Corporate Factbook

April 2024

VATTENFALL

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Overview and strategy

VATTENFALL

This is Vattenfall

Activities in the Value Chain ● Active ● Inactive

Upstream | Production | Transmission | Distribution | Trading | Retail | Services

In Brief

- Vattenfall is a leading European energy company
- We want to enable the **fossil freedom that drives society forward**
- We are driving the transition to a more sustainable energy system through growth in renewable production and climate smart energy solutions for our customers
- **100 per cent owned by the Swedish State**
- Our long-term credit ratings are **BBB+ stable outlook by S&P and A3 stable outlook by Moody's**

8.0 Million
Electricity customers

2.1 Million
Heat customers

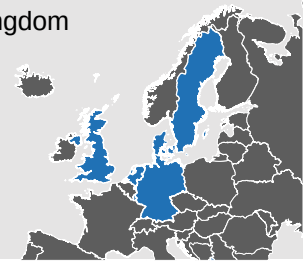
1.0 Million
Electricity grid customers

2.3 Million
Gas customers

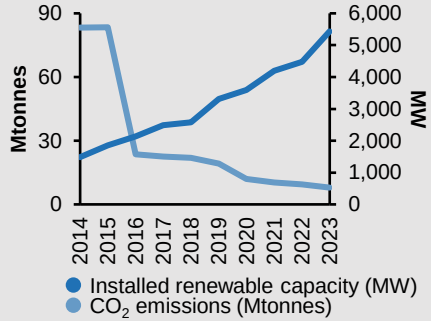
20 995
Employees

Main markets

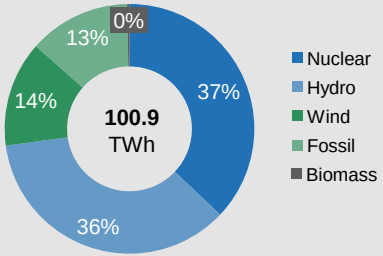
- Sweden
- Netherlands
- Denmark
- United Kingdom
- Germany



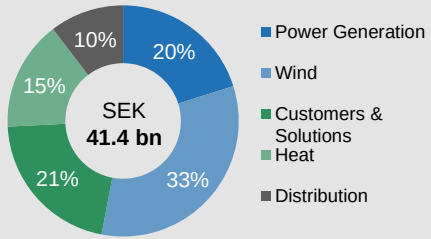
CO_2 emissions & renewable capacity



Electricity generation breakdown by technology, 2023



Underlying EBITDA breakdown by segment, 2023[1]



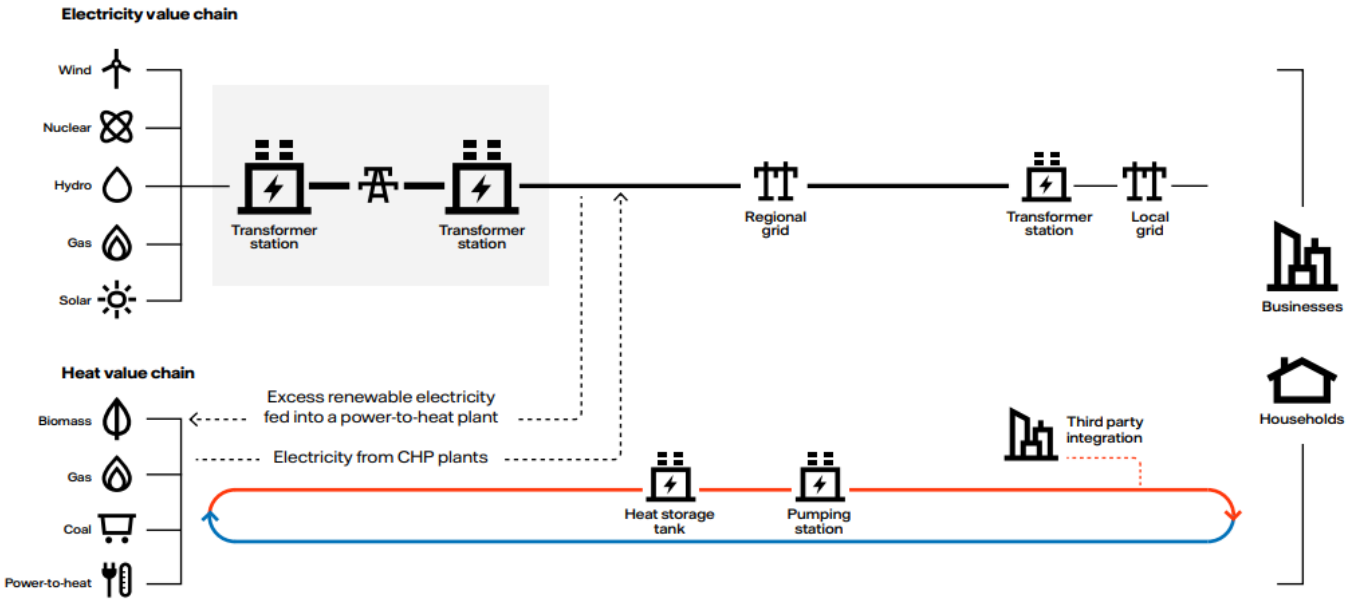
1 Breakdown excludes other and eliminations

