S&P Global
Ratings

RatingsDirect®

Electricite de France S.A.

Primary Credit Analyst:
Claire Mauduit-Le Clercq, Paris + 33 14 420 7201; claire.mauduit@spglobal.com

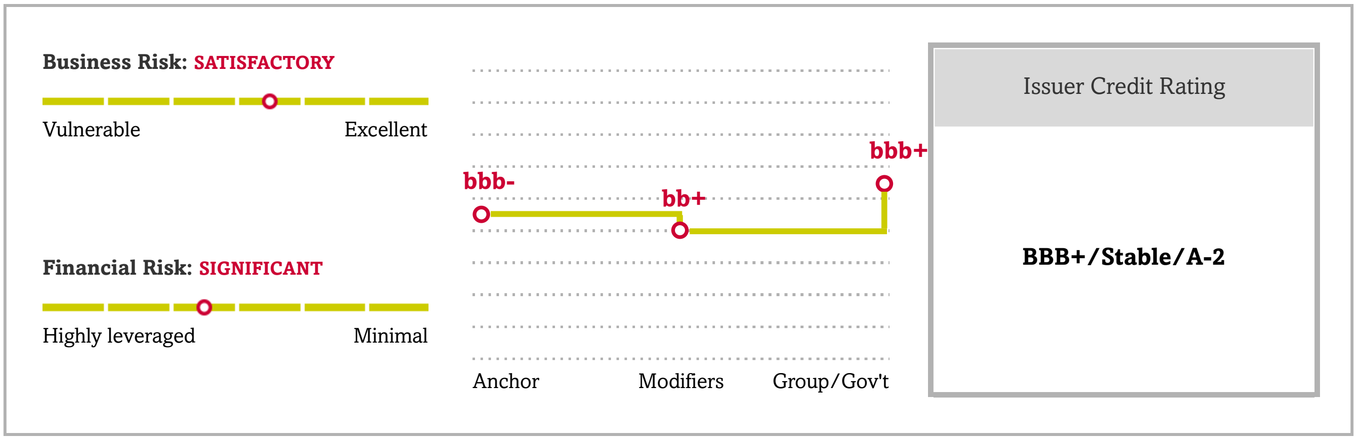
Secondary Contact:
Beatrice de Taisne, CFA, London + 44 20 7176 3938; beatrice.de.taisne@spglobal.com

Research Contributors:
Pauline Pasquier, Paris + 33 14 420 6771; pauline.pasquier@spglobal.com
Federico Loreti, Paris + 33140752509; federico.loreti@spglobal.com

Table Of Contents

Table Of Contents (cont.)

Electricite de France S.A.



Credit Highlights

Overview

Key Strengths	Key Risks
One of the largest vertically integrated utilities in the world, with a dominant position in France and strong positions in the U.K. and Italy.	Still significant exposure to volatile European nuclear power activities and merchant hydro, although this could improve if the upcoming nuclear reform is successful.
Relatively high contribution from domestic regulated earnings (31% of 2020 EBITDA), notably through the full ownership of the French power distribution network (Enedis).	Execution risks and negative track record associated with capital-intensive nuclear new build projects and challenges related to the life extension of existing French reactors.
Strong support from the French government, which owns a stake of almost 84%, since it is the main power generator and grid operator in France and has a pivotal role in France's energy transition.	Structural negative free cash flow generation due to an inflexible and massive investment program, mainly on unregulated nuclear assets.
Substantial cash balances and excellent access to capital markets.	Relatively high S&P Global Ratings-adjusted debt to EBITDA that increased to 4.7x in 2020, with substantial pensions and nuclear liabilities.
Proven financial flexibility of its majority shareholder, which has opted for scrip dividends in the past.	A sizable investment program combined with very long and complex construction phases, resulting in high negative free operating cash flow (FOCF) after dividends in our forecasts.

The COVID-19 pandemic had a greater effect on EDF--mainly on its nuclear operations--than on peers. The maintenance calendar was disrupted in 2020, which will also have a knock-on effect on 2021-2022. This disruption, combined with the phasing of nuclear production to prioritize reactor availability during the winter of 2020-2021, triggered a sharp decrease in nuclear output to 335 terawatt hours (TWh) in 2020 versus 380TWh in 2019, denting EDF's 2020 results. EBITDA reached €16.2 billion in 2020, down only 2.7% on an organic basis and above our expectation of €15.7 billion, since nuclear output did not drop to 300TWh as we previously expected. The pandemic's hit to EBITDA totaled about €1.5 billion, including €0.7 billion in nuclear generation as a result of maintenance calendar disruptions, €0.6 billion in customer service activities related to power demand reduction, and €0.2 billion due to lower distributed volumes by Enedis.

Although nuclear output will remain subdued in the coming two years, the favorable pricing environment should support gradual earnings recovery over 2021-2023. The group has maintained assumption of French nuclear output between 330TWh and 360TWh so far over 2021-2022, which is below historical levels. This is mainly due to the ramp-up of maintenance works postponed in 2020 and the high number of the French nuclear safety authority's (ASN) inspections--although these inspections allow for the 10-year life extension of certain tranches, they also cause extensive outages. Nevertheless, we forecast a gradual recovery over the two coming years compared to low output in 2020. We estimate that about 30% of EDF's generation EBITDA is exposed to wholesale market prices. For France, we expect power prices to remain sustained at €45-€50 per megawatt hour (/MWh) over 2021-2023 on the back of a tight balance of internal supply and demand following the disruption of nuclear production in 2020.

EDF's sizable capital expenditure (capex) continues to put pressure on cash flows and results in increasing net financial debt. We think execution risks in new nuclear projects, coupled with the Grand Carénage program--which aims to enhance the safety and lifespan of EDF's existing nuclear fleet--represent the highest risk to the group's credit quality, since they could translate into increasing capex, an upward debt trajectory, and reduced financial flexibility. EDF's investment plans include very high maintenance and upgrade expenditure on the existing French nuclear fleet and the construction of nuclear power plants in France and the U.K. This comes on top of ambitious investments in renewables and sizable investments in networks, leading to about €17 billion of spending per year, as per our estimates. We think this investment plan has very low flexibility and we also note that it is mostly skewed toward unregulated power generation. Under our power price assumptions, we anticipate that these high investments will translate into substantially negative FOCF of €4 billion per year on average over 2021-2023. This means EDF will likely further increase its net financial debt to about €50 billion-€52 billion at end-2023 from about €42 billion at end-2020. This is subject to the adjustment of EDF's dividend policy, since we have factored in that EDF will resume full cash dividend distribution in 2023. In addition, we expect the group will continue implementing measures that support the balance sheet, such as a disposal program and capital structure optimization. Debt adjustments comprised about €16 billion of pension deficit and €19 billion of nuclear liabilities for asset dismantling, while nuclear waste management should remain broadly stable. This takes into consideration that the new actuarial method, which is based on an ultra-forward rate, should help EDF to contain the net present value of nuclear obligations. We forecast that EDF's adjusted financial debt to EBITDA will stabilize at about 4.5x-4.7x by 2023 thanks to the forecasted EBITDA growth, absent any material deviation in costs or timeframes for the the group's new nuclear build projects. Although this leverage is in line with our requirement for the 'BBB+' rating on the group, we think it is particularly high given the group's exposure to merchant power activities--about 53% of 2020 EBITDA for generation and supply--and the sensitivity of credit metrics to power prices.

