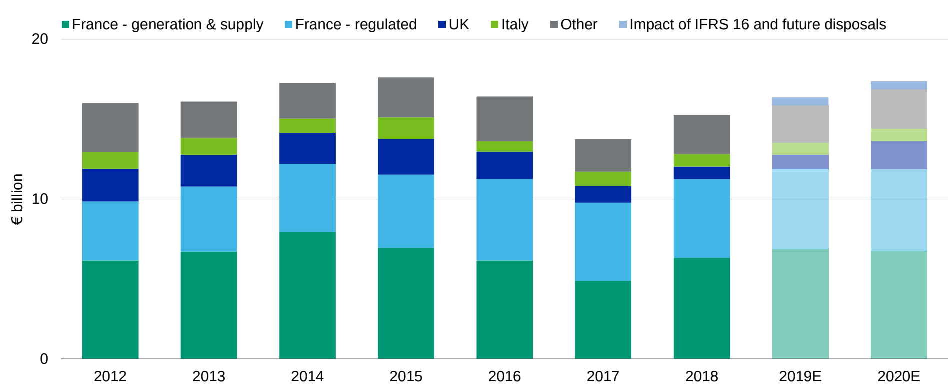
These challenges are balanced by (1) the scale and breadth of EDF's businesses in France, which account for more than two-thirds of its EBITDA; (2) the stabilising contribution to earnings from its domestic regulated activities and renewables business, which together account for around 40% of the group's EBITDA; and (3) its geographical diversification given sizeable positions in other European countries.

From a financial risk perspective, we expect EDF to achieve funds from operations (FFO)/net debt at least in the mid-to-high teens in percentage terms in the short to medium term.

Exhibit 1

Higher power prices and operational improvement support earnings recovery from the 2017 low

EBITDA (in € billion)



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports and Moody's Investors Service

The A3 rating incorporates two notches of uplift, given the company's 83.7% ownership by the Government of France (Aa2 positive).

Credit strengths

» Leading electric utility in France

» Regulated activities and geographical diversification support cash flow stability

» Expectation of high support from the French government, given the company's 83.7% state ownership

Credit challenges

» High volumes of fixed-cost, low-emission, merchant power generation in France and the UK, which expose the company to power price volatility

» Significant capital spending programme, which results in structural negative FCF without asset disposals

» Uncertainties surrounding the future nuclear regulations (although new regulatory framework proposed by the French government may increase earnings visibility), as well as EDF's organisational and financial structure as part of France's energy transition plan

» Increasing competition in the French supply market

» Construction risk associated with the Flamanville 3 and HPC nuclear power plant projects in France and the UK

Rating outlook

The stable outlook reflects our expectation that EDF's FFO/net debt will remain at least in the mid-to-high teens in percentage terms over 2019-20.

Factors that could lead to an upgrade

Upward rating pressure is unlikely in the medium term, given the group's substantial capital spending commitments and uncertainties surrounding the evolution of the electricity market in France, including nuclear regulations, and EDF's organisational and financial structure. Nevertheless, the ratings could be upgraded if (1) there is clarity on the market's evolution; and (2) EDF appears likely to achieve credit metrics in excess of the guidance on a permanent basis, probably as a result of higher power prices or the introduction of regulatory measures that would support the group's business model.

Factors that could lead to a downgrade

The ratings could be downgraded if (1) EDF's credit metrics fall below our guidance for an A3 rating, (2) a change in the group's relationship with the French government were to cause us to remove the uplift for government support, or (3) there were to be a significant downgrade of France's government rating.

Key indicators

Exhibit 2
Electricite de France

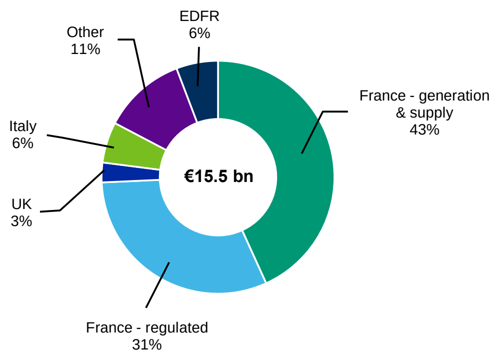
	12/31/2014	12/31/2015	12/31/2016*	12/31/2017*	12/31/2018*	2019E	2020E
(CFO Pre-W/C + Interest) / Interest	4.7x	5.0x	5.3x	4.8x	5.4x	c. 5.4x	5.4-5.7x
(CFO Pre-W/C) / Net Debt	18.4%	18.5%	18.5%	17.7%	21.3%	c. 21%	20-23%
RCF / Net Debt	14.3%	15.6%	17.4%	16.8%	19.7%	c. 20%	18.5-21.5%

All figures and ratios are calculated using Moody's estimates and standard adjustments. Moody's forecasts (f) or projections (proj.) are Moody's opinion and do not represent the views of the issuer. Periods are financial year-end unless indicated. LTM = Last 12 months.
*These ratios do not take into account the fair value of EDF's stake in RTE included in the company's dedicated assets.
Source: Moody's Investors Service

