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CREDIT OPINION
17 July 2024

Update

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**RATINGS**

**Vattenfall AB**

| | |
|---|---|
| Domicile | STOCKHOLM, Sweden |
| 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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# Vattenfall AB

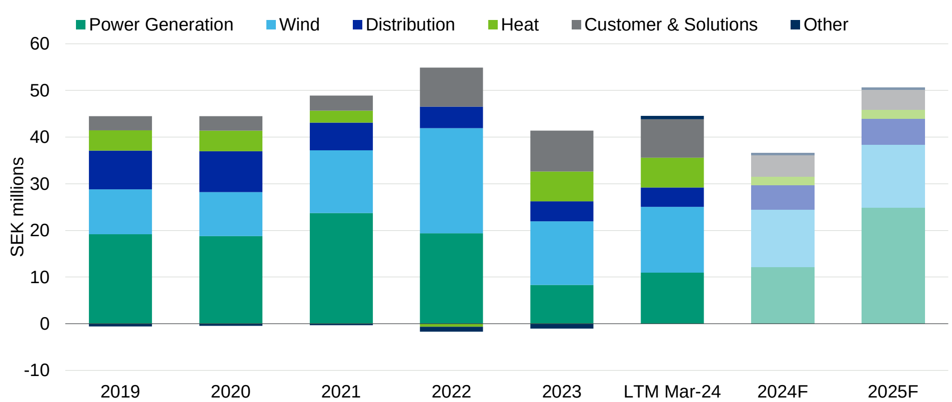
## Update to credit analysis

## Summary

Vattenfall AB's (Vattenfall) A3 senior unsecured rating is supported by the breadth and scale of the company's operations; its clean generation portfolio in the Nordics; a moderate contribution from regulated electricity distribution and district heating activities; an increasing contribution from contracted renewables; and its solid financial profile, with funds from operations (FFO)/net debt amounting to around 25% in 2023.

These factors are balanced by Vattenfall's exposure to wholesale prices through merchant power generation and trading, which accounted for around 25% of its underlying EBITDA as of the 12 months that ended March 2024; the competition in retail markets; and execution risk associated with Vattenfall's strategy to grow its renewable energy portfolio and adapt to the evolving industry of energy services.

Exhibit 1
**Earnings in 2024 expected to be lower as a result of the sale of Heat Berlin and lower profitability in the Customer & Solutions business, driven by higher competition**
**Underlying EBITDA**




All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated. LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
*Source: Company's reports and Moody's Ratings*

Vattenfall's A3 rating incorporates a one-notch uplift from its Baseline Credit Assessment (BCA) of baa1, taking into account the presence of the Government of Sweden (Aaa stable) as the company's 100% shareholder.

## Credit strengths

» Predominantly fossil-free generation mix in the Nordic region

» Solid earnings contribution from regulated and contracted businesses

» 100% state ownership, which supports credit quality

## Credit challenges

» High exposure of earnings to wholesale power markets

» Large capital spending programme, which carries some execution risk

» Competition for renewable assets and declining subsidies with a move to merchant-based projects

## Rating outlook

The stable outlook reflects our expectation that Vattenfall will continue to meet our guidance for the current rating, which includes FFO/net debt above 25% and Retained Cash Flow (RCF)/net debt in the high teens in percentage terms.

## Factors that could lead to an upgrade

An upgrade of Vattenfall's ratings is not currently expected given the current portion of regulated earnings, its financial targets and expected large capital spending.

## Factors that could lead to a downgrade

The ratings could be downgraded if Vattenfall's credit metrics appeared unlikely to meet our guidance for the A3 rating, that is if FFO/net debt were to fall sustainedly below 25% and RCF/net debt below the high teens in percentage terms, or the share of higher-risk cash flow were to increase without a commensurate strengthening of the company's financial profile. A change in the government support assumption could also result in a downgrade of Vattenfall's ratings.

## Key indicators

Exhibit 2
**Vattenfall AB**

| (in SEK millions) | 2019 | 2020 | 2021 | 2022 | 2023 | Moody's 12-18 month forward view |
|---|---|---|---|---|---|---|
| (CFO Pre-W/C + Interest) / Interest Expense | 7.1x | 8.4x | 10.6x | 5.4x | 5.4x | 3.0x - 5.0x |
| (CFO Pre-W/C) / Net Debt | 24.7% | 28.3% | 169.4% | 51.8% | 25.3% | 23.0% - 30% |
| RCF / Net Debt | 21.6% | 23.7% | 147.1% | 15.7% | 21.5% | 15.0 - 20.0% |

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*Source: Moody's Financial Metrics™ and Moody's Ratings forecasts*

For definitions of Moody's most common ratio terms, please see the accompanying User's Guide.

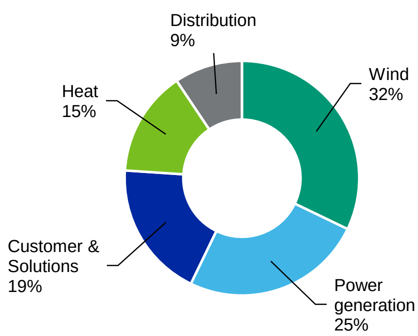
## Profile

Vattenfall AB (Vattenfall) is a 100% Swedish state-owned integrated utility. With 25 gigawatts (GW) of installed electric capacity, following the disposal of the Berlin power and heating plants (together with heat grids, Heat Berlin), and some 100 terawatt hours (TWh) of electricity output as of LTM March 2024, Vattenfall is one of the biggest European energy groups. The company's generation portfolio primarily includes hydro (11.5 GW), onshore and offshore wind (5.7 GW) and nuclear power (5.5 GW), with 8.5 GW of the hydro and all of the nuclear capacity located in Sweden. In addition, Vattenfall has gas and biomass plants in Sweden and the Netherlands (Aaa stable), largely dedicated to combined heat and power generation.

In addition to dealing in power and heat generation, Vattenfall owns Sweden's largest electricity distribution network. The company's retail base includes around 8.0 million electricity and 2.3 million gas customers.

Exhibit 3

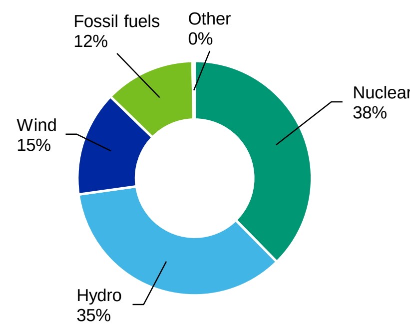
**Vattenfall has a diversified business mix**
**Underlying EBITDA breakdown (LTM Mar-24)**




Total underlying EBITDA of SEK 44.5 billion.
LTM = Last 12 months.
*Source: Company's reports and Moody's Ratings*

Exhibit 4

**Nuclear and hydro account for the bulk of generation**
**Breakdown of output (LTM Mar-24)**




Total output of 103.6 TWh.
LTM = Last 12 months.
*Source: Company's reports and Moody's Ratings*