A change in nuclear regulation for the group's French fleet and its implementation are unlikely before 2022, in our view, but we still factor in the pursuit of negotiation with the European Commission as a supportive component of the rating. The shared plan by EDF and the French government to negotiate a structural regulatory reform of the group's existing nuclear assets has faced headwinds over the past 18 months. The pandemic created delays in the negotiation between the French government and the European Commission, with whom no public agreement of principle has been reached. EDF is also facing internal opposition from its unions, notably concerning the structure of the group.

We understand EDF has made progress regarding the features of the remuneration with a fixed price mechanism. We understand this could be set at €47-€49/MWh, compared to the current Regulated Access to Historical Nuclear Power (ARENH) price of €42/MWh and forward price for 2022 currently well above €50/MWh. That said, we recognize that there is currently no official confirmation on the level of this fixed price. The timing of implementation and level of the fixed price will be key factors when assessing EDF's degree of support for the proposed regulation and how this could help the group to structurally restore neutral or positive FOCF generation in particular. In our base case, which takes into consideration the presidential elections in France in April 2022, we now consider it unlikely that this change in market design will be implemented before 2023. That said, we recognize that negotiations are still ongoing and neither party has put them on hold. We would consider a late implementation in mid-2025--when the existing pricing mechanism, ARENH, legally ends--as detrimental to EDF's cash flows (see "The Energy Transition: Is The Proposed Regulation For France's Existing Nuclear Assets Favorable For EDF’s Credit Quality?", published Jan. 28, 2020).

The high likelihood of support from the French state continues to enhance EDF's credit quality. The French state has lined up financial support to EDF in different forms: Opting for scrip dividends, thus preserving cash; injecting capital at a time of low power prices; and investing in 40% of EDF's convertible bond. The history of financial support reinforces our assessment of a high likelihood of extraordinary government support for EDF, if needed. Furthermore, even if nuclear power's share of France's total energy production reduces to 50% by 2035, it will remain key to French energy policy, embedded in the multi-year annual program. The French government's Energy Climate Act, enacted at end-2019, also set an ambitious target to significantly increase the share of renewables in the generation mix, which includes an increase in new solar and wind capacity, where EDF could play a pivotal role. The pandemic has also reinforced EDF's mission of public service.

Outlook: Stable

The stable outlook reflects our expectation that the group's earnings will recover over 2021-2022 thanks to the favorable pricing environment and a gradual uptake in French nuclear production after a disrupted 2020. We also take into consideration the implementation of further financial measures to offset any debt increases. This should allow the group to maintain adjusted debt to EBITDA at about 4.5x by 2023.

We also consider that the French government will likely continue actively supporting any potential change in nuclear regulation, even though the approval process--involving EU competition authorities and EDF's employee organization--has been prolonged and the timing of implementing any reorganization is more likely to happen beyond 2022.

Downside scenario

We could see pressure on the rating if the group's credit metrics deteriorated such that adjusted debt to EBITDA was materially above 5.0x and funds from operations (FFO) to debt fell below 14% for a prolonged period. This could happen if EDF faced additional cost overruns and timing on nuclear new builds was significantly delayed, at either the company's Flamanville (FLA-3) or Hinkley Point C (HPC) sites.

A downgrade could also stem from persistent low availability of the existing nuclear fleet due to unplanned outages and operating issues. We would also consider lowering the rating on EDF if a change in market design was not implemented over the medium term, leaving the group's FOCF in very negative territory.

Upside scenario

Rating upside is remote at this stage. It would be contingent on significant debt reduction in 2021-2023, combined with stronger-than-expected operational, volume, or price recovery by 2023, leading to more sustainable neutral to positive FOCF. This would allow credit metrics to improve such that debt to EBITDA fell below 4.5x, trending toward 4.0x, on a consistent basis, with FFO to debt comfortably above 17%. An upgrade would also require increased visibility on the group's potential new nuclear builds engagements and on their related funding mechanism over the medium-term.

Our Base-Case Scenario

Assumptions

Our base-case scenario for the period 2021-2023 includes the following assumptions:

- In France, we expect power prices of about €44-€46/MWh in 2021, €46-€48/MWh in 2022, and €48-€53/MWh in 2023. In the U.K., we expect power prices of about €49-€52/MWh in 2021 and €48-€55/MWh in 2022 and 2023.
- French nuclear output remaining at about 340-360TWh over 2021-2023, reflecting the continuous disruption to the 2020 maintenance calendar caused by the pandemic. We also expect numerous 10-year life extension works
- Working capital of negative €1.7 billion in 2020, negative €207 million in 2021, and positive €400 million in 2022.
- Cash dividend payments limited to about €800 million in 2021 (hybrid coupons and minorities), with the remainder of 2020 dividends in scrip. From 2022, we forecast a progressive increase, with a full return to cash dividends of about €2.0 billion-€2.5 billion in 2023.
- Asset disposals of about €1.3 billion cumulated over 2021-2023.
- Net investments of about €17 billion on average per year, including capex linked to HPC, the new nuclear build in the U.K.
- Roughly stable unfunded nuclear obligations by 2023, reflecting the revised actuarial method and our assumption of a 2.1% net discount rate over the period.
- An increase in net pension liabilities at a 30 basis point discount rate over the period.

Key Metrics

Table 1

Electricite de France S.A. -- Key Metrics

(Bil. €)	2019a	2020a	2021e	2022e	2023e
EBITDA*	16.7	16.3	16.7-17.2	17.5-18	18.7-19.2
Capital expenditure*	16.7	15.4	16.5-17	16.7-17.2	17.4-17.9
Free operating cash flow*	(3.4)	(3.2)	(5.3)-(5.8)	(3.0)-(3.5)	(4.1)-(4.6)
Discretionary cash flow§	(3.6)	(3.3)	(6.0)-(6.6)	(4.5)-(5.0)	(6.5)-(7.0)
Debt*	72.0	76.0	78-83	78-83	83-88
Funds from operations/debt (%)*	19.0	17.5	15.5-16.5	18-19	18-19
Debt/EBITDA (x)*	4.3	4.7	4.5-4.9	4.3-4.7	4.3-4.7

*S&P Global Ratings-adjusted. §Calculated before asset disposals. a--Actual. e--Estimate.