Profile

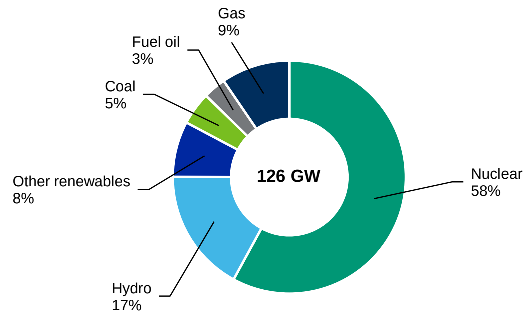
With a reported EBITDA of €15.5 billion for the 12 months ended 30 June 2019 and net installed generation capacity of 131 gigawatts (GW) as of year-end 2018, Electricite de France (EDF) is one of Europe's largest integrated utilities, providing electricity generation, distribution and supply services. The group is organised along the following business lines: (1) France - generation and supply, where it is the dominant power generator and supplier; (2) France - regulated, which primarily includes electricity distribution through its subsidiary Enedis; (3) UK, through EDF Energy, the country's largest generator following the acquisition of British Energy; (4) Italy, where it is the third-largest generator through Edison S.p.A. (Baa3 positive); (5) other international, which mainly consists of operations in Northern Europe, in particular in Belgium where EDF Luminus is the second largest electricity supplier in the Belgium market; (6) EDF Renouvelables (EDFR), the group's wholly owned investment vehicle for renewables, excluding hydro; and (7) other activities, which include Framatome, EDF Trading Limited (Baa2 stable) and energy services through Dalkia.

Exhibit 3
France accounts for around 75% of EDF's EBITDA
Split of EBITDA by business segment (12 months ended 30 June 2019)



Sources: Company reports and Moody's Investors Service

Exhibit 4
EDF's installed capacity includes mostly nuclear and hydro
Split of net consolidated capacity by fuel (end of June 2019)



Sources: Company's reports and Moody's Investors Service

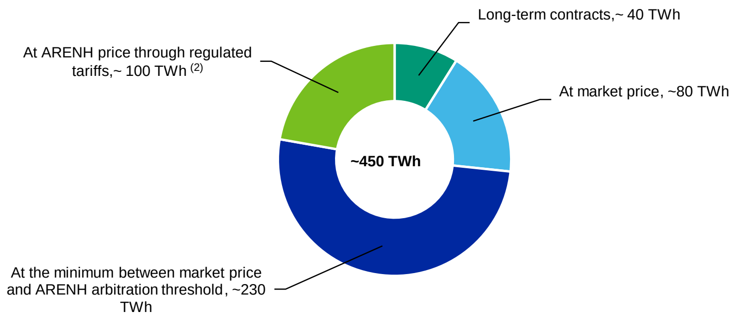
EDF is listed on the Euronext Paris, with a market capitalisation of around €30.8 billion as of the beginning of January 2020. It is 83.7% owned by the French government.

Detailed credit considerations

Fixed-cost generation fleet exposed to volatile power prices

We estimate that commodity-exposed activities account for around 35%-40% of EDF's EBITDA. This reflects the fact that (1) around 100 terawatt-hour (TWh) of EDF's domestic electricity volume is directly exposed to market prices (see Exhibit 5), and (2) power generation in the UK and Italy is fully exposed to wholesale prices. Although EDF typically hedges by selling forward a substantial proportion of its outright power generation two to three years ahead of delivery, the company retains exposure to market prices as hedges roll off. Capacity payments mitigate only a part of EDF's commodity price exposure.

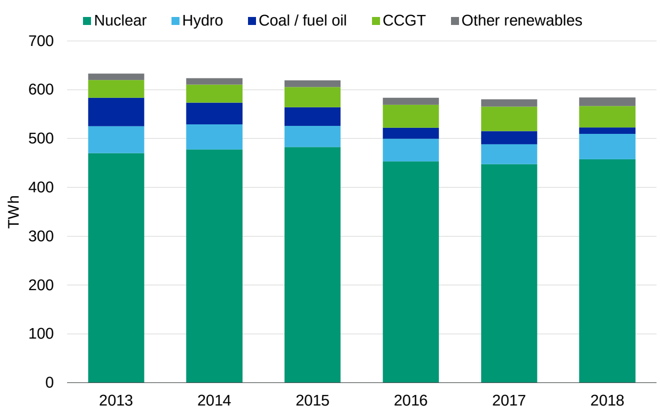
Exhibit 5
Distribution of electricity sales[1] according to their market exposure in 2018
In TWh



[1] Sales excluding purchase obligation volumes and volumes under long-term supply contracts.
[2] Regulated electricity sales tariffs.
Sources: Company reports and Moody's Investors Service

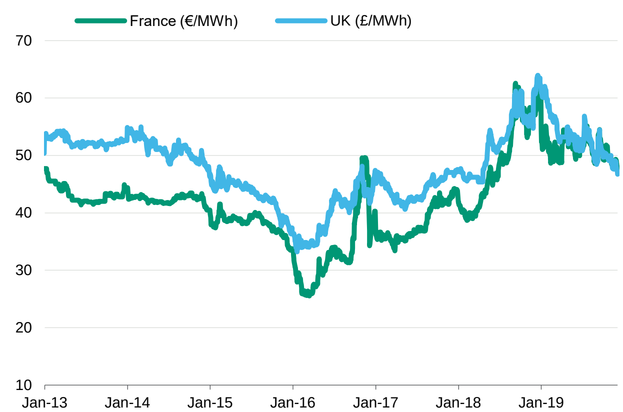
EDF is particularly exposed to movements in wholesale power prices because its generation fleet is predominantly fixed cost in nature: in the first half of 2019, 87% of its 292 TWh output was represented by nuclear and hydro.

Exhibit 6
Most of EDF's generation output ...
Output by technology



Sources: Company reports and Moody's Investors Service

Exhibit 7
... is exposed to volatile power prices
One-year forward baseload power price



Sources: FactSet and Bloomberg

We estimate that French wholesale power prices will move in a range between €45/megawatt-hour (MWh) and €55/MWh in the period to 2022. This reflects (1) a lower contribution of nuclear reactors in the nationwide generation mix in the context of the Fessenheim nuclear power plant closure and the ongoing 10-year inspection programme, (2) no material changes on commodity prices in accordance with our estimates [1], and (3) the predominant influence of German prices despite new interconnections with Italy and the UK.