## Detailed credit considerations

### Strategic shift towards clean energy underpinned by high investment spending on renewables and grids

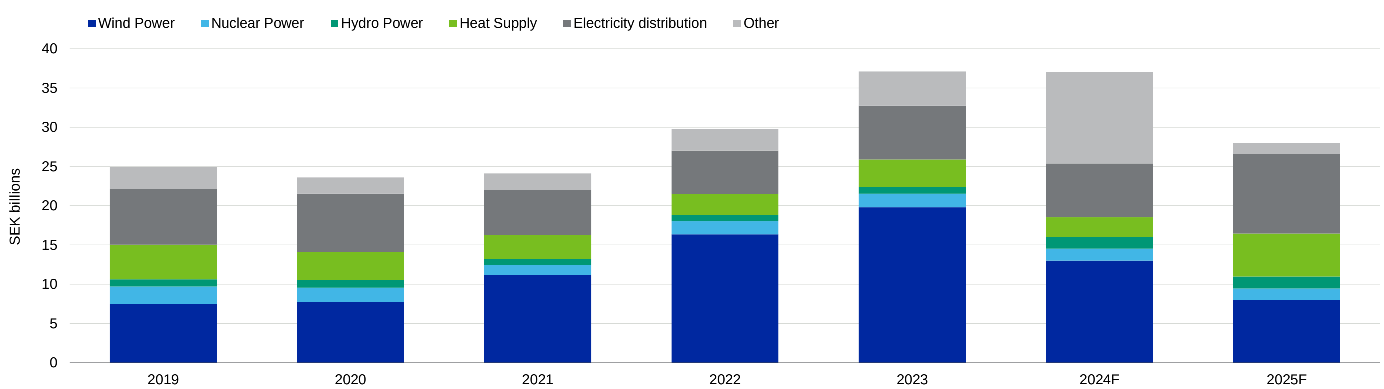
Vattenfall's strategy is to shift towards an increasingly fossil-free business model by driving growth in renewables (RES) while maintaining hydro and nuclear power as baseload capacity. This includes investments in both centralised and decentralised solutions.

In line with this strategy, the company plans investments of SEK65 billion in 2024-25. Around SEK41 billion of this amount is earmarked for growth capital spending, primarily for expansion in onshore and offshore wind (SEK18 billion). Other growth projects include development of electricity grids and district heating networks to connect new customers and areas. Maintenance capital spending is mainly related to investments in distribution networks and modernisation of the heat portfolio, coupled with safety investments in the Swedish nuclear and hydropower plants.

Vattenfall does not provide a target for capital spending over the medium term. However, given the company's pipeline of offshore and onshore wind projects, and focus on efficiency and smart grid solutions, we expect most investments to continue to be directed into renewables, often combined with battery storage, and grids.

Exhibit 5

**Most capital expenditure continues to be directed into renewables**




"Other" relates mainly to e-mobility, solar and battery capacity.
*Source: Company's reports and Moody's Ratings*

### Segment Power Generation (PG): Higher achieved prices in the Nordics and relatively stable output should lead to a moderate EBITDA growth in 2024

The PG segment comprises electricity generation from nuclear and hydro plants as well as trading, including the marketing of output from third party RES producers. Notably all generation-related hedging operations, also for the Wind segment and thermal plants in the Heat segment[1], are captured within the PG segment.

**Key earnings drivers for the PG segment include:**

» High share of Vattenfall's generation fleet is predominantly fixed-cost in nature (around 73% of 2023 output came from nuclear and hydro plants), leading to meaningful exposure to wholesale power prices.

» Vattenfall's Swedish installed generation capacity is concentrated (ca 54%) in the north (price areas SE1 and SE2) which are marked by exposure to hydrology and lack of transmission capacity.

» Securing prices for Swedish output is reliant on proxy hedging through Nordpool system price (NPSYS) as there are no hedging products for the Swedish price areas, resulting in base risk exposure.

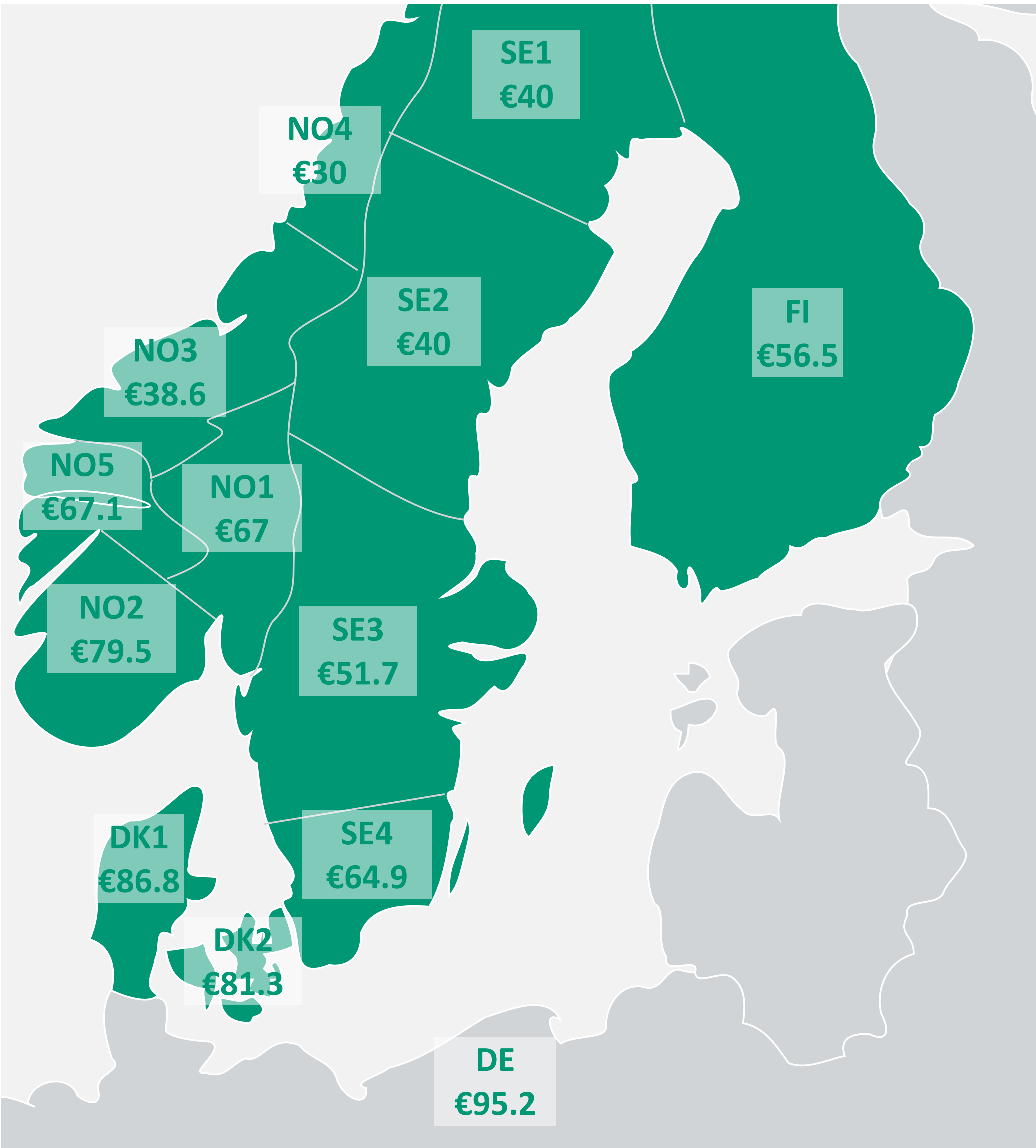
Following the disposal of the heat business in Berlin (see below "Segment Heat (until 2023)") this year and the sale of the gas-fired Magnum plant in the Netherlands to RWE AG (Baa2 stable) in 2023, the related so-called continental hedges will cease to have a significant effect on the PG earnings.