Base-case projections

Based on these assumptions, we arrive at the following S&P Global Ratings-adjusted credit measures:

- Reported EBITDA of about €17 billion in 2021, progressively rising to above €18 billion in 2023.
- Debt to EBITDA of 4.7x in 2021, marginally decreasing to about 4.5x by 2023.
- FFO to debt remaining subdued at about 16% in 2021, improving to above 18% in 2023.

Company Description

EDF is an integrated energy company operating in a wide range of electricity-related businesses: Generation, distribution, supply, and energy trading. It is France's dominant electricity operator and has strong positions in the U.K. through EDF Energy, and in Italy through fully owned Edison, making it the world's leading electricity player. The group also manages the low- and medium-voltage public distribution network in France through its subsidiary Enedis, with a regulated asset base (RAB) of about €53.7 billion at year-end 2020. French regulated activities accounted for 32% of 2020 EBITDA versus 31% in 2019 (see chart 1).

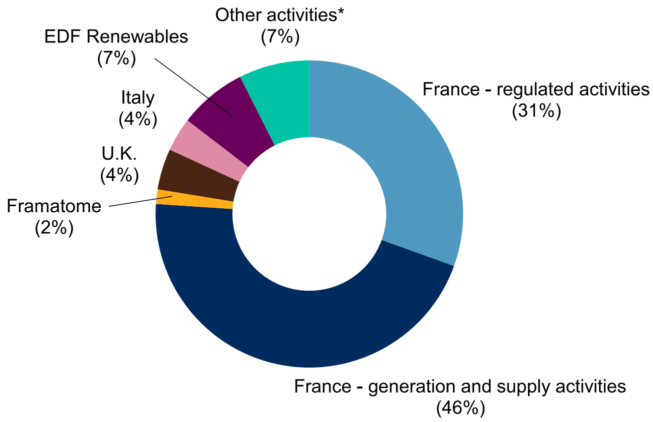
With worldwide net installed capacity of 128 gigawatts (GW) as of Dec. 31, 2020, and global energy generation of 502TWh, EDF has the largest generating capacity of all the major European utilities. The EDF group supplies electricity, gas, and associated services to about 40 million customer accounts worldwide, of which more than two-thirds are in France. It has a significant proportion of nuclear and hydroelectric power in its generation mix, which represented 76% and 10% of electricity output, respectively, in 2020. Notably, EDF operates 56 nuclear reactors in France and eight in the U.K., with a total capacity of 69GW. French generation and supply activities accounted for 46% of 2020 EBITDA--the same as in 2019--while the U.K. and Italy accounted for 5% and 4%, respectively.

EDF Renewables, which develops French and international new renewables activities--total net installed capacity of 8.6 GW, mostly wind--represents 5% of 2020 EBITDA. The other activities segment represents 7% of EDITDA. This includes Dalkia, which focuses on energy services as well as heating and cooling networks (2% of 2020 EBITDA); and EDF Trading, which provides market, optimization, and risk management services via wholesale energy market operations.

At end-2020, EDF reported revenue of €69 billion, EBITDA of €16.2 billion, and net financial debt of €43 billion. The group is listed on Euronext, with a market capitalization of €37 billion as of June 2021. The French government is the main shareholder, with 83.68% of EDF shares as of Dec. 31, 2020.

Chart 1

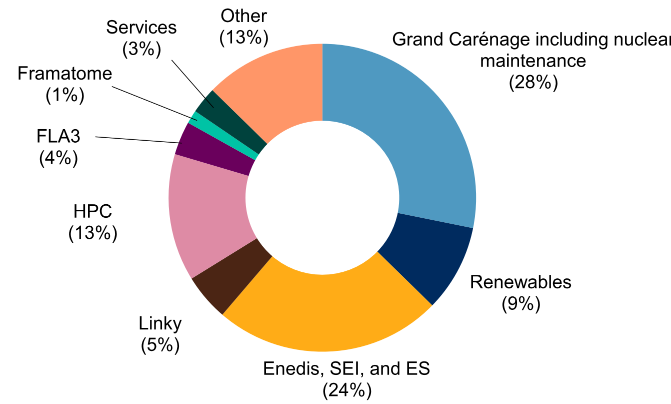
EDF EBITDA By Segment
2020



*Dalkia, EDF Trading, and other. Source: Company disclosures.

Chart 2

Net Investments Including Acquisitions And Excluding Disposal Plan
2020



Source: Company disclosures.

Business Risk: Satisfactory

EDF benefits from its dominant position as one of the world's largest integrated utilities and its large share of regulated activities. EDF is the leader in France in terms of generation, distribution, and supply, and it has solid positions in the U.K. and Italian power generation markets.

We note the sizable share of regulated networks--totaling 32% of EBITDA in 2020--in the group's earnings. This primarily includes the bulk of the power distribution network in France, with Enedis owning a RAB of about €53.7 billion at year-end 2020, excluding Linky RAB of €2.7 billion. We assess the regulatory framework as strong, supported by its track record and predictability of earnings, as demonstrated by the continuity of the TURPE 6 regulatory tariff (TURPE 6 HVA/HV), which starts on Aug. 1, 2021. We expect the group's regulated earnings will benefit from the full deployment of Linky smart meters, which have a favorable RAB-based remuneration. We expect EDF to receive a nominal pre-tax return of 7.25% over 2022-2030 plus a 3% additional premium, as the deployment of the Linky smart meters is on time and on budget. EDF has disbursed most of its €4.5 billion capex over 2018-2020.

The largely contracted renewables portfolio--net installed capacity of about 34.0GW at end-2020, out of which 22.5GW is hydropower--also enhances the group's positioning. That said, it contributes only marginally to the group's earnings, accounting for 6% of EBITDA in 2020. We expect an increase in earnings contribution over 2021-2022 thanks to 2.4GW of solar and wind capacity being commissioned in 2021 and 8.0GW (or 4.7GW of net capacity, for EDF's share) under construction for wind and solar. EDF will also grow in French offshore wind, with about 1.5GW capacity due to be commissioned over 2023-2024.

Execution risk puts pressure on the group's nuclear operations, which in turn constrains EDF's business model Our assessment of EDF's business risk profile reflects that it relies heavily on capital-intensive nuclear operations, which implies technology concentration. This reliance on an aging fleet--over 30 years old on average, with the latest plant commissioning in 1997--exposes the group's power generation to more frequent planned and potential unexpected outages. This in turn exposes the group to the lack of predictability in the availability of its nuclear output. Last year, marked by exceptional lockdown measures, was an example of this, with total output declining to 335TWh in 2020 from about 390TWh on average in the previous five years (see chart 3).