If sustained, high power prices will boost EDF's profit from its predominantly fixed-cost, low-emission generation fleet. The group typically hedges planned output two to three years ahead of delivery, and it estimates that around 100 TWh of its output in France (after taking into account the direct and indirect effects of the ARENH [Accès régulé à l'électricité nucléaire historique] mechanism) is exposed to market price movements, when the power price and capacity price are above the €42/MWh ARENH price.

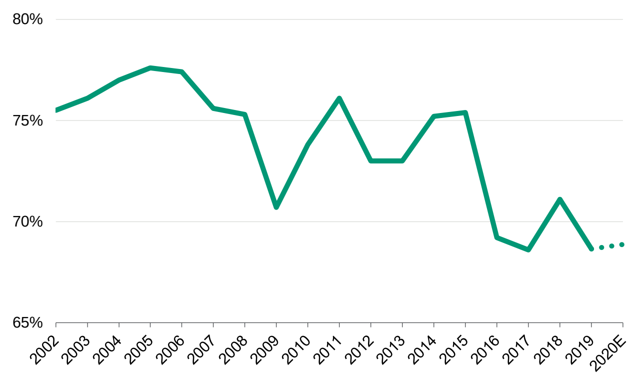
2019 nuclear production below plan as result of outages

EDF initially forecasted domestic nuclear production of 395TWh for 2019. This was 2-TWh up on the prior year despite an increase in the number of planned 10-year inspections (see Exhibit 9). In Q4 2019, the group revised its estimate downwards to 384 to 388 TWh, in line with production in the first 11 months of the year (346.5 TWh), following extensions to scheduled outages and an unplanned shutdown of three out of four reactors of Cruas power plant (equivalent to an installed capacity of 2.7 GW) following an earthquake in southern France in November 2019. Nuclear output for 2019 finally amounted to 379.5 TWh, down 13.7TWh compared to 2018. In the UK, the outlook was for lower production as well, because of the inspection at Hunterston B, and an extended unplanned outage of Dungeness B: nuclear output in 2019 finally totaled 51 TWh, 8-TWh down on the prior year.

Exhibit 8

Outages for lifetime extensions to weigh on load factors

Load factor of the French nuclear fleet

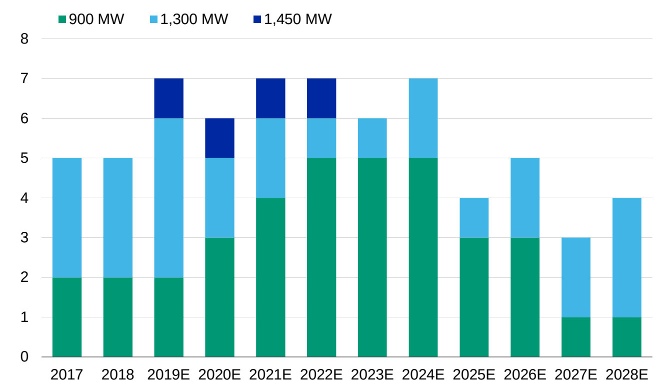


The 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports and Moody's Investors Service

Exhibit 9

Current elevated levels of maintenance will weigh on output

Number of 10-year inspections by reactor type



Source: Company reports

Position as the leading electric utility in France challenged by growing competition in the supply market

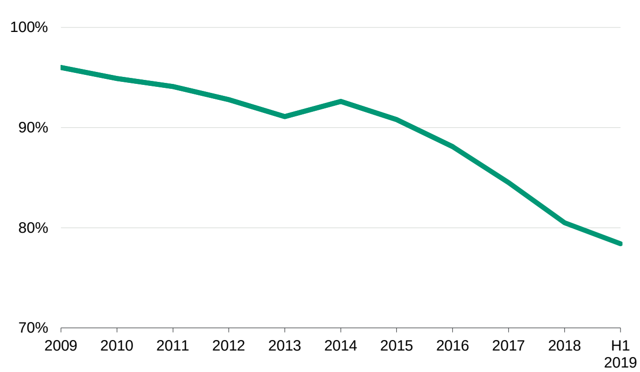
EDF is the leading electricity generator in France, with 89 GW of installed capacity. The company's annual domestic generation (450.6 TWh in 2018, excluding French island activities, representing 82% of the national power output and mostly generated by nuclear and hydropower plants) is matched by its downstream position, which consists of more than 28 million electricity customer accounts, or about 62% of the electricity market as of the end of August 2019.

This market position, combined with the predominantly regulated nature of electricity tariffs until 2015, has historically underpinned the predictability of EDF's cash flow. However, growing competition in the supply market, as illustrated by higher churn rates (see Exhibits 10 and 11) is a challenge.

Exhibit 10

EDF is gradually losing market share in both the residential ...

Incumbent share of the residential electricity supply market in France

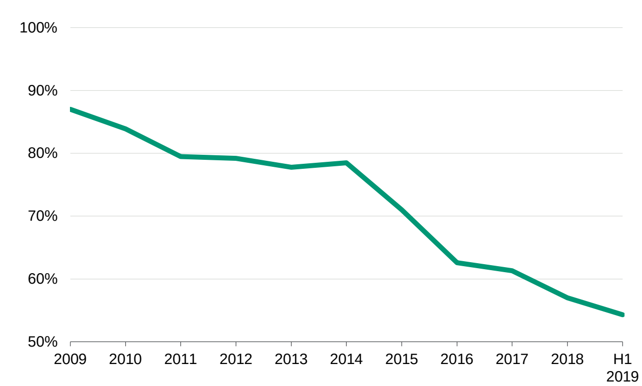


Source: CRE

Exhibit 11

... and nonresidential power supply markets in France

Incumbent share of the nonresidential electricity supply market in France



Source: CRE

Over the longer term, EDF could face an accelerated erosion of its market share in the French residential market if ARENH volumes were to be increased from the 100-TWh current cap. Indeed, the Energy-Climate law, promulgated in November 2019, authorises the French government to increase the cap to 150 TWh from 2020 onwards. However the government has said that the volumes would remain at 100 TWh for 2020.

