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Electricite de France S.A.

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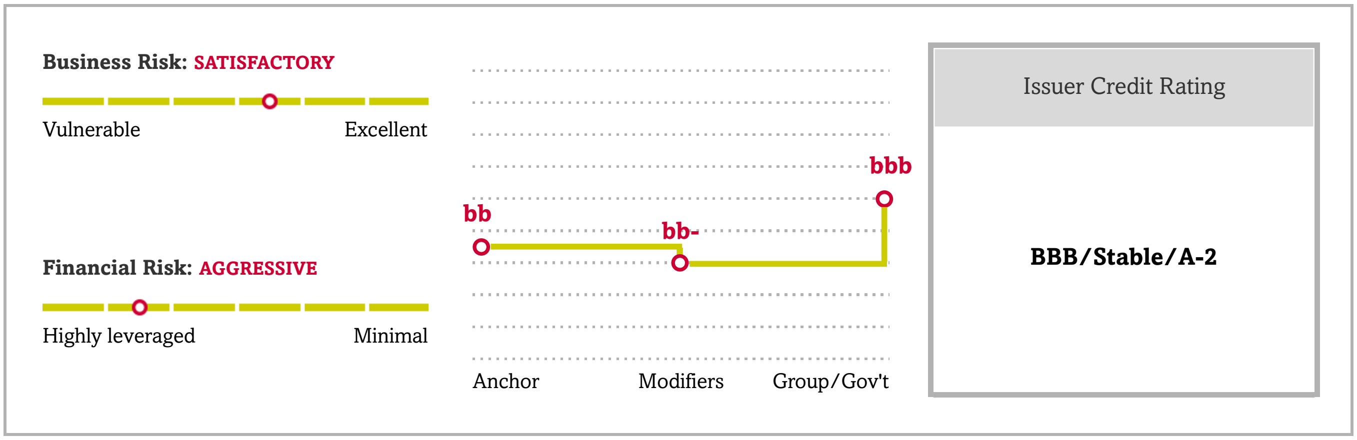
Electricite de France S.A.



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.	Continuing challenges on domestic nuclear fleet availability and complex nuclear newbuilds in France and the U.K.
Strong support from the highly-rated French government (now its sole owner). As France's main power generator and distribution grid operator Electricite de France S.A. (EDF) plays a pivotal role in France's energy transition through nuclear newbuilds.	Relatively high debt, with S&P Global Ratings-adjusted leverage clearly exceeding 4x each year over 2020-2023, combined with structural negative free cash flow due to massive and inflexible investment program.
Proven flexibility to cut dividends and receive common equity, and good access to debt capital markets.	Remuneration of legacy domestic nuclear assets from 2026 is unclear. In the meantime, EDF is exposed to volatile power prices while part of the upside is capped by regulatory measures and the downside is significant in the case of insufficient nuclear plant availability.
Relatively high contribution from domestic regulated earnings (a third of EBITDA on average), notably through fully-owned Enedis, France's distribution network.	Exceptional operational and financial underperformance in 2022 due to severe technical issues impacting its whole French nuclear fleet.

Fleet ageing and stress corrosion issues at EDF's domestic nuclear fleet weigh on our view of its business risk profile and stand-alone credit profile (SACP). EDF's domestic nuclear fleet has been severely harmed by corrosion under stress issues, especially at many of the company's newer domestic reactors. Despite EDF's otherwise robust performance (at its power distribution, international, and trading divisions) this has hindered its overall creditworthiness because of the severity of the issues and how central the domestic nuclear fleet is to EDF's earnings and capital expenditure (capex). These issues raise concerns regarding the fleet ageing and the level and predictability of EDF's consolidated power and profit generation, even if the company put in place an action plan validated by the safety authority, ASN, to ensure the continuity of its operations. We expect a gradual recovery in EDF's domestic nuclear output over 2023-2025, but slightly below levels reached in the late 2010s given the severity of the corrosion issues and the outages linked to high number of ASN inspections necessary to grant 10-year life extensions.

Substantial delays and cost overruns on EDF's two nuclear newbuilds also weigh on the SACP; these are currently 66.5%-owned Hinkley Point C (HPC) in the U.K. and Flamanville-3 in France. We factor in the high likelihood that EDF incurs most of the £3 billion of additional capex it announced on HPC in May 2022 (last formal cost review published) as it shoulders all capex from late 2023, in our base case. We expect Flamanville to contribute a full year from 2026 (expected generation of some 12 terawatt hours [TWh]).

EDF's 2023-2025 cash generation outlook is supported by some recovery in domestic nuclear output and a favorable price environment. However, the output recovery is gradual and longer-terms prospects on domestic legacy generation are unclear. Recovering from 2022's historic low will help EDF leverage on the about one-third share of generation that is exposed to wholesale market prices. This share itself is capped at €90 per megawatt-hour (/MWh) up to December (and at €100/MWh for wind), in our understanding of the Loi de Finances pour 2023 voted December 30, as part of inframarginal rent capture, i.e. EDF will not fully benefit from the €90-€130/MWh expected average annual wholesale baseload prices we expect through 2025. We believe that lower volumes for 2023 under the ARENH regime (Regulated Access to Historical Nuclear Power, ending Dec. 31, 2025), output recovery, and better understanding and anticipation of the corrosion issue make a repeat of significant earnings losses unlikely. Ultimately, our view of the company's business profile hinges noticeably on the complex issue of the successor to the current ARENH regime. Clarity and timing of implementation—-not received to date--regarding the nature of the regime's successor will be key for us to assess EDF's business model and the likelihood of sustainably restoring neutral or positive free operating cash flow (FOCF) generation on its existing French nuclear perimeter.