Vattenfall’s value chain

Electricity value chain
Electricity go through three main steps before it can be used by end customers: generation, transmission, and distribution. Generation is typically a competitive market both in terms of energy sources and the number of actors. The transmission grid is typically a national monopoly while regional and local grids are regulated monopolies

Heat value chain
District heating systems transport hot water to heat up buildings. The water is kept in a closed loop, which means that it is returned to the heating plant, re-heated, and re-used in the network. Heat storage tanks serve as buffer for fluctuations in supply and demand, and pumping stations ensure the right pressure throughout the network. Heat can also be integrated from third-party sources that feed their excess heat into the network.

The two value chains are interconnected
Plants used for district heating can also produce electricity. These are called combined heat and power (CHP) plants and the co-generation makes more efficient use of the utilised fuel. Electricity from CHP plants are typically fed directly into the grid. In so-called power-to-heat plants, excess electricity from e.g. wind and solar can be used in an e-boiler to generate heat.



Operating segment overview FY 2023

Operating segments

We report our operations broken down by the Group's operating segments: Customers & Solutions, Power Generation, Wind, Heat, and Distribution. The operating segments reflect our Business Area organisational structure except for the Power Generation segment, which is divided into the Generation and Markets Business Areas

Number of Employees as of 31 December 2023[1]

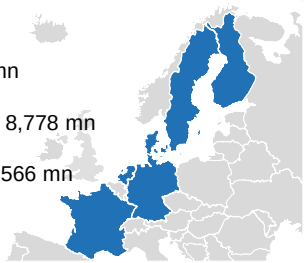
Power Generation	7,474
Customers & Solutions	3,641
Heat	3,227
Wind	1,708
Distribution	1,606
Other[2]	3,339

Customers & Solutions

Responsible for sales of electricity, gas and energy services as well as e-mobility charging solutions. We also offer a broad range of decarbonised, decentralised solutions such as heat pumps and solar panels.

- A market leader in Sweden with nearly 0,9 million electricity contracts
- A market leader in the Netherlands with 4.5 million electricity and gas contracts
- A total of 5.3 million electricity and gas contracts in Germany with a leading position as electricity supplier in Berlin and Hamburg
- Operates 51,000 e-mobility charging points in Sweden, Germany, the Netherlands, and Norway.

Net Sales: SEK 216,339 mn
(20% of total[3])
Underlying EBITDA: SEK 8,778 mn
(22% of total)
Underlying EBIT[4]: SEK 7,566 mn
(38% of total)

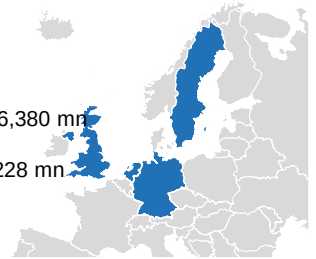


Heat

Responsible for Vattenfall's heat business (district heating and decentralised solutions) and gas-fired condensing plants.

- One of Europe's leading providers of district heating in large metropolitan areas with approximately 2.1 million households equivalents
- Partnerships with cities for the realisation of carbon reduction plans, supported by a track record of meeting previous reduction targets
- Heat production and distribution systems used as platforms to integrate other energy solutions, like district cooling, e-mobility charging solutions, wind, and solar.

Net Sales: SEK 44,202 mn
(9% of total[1])
Underlying EBITDA: SEK 6,380 mn
(16% of total)
Underlying EBIT[2]: SEK 3,228 mn
(16% of total)



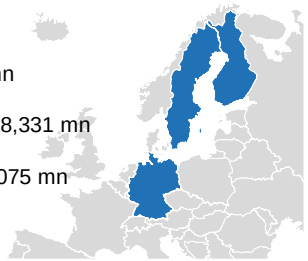
[1] Full-time equivalents
[2] Pertains mainly to Staff Functions and Shared Service Centres
[3] Calculation excludes eliminations and other
[4] Operating profit excluding items affecting comparability

Operating segment overview FY 2023 (Cont'd)

Power generation

Responsible for Vattenfall's hydro and nuclear power operations, maintenance services business and optimisation and trading operations, including certain large business customers.