The Energy-Climate law endorses the end of regulated gas tariffs in France but, as yet, there is no timeline for the elimination of regulated electricity tariffs. This is despite the European Union pushing for the phaseout of regulated tariffs as part of its Energy Union initiative. Short-term pressure to eliminate regulated tariffs eased following a ruling in May 2018 by the country's highest administrative jurisdiction (*Conseil d'Etat)*: this ruling endorsed regulated tariffs as serving the public economic interest of price stability, subject to certain conditions — including that they be subject to regular reviews, and restricted to residential and small to medium-sized non residential sites.

Regulated activities and geographical diversification provide cash flow stability

EDF's credit profile is supported by its regulated activities in France, which accounted for 31% of the group's EBITDA in H1 2019. Such activities include, in addition to domestic electricity distribution through its subsidiary Enedis, regulated generation, network and supply businesses in the French islands. These exclude EDF's 50.1% interest in France's transmission network owner and operator RTE, which is equity accounted.

Enedis' revenue benefits from a high degree of visibility under a regulatory framework that entered its fifth regulatory period in August 2017 for four years (TURPE 5). Under this framework, Enedis earns a return on regulated equity of 4% (nominal, pretax) and a 2.5% margin on its €51 billion regulated asset base.

The group's activities outside France account for roughly a quarter of its EBITDA. Just over 40% of that is generated by its nuclear assets in the UK and the fast-growing renewables business of EDFR (8 GW of net installed capacity as of 30 June 2019[excluding hydro], with a further 4 GW gross capacity under construction), which should provide some ballast to the group's earnings outside France. Around 85% of EDFR's revenue comes from long-term contracts, with an average remaining life of 14 years.

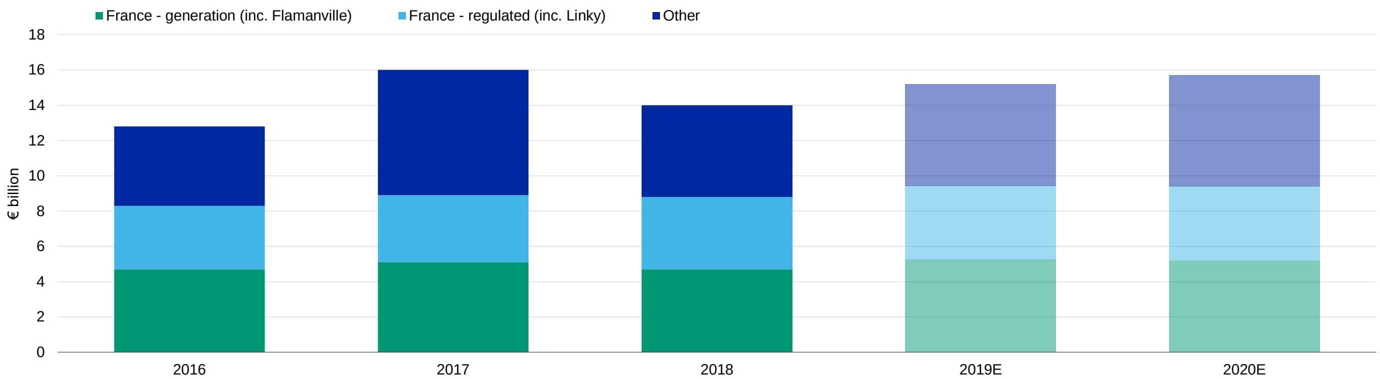
Significant capital spending programme creates execution risk and results in negative FCF before asset sales

EDF faces a substantial capital spending programme over the coming years, with limited flexibility to reduce its spending significantly, mostly because of the large investment required to maintain and upgrade its distribution network and nuclear fleet in France. The latter is estimated at €45 billion over 2014-25 and reflects (1) the ageing status of the existing fleet, which is more than 30 years old on average, as well as EDF's strategy to extend its life span to 50 years (or more); (2) the group's ongoing programme to reduce unplanned outages and boost availability; and (3) more stringent nuclear safety requirements after Fukushima.

Other significant projects (excluding HPC, discussed below) include (1) the 1.6 GW Flamanville 3 nuclear plant. Commissioning of this first European Pressurised Reactor (EPR) project in France was delayed once again, by three years, following the discovery of quality issues with eight welds in the containment. Remedial additional costs will total €1.5 billion, increasing the final construction cost to €12.4 billion. The power plant will come into service in 2023, with the fuel loading planned for the year-en 2022; (2) the €4 billion Linky smart meter project, which is due to be completed by 2022; and (3) the expansion of renewable capacity through EDFR, including the development of 30 gross GW of solar capacity in France between 2020 and 2035. We expect capital spending to remain high, with the group guiding to net investments of close to €15 billion in 2019. The cost overruns for HPC will increase the capital expenditure from 2020 onwards while the ones for Flamanville will be booked as other expenses.

During the last quarter of 2019, the French government asked EDF to assess the feasibility of six new EPRs in France post 2022. The government might be willing to decide after the Flamanville nuclear power plant's commissioning.