EDF's sizable 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 key credit risks through increased capex and debt. Our capex expectations include very high maintenance and upgrade expenditure on the existing French nuclear fleet and new nuclear plants in France and the U.K. Combined with ambitious investments in renewables and sizable maintenance and grid-strengthening of distribution networks, we have raised our expectation of consolidated capex to about €20 billion annually (from our previous expectation of €17 billion), with very low flexibility and a skew toward unregulated power generation. Under our power price assumptions, we thus anticipate substantial negative FOCF of €4 billion annually on average over 2023-2025. As we assume limited mergers and acquisitions and dividends (unless EBITDA substantially exceeds our expectations), we see adjusted debt trending up past €100 billion, including post-tax deficits (at year-end 2022) of some €16 billion on employee obligations and €9 billion on nuclear liabilities for asset dismantling and waste management.

We view the "bb-" SACP as stable as it balances the above-mentioned credit negatives with several supportive factors, notably supportive merchant prices; leverage trending down to under 4.5x off increasing EBITDA; and supportive government actions as shareholder. Beyond addressing corrosion issues and the fissures revealed in March 2023 in line with ASN requirements over 2023-2024, we expect strong performance at other divisions and no significant deterioration from end-2022 levels on asset retirement obligations and pensions. We expect EBITDA to strongly recover in 2023 past €20 billion and grow further in both 2024 and 2025 based on an approximate 15TWh/year annual increases in domestic nuclear generation; supportive power prices in the U.K. and Italy; and for the merchant part of domestic generation. This supports credit metrics sustainably anchored within the "aggressive" category from 2023, notably adjusted debt to EBITDA within 5x in 2023 and 4.5x from 2024, and negative discretionary cash flow (DCF) contained in the low-single-digit billions of euros, with no significant cash dividends expected. Lastly, the full conversion into common equity of the €2.4 billion OCEANE convertible bonds in 2023; limited domestic income taxes and dividends (unless EBITDA grew even more than we expect); and limited acquisitions and disposals if any, further support the leverage containment path.

We view the likelihood of extraordinary French government support to EDF as very high. This is based on the company's very strong link with its sole owner and very important role for France's energy policy. There is a broad-based consensus for France to commit to nuclear energy for the long term, as a support to the security of energy supply and a low-carbon, small-footprint source of energy. This has been repeatedly demonstrated by the French government's supportive actions on nationalization, equity increase, and the clarification of EDF's lead role in the country's highly strategic new nuclear buildup over the next couple of decades.

Outlook: Stable

The stable outlook factors in a gradual recovery in domestic nuclear generation and consolidated profits through 2024, containing leverage within 5x in 2023 and 4.5x in 2024, in a supportive price environment. We assume no major overruns at existing nuclear newbuilds nor major financial exposure being directly taken on the potential U.K. nuclear newbuild at Sizewell C, in case of a final investment decision. We also anticipate clarity to gradually emerge on the successor to ARENH, and no significantly adverse regulatory impact regarding domestic merchant revenues and residential regulated tariffs.

Downside scenario

Downside is currently somewhat limited. Barring a change in our views on extraordinary government support, a downgrade would be driven by a significant SACP deterioration. This likely would reflect more severe industrial challenges at the domestic nuclear fleet than we currently factor in, or a significant negative deviation from our base case for leverage.

Upside scenario

Barring a change in our views on extraordinary government support, an upgrade could potentially occur if we gained sufficient confidence that EDF has substantially resolved its industrial challenges at the domestic nuclear fleet, that nuclear newbuilds do not add significantly to operating, reputation, and financial risks, and that the new domestic regulatory regime for the legacy fleet replacing ARENH from early 2026 provides sufficient clarity on its remuneration.

Our Base-Case Scenario

Assumptions

- French nuclear output of 300TWh, 315TWh, and 330TWh for 2023, 2024, and 2025, respectively.
- French hydro output of 40TWh for each of these years.
- Realized domestic power prices of about €65-€68/MWh through 2023-2025.

- Working capital outflow in 2023 of about €9 billion, notably regarding the CSPE tax.
- Cash dividends of about €0.7 billion annually (limited to hybrid coupons and dividends to minority interests).
- Net annual capex of about €20, €23, and €24 billion over 2023-2025.
- No significant acquisitions and disposals, relative to EDF's debt
- Stable deficit on unfunded nuclear obligations and slight increase in the deficit on employee obligations relative to end-2022 levels.