- Operates a portfolio with 5.5 GW nuclear power capacity and 11.5 GW hydro power capacity across Sweden, Finland, and Germany
- One of Europe's largest producers of fossil-free electricity, with 37.4 TWh from nuclear power and 36.1 TWh from hydro power in 2023
- Provides professional assetoptimisation services and market access and is a leading player in commodites trading and power purchase agreements in northwestern Europe.

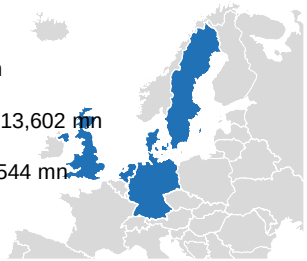


Net Sales: SEK 207,510 mn
(40% of total[3])
Underlying EBITDA: SEK 8,331 mn
(21% of total)
Underlying EBIT[2]: SEK 3,075 mn
(15% of total)

Wind

Responsible for development, construction and operation of Vattenfall's wind farms as well as for large-scale and decentralised solar power and batteries.

- One of the largest producers of onshore wind power in Denmark and the Netherlands
- One of the largest producers of offshore wind power in the world[3]
- 13.8 TWh of electricity generated from 5.4 GW in operated capacity
- Strong wind power pipeline with 2.3 GW in construction and over 2.7 GW in mature stage development
- Forerunner in innovative solutions in solar and batteries, such as co-location.

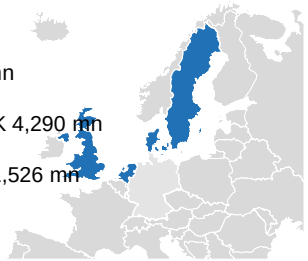


Net Sales: SEK 25,373 mn
(5% of total[1])
Underlying EBITDA: SEK 13,602 mn
(34% of total)
Underlying EBIT[2]: SEK 6,544 mn
(33% of total)

Distribution

Responsible for Vattenfall's electricity distribution operations in Sweden and the UK. Provides Power-as-a-Service where we own and operate electrical- , storage- and charging infrastructure on long-term contracts.

- Leading operator of regional electricity distribution grids and among the top three largest actors in local grids in Sweden
- Distributes over 50% of the electricity in Sweden
- Approximately 1,000,000 business and private customers in Sweden
- Unit for operation and ownership of new grids in the UK established in 2017



Net Sales: SEK 11,139 mn
(2% of total[1])
Underlying EBITDA: SEK 4,290 mn
(11% of total)
Underlying EBIT[2]: SEK 1,526 mn
(8% of total)

[1] Calculation excludes eliminations
[2] Operating profit excluding items affecting comparability
[3] Excluding China as this market is generally unaccessible to western developers.

Financial characteristics per operating segment

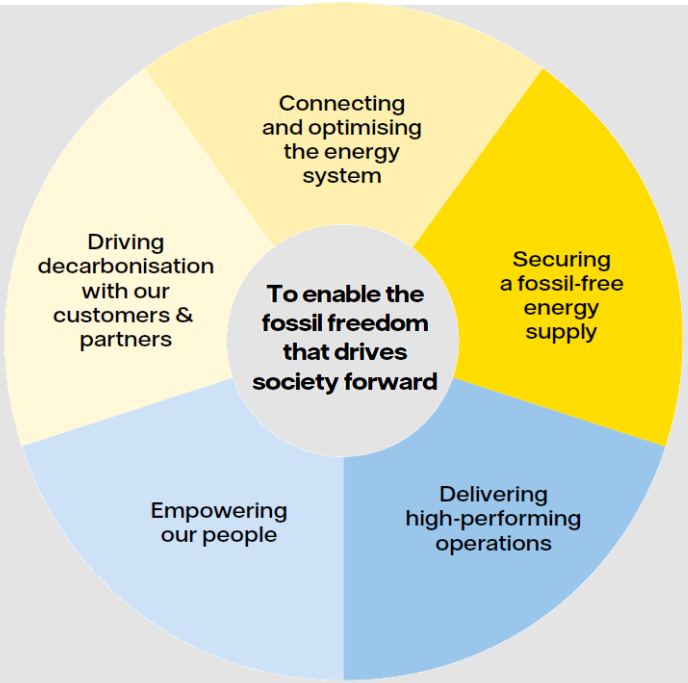
Operating segment	Key drivers for earnings	Characteristics of earnings and cash flow
Customers & Solutions	Difference in sourcing costs compared to sales price (gross margin) and development in the customer base	Track record of stable earnings
Power Generation	A function of spot price, generation volume, hedge ratio and hedge level	Large outright power price exposure is offset by hedging activites, thereby reducing volatility
Wind	A function of existing subsidies schemes rolling off, net new capacity added, the achieved power price rewarded to new capacity, technological development and synergies	Growing contribution on the back of new capacity
Heat	Mainly fuel costs/spreads and temperature effects/weather	New, partly subsidized, assets replacing older ones and thereby increasing the availability in combination with increased hedging activities contribute to less volatility than seen in last couple of years.
Distribution	Largely a function of regulatory asset base (RAB), regulatory WACC, and the efficiency of the operations	Stable