Before the energy crisis in 2022, by the end of a given year t, Vattenfall customarily had hedged around 70% of the expected Nordic output of year t+1 and around 40% of the output of year t+2. The high volatility of market prices in 2022 led the company to reduce the t+1 quota to around 50%, with concurrent higher exposure to spot prices. In 2023 this resulted in improved earnings as the company at year-end 2022 had only hedged 56% of its 2023 output against NPSYS at an average price of €30/MWh whereas the average SE1/SE2 spot price was €40/MWh, leading to an overall achieved price of €37/MWh, compared to €27/MWh in 2022.

Exhibit 6

**Good hydrology in 2023 led to SE1/SE2 prices being among the lowest in Scandinavia**

**Average day-ahead prices in 2023 converted to Euro**



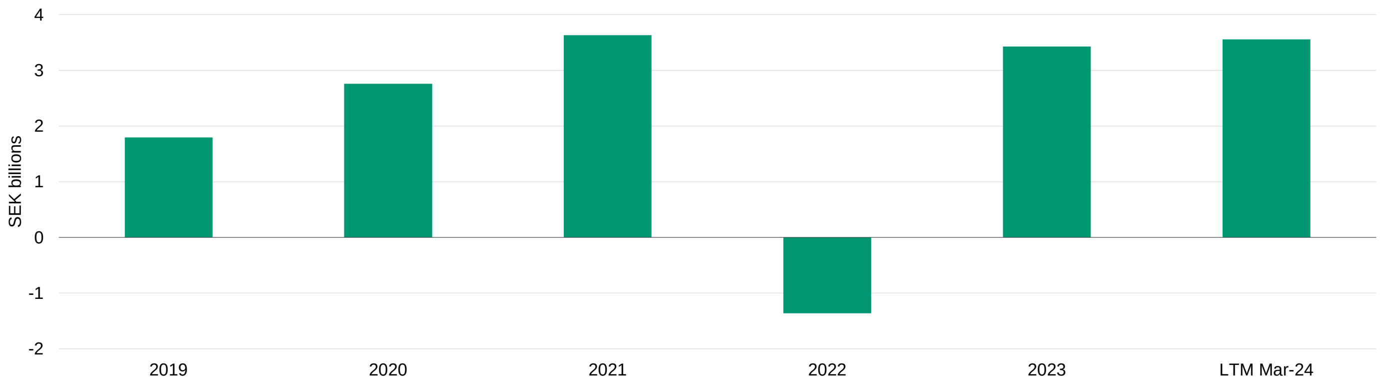

*Source: Nordpool, Moody's Ratings*

Given that hedging for all of the company's power generation are captured within the PG segment, Vattenfall's trading operations, which are inherently volatile, have a significant impact on the segment earnings. In 2023, the underlying EBITDA result of SEK3.1 billion of the PG segment would have been negative without trading's SEK3.4 billion profit.

Exhibit 7

**Trading activities are volatile**

**Underlying EBIT contribution of realised trading activities**




LTM = Last 12 months.

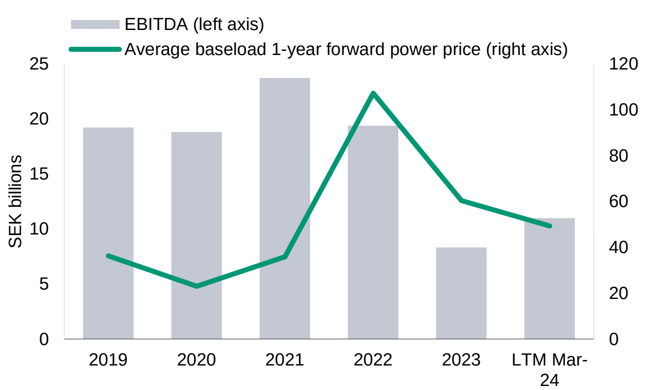
*Source: Vattenfall annual reports and Q1 2024 interim report*

Generally, power prices in the Nordic markets are fundamentally a function of power prices in Continental Europe, primarily in Germany (Aaa stable) though there is no exact correlation. As of early July 2024, 1-year forward prices in Germany are at around €100/MWh, more than double the forward price of NPSYS at some €40/MWh.

Exhibit 8

**Vattenfall's earnings in the PG segment are sensitive to changes in power prices**

**Underlying EBITDA in SEK billions, 1-year forward power price in €/MWh**



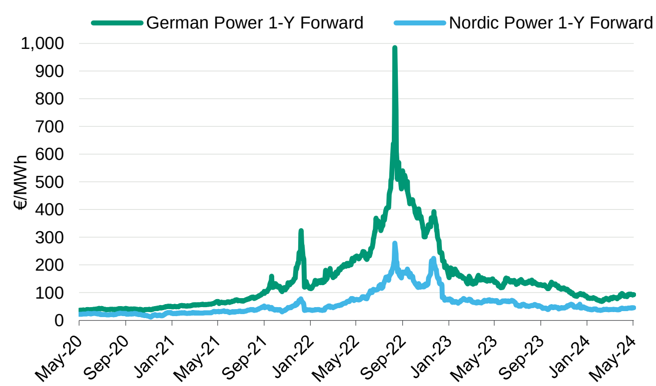

LTM = Last 12 months.

*Source: Company's reports, FactSet and Moody's Ratings*

Exhibit 9

**Power prices have declined materially since August 2022**

**One-year forward, in €/MWh**




*Source: FactSet and Moody's Ratings*

During the first quarter of 2024, a combination of higher nuclear and hydro output; Nordic hedges with a high average strike price of €46/MWh covering 55% of 2024 output; and an average SE1/SE2 spot price of around €48/MWh, all led to an achieved price of €49/MWh, compared to €40/MWh in Q1/2023. The underlying EBITDA improved to SEK7.7 billion from SEK5.1 billion. Assuming around 10% lower generation volumes in 2024, driven by the sale of Heat Berlin's cogeneration plants and the output from the Magnum plant, but a slight improvement of earnings from Nordic power production caused by higher achieved prices and a stable trading result, we expect a moderately higher EBITDA from the PG segment in 2024 compared to 2023, noting uncertainties around hydrology and earnings from trading.

In the longer term, the PG segment could grow from new nuclear capacity. New capacity of 2.5 GW at the site of the decommissioned blocks Ringhals 3 and 4 has been discussed and approved by the Swedish parliament in November 2023, with an aim to have these on the grid by 2035. Vattenfall is the likely operator of these new plants, which could be large blocks or small modular reactors, but has cautioned that an investment decision requires significant government support due to the risks involved. Our current view of

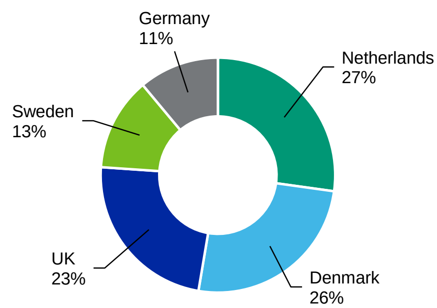
Vattenfall's credit profile does not include such new capacities, given the early stage of the project discussions and the absence of a final investment decision.

## Segment Wind: Capacity growth will boost long-term contracted cash flow

At the end of March 2024, Vattenfall's installed RES capacity, excluding hydro, was around 5.8 GW, made up of 3.7 GW offshore wind, 2.0 GW onshore wind and around 0.1 GW solar and batteries[2]. The RES portfolio is spread over five European countries, with Denmark (Aaa stable), the UK (Aa3 stable) and the Netherlands each accounting for around 25% of installed capacity with the rest nearly evenly spread between Sweden and Germany.