Key Metrics

Electricite de France S.A.--Key metrics

	--Fiscal year ended Dec. 31--				
(Bil. €)	**2021a**	**2022a**	**2023f**	**2024f**	**2025f**
EBITDA	17.45	(13.04)	23.0-23.5	25.0-25.5	30.5-31.0
Capital expenditure*	17.05	17.86	18.0-18.5	22.5-23	23.5-24.0
Free operating cash flow*	(5.90)	(27.06)	(9.0)-(9.5)	(1.5)-(2.0)	(0.0)-(0.5)
Discretionary cash flow§	(6.42)	(27.84)	(9.5)-(10)	(2.0)-(2.5)	(0.5)-(1.0)
Debt*	74.84	95.20	100-105	103-108	103-108
Funds from operations/debt (%)*	17.90	(17.40)	17.5-18	17-17.5	19.8-20.3
Debt/EBITDA (x)*	4.30	(7.30)	4.2-4.7	3.8-4.3	3.3-3.8

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

Company Description

EDF is an integrated power company with major operations across generation, distribution, supply, and trading, fully-owned by the French central government since June 2023. It is France's dominant electricity operator and has strong positions in the U.K. through EDF Energy, and in Italy through 97.45%-owned Edison, making it the world's largest electricity player outside China with 2022 net installed capacity of 123 gigawatts (GW), and global power generation of 432TWh, 76% of which is nuclear and almost one-tenth hydro.

Absent significant outages, French operations contribute almost nine-tenths to EDF's generation and supply EBITDA, equivalent to two-fifths of the company's consolidated EBITDA. EDF Renewables, with global net installed capacity of 13.4GW (at December 31, 2022; three-quarters wind), of which three-quarters are outside France, typically contributes about 5% of EBITDA, slightly less than Dalkia (energy services and heating and cooling networks) and EDF's other activities. These include gas activities and EDF Trading, which provide market optimization and risk management services via wholesale energy market operations.

EDF owns and manages France's low- and medium-voltage public distribution network primarily through fully owned Enedis, with a regulated asset base excluding Linky of €53.7 billion (at Jan. 1, 2021), Europe's largest. French regulated activities typically account for about one-third of consolidated EBITDA. EDF also owns 50.1% of RTE (A/Stable/A-1), the equity-accounted national high-voltage transmission power grid.

Peer Comparison

While there are few utility peers similar to EDF in terms of generation size, focus on nuclear, generation issues, and earnings swings, the table below provides some relativities within Europe.

Table 1

Electricite de France S.A.--Peer comparison					
Industry sector: Electric					
	Electricite de France S.A.	**Enel SpA**	**Iberdrola S.A.**	**Engie S.A.**	**Fortum Oyj**
Ratings as of June 12, 2023	BBB/Stable/A-2	BBB+/Negative/A-2	BBB+/Stable/A-2	BBB+/Stable/A-2	BBB/Stable/A-2
	--Fiscal year ended Dec. 31, 2022--				
(Mil. €)					
Revenue	143,476.0	138,549.0	53,949.0	93,865.0	8,804.0
EBITDA	(13,038.0)	17,345.0	12,407.0	12,967.0	2,249.0
Funds from operations (FFO)	(16,563.0)	13,141.5	9,522.5	10,450.0	1,881.0
Interest expense	(920.0)	3,058.5	2,355.5	1,806.0	233.0
Cash interest paid	2,243.0	2,269.5	1,829.5	1,013.0	201.0
Cash flow from operations	(9,199.0)	8,965.5	8,726.1	7,643.0	2,104.0
Capital expenditure	17,861.0	13,193.0	7,634.0	6,226.0	534.0
Free operating cash flow (FOCF)	(27,060.0)	(4,227.5)	1,092.1	1,417.0	1,570.0
Discretionary cash flow (DCF)	(27,842.0)	(9,240.0)	(2,186.4)	(1,577.0)	538.0
Cash and short-term investments	28,889.0	10,964.0	4,642.0	15,558.0	3,919.0
Debt	95,203.0	83,887.6	48,469.0	42,089.5	4,128.2
Equity	40,751.0	40,007.0	53,989.0	37,588.5	7,737.0
Adjusted ratios					
EBITDA margin (%)	(9.1)	12.5	23.0	13.8	25.5
Return on capital (%)	(18.8)	8.6	8.4	10.6	6.1
EBITDA interest coverage (x)	14.2	5.7	5.3	7.2	9.7
FFO cash interest coverage (x)	(6.4)	6.8	6.2	11.3	10.4
Debt/EBITDA (x)	(7.3)	4.8	3.9	3.2	1.8
FFO/debt (%)	(17.4)	15.7	19.6	24.8	45.6
Cash flow from operations/debt (%)	(9.7)	10.7	18.0	18.2	51.0
FOCF/debt (%)	(28.4)	(5.0)	2.3	3.4	38.0
DCF/debt (%)	(29.2)	(11.0)	(4.5)	(3.7)	13.0

Business Risk: Satisfactory

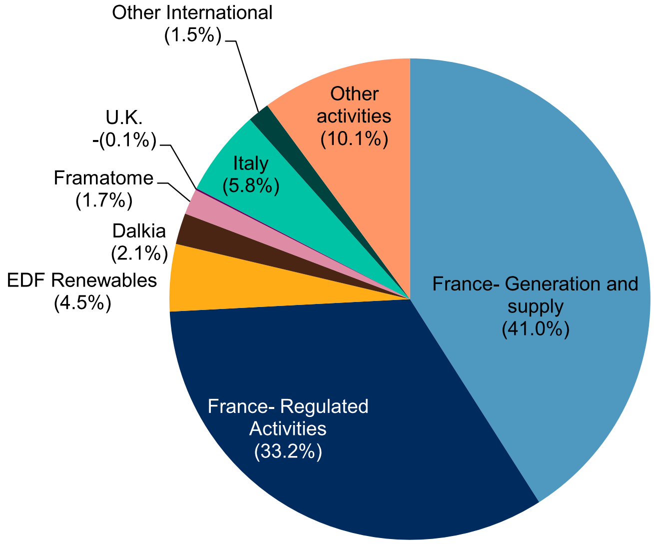
Our assessment of EDF's business risk profile as fair balances noteworthy strengths (dominant domestic distribution grid in a strongly supportive regulatory framework; world's largest generation capacity outside China (and the largest for nuclear only, even including China); low-variable cost, low-carbon, low-footprint nuclear fleets; growing wind and solar capacity) with significant current weaknesses (domestic nuclear fleet availability issues; exposure to three in-progress reactor newbuilds; and uncertainty on the remuneration of domestic nuclear generation from 2026 and on domestic EPR-2 newbuilds)

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.