Over 2021-2024, planned outages related to the execution of the Grand Carénage program will remain material, since the number of 10-year inspections by ASN is high, peaking at seven reactors over this period. On top of these schedules, which have so far lasted longer than their respective initial planned timeframes, EDF has experienced extended unplanned outages in recent years, signaling an increase in technical issues, coupled with stringent safety requirements for nuclear activities (see chart 4). ASN's 2016-2017 investigation, which related to concerns about segregation in the French nuclear fleet's steam generators, weighed heavily on EDF's power output in 2017 (below 380TWh), affecting 18 French reactors and forcing a shutdown for several months. In October 2019, ASN said that irregularities in Framatome's steam generator manufacturing process--affecting 19 steam generators and six reactors--did not require any immediate reactor shutdowns. Although this outcome was positive, EDF will have to fix the technical problems during the upcoming review, potentially further lengthening the maintenance outage, and the case highlights the magnitude of operational risk facing the group.

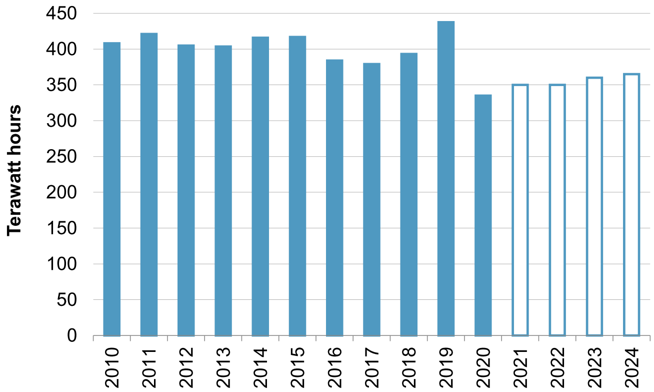
The aging U.K. nuclear fleet has also experienced technical issues and prolonged unplanned outages, mainly related to the graphite inspections. For instance, Hunterston B and Hinkley Point B (HPB) experienced outages and, although currently running, will be taken offline, and Dungeness has been offline since 2018. The technical challenges prompted EDF to terminate operations early in its oldest U.K. advanced gas-cooled reactor power plants, Hunterston B and HPB, announced in 2020, and Dungeness, announced in June 2021. The British Nuclear Decommissioning Authority has yet to validate the decommissioning plan, and EDF has revised upward its costs for costs for the defueling phase, which totaled €1.9 billion in 2019 for Hunterston B and HPB.

Furthermore, in 2019, EDF's fleet experienced three significant incidents of level 2 out of 7 on the International Nuclear and Radiological Event Scale. We think the scarcity of technical skills throughout the nuclear value chain is an increasing key industrial challenge for EDF. ASN's president Mr. Bernard Doroszcuk commented on EDF's overall positive 2019 operational record, highlighting two points of attention: "Challenge of maintaining engineering capacity" and a "lowering of rigor level in plant management". We see these as long-term structural challenges that EDF aims to address--notably through its Excell Plan--and that will take significant time to resolve, in our view.

More recently, the Chinese authorities confirmed an incident at one of Taishan's evolutionary power reactor (EPR) reactors, which were commissioned in 2018 and 2019. EDF and its 75% owned subsidiary Framatome were responsible for some of the design and construction of these reactors, and they retain a 30% stake, while Chinese General Nuclear Power Corp. (CGN, A-/Stable) is operating the nuclear site and is the majority owner. An adverse development of the technical issues regarding fuel rod defects, including a potential shutdown of the reactor, could create risk of reputation on EDF's expertise on EPR technology.

Chart 3

Evolution Of Nuclear Output In France Since 2010

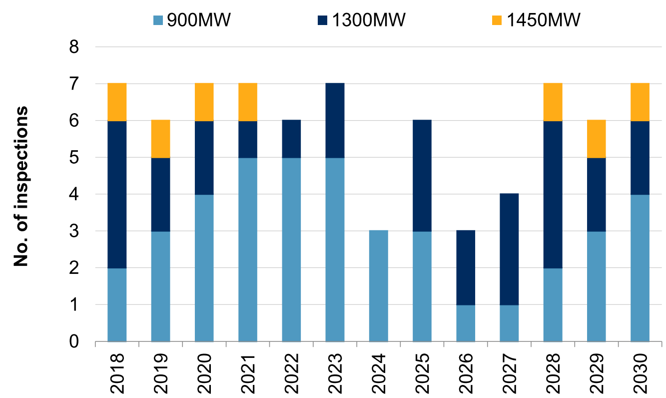


Source: Company disclosures, S&P Global Ratings.

Chart 4

Life Extension Of French Nuclear Reactors

Most recent 10-year inspections and expected future inspections



MW--Megawatts. Source: Company disclosures.

Complex new nuclear build projects represent overhanging risk of cost inflation. Material cost and delay overruns for HPC and FLA-3 highlight significant operating and contingency risks related to new nuclear buildings. EDF is deploying the capacity of HPC's EPRs by 3.2GW. The group revised upward completion costs by a further £500 million in the context of the pandemic, with the full budget now estimated at £22 billion-£23 billion (in £ at 2015, without inflation). EDF also delayed the start of the electricity generation from unit 1 by six months to June 2026. In addition, EDF has flagged that there is a high risk it will delay the commissioning of units 1 and 2 by 15 and nine months, respectively, which would translate into additional costs of £0.7 billion in 2015 pound sterling. As for the FLA-3 EPR, EDF announced at end-2020 that there were very high risks regarding both the schedule--fuel loading at end-2022--and completion costs, even though the review of the impact of the pandemic did not lead to any change compared to targets announced at end-2019. We note that FLA-3's total budget increased to €12.4 billion on the back of €1.5 billion cost overruns and the project completion was postponed by three years following ASN's request for repairs on eight faulty welds. Meeting the revised timetable and budget requires:

- The successful penetration weld repairs by remotely operated robots, a process that the ASN approved in March 2021;
- Other weld repairs in the main secondary circuit, which are currently in progress; and
- The resolution of a significant event, declared to ASN, regarding the break preclusion on the main primary circuit.

Given EDF's poor track record of execution, these two projects carry further contingency risks for EDF, in our view, while increasing its large investment pipeline.