Exhibit 10

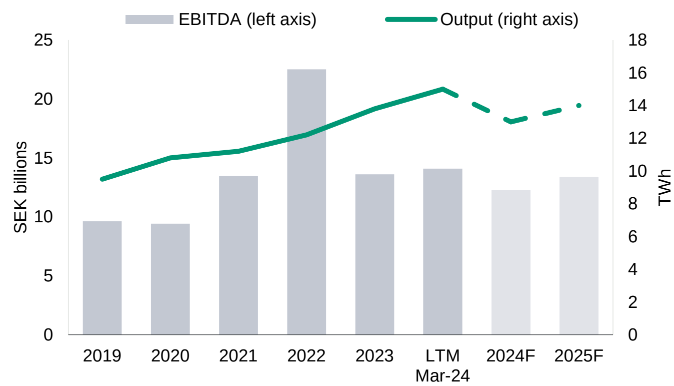
**Vattenfall's RES capacity benefits from geographical diversification**
**Breakdown of installed capacity (LTM Mar-24)**




Total capacity of 5.8 GW.
LTM = Last 12 months.
*Source: Company's reports and Moody's Ratings*

Exhibit 11

**Wind earnings are expected to decline on the back of lower prices**
**Underlying EBITDA in SEK billions, output in TWh**




Underlying EBITDA as reported.
LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
*Source: Company's reports and Moody's Ratings forecasts*

### Key earnings drivers for the Wind segment include:

- Capacity growth, primarily focused on wind offshore and onshore;
- Cost inflation and supply chain bottlenecks;
- Type of remuneration, currently mostly through government support schemes but with a growing share of power purchase agreements (PPAs) for new projects;
- Partnerships, mainly for offshore wind, to share risks and allow a more diversified capital allocation.

According to the company, Vattenfall's development pipeline amounts to more than 25 GW, including around 16 GW of wind projects and nearly 9 GW of solar capacity, complemented by more than 2 GW of battery storage capacity. In addition, various wind onshore projects, mainly in Sweden, and some solar projects in Germany are under construction and could add 2-3 GW through 2026.

Vattenfall's ambitions to grow its offshore wind capacity have been pushed towards the end of the decade as the company in late 2023 decided to sell its UK-based Norfolk Vanguard and Norfolk Boreas projects under development with a combined capacity of 4.2 GW to RWE AG at a price of GBP963 million (around SEK12.9 billion), achieving a capital gain of SEK4.6 billion. Key driver for the sale was Vattenfall's view that the awarded 15-year Contract for Difference (CfD) for Boreas had ceased to be economically viable, given higher interest cost and supply chain inflation.

Principal offshore wind projects currently in a mature stage of development comprise the 1.6 GW Nordlicht 1 and 2 wind farms in the German North Sea, 49% co-owned by BASF SE (A3 stable), a German chemicals giant who is also Vattenfall's partner in the Hollandse Kust Zuid project; and the 750 MW Muir Mhor (Scotwind) project off the coast of Scotland, 50% owned by Norwegian renewables developer Fred. Olsen Seawind. The projects are planned for commissioning in 2028 and 2030, respectively, and are remunerated on a merchant basis in the case of Nordlicht, mitigated by a PPA contract with BASF in proportion to its shareholding; and for Scotwind, by a CfD, assuming a successful bid in one of the next CfD auctions. Construction of offshore wind farms is relatively risky compared with other well-established renewables technologies but we note that Vattenfall has a good operational track record in its RES portfolio.

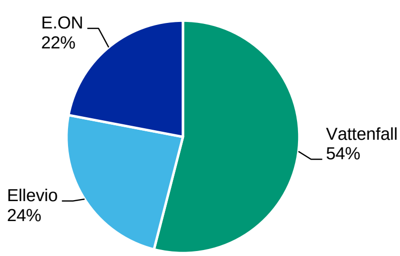
Vattenfall's assets benefit to a large degree from a variety of government support schemes (feed-in tariffs, CfDs with different designs), which provide long-term earnings stability and reduce Vattenfall's exposure to wholesale power price volatility. Wind farms in Sweden and in the UK have merchant power price exposure, mitigated by renewable obligation certificates schemes. Merchant price exposure, mitigated by long-term PPAs, will be a growing source of earnings for RES projects, resulting from partly insufficient strike prices in government CfD auctions; more flexibility to structure terms and conditions, compared to government support schemes; and growing demand from corporates eager to reduce their carbon exposure.

Following the record earnings of SEK22.5 billion in EBITDA in 2022, mainly driven by high power prices, Vattenfall in 2023 achieved underlying EBITDA of SEK13.6 billion as prices declined and operating expenses for staff and maintenance reduced margins. Given the commissioning of new capacity, but weaker prices, we expect earnings in 2024 be on par with those of 2023. Through 2026, earnings are likely to grow gradually as incremental onshore wind and solar capacity come online whereas merchant price exposure will still only make up a relatively small share of capacity and the remainder of output is protected by support schemes and PPAs.

### Segment Distribution (DIS): Network earnings are expected to grow moderately through 2026

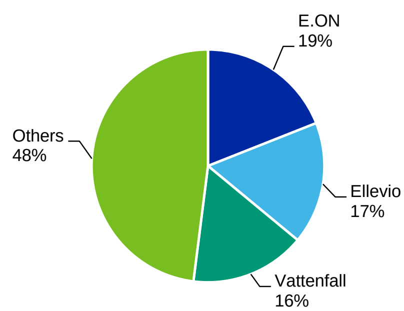
Vattenfall through its unbundled subsidiary Vattenfall Eldistribution AB is Sweden's largest owner and operator of electricity distribution grids (DSO), operating under an evolving regulatory framework set by the Swedish regulator Energimarknadsinspektionen (Ei). Because of the energy transition, future market growth will essentially occur in the regional market.

Exhibit 12
**Vattenfall has a high market share of regional electricity grids in Sweden**
**Regional market shares**




Market shares based on throughput volume and excluding grid losses.
*Source: Vattenfall Corporate Factbook (April 2024)*

Exhibit 13
**Local grids remain a highly fragmented market**
**Local market shares**




Market shares based on number of connections.
*Source: Vattenfall Corporate Factbook (April 2024)*

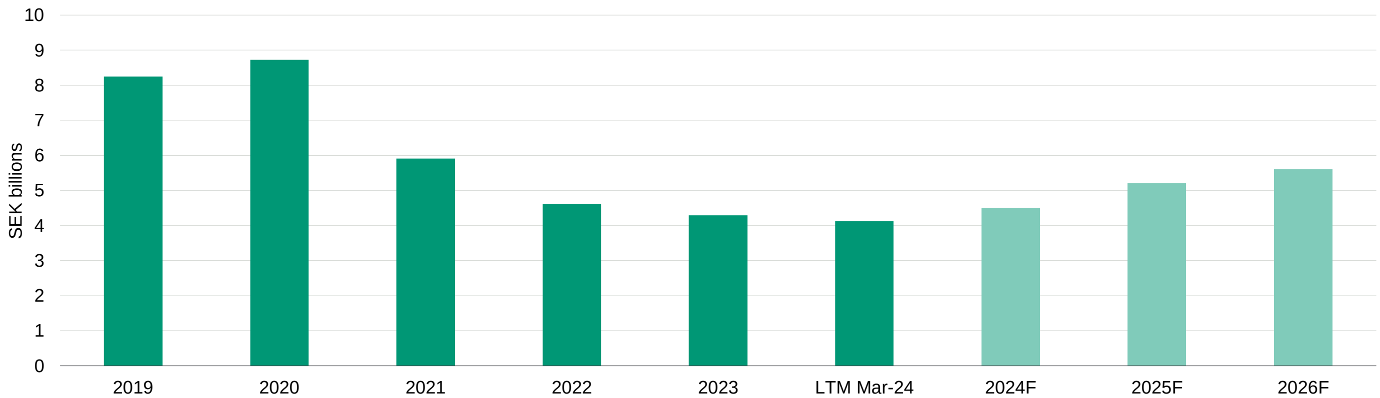
The regulatory framework applicable for the DSO is an incentive-based revenue cap regime, based on a TOTEX approach, which includes qualitative factors and a sharing mechanism for outperformance of controllable cost targets. Deviations between regulatory assumptions and actual costs and volumes are trued up in the next regulatory period (RP). In 2024 the fourth 4-year RP commenced, with Ei setting the returns rate, measured as pre-tax real weighted average cost of capital (WACC) at 4.53%, up from 2.35% for 2020-23. The WACC returns, together with the regulatory depreciation, which in Sweden generally is below the one used in accounting, provide the bulk of cash flows for the DSO and pertain to the regulated asset base (RAB). Vattenfall's RAB in 2023 was around SEK89 billion, up from SEK68 billion in 2022, driven by investments and the indexing of the RAB to reflect asset replacement values.