Exhibit 12
We expect EDF's capital spending programme to remain significant
Net investments, excluding the asset disposal programme (€ billion)



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports and Moody's Investors Service

HPC increases construction risk and cost

In early 2017, EDF began the construction of a new 3.2 GW nuclear power plant at Hinkley Point in the UK. HPC will only be the fifth plant in the world that will use the EPR technology. The EPR technology is linked with a series of cost overruns and delays at Olkiluoto in Finland and Flamanville in France, where construction cost trebled from initial expectations.

The total construction cost of the HPC project, of which 66.5% will be funded by EDF and the remaining 33.5% by its partner China General Nuclear Power Corporation (CGN, A2 stable), was revised upwards in September 2019 to £21.5-22.5 billion (in 2015 money), from a previous estimate of £19.6 billion established in July 2017 (see Electricite de France: New cost overrun and potential delay at Hinkley Point are credit negative, published on 26 September 2019). Cost increases reflect difficult ground conditions and extra costs to implement the completed functional design.

This illustrates the execution risks that EDF and CGN face in constructing the power station. In addition, with the first unit unlikely to be commissioned before the end of 2025, EDF's balance sheet will have to shoulder the financial implications of a very long construction phase during which the investment will not generate any cash flow.

Balance-sheet strengthening is positive for financial risk in the near term ...

Following the completion of its €10 billion asset disposal programme 2015-20 two years ahead of schedule, EDF continues to strengthen its balance sheet.

The group has proposed an option to pay dividends over the 2018-20 period in shares. Following the 2019 AGM, shareholders representing 94% of the voting rights opted for a payment in shares. The French state already announced its commitment to opt for scrip dividends relating to the 2018-20 period.

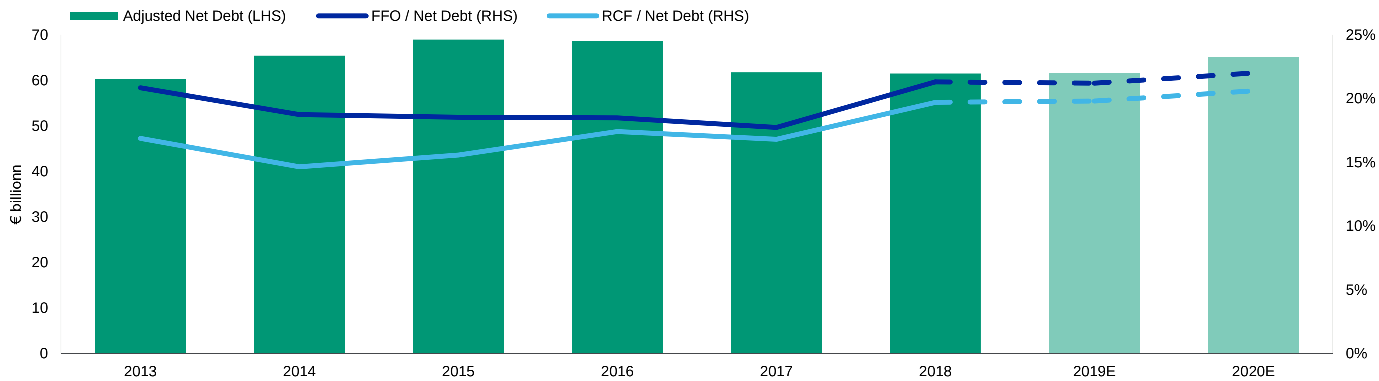
The group is also planning to dispose of a further €2 billion-€3 billion of assets in 2019-20. Over 2019, the group has signed three material transactions: (1) EDF completed the sale of its 25% stake in Alpiq valued at €434 million in May 2019; (2) the group signed a binding agreement to sell Edison's Exploration and Production activity for an amount of up to $1 billion [2] in July 2019 (see Edison : E&P sale accelerates strategic shift towards renewables, published on 5 July 2019); and (3) EDF also notified the exercise of its put option on its 49.99% stake in CENG at fair value as of the end of November 2019. CENG owns and operates five nuclear reactors in the states of New York and Maryland for a total capacity of 4 GW. As of 31 December 2018, CENG's share of net equity in EDF balance sheet accounted for €1.7 billion.

H1 2019 reported EBITDA was €8.3 billion, in line with the company's guidance, and up by 3.5% compared with H1 2018, mainly supported by favourable market conditions, in France in particular, and the solid performance of EDF Trading. Net reported financial debt was €37.4 billion in H1 2019, which is down €506 million compared with net debt reported as of year-end 2018, excluding the impact of IFRS 16. On an adjusted basis, net debt has decreased slightly from €61 billion to €59 billion, mainly with the decrease of our nuclear provisions adjustments. This is because favourable market conditions supported higher valuation for dedicated assets (the performance of dedicated assets was +€2.4 billion before tax), which have more than offset the impact of a lower discount rate (+ €955million). Although there is a slight decrease in Moody's-adjusted FFO for the 12 months ended June 2019 compared with 2018, FFO/net debt is slightly up to 21.6% (21.3% in 2018), above our guidance for the rating.

In October 2019, EDF confirmed its financial guidance for 2019, with a targeted EBITDA of €16.0-€16.7 billion (incorporating a positive €0.7 billion impact from the application of IFRS 16) despite the revision of its nuclear output between 384 TWh-388 TWh from the initial 395 TWh. The lower nuclear output has been offset by better-than-anticipated pricing conditions in wholesale markets, including in Q3 2019, a better performance for regulated activities and improved hydro conditions from October 2019 onwards. We expect that the group to achieve a FFO/net debt ratio of around 21% for 2019.