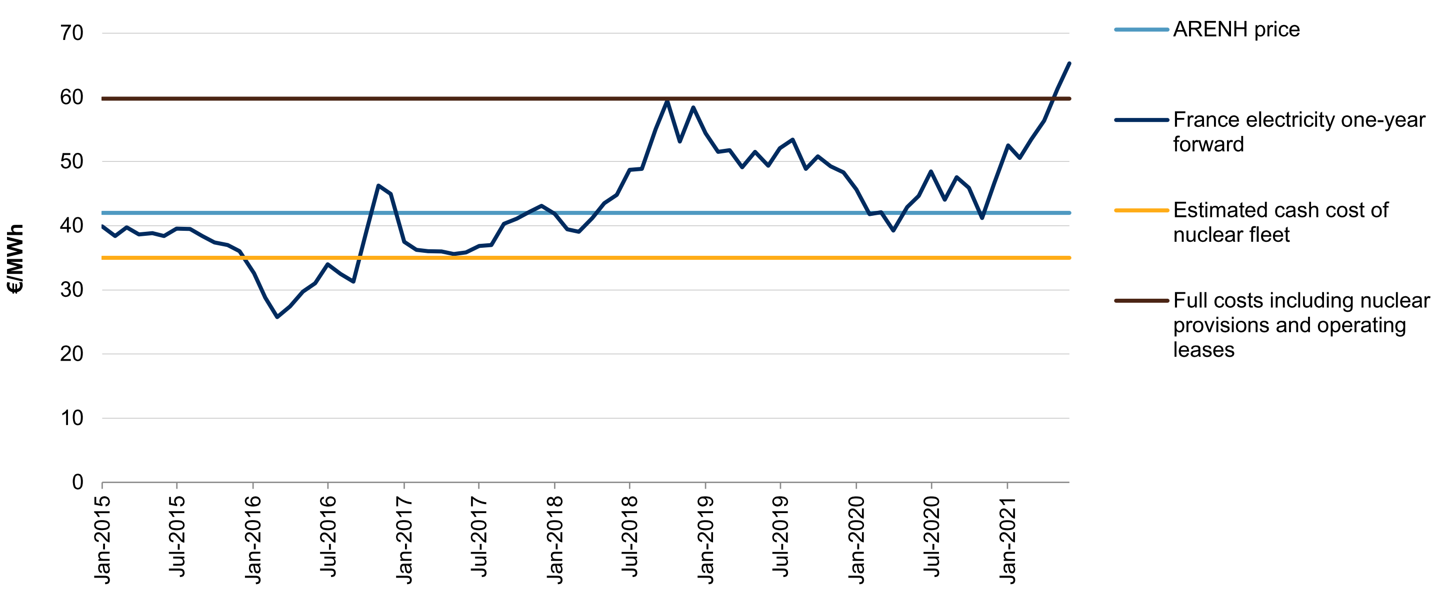
EDF still has greater exposure to merchant prices than many other large European integrated utilities do. However, the proposed reform of French nuclear could improve its earnings profile. EDF is also more exposed to volatile power prices than its main peers such as Enel and Iberdrola are, given its significant generation capacity comprising sizable nuclear and hydro assets. These assets are well positioned in the merit order, given their low marginal cost. However, they have unregulated outright production, mostly fixed costs, and are ultimately highly sensitive to the volatile power markets (see chart 5). Although we forecast sustained power prices over the next two years thanks to the surge in carbon price amid the accelerated European energy transition, the group remains exposed, via the ARENH regulated pricing mechanism with no floor, to a drop in wholesale prices (see chart 5).

We note that the French state has recognized the need to implement a more favorable remuneration framework for EDF's nuclear assets over the past 18 months. This would allow the group to cover its fixed costs and fund required investments to maintain the viability of its operating fleet. Discussions are ongoing between the French government and the European Commission, and we understand a fixed price is being considered, versus a price corridor as proposed by the government in its January 2020 public consultation. However, negotiations are proving lengthy and EDF faces internal opposition to a necessary reorganization project, which is a required step for this new potential guaranteed fixed price mechanism to not be viewed as state aid by the commission. There is a lack of visibility on the next steps, and we think the French political agenda will constitute a further hurdle that will likely prevent the implementation of a new, favorable regulation before 2023.

We expect French power prices to remain sustained over 2021-2023 on the back of a tight balance of internal supply and demand following the disruption of nuclear production in 2020. We also do not expect any progress in reducing the country's dependence on nuclear over the period, with no preset closures for reactors set by the Multiannual Energy Program (PPE) energy roadmap before 2027. As for renewables growth, delays over targets are cumulating on all technologies, mainly due to administrative hurdles (permitting) and social opposition, which is why we do not foresee overcapacity in the period. Finally, we expect sustained export potential for France, increasing from 2023, because capacity will tighten in neighboring countries Belgium and Germany while France will have new interconnection capacity. As such, we expect EDF, through its merchant-exposed baseload production, will benefit from this more favorable price environment.

Chart 5

France Electricity One-Year Forward, ARENH Price, And Cost Of Nuclear Fleet



ARENH--Regulated Access to the Historical Nuclear Power. MWh--Megawatt hour.

EDF's involvement in the renewal of the French nuclear fleet and U.K. nuclear projects will be key factors underlying the group's future credit quality. In France, EDF submitted its proposal to the government for the partial renewal of the existing nuclear fleet, based on EPR 2 technology. EDF has performed research and development studies and must take the final decision for the construction of new reactors by 2023 at the latest, as per President Macron's statement.

EDF aims to remain an active player in the energy landscape in the U.K. The group has signed two agreements with CGN related to two new nuclear builds, Sizewell C and Bradwell B. In December 2020, EDF and the U.K. government entered into discussions regarding the financing of Sizewell C, which is critical for the build's construction and the funding of future investment. Although no decision has been made on the regulatory (remuneration) and financing framework of these two well-separated potential projects, we understand a decision will be taken on them in the coming years. Combined with the existing challenges of the existing nuclear fleet, these potential new builds could add another layer of complexity that the group will need to manage.

Peer comparison

Table 2

Electricite de France S.A. -- Peer Table

	Electricite de France S.A.	Enel SpA	Iberdrola S.A.	ENGIE SA	Fortum Oyj
(Mil. €)	**--Fiscal year ended Dec. 31, 2020--**				
Revenue	69,031	64,816	33,145	55,751	49,015
EBITDA	16,274	14,894	9,355	8,903	2,955
FFO	13,342	11,343	7,553	7,503	2,480
Interest expense	2,146	2,502	1,551	1,477	276
Cash interest paid	1,950	1,977	960	832	208
Cash flow from operations	12,186	11,001	7,290	6,888	2,555
Capital expenditure	15,428	9,548	6,305	5,012	1,101
FOCF	(3,243)	1,453	985	1,876	1,454
DCF	(3,259)	(3,395)	(2,406)	1,318	317
Cash and short-term investments	21,056	5,753	3,674	12,912	2,308
Debt	75,850	60,083	40,483	42,791	9,878
Equity	49,581	41,942	44,468	31,817	15,577
Adjusted ratios					
EBITDA margin (%)	23.57	22.98	28.22	15.97	6.03
Return on capital (%)	4.48	9.52	6.46	5.48	11.11
EBITDA interest coverage (x)	7.58	5.95	6.03	6.03	10.71
FFO cash interest coverage (x)	7.84	6.74	8.87	10.02	12.92
Debt/EBITDA (x)	4.66	4.03	4.33	4.81	3.34
FFO/debt (%)	17.59	18.88	18.66	17.53	25.11
Cash flow from operations/debt (%)	16.07	18.31	18.01	16.10	25.87
FOCF/debt (%)	(4.27)	2.42	2.43	4.38	14.72
DCF/debt (%)	(4.30)	(5.65)	(5.94)	3.08	3.21

DCF--Discretionary cash flow. FFO--Funds from operations. FOCF--Free operating cash flow.