Underlying EBITDA in 2023 amounted to SEK4.3 billion, down from SEK4.6 billion in 2022, as higher growth-related staff costs and a temporary reduction of grid tariffs in H2/2023 reduced earnings. Given the large planned investments of SEK17 billion over 2024-25, compared with SEK6.9 billion in 2023; the increase in WACC; and the depreciation based on a substantially higher RAB, we expect DIS earnings in 2024 to be above those achieved in 2023 and to grow moderately thereafter.

Exhibit 14

**Earnings from distribution will grow gradually as the RAB increases**

**Distribution underlying EBITDA**

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*Source: Company's reports and Moody's Ratings forecasts*

The regulated earnings from the DIS segment carry a lower risk than Vattenfall's generation and supply activities. However, given that this segment contributes a relatively modest share of underlying EBITDA, namely 11% in 2023, the positive effect on our view of Vattenfall's credit quality is limited.

### Segment Customers & Solutions (C&S): Sales of energy and heat will remain earnings drivers as cash flow contributions from energy solutions will likely grow slowly

C&S's operations include supply of electricity and gas to residential, commercial and industrial customers; energy solutions and e-mobility charging; and, since 1 January 2024, Vattenfall's remaining heating activities following the disposal of Heat Berlin (see below). At the end of March 2024, the company had 11.8 million customers, with operations in the Nordic countries, the Netherlands, Germany, the UK and France (Aa2 stable).

**Key earnings drivers of the C&S segment include:**

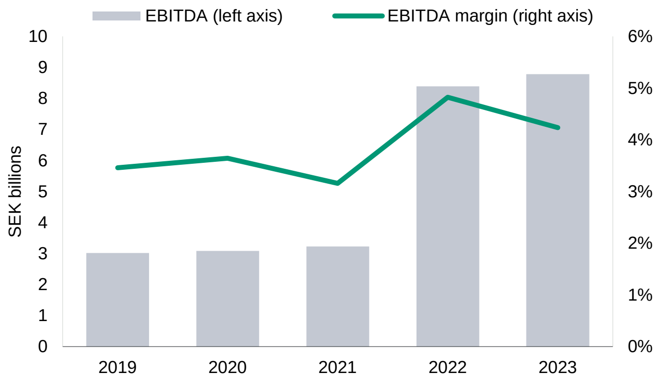
» Sales volume growth of electricity and gas, mainly driven by higher customer numbers (be it own customers or indirectly through sales to resellers);

» Gross margin development which displays relative long-term stability but is exposed to short-term fluctuations as energy price movements are only captured in tariffs with a time-lag, especially in the B2C segment;

» Heating results are driven by weather and temperature and the ability to adjust tariffs for fuel price changes under the prevailing quasi-regulated regimes (to note: earnings effects from the sale of co-generated electricity are allocated to the PG segment).

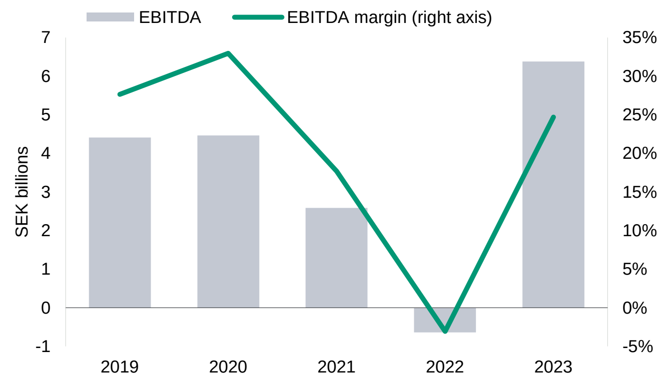
In 2023, the C&S (excl. Heat) and the Heat segments among them contributed SEK12.1 billion, or around 38%, to Vattenfall's underlying EBITDA, driven by higher customer and volume numbers in C&S and tariff adjustments of Heat Berlin and in the Netherlands to incorporate higher fuel prices. In Q1 2024, C&S incl. Heat (except Heat Berlin) recorded a year-over-year drop in profits to SEK2.6 billion from SEK3.1 billion as gas tariffs were adjusted downwards on the back of lower gas prices and earnings from cogenerated electricity (pre-hedging) suffered from adverse clean spark spreads as carbon prices remained relatively stable. Adjusted for the earnings from Heat Berlin, we overall expect earnings for the newly defined C&S segment somewhat below the level of the combined segment results C&S and Heat in 2023 as lower wholesale prices incentivise higher customer churn and margin pressure since procurement costs of electricity could still incorporate a share of high-priced energy sourced in 2022. In addition, we do not expect energy solutions and e-mobility to be significant contributors to earnings over the next few years as ramp-up costs will likely absorb a large share of incremental revenues.

Exhibit 15
**EBITDA margins for the energy sales business decreased in 2023 as sourcing of electricity and gas incorporates high prices in 2022**
**EBITDA in SEK billions**




Underlying EBITDA as reported.
*Source: Company's reports and Moody's Ratings*

Exhibit 16
**Heat earnings in 2023 benefited from tariff adjustments with a time-lag for higher commodity costs in 2022**
**EBITDA in SEK billions**




Underlying EBITDA as reported.
*Source: Company's reports and Moody's Ratings*

## Segment Heat (until end of 2023): Quasi-regulated nature of district heating improves business risk profile but lower significance after sale of Heat Berlin

Before the sale of Heat Berlin, Vattenfall was one of Europe's largest producers and distributors of heat, supplying electricity and heat to growing metropolitan areas in Northwest Europe, including Berlin, Amsterdam and Uppsala.

Compared to the regulated earnings in the DIS business, we consider district heating income as quasi-regulated, given the presence of customer contracts that are long-term (Netherlands, UK) or have no fixed end date but little churn (Sweden, less than 1% churn); regulated tariffs based on concessions (Netherlands, UK); and, despite not being a monopoly business, high barriers to entry. However, potential competition from other heating sources such as heat pumps and the less clearly defined capital returns on the infrastructure asset base lead to a lower earnings quality compared with against the regulated DSO operations.

### Cash proceeds from disposal of Heat Berlin could reduce funding needs, a credit positive

In May 2022, Vattenfall announced that it was exploring strategic options for its Heat Berlin segment, which is the largest district heating network in Western Europe. In December 2023 the company came to an agreement with the Land of Berlin (Aa1 stable), the largest of Germany's three city-states, to sell the entire heating infrastructure, including heating and power plants, and the customer base to Berlin. The deal was closed in early May 2024, with all approvals in place, at a final sales price of €1.4 billion (SEK15.7 billion).