Exhibit 13

We estimate EDF's credit metrics will remain solid in 2019, following recovery in 2018



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Investors Service

... but further measures are required to address structural negative pressure on cash flow

Notwithstanding the group's improved operating performance, the scale of its investment spending is reflected in ongoing negative FCF. In 2019, for example, EDF guides to FCF of > €600 million, after disposal proceeds and excluding HPC and Linky, which we estimate will require aggregate annual capital spending of around €2.8 billion over 2019-21. Given the political endorsement of EDF's capital spending programme (notably in respect of HPC, Linky and the development of renewables) and its scale relative to its cash flow generation capacity, our view of EDF's credit quality reflects our expectation that the French government would continue to provide financial relief if needed.

In our view the French government's Programmation pluriannuelle de l'energie (PPE), published in February 2019, reflects a recognition of the need to address the group's structural FCF pressures. This is reflected in the current discussions around potential remedial measures as part of the country's energy transition plan — including adjusting the current “asymmetric” ARENH regulatory regime and a reorganisation of the group.

Measured energy transition plan allows EDF time to adapt, but regulation and group structure are under discussion

The government's PPE outlines its plan to continue the country's energy transition to a carbon neutral economy. It targets, inter alia, reduced energy consumption and the improved resilience of the country's energy mix through diversification by growing its renewables' installed capacity and progressively reducing its reliance on the nuclear fleet. It also recognises the need to address the structural pressures on EDF's cash flow exerted by its large capital spending commitments and (1) flagged that integral to achieving the electricity sector's transformation in a cost-efficient manner will be a revision of nuclear regulations (including the ARENH mechanism, whose formal expiry date is 2025), which is needed to give EDF the financial capacity to make the investment required to extend the life of the existing nuclear fleet, and more generally, to support the country's energy transition; and (2) indicated that it was also considering the organisational and financial structure that would allow EDF best to operate in delivering the PPE.[3]

In the context of EDF remaining an integrated group, the government asked EDF to present its proposal by mid 2020 to reshuffle the group's configuration and shareholdings to comply with the European Commission guidelines and to address the structural pressures exerted on its cash flow generation from its capital spending programme. While discussions are ongoing, there has been limited communication from both EDF and the French government. However, press reports suggest a possible reconfiguration could involve a split of the group into two entities: "EDF Blue" and "EDF Green", with the former potentially 100% owned by the French government, and the latter potentially 65%-70% owned. Reports suggest that EDF Blue could house the French and international nuclear, hydroelectric activities, Framatone and RTE; with EDF Green potentially housing renewables (excluding hydroelectric activities), customers and services activities, Enedis and international activities. However, EDF's reorganisation requires that the French state and European Commission agree on a new regulatory framework to update the existing ARENH mechanism. Negotiations have started as of year-end 2019 and will be discussed over the first months of 2020. At the same time, in January 2020, the French government initiated a consultation about the new nuclear regulation which may increase EDF's earnings visibility (see Electricite de France: Proposed new regulatory framework for nuclear power may increase earnings visibility, published on 30 January 2020).

More generally, the PPE's principal provisions represent an extension and update of France's existing plans and, therefore, are broadly consistent with EDF's strategy. We view as positive the measured pace of the planned transformation over the period to 2035 and the flexibility built into the plan, which will allow EDF sufficient elbowroom to adapt its strategy accordingly.

Expectation of high support from the French state

Given the 83.7% stake held by the French government, EDF is considered a government-related issuer (GRI) under our methodology. Accordingly, and based on our estimate of high support in case of financial distress, the A3 rating factors in two notches of uplift from the group's BCA of baa2.

Our estimate of high support reflects (1) the strategic importance of EDF to the French government as the owner and operator of France's nuclear power plants; (2) the company's highly unionised and politically influential workforce; and (3) the French government's track record of supporting strategically important entities, illustrated by the government subscribing to €3 billion of EDF's capital increase in March 2017 and exercising its option to take EDF's dividend in shares.

Moderate risk from decarbonisation of the power sector

The EU has committed to reduce greenhouse gas emissions by 40% from 1990 levels and to increase the contribution of renewables to energy demand to 32% by 2030. These targets, agreed in 2014, formed the basis of the EU's Nationally Determined Contributions incorporated into the Paris Agreement and are designed to significantly decarbonise the region's economies. We believe that unregulated utilities, which account for 40% of EU carbon emissions, will need to deliver a significant share of the reductions and that this will create a variety of risks and opportunities for individual utilities.

We believe that EDF is moderately well positioned to face carbon transition risks compared with peers, given the low-variable-cost nature and low carbon intensity (57g CO_2/kWh) of its nuclear and hydropower generation fleet, as well as the growing contribution of renewables and regulated activities to its earnings. This is offset by the company's significant exposure to large-scale, centralised generation.

Our framework for assessing the risk associated with decarbonisation in this industry is set out in Carbon transition brings risks and opportunities for Unregulated Utilities, published in June 2018.

Liquidity analysis

EDF's liquidity is underpinned by its material cash flow, large holdings of cash and cash equivalents, and committed bank facilities. As of 30 June 2019, the group had €23.6 billion of cash and cash equivalents, and liquid financial assets. In addition, unused committed credit facilities amounted to €11.0 billion, of which €1.1 billion mature within one year. In July, the group added two €300 million sustainable revolving credit facilities to its liquidity availability. We believe that these sources of liquidity are sufficient for the group to meet short-term debt maturities of €10.0 billion, as well as capital spending and dividend payments over the next 18 months. In addition, EDF's debt maturities are well spread, avoiding any significant concentration of refinancing risk.

Methodology and scorecard

EDF is rated in accordance with the rating methodologies for Unregulated Utilities and Unregulated Power Companies, published in May 2017, and Government-Related Issuers, published in June 2018.