Financial Risk: Significant

Economic debt trending up on the back of negative cash flows and constrained by already significant nonfinancial liabilities. Our assessment of EDF's financial risk profile is underpinned by its high adjusted debt, trending up to above €85 billion in 2023 from about €76 billion in 2020. This is despite credit-supportive measures in the form of asset disposals and capital structure optimization, which will reduce net economic debt by about €3 billion-€4 billion over 2021-2023. This increase in adjusted debt is the result of sizable negative cash flow and a gradual increase in pension provisions in a lower-for-longer rate environment and contained increase of nuclear provisions on the back of a more favorable actuarial rate determination. We take into consideration the resumption of full cash dividends distribution in 2023, which will cover the previous year.

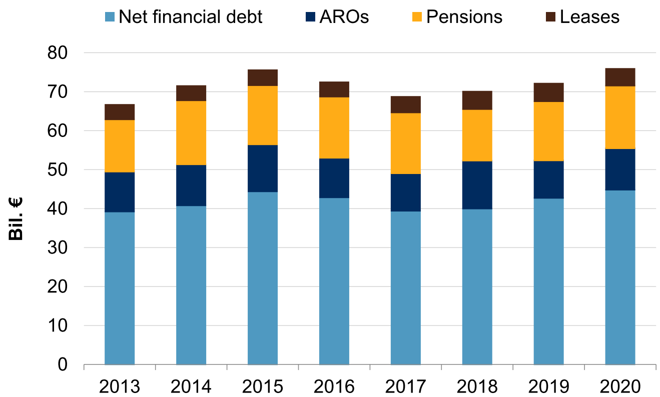
We benchmark EDF's credit metrics--notably our adjusted FFO-to-debt and debt-to-EBITDA ratios--against our medial volatility table. We use this approach because EDF derives more than one-third of its earnings from France's supportive regulated activities. The relative weight of EDF's nonfinancial obligations affect our adjusted credit metrics for EDF in particular. Pensions and asset-retirement obligations--mostly linked to the nuclear segment--represented €16 billion and €10.9 billion, respectively, out of €76 billion of adjusted debt, while operating leases of about €4.3 billion are now part of EDF's reported debt (see chart 6).

EDF's sizable investment plan leads to negative cash flows. This plan includes very high maintenance and upgrade expenditure on the existing nuclear fleet and construction of nuclear power plants in France. This comes on top of ambitious investments in renewables and sizable investments in networks leading to about €16.5 billion-€17.0 billion in spending each year over 2021-2023, as per our estimates. We think this investment plan has very low flexibility. We anticipate that these high investments will translate into sizable negative FOCF of €3 billion-€4 billion on average per year over 2021-2023 (see chart 7)

We think the ongoing complex new nuclear builds contribute to the group's deeply negative FOCF and that associated cost overruns exacerbate the debt trajectory. The cash flow contribution from these assets is also still some way off and we remain uncertain as to their value creation potential if there are further problems during construction.

Chart 6

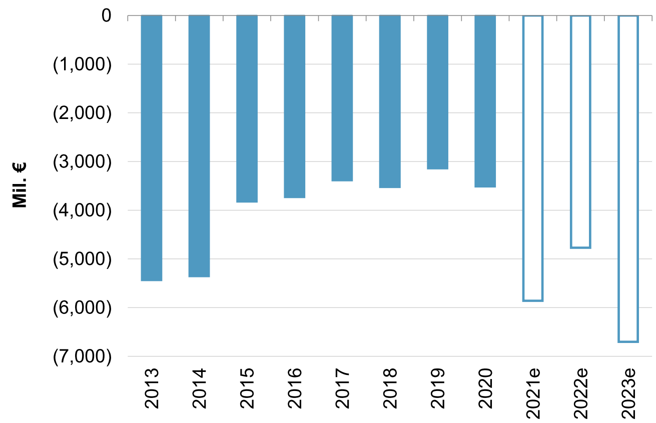
Evolution Of S&P Global Ratings-Adjusted Debt Components For EDF
2013-2020



Source: S&P Global Ratings.

Chart 7

Historical And Projected Discretionary Cash Flow
2013-2023, reported



e--Estimate. Source: S&P Global Ratings.

Financial summary

Table 3

Electricite de France S.A. -- Financial Summary					
Industry Sector: Electric					
	--Fiscal year ended Dec. 31--				
(Mil. €)	**2020**	**2019**	**2018**	**2017**	**2016**
Revenue	69,031	71,317	68,976	69,632	71,203
EBITDA	16,274	16,716	16,155	14,627	17,341
FFO	13,342	13,699	13,583	11,526	14,131
Interest expense	2,146	695	3,140	3,029	3,517
Cash interest paid	1,950	2,096	2,183	2,358	2,398
Cash flow from operations	12,186	12,819	12,994	11,757	11,079
Capital expenditure	15,428	15,969	15,684	14,232	13,960
FOCF	(3,243)	(3,151)	(2,690)	(2,475)	(2,881)
DCF	(3,259)	(3,083)	(3,095)	(2,490)	(3,046)
Cash and short-term investments	21,056	22,621	23,593	22,357	25,159
Gross available cash	20,872	22,378	23,351	22,202	24,720
Debt	75,850	72,074	70,013	68,695	72,428
Equity	49,581	51,186	47,596	43,651	36,315
Adjusted ratios					
EBITDA margin (%)	23.57	23.44	23.42	21.01	24.35
Return on capital (%)	4.48	6.34	5.61	4.52	8.46
EBITDA interest coverage (x)	7.58	24.04	5.14	4.83	4.93
FFO cash interest coverage (x)	7.84	7.54	7.22	5.89	6.89
Debt/EBITDA (x)	4.66	4.31	4.33	4.70	4.18
FFO/debt (%)	17.59	19.01	19.40	16.78	19.51

Table 3

Electricite de France S.A. -- Financial Summary (cont.)