Regulated networks contribute a sizable third to consolidated EBITDA in a strongly supportive regulatory framework. Through Enedis, this primarily includes the bulk of the power distribution network in France, where we assess the regulatory framework as strong and supporting earnings predictability, as illustrated by the continuity of the TURPE 6 regulatory tariff from Aug. 1, 2021. EDF's regulated earnings benefit from the full deployment completed in 2020 through €4.5 billion capex, of Linky smart meters and its favorable RAB-based remuneration at a nominal pre-tax return of 7.25% over 2022-2030 and a 3% additional premium.

Chart 1

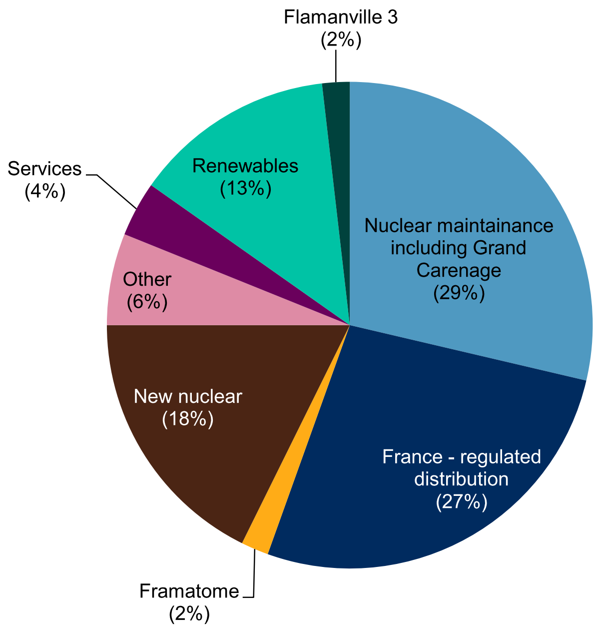
EDF EBITDA by segment
2021



Source: Company data.

Chart 2

Net investments including acquisitions and excluding disposal plan
2022



Source: Company data.

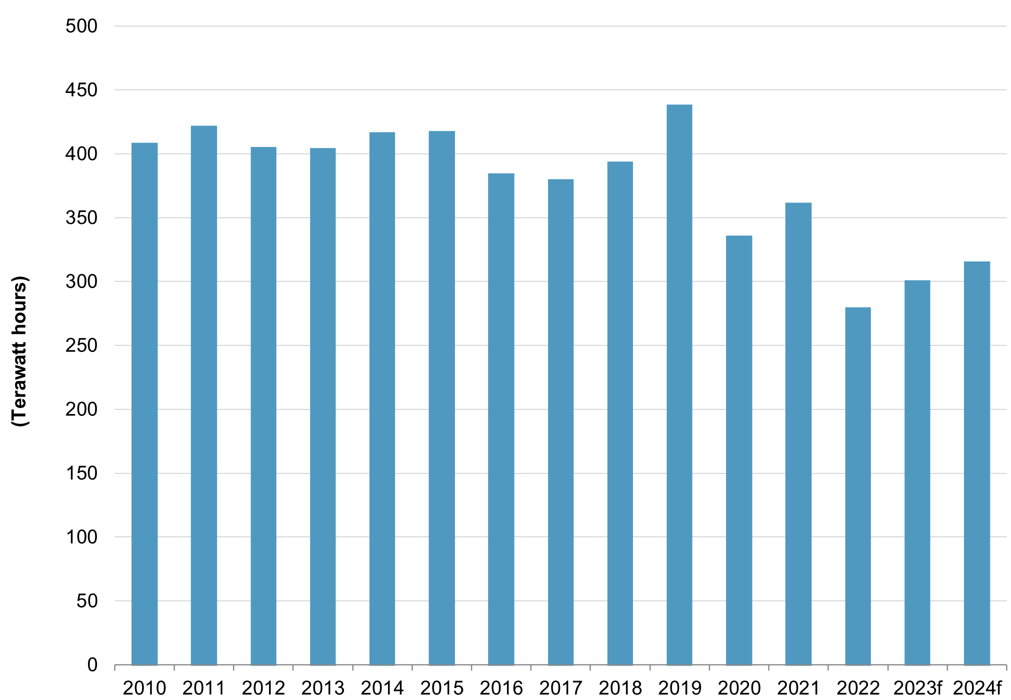
The largely contracted and growing renewables portfolio--net installed capacity of about 36.0GW at end-2022, out of which 22.6GW is hydropower--also enhances the company's positioning. EDF targets a 60GW net installed capacity by 2030, an ambitious target supported by achieved growth of 3.6GW additional capacity added in 2022 and 7.1GW under construction at end-2022. Renewables will increasingly contribute to EDF's earnings, from a currently minor level of 4.5% of EBITDA in 2021 outside hydro, despite administrative hurdles and local population opposition in many European countries, which has slowed new capacity deployment.