Exhibit 14
Rating factors

Unregulated Utilities and Unregulated Power Companies Industry Grid [1][2]	FY ending 31, December 2018		Moody's 12-18 Month Forward View As of June 2019 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Scale (USD Billion)	Aaa	Aaa	Aaa	Aaa
Factor 2 : Business Profile (40%)				
a) Market Diversification	A	A	A	A
b) Hedging and Integration Impact on Cash Flow Predictability	A	A	A	A
c) Market Framework & Positioning	Baa	Baa	Baa	Baa
d) Capital Requirements and Operational Performance	Ba	Ba	Ba	Ba
e) Business Mix Impact on Cash Flow Predictability	Aa	Aa	Aa	Aa
Factor 3 : Financial Policy (10%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Factor 4 : Leverage and Coverage (40%)				
a) (CFO Pre-W/C + Interest) / Interest (3 Year Avg)	5.1x	Baa	5.4-5.7x	Baa
b) (CFO Pre-W/C) / Net Debt (3 Year Avg)	19.1%	Ba	20-23%	Ba/Baa
c) RCF / Net Debt (3 Year Avg)	17.9%	Baa	18.5% - 21.5%	Baa
Rating:				
a) Scorecard indicated outcome		Baa1		Baa1/A3
b) Actual Baseline Credit Assessment				baa2
Government-Related Issuer				**Factor**
a) Baseline Credit Assessment				baa2
b) Government Local Currency Rating				Aa2
c) Default Dependence				High
d) Support				High
e) Final Rating Outcome				A3

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of 06/30/2019.
[3] This represents Moody's forward view, not the view of the issuer, and unless noted in the text, does not incorporate significant acquisitions and divestitures.
Sources: Moody's Investors Service and Moody's Financial Metrics™

Ratings

Exhibit 15

Category	Moody's Rating
ELECTRICITE DE FRANCE	
Outlook	Stable
Issuer Rating	A3
Senior Unsecured	A3
Jr Subordinate	Baa3
Commercial Paper	P-2
EDF TRADING LIMITED	
Outlook	Stable
Issuer Rating	Baa2
EDISON S.P.A.	
Outlook	Positive
Issuer Rating	Baa3

Source: Moody's Investors Service

Appendix

Exhibit 16

Peer comparison

Electricite de France

	Electricite de France			ENGIE SA			RWE AG			E.ON SE			ENEL S.p.A.		
	A3 Stable			A3 Stable			Baa3 Stable			Baa2 Stable			Baa2 Positive		
(in EUR millions)	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18
Total Assets	282,418	275,542	286,158	163,965	154,554	158,295	77,285	69,201	80,513	63,081	55,488	55,090	158,842	158,791	168,958
EBITDA	15,606	13,677	11,852	10,937	9,259	9,040	2,167	3,129	1,112	2,575	8,026	3,675	14,777	15,033	16,176
CFO Pre-W/C	12,693	10,943	13,091	8,296	8,462	7,507	2,857	2,957	- 181	3,742	6,355	3,294	9,750	10,484	10,747
Retained Cash Flow	11,948	10,368	12,105	5,214	5,663	4,920	2,402	2,760	- 1,198	2,653	5,805	2,411	7,098	7,466	7,175
Net Debt	68,672	61,722	61,499	45,547	42,238	41,847	24,416	21,284	4,662	28,497	20,795	18,204	45,533	46,545	51,711
CFO pre-W/C / Net Debt	18.5%	17.7%	21.3%	18.2%	20.0%	17.9%	11.7%	13.9%	-3.9%	13.1%	30.6%	18.1%	21.4%	22.5%	20.8%
RCF / Net Debt	17.4%	16.8%	19.7%	11.4%	13.4%	11.8%	9.8%	13.0%	-25.7%	9.3%	27.9%	13.2%	15.6%	16.0%	13.9%
(CFO pre-W/C + Interest)/ Interest	5.3x	4.8x	5.4x	6.2x	6.8x	5.9x	2.8x	4.1x	0.8x	3.3x	4.3x	2.9x	4.6x	5.2x	5.1x
Debt / Book Capitalization	72.1%	65.2%	63.9%	53.4%	54.3%	54.1%	80.6%	70.8%	42.5%	91.2%	76.4%	71.1%	46.4%	47.6%	51.3%

All figures and ratios are calculated using Moody's estimates and standard adjustments. FYE = Financial year-end. LTM = Last 12 months.

Source: Moody's Financial Metrics™

Exhibit 17

Adjusted debt breakdown

Electricite de France

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported Debt	**51,637**	**55,652**	**64,183**	**65,195**	**56,846**	**59,188**
Pensions	12,324	14,113	13,714	14,693	14,063	11,687
Operating Leases	3,223	3,660	3,828	3,876	4,488	4,368
Hybrid Securities	3,063	5,048	5,048	5,048	5,048	5,051
Securitizations	1,151	1,225	1,544	1,304	903	1,095
Non-Standard Adjustments	6,603	3,424	2,970	3,472	2,731	3,703
Moody's-Adjusted Debt	**78,000**	**83,121**	**91,287**	**93,588**	**84,079**	**85,092**

Nonstandard adjustments include, notably, nuclear provisions (net of dedicated assets), debt guarantees (€974 million as of 31 December 2018), accrued interest (€1.3 billion as of 31 December 2018) and derivatives (€2.0 billion as of 31 December 2018) (the last two being removed from debt as reported). All figures are calculated using Moody's estimates and standard adjustments.
Source: Moody's Financial Metrics™