Industry Sector: Electric

	--Fiscal year ended Dec. 31--				
(Mil. €)	**2020**	**2019**	**2018**	**2017**	**2016**
Cash flow from operations/debt (%)	16.07	17.79	18.56	17.12	15.30
FOCF/debt (%)	(4.27)	(4.37)	(3.84)	(3.60)	(3.98)
DCF/debt (%)	(4.30)	(4.28)	(4.42)	(3.62)	(4.21)

DCF--Discretionary cash flow. FFO--Funds from operations. FOCF--Free operating cash flow. N.M.--Not meaningful

Liquidity: Strong

We continue to assess EDF's liquidity as strong given the group's ample and diversified liquidity sources. We forecast that its liquidity sources will exceed uses by more than 1.5x over the next 12-24 months. Our assessment is further supported by EDF's consistently substantial cash balances, solid relationships with banks, and ample and proven access to capital markets, even under dire conditions. The recent successful €1.25 billion inaugural social bond highlights EDF's ability to diversify debt funding sources at attractive rates.

Principal Liquidity Sources

We expect principal liquidity sources for the 12 months from March 31, 2021 will include:

- About €24.4 billion cash and highly liquid marketable securities;
- €10 billion in available (or soon to be renewed) committed credit lines maturing beyond March 31, 2022;
- Estimated FFO of about €12.0 billion-€12.5 billion; and
- Debt issuances or additional bi-lateral credit lines.

Principal Liquidity Uses

We expect principal liquidity uses for the same period will include:

- Short-term debt of about €11.4 billion, including €5.4 billion of commercial papers;
- Long-term debt of about €4.6 billion;
- Estimated capex of about €16.0 billion-€16.5 billion; and
- Cash dividends of about €1 billion, including dividends on hybrids and about dividends to minorities.

Environmental, Social, And Governance

EDF's governance is the most prominent ESG risk that we identify for the group. We assess it as fair, which is weaker than peers'. EDF's governance risk mostly relates to the oversight of its board and uncertainty regarding the group's ability to manage risks and avoid cost overruns at multibillion new-build nuclear EPR projects. The group has embarked on two new EPRs at HPC, for which cost overruns have so far totaled about £22.5 billion-£23.0 billion, and EDF has announced two consecutive cost revisions, relatively early in the construction phase. Additionally, cost overruns for its first-in-kind EPR in France, FLA-3, currently amount to €9.5 billion, with repeated cost inflation, the most recent of which totaled €1.5 billion in October 2019, following ASN's request for repairs to the eight welds inside the containment building. However, we view positively the French government's supportive financial stance (see "Government Influence" section below).

With one of the world's largest nuclear generation fleets--72GW net capacity and 77% of output in 2020--EDF's carbon footprint is markedly advantageous. However, environmental and social risks relating to the future long-term storage of nuclear waste offset EDF's low carbon emission advantage. Our asset retirement obligation debt adjustment--net of dedicated assets--takes into consideration EDF's large end-of-cycle liabilities--provisions totaling about €62 billion at end-2020--for both decommissioning and nuclear waste storage. However, the amount remains subject to uncertainty and will most likely increase. In addition, France's updated energy policy, embedded in the PPE and adopted by decree in 2020, has the key objective of reducing the share of nuclear in the power mix to 50% by 2035, from 75% currently. This will require EDF to start decommissioning its plants as per the currently approved 50-year lifespan, over 2027-2035. At the same time, given uncertainty regarding the status of nuclear energy in the European taxonomy, we expect EDF will decide by 2025 whether it will build new reactors to replace the second wave of reactors' closures, which will take place from 2040 onward. However, we also think the group's sizable capex plan related to its nuclear operations and its resulting low balance sheet headroom constrain its ambitions in renewables. We do not think France's path to net zero emissions will alleviate pressure on the group's free cash flow from sizable investments planned over an extended period. As a result, EDF's environmental score is in line with the unregulated power industry's.

Social factors are also important to our assessment of EDF's standing with the French state. We think the government is supportive of both the nuclear industry in France and EDF's public mission, embedded in its network activities, given the group's economic and social stakes. We also factor into our assessment of government support EDF's social role as a major employer in France, in particular given some of its staff have civil servant status. That said, we also note the negative track record of project management and third-party reports, pointing to a loss of technical skills and quality within the French nuclear industry, both for EDF and throughout the supply chain, which we see a great social challenge for EDF at a time of investment step-up over the coming decade.

Government Influence

We think there is a high likelihood of extraordinary government support for EDF if needed. This is underpinned by the French government's historical support to EDF--specifically, the €4 billion capital increase in 2017--as well as the scrip dividends agreed for 2017, which were repeated at the end of February 2019 for FY2018, FY2019, and FY2020. The government's involvement in EDF's strategy and willingness to provide financial support are other key factors in our assessment. We currently see a strong alignment of interests between EDF's management and the French government regarding a potential structural reform of nuclear remuneration in France. However, we note that discussions to address EDF's future energy market reforms, with both the European Commission and with EDF's internal employee organizations, prove lengthy and difficult.

In our view, the pandemic and associated restrictive measures have bolstered EDF's highly strategic role as producer, distributor--through its concession Enedis--and supplier of electricity, and as provider of an essential public service. Furthermore, EDF is at the core of the government's national energy policy. The Energy Climate Act enacted at end-2019 highlights both France's pro-nuclear stance and nuclear power's key place in the French energy mix for the next decade. It also set ambitious targets to significantly increase the share of renewables in the generation mix, including new solar and wind capacity, where EDF could play a pivotal role.

We factor the likelihood of government support into our rating on EDF by including three notches of uplift from EDF's 'bb+' stand-alone credit profile (SACP). We base our assessment of the high likelihood of support on EDF's important role for France and very strong link with the French government.

Group Influence

We assess EDF's group credit profile at 'bbb+', based on the consolidated cash flows and debt at the ultimate holding company, EDF S.A., and potential governmental support. We view the group's U.K. subsidiaries, EDF Energy PLC and EDF Energy Customers PLC, as core entities because of their significant contribution to the group's earnings, deep integration, and focus on the group's strategic plan.

Our assessment of the Italian subsidiary, Edison, as highly strategic to EDF reflects that Italy is a key market for EDF and Edison will act as a core platform to develop that market. Edison is fully integrated into the group, and depends on EDF strategically, managerially, and financially. Under its current SACP of 'bbb' (revised on May 21, 2021, see "Italian Utility Edison SpA Upgraded To 'BBB' On Improved Performance And Credit Metrics; Outlook Stable, published May 21, 2021), Edison does not currently benefit from any rating upside from its parent. Conversely, it is our 'BBB+' long-term issuer credit on EDF, not EDF's 'bb+' SACP, that caps the long-term issuer credit rating on Edison.

EDF also owns a 50.1% stake in RTE, the French transmission grid operator. We consider that EDF has no control of RTE, although it can influence dividends. Therefore, the rating on RTE is delinked from the rating on EDF, and the same applies to equity in EDF's accounts.