Execution risks and uncertainties on post-2025 remuneration weigh on legacy nuclear operations and thus constrain EDF's business model. EDF's heavy reliance on capital-intensive nuclear operations implies significant technology concentration and outage risks over an aging fleet, most reactors being 30 years old or more. Total output has been on a declining trend and over 2020-2025 and is likely to stay within 280TWh-350TWh, down from about 390TWh on average over 2015-2019 (see chart 3). Over 2023-2025, planned outages related to the execution of the Grand Carénage program will remain material, with the number of 10-year inspections by ASN remaining sustained up to seven reactors annually (see chart 4). This is in the context of continued scarcity of technical skills throughout the nuclear value chain, one of the 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. On the other hand, in July 2022 and April 2023, France's nuclear safety regulator ASN confirmed its agreement with EDF's action plan for nearly all reactors subject to corrosion under stress, substantially reducing the risk of further prolonged unplanned outages--if at the cost of longer planned ones.

Domestically, most of EDF's nuclear production is subject to the ARENH regulated pricing mechanism, which imposes a low price until it lapses at Dec. 31, 2025, and we have currently no clarity on the successor regime--nor on the remuneration system envisaged during construction and operation of the new fleet--despite years of discussions amid internal opposition to an envisaged reorganization project then seen as a required step for a new guaranteed fixed price consistent with EU state aid rules. On the other hand, EDF's nuclear and hydro assets are well positioned in the merit order given their low marginal cost, and so to a degree will benefit from sustained power prices over the next two years thanks to the surge in the EU carbon price, amid the accelerated European energy transition (see chart 5), before prices decline in the second part of the decade, in our view. In 2023, sustained power prices and ARENH volumes kept at 100TWh should support strong earnings and metrics recovery. Positively, in the meantime, the government has rejected the power regulator's (CRE's) 130TWh ARENH proposal for 2023, and under the 100TWh legal minimum EDF bears much lower reprocurement loss risks in case of a generation shortfall. We also expect EDF's essentially fixed-cost generation (including hydro and renewables) to increasingly benefit from Europe's durably higher-price environment for a few years, even net of inframarginal rent capping mechanisms.

Chart 3

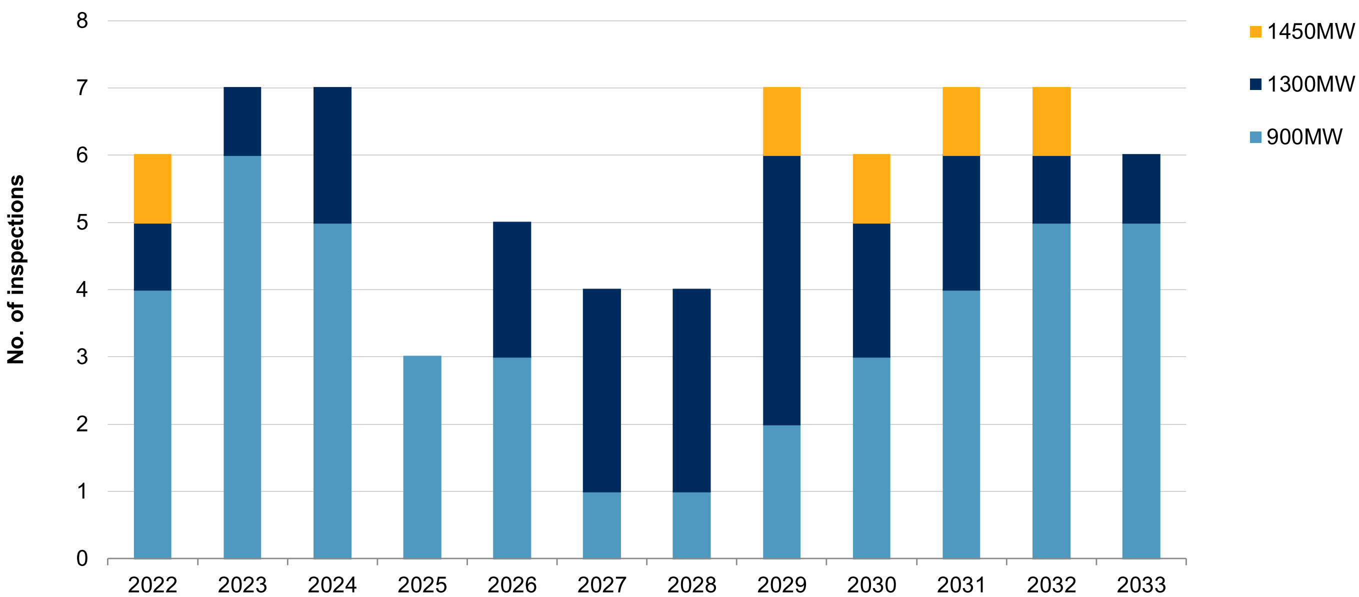
Evolution of nuclear output in France since 2010



f--forecast. Source: Company disclosure and 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.