We expect Vattenfall to use the proceeds in the context of their investment financing needs and also note the concurrent complete exit from thermal generation in Germany, thus reducing Vattenfall's carbon footprint. Given that Heat Berlin represented the biggest share of heat and electricity sales in the Heat segment (heat 8.9 TWh out of 13.5 TWh in total; electricity 6.1 TWh out of 13.6 TWh in total, both in 2023), the disposal has led Vattenfall to move the remaining Heat operations into the C&S segment.

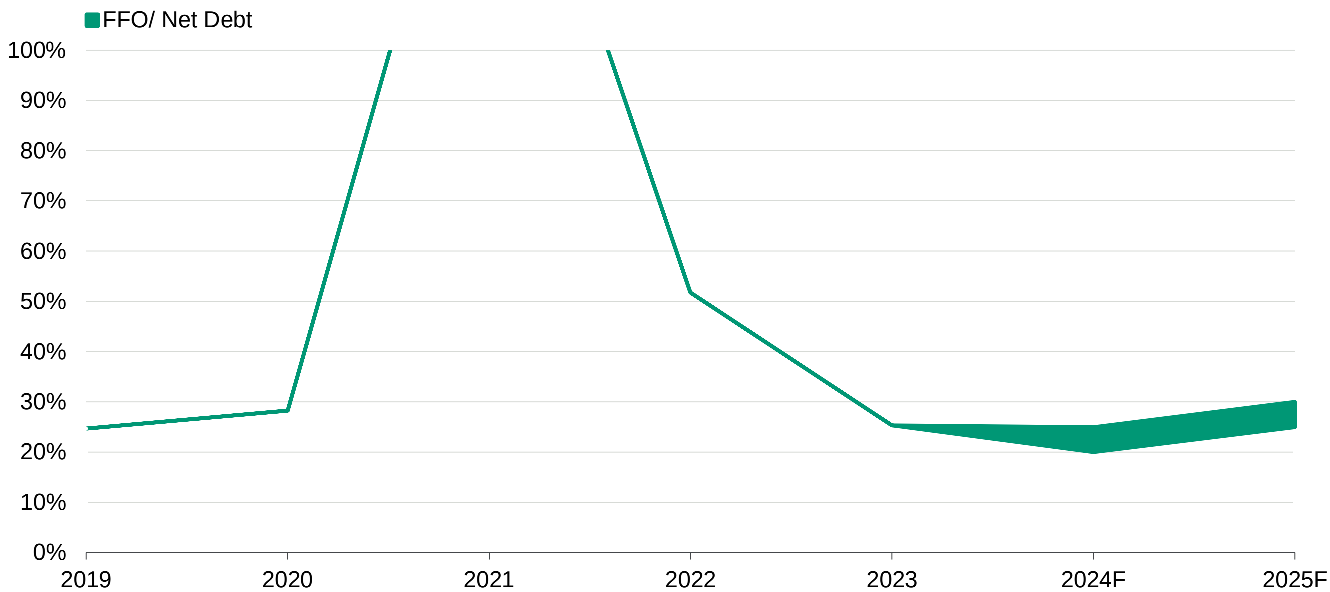
From a credit perspective, the sale reduces the compound share of regulated and quasi-regulated/contracted earnings in Vattenfall's business mix, leaving the group's earnings proportionally more exposed to volatility in wholesale power markets. This would be mitigated if Vattenfal was to use at least a material part of the proceeds to fund investments in businesses with a similar earnings quality, such as supported or contracted RES.

## FFO is expected to weaken, but lower capital spending and inflows from disposals will support credit metrics in 2024

Vattenfall's Moody'-adjusted FFO/net debt was 25.3% for 2023, down from more than 50% in 2022. Key drivers were a weaker FFO, driven by lower power prices as well as hedging effects in the PG and WInd segments; and an increase in Moody's-adjusted net debt as of the end of December 2023 to SEK129 billion from SEK76 billion a year earlier. As expected, significant margin call outflows (SEK74 billion) and around SEK41 billion of capital spending led to higher net debt levels. The achieved leverage still meets our guidance for the current rating and also sits within Vattenfall's self-imposed target range of 22%-27% FFO/net debt (as per the company's definition).

We note that adjusted gross debt of Vattenfall of around SEK185 billion included SEK74 billion in adjustments related to pension and nuclear liabilities for the decommissioning of power plants in Sweden and Germany.

Exhibit 17
**Vattenfall's funds from operations (FFO)/net debt will likely remain within the guidance**

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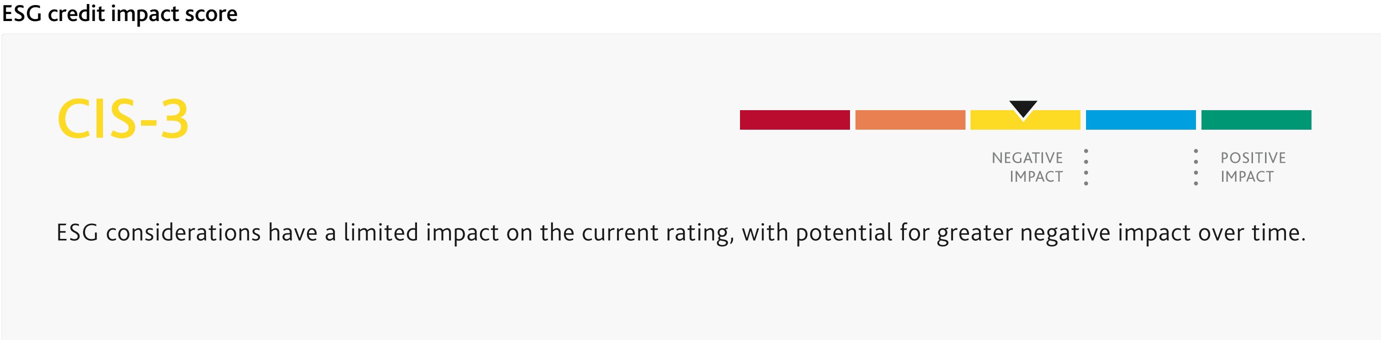
*Source: Moody's Financial Metrics™ and Moody's Ratings forecasts*

For 2024, we expect FFO to be around 10% weaker at some SEK29 billion, compared to more than SEK32 billion in 2023, driven primarily by price effects and the disposal of Heat Berlin. However, we expect credit metrics to meet our guidance as net debt levels should benefit from somewhat lower investment expenses, based the average of planned 2024/25 numbers; the absence of large margin call outflows; and from the one-off cash proceeds generated from the disposals of the Norfolk projects and of Heat Berlin (in total around SEK29 billion).

## ESG considerations

### Vattenfall AB's ESG credit impact score is CIS-3

Exhibit 18
**ESG credit impact score**

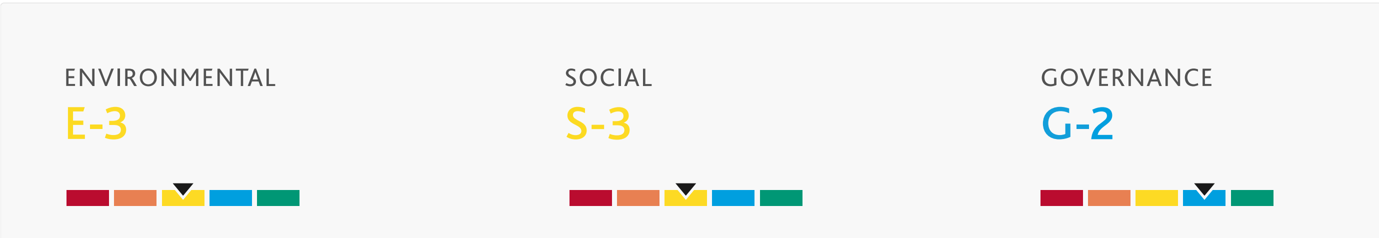



*Source: Moody's Ratings*

Vattenfall's **CIS-3** indicates that its ESG attributes are overall considered as having a limited impact on the current rating, with greater potential for future negative impact over time. The score reflects moderately negative environmental and social risks, partly offset by neutral-to-low governance risks.