Exhibit 19

Adjusted EBITDA breakdown

Electricite de France

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported EBITDA[1]	**17,870**	**19,268**	**18,485**	**17,551**	**16,738**	**14,728**
Pensions	-925	-426	-1,071	-408	-403	-476
Operating Leases	525	610	638	646	748	728
Interest Expense – Discounting	-1,688	-1,723	-1,742	-2,369	-2,075	-2,611
Securitizations	38	36	46	51	36	41
Unusual	100	-64	-138	-108	-1,519	-809
Non-Standard Adjustments	229	206	234	243	151	250
Moody's-Adjusted EBITDA	**16,149**	**17,907**	**16,453**	**15,606**	**13,677**	**11,852**

(1) reported EBITDA includes other income and expenses
All figures are calculated using Moody's estimates and standard adjustments.
Source: Moody's Financial Metrics™

Exhibit 20

Select historical Moody's-adjusted financial data

Electricite de France

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
INCOME STATEMENT						
Revenue/Sales	71,916	73,383	75,006	71,203	64,892	68,976
EBITDA	16,149	17,907	16,453	15,606	13,677	11,852
EBIT	8,576	9,467	6,933	7,132	4,538	2,298
Interest expense	3,228	3,215	3,175	2,974	2,917	2,961
BALANCE SHEET						
Net debt	60,338	65,430	68,964	68,672	61,722	61,499
CASH FLOW						
Capital Expenditure (CAPEX)	- 13,203	- 13,805	- 14,524	- 14,344	- 14,856	- 16,251
Cash from investing Activities	- 11,868	- 12,477	- 18,574	- 16,504	- 11,822	- 17,230
Dividends	- 2,398	- 2,678	- 2,040	- 745	- 575	- 986
Retained Cash Flow (RCF)	10,176	9,580	10,735	11,948	10,368	12,105
RCF / Net Debt	16.9%	14.6%	15.6%	17.4%	16.8%	19.7%
Free Cash Flow (FCF)	- 4,228	- 5,629	- 3,911	- 3,441	- 3,040	- 3,809
FCF / Net Debt	-7.0%	-8.6%	-5.7%	-5.0%	-4.9%	-6.2%
PROFITABILITY						
%Sales in Sales (YoY)	-0.4%	2.0%	2.2%	-5.1%	-8.9%	6.3%
EBIT margin %	11.9%	12.9%	9.2%	10.0%	7.0%	3.3%
EBITA margin	13.0%	13.9%	10.9%	11.4%	8.5%	4.7%
EBITDA margin %	22.5%	24.4%	21.9%	21.9%	21.1%	17.2%
INTEREST COVERAGE						
EBIT / Interest Expense	2.7x	2.9x	2.2x	2.4x	1.6x	0.8x
EBITDA/ Interest Expense	5.0x	5.6x	5.2x	5.2x	4.7x	4.0x
(EBITDA - CAPEX)/ Interest Expense	0.9x	1.3x	0.6x	0.4x	-0.4x	-1.5x
LEVERAGE						
Debt / EBITDA	4.8x	4.6x	5.5x	6.0x	6.1x	7.2x
Net Debt / EBITDA	3.7x	3.7x	4.2x	4.4x	4.5x	5.2x

Source: Moody's Investors Service

Moody's related publications

Press Releases:

- Moody's assigns Baa3 rating to hybrid notes of EDF; stable outlook, published on 26 November 2019
- Moody's changes Edison's rating outlook to positive; affirms Baa3 rating, published on 19 September 2019

Issuer Comments:

- Proposed new regulatory framework for nuclear power may increase earnings visibility, published on 30 January 2020
- Electricite de France: New cost overrun and potential delay at Hinkley Point are credit negative, published on 26 September 2019
- E&P sale accelerates strategic shift towards renewables, published on 5 July 2019
- Edison S.p.A.: Acquisition of EDF EN Italia renewable assets: a modest credit positive, published on 26 June 2019

Credit Opinions:

- EDF Trading Limited: Update to credit analysis, published on 26 September 2019
- Edison S.p.A: Update following the change of outlook to positive, published on 2 October 2019

Sector Comments:

- Unregulated utilities and power companies - UK: Re-approval of the UK capacity market is credit positive for generators, published on 24 October 2019
- Regulated Electric & Gas Networks – France: France's proposal to significantly cut allowed returns for gas transport and storage from 2020 is credit negative, published on 29 July 2019
- Regulated electric & gas networks - Great Britain: Regulator signals smaller cut to allowed return, but many uncertainties remain, published on 30 May 2019

Sector In-Depth:

- EU decarbonisation strategy accelerating energy transition, published on 19 November 2019
- In France, renewable development must accelerate to offset nuclear downsizing, published on 19 November 2019
- In Italy, the transition to renewables is gathering momentum, published on 19 November 2019
- In Britain, end of coal shifts focus to renewables and interconnectors, published on 19 November 2019
- Industry credit risk: recent trends for global non-financial corporations, published on 26 November 2019

Industry Outlook:

- 2020 outlook positive, with utilities set to benefit from renewables growth, published on 19 November 2019

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Endnotes

1 Our medium-term estimates are as follows: coal price between $60 and $90 per tonne (see Base Metals – Global: Outlook remains stable, despite slowing global growth, trade tensions, published on 27 June 2019), natural gas price in the high-€20s per barrel based on our medium-term price band for crude oil of $50-70$ per barrel (see Oil & Gas – Global: Ample supply will keep a lid on US natural gas prices through medium term, published on 17 September 2019), and CO2 between €15 and €25 per tonne.

2 Enterprise value of $750 million, with an additional consideration of $100 million contingent on the commissioning of the Cassiopea gas development project in Italy. Edison could also receive royalties associated with further potential developments in Egypt, which would bring the aggregate value to about $1 billion.

3 See Electricite de France: France's measured energy transition plan allows EDF time to adapt, but certain issues yet to be decided, published on 3 December 2018.

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