Risks and achievements on EDF's involvement in the industrially and technologically complex French and U.K. nuclear newbuilds remain key credit drivers, especially in an inflationary context. Repeated, material cost and delay overruns for HPC and FLA-3 highlight significant operating and contingency risks related to new nuclear builds. At HPC, despite successive commissioning dates being pushed back, there remains a high risk of further delays to the commissioning of units 1 and 2 (by 15 and nine months, respectively) and associated costs. As for the FLA-3 EPR, the December 2022 announcement delay to fuel loading in first-quarter 2024 and extensive repairs needed at first refueling some 18 months after commissioning suggest lingering risks. 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.

Regarding projects not yet sanctioned, in France EDF also leads the construction of 6-14 EPR-2 reactors and is already performing and financing research and development on the first pair; we expect the most massive capex to emerge from late this decade. In the U.K., EDF is in discussions with the U.K. government regarding Sizewell C, the financing regime of which is critical to our assessment of risks on EDF. We expect EDF will act primarily as an industrial party to the construction and sanction the project only with a stake less than 20% versus 50% expected at end-2023 (the U.K. government will hold the other 50%). We also take comfort from the remuneration regime enacted by the U.K. parliament in early 2022, which remunerates RAB while construction is in progress.

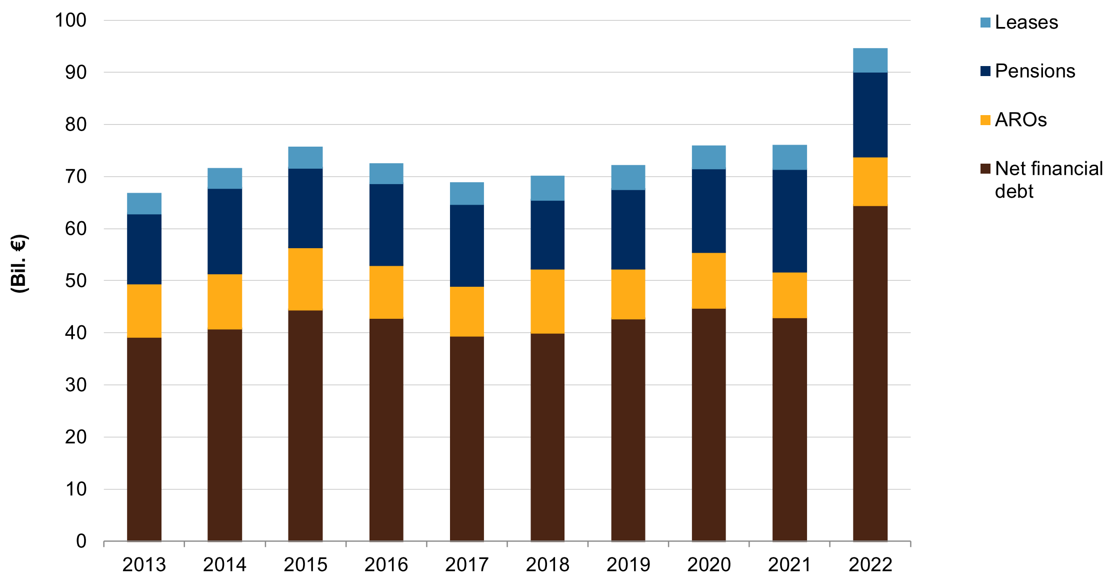
Financial Risk: Aggressive

Economic debt grew over €20 billion in 2022 alone and likely will continue trending up given modestly negative DCF. Our assessment of EDF's financial risk profile balances the high absolute and relative level--and steady growth--of its adjusted debt, which we expect to reach and sustainably exceed €100 billion from 2023, with credit-supportive measures in the form of asset disposals, limited acquisitions, equity injection, and bond conversion to equity and our expectations of limited dividend, if any, from the parent company, barring above-expectation earnings. We benchmark EDF's credit metrics against our medial volatility table as it derives a third of its earnings from France's supportive regulated activities. We adjust them notably for significant after-tax deficits on employee and asset-retirement obligations--mostly linked to the nuclear segment (see chart 6).

EDF's sizable investment plan leads to negative cash flows, particularly regarding nuclear and renewable newbuilds in an inflationary context. Newbuilds are very high maintenance, while upgraded expenditure on the existing nuclear fleet leads annual capex to approach €20 billion in 2023, and then clearly surpass this level, as per our estimates, with low flexibility to defer outlays and risks on sector-wide inflation boosting the figure. We anticipate that these high investments will translate into sizable negative FOCF of €3 billion-€4 billion on average per year over 2023-2025 (see chart 7). The cash flow contribution from nuclear newbuilds is also still some way off and we remain uncertain as to their value creation potential if further issues emerge during construction.

Chart 5

Evolution of S&P Global Ratings-adjusted debt components for EDF
2013-2022



ARO--Asset-retirement obligations. Source: S&P Global Ratings. "Pensions" includes pensions and other post-employment employee benefits.