Exhibit 19

**ESG issuer profile scores**




*Source: Moody's Ratings*

### Environmental

Vattenfall is **E-3**, reflecting its low carbon transition risk with power generation comprised mainly of renewables and nuclear. As a large hydro operator, Vattenfall is, however, exposed to a degree of resource risks. The issuer profile score also incorporates a degree of physical climate risks related to its network operations in Sweden where flooding is a risk factor. As a nuclear operator with around 5.5 GW of capacity, Vattenfall's nuclear operations are also exposed to both a degree of physical climate risk and waste and pollution given the costs associated with nuclear decommissioning and nuclear waste treatment.

### Social

Vattenfall is **S-3**, reflecting the risk that demographics and societal trends could include concerns over affordability, including the expectation from the public that state-owned utilities should act as a public service. These pressures could turn into adverse political intervention or adverse regulatory decisions for its grid operations, or both.

### Governance

Vattenfall is **G-2**, reflecting on one hand our view that, as a government-owned company, the independence of Vattenfall's board is relatively weak and that management may face competing priorities. However, we note that its board has a track record of creditor friendly decisions. Governance risks are also balanced by other considerations associated with government ownership, including transparent reporting and oversight.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

## Government support considerations

Given the 100% ownership by the Swedish government, Vattenfall is considered a government-related issuer (GRI) under our Government-Related Issuers methodology. Though Vattenfall is the largest electric utility in Sweden, the company has a broader European footprint, leading us to view the default dependence with its owner and supporter, the Swedish government, as moderate.

While we recognise the strategic importance of the company for Sweden, we also acknowledge the state's determinedly noninterventionist stance. The authorities would hesitate to intervene (such as through a direct capital injection) except in the most extreme circumstances, that is, where there is a threat to key strategic Swedish assets such as nuclear and hydropower plants, and the network infrastructure. We thus assume a moderate support probability in case of financial distress for Vattenfall.

## Liquidity analysis

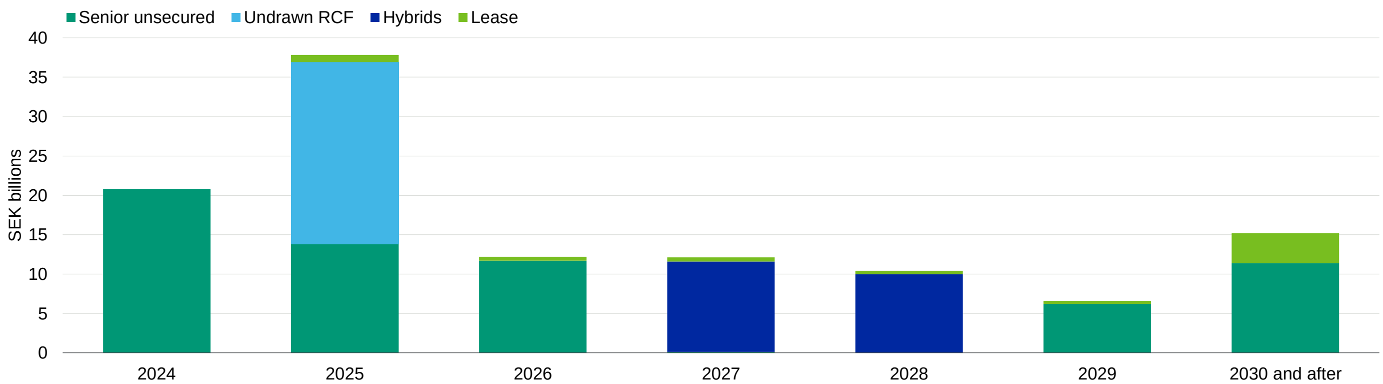
As of the end of March 2024, Vattenfall's liquidity was supported by SEK56.2 billion of unrestricted cash and short-term investments, and a committed revolving credit facility (RCF) of €2 billion (SEK23.1 billion). The RCF, which is undrawn, expires in November 2025.

Vattenfall's investments of around SEK30-50 billion over the next 12-18 months; dividends pay-outs in 2024 and 2025 in an estimated aggregate amount of SEK10 billion and debt repayments of around SEK25 billion in 2024/25 can comfortably be covered through the said sources and operating cash flow of around SEK30-35 billion per annum.

Exhibit 20

**Vattenfall has a fairly well-spread debt maturity profile**

**As of the end of March 2024**




The bulk of 2024 maturities were repaid in April 2024. Maturity of hybrids are shown at first call dates.

*Source: Company's reports and Moody's Ratings*

## Structural considerations

Vattenfall's capital structure includes a mix of senior unsecured bonds, bank debt and hybrid securities. Given the features of the hybrids, we treat them as 50% debt and 50% equity for financial leverage calculations.

Given that debt is almost entirely raised on the Vattenfall AB level, we do not apply any notching of senior debt for reasons of structural subordination.

## Methodology and scorecard

Vattenfall is rated in accordance with the Unregulated Utilities and Unregulated Power Companies rating and the Government-Related Issuers methodologies.

Exhibit 21
**Rating factors**
**Vattenfall AB**

| Unregulated Utilities and Unregulated Power Companies Industry Scorecard | Current LTM Mar-24 | | Moody's 12-18 month forward view | |
|---|---|---|---|---|
| **Factor 1 : Scale (10%)** | **Measure** | **Score** | **Measure** | **Score** |
| a) Scale ($ billions) | Aa | Aa | Aa | Aa |
| **Factor 2 : Business Profile (40%)** | | | | |
| a) Market Diversification | Baa | Baa | Baa | Baa |
| b) Hedging and Integration Impact on Cash Flow Predictability | Baa | Baa | Baa | Baa |
| c) Market Framework & Positioning | Ba | Ba | Ba | Ba |
| d) Capital Requirements and Operational Performance | Baa | Baa | Baa | Baa |
| 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) | 6.2x | Baa | 4.2x - 4.6x | Baa |
| b) (CFO Pre-W/C) / Net Debt (3 Year Avg) | 46.5% | A | 26.0% - 30.0% | Baa |
| c) RCF / Net Debt (3 Year Avg) | 31.1% | A | 17.0% - 19.0% | Baa |
| **Rating:** | | | | |
| a) Scorecard-Indicated Outcome | | A3 | | Baa1 |
| b) Actual Rating Assigned | | | | A3 |
| | | | | |
| Government-Related Issuer | **Factor** | | | |
| a) Baseline Credit Assessment | baa1 | | | |
| b) Government Local Currency Rating | Aaa, stable | | | |
| c) Default Dependence | Moderate | | | |
| d) Support | Moderate | | | |
| e) Actual Rating Assigned | A3 | | | |

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
*Source: Moody's Financial Metrics™ and Moody's Ratings forecasts*