Issue Ratings - Subordination Risk Analysis

Capital structure

At end-2020, EDF's capital structure comprised about €69 billion of senior unsecured debt and about €11.3 billion of hybrid securities and unsecured debt issued by EDF and its financing subsidiaries. The amount of debt at the level of its subsidiaries is well below 50% of total debt, the threshold set in our criteria to assess subordination risk.

Analytical conclusions

We do not see any material structural subordination risk on the senior unsecured debt instruments issued by the group and we rate them 'BBB+', in line with the issuer credit rating on EDF.

In our analysis, we do not expect the French state to provide extraordinary support for the hybrid instruments. We therefore rate them 'BB-', two notches below EDF's 'bb+' SACP, reflecting the subordinated nature of these instruments and the optionality to defer the coupon. If we revised upward or downward our assessment of the SACP, we would not expect to change our approach related to the notching differential, nor our approach to assessing the hybrid's equity content. This is because the issuer credit rating would remain investment grade, all else being equal.

Reconciliation

Table 4

Electricite de France S.A. -- Reconciliation Table

	--Fiscal year ended Dec. 31, 2020--								
	Debt	**Shareholders' equity**	**EBITDA**	**Operating income**	**Interest expense**	**S&P Global Ratings-adjusted EBITDA**	**Cash flow from operations**	**Dividends**	**Capital expenditure**
Electricite de France S.A. reported amounts (mil. €)	69,201	45,633	15,687	3,875	1,128	16,274	12,765	267	16,007
S&P Global Ratings' adjustments									
Cash taxes paid	--	--	--	--	--	(983)	--	--	--
Cash interest paid	--	--	--	--	--	(1,008)	--	--	--
Cash interest paid: Other	--	--	--	--	--	(112)	--	--	--
Trade receivables securitizations	792	--	--	--	--	--	250	--	--
Reported lease liabilities	4,307	--	--	--	--	--	--	--	--
Intermediate hybrids reported as equity	5,645	(5,645)	--	--	251	(251)	(251)	(251)	--
Postretirement benefit obligations/deferred compensation	16,062	--	146	146	259	--	--	--	--
Accessible cash and liquid investments	(20,872)	--	--	--	--	--	--	--	--
Capitalized interest	--	--	--	--	579	(579)	(579)	--	(579)
Dividends received from equity investments	--	--	433	--	--	--	--	--	--
Asset-retirement obligations	10,618	--	--	--	(71)	--	--	--	--
Nonoperating income (expense)	--	--	--	915	--	--	--	--	--

Table 4

Electricite de France S.A. -- Reconciliation Table (cont.)									
Noncontrolling interest/minority interest	--	9,593	--	--	--	--	--	--	--
Debt: Derivatives	(7,917)	--	--	--	--	--	--	--	--
Debt: Fair value adjustments	(1,986)	--	--	--	--	--	--	--	--
EBITDA: Gain/(loss) on disposals of property, plant, and equipment	--	--	229	229	--	--	--	--	--
EBITDA: Business divestments	--	--	(221)	(221)	--	--	--	--	--
Depreciation and amortization: Impairment charges/(reversals)	--	--	--	799	--	--	--	--	--
EBIT: Other	--	--	--	(175)	--	--	--	--	--
Total adjustments	6,649	3,948	587	1,693	1,018	(2,933)	(580)	(251)	(579)
S&P Global Ratings' adjusted amounts									
	Debt	**Equity**	**EBITDA**	**EBIT**	**Interest expense**	**Funds from operations**	**Cash flow from operations**	**Dividends paid**	**Capital expenditure**
	75,850	49,581	16,274	5,568	2,146	13,342	12,186	17	15,428

Ratings Score Snapshot

Issuer Credit Rating

BBB+/Stable/A-2

Business risk: Satisfactory

- **Country risk:** Low
- **Industry risk:** Intermediate
- **Competitive position:** Satisfactory

Financial risk: Significant

- **Cash flow/leverage:** Significant

Anchor: bbb-

Modifiers

- **Diversification/portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Strong (no impact)

- **Management and governance:** Fair (no impact)
- **Comparable rating analysis:** Negative (-1 notch)

Stand-alone credit profile : bb+

- **Group credit profile:** bbb+
- **Entity status within group:** Core
- **Related government rating:** AA
- **Likelihood of government support:** High (+3 notches from SACP)

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- General Criteria: Hybrid Capital: Methodology And Assumptions, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- General Criteria: Rating Government-Related Entities: Methodology And Assumptions, March 25, 2015
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria | Corporates | Industrials: Key Credit Factors For The Unregulated Power And Gas Industry, March 28, 2014
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Related Research

- Italian Utility Edison SpA Upgraded To 'BBB' On Improved Performance And Credit Metrics; Outlook Stable, May 21, 2021
- Bulletin: Electricite de France's 2020 Results Exceed Expectations, But Debt Continues Upward Trajectory, Feb. 19, 2021
- Electricite de France S.A., April 3, 2020
- Credit FAQ: The Energy Transition: Is The Proposed Regulation For France's Existing Nuclear Assets Favorable For EDF's Credit Quality? Jan. 28, 2020

- The Energy Transition: Different Nuclear Energy Policies, Diverging Global Credit Trends, Nov. 11, 2019
- The Energy Transition: Nuclear Dead And Alive, Nov. 11, 2019

Business And Financial Risk Matrix

	Financial Risk Profile					
Business Risk Profile	Minimal	Modest	Intermediate	**Significant**	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	**bbb-/bb+**	bb	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

Ratings Detail (As Of June 30, 2021)*

Electricite de France S.A.	
Issuer Credit Rating	BBB+/Stable/A-2
Commercial Paper	A-2
Junior Subordinated	BB-
Senior Unsecured	BBB+
Short-Term Debt	A-2
Issuer Credit Ratings History	
22-Jun-2020	BBB+/Stable/A-2
17-Apr-2020	A-/Watch Neg/A-2
10-Oct-2019	A-/Negative/A-2
25-Feb-2019	A-/Stable/A-2
20-Nov-2017	A-/Negative/A-2
21-Sep-2016	A-/Stable/A-2
Related Entities	
Coentreprise de Transport d'Electricite	
Issuer Credit Rating	A-/Stable/--
Senior Unsecured	BBB+
EDF Energy Customers Ltd	
Issuer Credit Rating	BB+/Stable/NR
EDF Energy Ltd.	
Issuer Credit Rating	BB+/Stable/B
Edison SpA	
Issuer Credit Rating	BBB/Stable/A-2
RTE Reseau de Transport d Electricite	
Issuer Credit Rating	A/Stable/A-1
Commercial Paper	
Local Currency	A-1
Senior Unsecured	A

Ratings Detail (As Of June 30, 2021)*(cont.)

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.