Financial summary

Table 2

Electricite de France S.A.--Financial summary

Industry sector: Electric

	--Fiscal year ended Dec. 31--				
	2022	**2021**	**2020**	**2019**	**2018**
(Mil. €)					
Revenue	143,476.0	84,461.0	69,031.0	71,317.0	68,976.0
EBITDA	(13,038.0)	17,456.0	16,274.0	16,716.0	16,155.0
Funds from operations (FFO)	(16,563.0)	13,412.5	13,341.5	13,698.5	13,583.0
Interest expense	(920.0)	(621.4)	2,145.8	695.5	3,140.5
Cash interest paid	2,243.0	1,767.5	1,949.5	2,095.5	2,183.0
Cash flow from operations	(9,199.0)	11,149.5	12,185.5	12,818.5	12,994.0
Capital expenditure	17,861.0	17,045.0	15,428.0	15,969.0	15,684.0
Free operating cash flow (FOCF)	(27,060.0)	(5,895.5)	(3,242.5)	(3,150.5)	(2,690.0)
Discretionary cash flow (DCF)	(27,842.0)	(6,419.0)	(3,259.0)	(3,083.0)	(3,095.0)
Cash and short-term investments	28,889.0	22,458.0	21,056.0	22,621.0	23,593.0

Table 2

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

Industry sector: Electric					
	--Fiscal year ended Dec. 31--				
	2022	**2021**	**2020**	**2019**	**2018**
Gross available cash	28,889.0	22,202.9	20,872.0	22,378.0	23,351.0
Debt	95,203.0	74,843.1	75,850.4	72,073.5	70,013.5
Equity	40,751.0	55,857.0	49,581.0	51,185.5	47,595.5
Adjusted ratios					
EBITDA margin (%)	(9.1)	20.7	23.6	23.4	23.4
Return on capital (%)	(18.8)	5.3	4.5	6.3	5.6
EBITDA interest coverage (x)	14.2	(28.1)	7.6	24.0	5.1
FFO cash interest coverage (x)	(6.4)	8.6	7.8	7.5	7.2
Debt/EBITDA (x)	(7.3)	4.3	4.7	4.3	4.3
FFO/debt (%)	(17.4)	17.9	17.6	19.0	19.4
Cash flow from operations/debt (%)	(9.7)	14.9	16.1	17.8	18.6
FOCF/debt (%)	(28.4)	(7.9)	(4.3)	(4.4)	(3.8)
DCF/debt (%)	(29.2)	(8.6)	(4.3)	(4.3)	(4.4)

Liquidity: Adequate

We regard EDF's liquidity as adequate. Our assessment balances the company's strong cash position, its very proactive refinancing, solid relationships with banks, and track record of ample access to capital including as a strategic entity for the French government, with negative free cash flow and significant debt maturities. Since the coverage of uses by sources currently only marginally exceeds our 1.2x expectation for an adequate liquidity position, if funds from operations (FFO) did not recover as we expect, or the working capital drain became heavier, we would anticipate that EDF's proactive liquidity management would bolster liquidity sources.

Principal liquidity sources

Specifically, we expect the following principal liquidity sources for the 12 months from March 31, 2023:

- Cash and cash equivalents of some €32 billion pro forma the May-June senior and hybrid issuance.
- Our estimate of about €11 billion availability under committed credit lines maturing more than one year out. This includes two syndicated credit facilities maturing in December 2025, for a combined €5.5 billion.
- Estimated cash FFO approaching €20 billion.

Principal liquidity uses

For the same period, we expect the following principal liquidity uses:

- Debt maturities of about €25 billion including the $0.6 billion outstanding amount of hybrid stepping up in January 2024.
- Estimated capex of €18 billion.
- Negative working capital in the mid-single digit € billions.
- Cash dividends of under €1 billion, including on hybrids and to minority interests.

Debt maturities

As of Dec. 31, 2022:

- 2023-2026: €28.7 billion.
- Thereafter: €34.7 billion.

Environmental, Social, And Governance

Governance factors are a negative consideration in our credit rating analysis of EDF, while environmental and social factors are moderately negative considerations. EDF's governance, which we assess as fair, mostly flags risks related to the oversight of its board and uncertainties regarding the company's ability to proactively identify, manage, and resolve risks on the company's existing ageing nuclear fleet. We consider the track record to be relatively poor, with a number of unplanned outages due to quality issues. This was exacerbated by the scale and impact of 2022 technical issues on its French nuclear operations. We also factor in inherent risks of cost overruns and delays at multibillion euro newbuild nuclear reactor projects in France and the U.K.

Environmental considerations primarily reflect the company's prominent nuclear operations. With the world's largest nuclear generation fleet, EDF's carbon footprint is markedly advantageous. However, environmental and social risks relating to the future long-term storage of nuclear waste mitigate EDF's low carbon footprint (total provisions related to nuclear generation of €57 billion and adjustment to debt for net asset retirement obligations of €9.3 billion at end-2022). We also factor into our assessment the government's support of EDF's strategic role in the French energy transition, its public mission embedded in its power network activities, and its social role as a major employer in France. This was reiterated in 2022 by President Macron and the new government (since July) as part of the country's nuclear strategy, which aims to give EDF the primary role in delivering new nuclear capacity. But we also see as a great social challenge 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. We believe these challenges remain difficult to address and rapidly resolve. In particular, we believe that the lack of significant engineering curriculum path and decades of uncertainty on the future of nuclear might mean not enough staff to deliver these nuclear ambitions.

Issue Ratings - Subordination Risk Analysis

Capital structure

EDF has limited debt at subsidiaries, or secured, relative to its overall gross consolidated debt

Analytical conclusions

We do not notch down EDF S.A.'s senior unsecured debt, as the holding company issues most of the company's debt.

Hybrid ratings, issuance capacity and refinancing

In light of support to EDF's hybrid layer in the testing 2022 year, we include a degree of support to our hybrid rating.