# Appendix

Exhibit 22

## Peer Comparison

### Vattenfall AB

| | Vattenfall AB A3 Stable | | | Statkraft AS A3 Stable | | | Iberdrola S.A. Baa1 Stable | | | EnBW Energie Baden-Wuerttemberg AG (P)Baa1 Stable | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (in € millions) | FY Dec-21 | FY Dec-22 | FY Dec-23 | FY Dec-21 | FY Dec-22 | FY Dec-23 | FY Dec-21 | FY Dec-22 | FY Dec-23 | FY Dec-20 | FY Dec-21 | FY Dec-22 |
| Revenue | 17,762 | 22,591 | 25,310 | 8,329 | 15,761 | 9,000 | 39,114 | 53,949 | 49,335 | 19,694 | 32,148 | 56,003 |
| EBITDA | 5,762 | 2,440 | 4,051 | 3,183 | 6,515 | 4,716 | 11,644 | 12,770 | 14,107 | 2,705 | 3,010 | 3,877 |
| Total Assets | 76,295 | 71,231 | 52,855 | 31,025 | 32,443 | 28,308 | 141,607 | 149,925 | 149,652 | 45,965 | 71,273 | 69,504 |
| Total Debt | 19,188 | 22,274 | 16,587 | 4,469 | 4,031 | 5,269 | 48,382 | 53,759 | 55,703 | 21,248 | 22,759 | 22,227 |
| Net Debt | 2,684 | 6,864 | 11,592 | 782 | (1,544) | 1,319 | 44,349 | 49,151 | 52,684 | 14,211 | 10,876 | 11,456 |
| FFO / Net Debt | 169.4% | 51.8% | 25.3% | 166.8% | -189.5% | 169.0% | 21.7% | 20.3% | 19.5% | 17.0% | 24.1% | 27.7% |
| RCF / Net Debt | 147.1% | 15.7% | 21.5% | 118.6% | -124.6% | 47.8% | 15.8% | 13.8% | 10.7% | 13.9% | 20.5% | 24.0% |
| (FFO + Interest Expense) / Interest Expense | 10.6x | 5.4x | 5.4x | 18.7x | 23.2x | 12.6x | 7.6x | 5.5x | 4.6x | 5.7x | 6.4x | 5.0x |
| Debt / Book Capitalization | 44.9% | 61.8% | 53.1% | 27.0% | 22.2% | 26.0% | 43.4% | 46.9% | 46.9% | 65.2% | 66.9% | 59.8% |

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
*Source: Moody's Financial Metrics™*

Exhibit 23

## Moody's-adjusted net debt reconciliation

### Vattenfall AB

| (in SEK millions) | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **As reported debt** | **97,627.0** | **104,775.0** | **126,408.0** | **176,765.0** | **121,109.0** |
| Pensions | 44,026.0 | 43,824.0 | 40,328.0 | 27,812.0 | 28,092.0 |
| Hybrid Securities | (10,082.0) | (9,652.0) | (10,210.5) | (10,965.5) | (10,493.5) |
| Non-Standard Adjustments | 31,815.0 | 37,794.0 | 40,233.0 | 53,930.0 | 46,011.0 |
| **Moody's-adjusted debt** | **163,386.0** | **176,741.0** | **196,758.5** | **247,541.5** | **184,718.5** |
| Cash & Cash Equivalents | (31,151.0) | (52,879.0) | (169,239.0) | (171,264.0) | (55,625.0) |
| **Moody's-adjusted net debt** | **132,235.0** | **123,862.0** | **27,519.5** | **76,277.5** | **129,093.5** |

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated.
*Source: Moody's Financial Metrics™*

Exhibit 24

## Moody's-adjusted EBITDA reconciliation

### Vattenfall AB

| (in SEK millions) | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **As reported EBITDA** | **44,920.0** | **49,122.0** | **80,719.0** | **25,186.0** | **46,318.0** |
| Unusual Items - Income Statement | (4,334.0) | (1,519.0) | (21,162.0) | - | - |
| Capital Development Costs | - | - | - | (149.0) | - |
| Interest Expense - Discounting | (2,297.0) | (2,165.0) | (2,033.0) | (2,009.0) | (2,133.0) |
| Non-Standard Adjustments | 1,115.0 | 701.0 | 910.0 | 2,857.8 | 2,258.9 |
| **Moody's-adjusted EBITDA** | **39,404.0** | **46,139.0** | **58,434.0** | **25,885.8** | **46,443.9** |

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated.
*Source: Moody's Financial Metrics™*

Exhibit 25

**Overview on selected historical Moody's-adjusted financial data**

**Vattenfall AB**

| (in SEK millions) | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **INCOME STATEMENT** | | | | | |
| Revenue | 166,360 | 158,847 | 180,119 | 239,644 | 290,168 |
| EBITDA | 39,404 | 46,139 | 58,434 | 25,886 | 46,444 |
| EBIT | 20,559 | 27,888 | 40,993 | 8,146 | 23,750 |
| Interest Expense | 5,336 | 4,713 | 4,843 | 9,007 | 7,496 |
| Net income | 10,823 | 15,338 | 28,460 | (1,634) | 8,755 |
| **BALANCE SHEET** | | | | | |
| Net Property Plant and Equipment | 256,563 | 249,060 | 252,828 | 276,901 | 263,031 |
| Total Assets | 450,643 | 463,188 | 782,358 | 791,616 | 588,591 |
| Total Debt | 163,386 | 176,741 | 196,759 | 247,542 | 184,719 |
| Cash & Cash Equivalents | 31,151 | 52,879 | 169,239 | 171,264 | 55,625 |
| Net Debt | 132,235 | 123,862 | 27,520 | 76,278 | 129,094 |
| Total Liabilities | 347,038 | 355,859 | 591,438 | 670,742 | 464,632 |
| **CASH FLOW** | | | | | |
| Funds from Operations (FFO) | 32,604 | 35,032 | 46,620 | 39,495 | 32,636 |
| Cash Flow From Operations (CFO) | 16,939 | 41,961 | 102,176 | 1,407 | (24,219) |
| Dividends | 4,071 | 5,627 | 6,135 | 27,553 | 4,917 |
| Retained Cash Flow (RCF) | 28,533 | 29,405 | 40,485 | 11,942 | 27,719 |
| Capital Expenditures | (26,995) | (22,311) | (26,132) | (25,800) | (42,679) |
| Free Cash Flow (FCF) | (14,127) | 14,023 | 69,909 | (51,946) | (71,815) |
| **INTEREST COVERAGE** | | | | | |
| (FFO + Interest Expense) / Interest Expense | 7.1x | 8.4x | 10.6x | 5.4x | 5.4x |
| **LEVERAGE** | | | | | |
| FFO / Net Debt | 24.7% | 28.3% | 169.4% | 51.8% | 25.3% |
| RCF / Net Debt | 21.6% | 23.7% | 147.1% | 15.7% | 21.5% |
| Debt / EBITDA | 4.1x | 3.8x | 3.4x | 9.6x | 4.0x |
| Net Debt / EBITDA | 3.4x | 2.7x | 0.5x | 2.9x | 2.8x |

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated.
*Source: Moody's Financial Metrics™*

## Ratings

Exhibit 26

| Category | Moody's Rating |
|---|---|
| **VATTENFALL AB** | |
| Outlook | Stable |
| Issuer Rating | A3 |
| Senior Unsecured | A3 |
| Jr Subordinate | Baa2 |
| Commercial Paper | P-2 |

*Source: Moody's Ratings*

## Endnotes

1 From 2024, the Heat segment has become part of the Customers & Solutions segment.

2 The installed capacity includes partially commissioned wind farms Hollandse Kust Zuid (offshore, Netherlands), Vesterhav (offshore, Denmark) and Windplan Blauw (onshore, Netherlands) which upon completion of the commissioning add some 0.6 GW to the capacity.

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