We include in junior subordinated debt ratings a fraction of the four-notch uplift we assign to the senior debt to reflect extraordinary government support. This change reflects our understanding that in 2022 massive losses did not prompt consideration for junior hybrid debt to absorb losses, and the likelihood that state support continues to accrue to EDF as an overall entity, also benefiting hybrid holders. Thus we now rate all obligations from the issuer credit rating and for hybrids we remove all but one of the four notches of uplift we assign to the senior debt.

Given EDF's considerable debt and equity, the company has significant capacity to issue hybrids while remaining within our typical 15% guidance. We expect no massive decrease in total hybrids outstanding versus the €12.3 billion level reached in mid-2022. The June 2023 issuance of a $1.5 billion non-stepup hybrid fully replaces the one stepping up in January 2024, of which$0.6 billion remains outstanding. In the specific case of EDF, the €2.4 billion conversion of OCEANE convertible bonds in first-half 2023 is eligible to act over a few quarters as replacement for up to double the amount of subsequently called hybrids, subject to the total stack of hybrids outstanding not decreasing significantly below €10 billion. (For more insights, see "French Energy Company Electricite de France S.A.'s Proposed Hybrid Rated 'B+’," June 8, 2023)

Government Support

We believe state support increasingly drives EDF's creditworthiness in the new energy landscape, as EDF's nuclear generation will remain crucial for France's power mix in the coming decades. Russia's 80% cut of its gas exports to Europe, and the subsequent rise of Europe's gas and power price levels and volatility, have prompted a significant shift in EU energy policymaking. For many years to come the EU will focus on meeting three goals: security of supply, affordability, and accelerating the energy transition. France firmly believes nuclear is key to concurrently achieve these goals and has designated EDF as its primary tool.

In our view, constraints around state aid to key energy suppliers has somewhat eased in the context of the EU energy crisis. Since the start of Europe's gas crisis, Germany and other countries that are traditionally less interventionist than France resorted to extraordinary measures to occasionally massively support the capital or liquidity of high-profile utilities. As a company generating about 3x more power than any other utility in Europe, we believe EDF is assuming an even greater role in terms of energy security for the European power platform than until 2021, easing constraints on French government support to it. Given the planned closure of five reactors by France's neighbors (and the only commissioning being in the Nordic market) over the winter 2022-2023, EDF's nuclear capacity represents some 60% of the EU's (and some 10x the next largest company's). Across technologies, we estimate EDF generates one-sixth of the EU's power.

Through its domestic nuclear fleet EDF is central to France's energy goals since the energy transition fosters electricity demand growth and the renewables buildup is somewhat slow. French energy policy expects EDF, as its nuclear fleet generates up to 70% of France's electricity, to start commissioning 6-14 new EPR reactors in the latter part of the next decade. Although the financing framework is as yet unclear, the investment will represent several dozens of billions of euros, just for the first six reactors. We believe that supporting the creditworthiness--and not just the continuity of operations--of a company in the construction phase for such massive, extremely complex projects with very long lead times, is much more important to the French government than protecting the creditworthiness of a company primarily operating legacy assets

Ratings Score Snapshot

Issuer Credit Rating

BBB/Stable/A-2

Business risk: Satisfactory

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

Financial risk: Aggressive

- **Cash flow/leverage:** Aggressive

Anchor: bb

Modifiers

- **Diversification/portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Adequate (no impact)
- **Management and governance:** Fair (no impact)
- **Comparable rating analysis:** Negative (-1 notch)

Stand-alone credit profile : bb-

- **Group credit profile:** bbb
- **Likelihood of government support:** Very high (+4 notches from SACP)

Related Criteria

- General Criteria: Hybrid Capital: Methodology And Assumptions , March 2, 2022
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments , April 1, 2019
- General Criteria: Principles Of Credit Ratings , Feb. 16, 2011

Related Research

- Europe's Utilities Face A Power Price Cliff From 2026; June 22, 2023
- EMEA Utilities: Credit Resilience Amid Stormy Waters, Jan. 23, 2023
- EMEA Utilities Outlook 2023: France, Italy, And Spain | Credit Quality To Withstand Fiscal And Regulatory Intervention, Jan. 19, 2023

- French Energy Company Electricite de France S.A.'s Proposed Hybrid Rated 'B+', June 8, 2023
- EU's Proposed Energy Market Redesign Mitigates Merchant Risks And Accelerates Renewables, April 3, 2023
- EDF Affirmed At 'BBB/A-2' As Stronger State Support Mitigates Operational Issues And Debt Growth; Outlook Stable, Dec. 14, 2022

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, 2023)*

Electricite de France S.A.	
Issuer Credit Rating	BBB/Stable/A-2
Commercial Paper	A-2
Junior Subordinated	B+
Senior Unsecured	BBB
Short-Term Debt	A-2
Issuer Credit Ratings History	
14-Dec-2022	BBB/Stable/A-2
24-May-2022	BBB/Watch Neg/A-2
21-Feb-2022	BBB/Negative/A-2
17-Jan-2022	BBB+/Watch Neg/A-2
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
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

Ratings Detail (As Of June 30, 2023)*(cont.)	
RTE Reseau de Transport d Electricite	
Issuer Credit Rating	A/Stable/A-1
Commercial Paper	
Local Currency	A-1
Senior Unsecured	A

*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.