A strategy based on an “integrated utility logic”

To enable the fossil freedom that drives society forward

We believe being active in the whole value chain is strategically important:

- **It increases our competitive advantage in eg. wind auctions, by enabling stable revenues through Corporate PPAs with our customers**
- **Access to renewable volumes on the customer side differentiates us from competitors as fossil-free electricity becomes more scarce**
- **The ability to optimise dispatch across both customer loads and supply brings optimal value of a total portfolio**
- **Diversifying and reducing total portfolio risk means lower cost of capital and an ability to take on more debt**



Strategic targets 2025

Strategic focus area	Strategic targets to 2025	Actual 2023	Actual 2022	Progress	Comments
Driving decarbonisation with our customers & partners	Net Promoter Score[1] (Absolute): **+18**	+11	+16	🔴	Decrease in absolute NPS due to longer response times in customer services during the beginning of 2023
Securing a fossil-free energy supply	CO_2 Emissions Intensity[3]: **≤86 gCO2e/kWh**	69[3]	78	🟢	Improvement due to lower fossil-based generation
Empowering our people	Lost Time Injury Frequency (LTIF): **≤1.0**	1.5	1.1	🔴	Above target levels. Further actions required to enhance safety
	Employee Engagement Index: **≥75%**	80	80	🟢	Outcome above target level after continued improved performance with more engaged employees
Delivering high-performing operations	FFO/Adjusted Net Debt: **22-27%**	21.5%	55.0%	🔴	Below target interval as a result of lower underlying EBITDA, and the adjusted net debt mainly increased due to increased investments.
	ROCE: **≥8%**	5.3%	4.2%	🔴	Outcome below target due to lower electricity prices and also lower generation volumes from hydro power and lower availability from nuclear power. The negative price effects from the Continental hedging also had a negative impact

[1] NPS absolute target is calculated with a weighting of 80% from Customers & Solutions and 20% from Heat resembling size of customer basis
[2] Targeting 86 gCO_2/kWh by 2025 puts us on a "1.5°C" trajectory by 2030 according to Science Based Target levels

[3]Deviates from the preliminary reported value communicated in the year-end report 2023

Financial targets

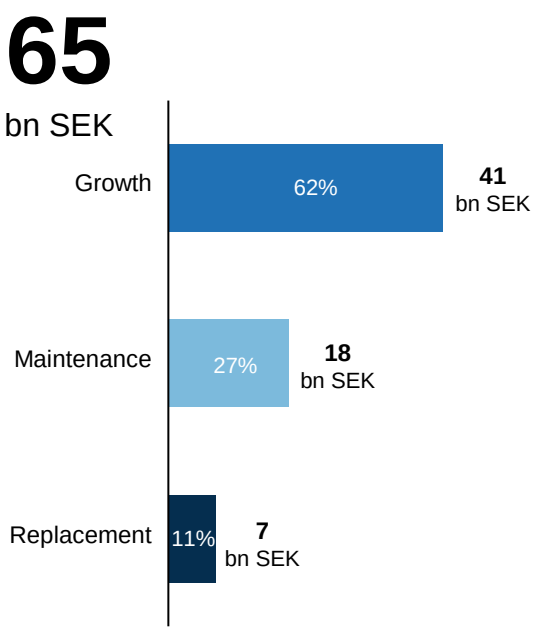
Financial targets	Targets over a business cycle[1]	FY 2023	FY 2022	Comments
Profitability	Return on capital employed: ≥8%[2]	5.3%	4.2%	Outcome below target due to lower electricity prices as well as lower generation volumes from hydro power and lower availability from nuclear power. The negative price effects from the Continental hedging also had a negative impact.
Capital structure	FFO/adjusted net debt: 22%–27%	21.5%	55.0%	Below target interval as a result of lower underlying EBITDA, and the adjusted net debt mainly increased due to increased investments.
Dividend policy	Dividend: 40%–70% of the year's profit after tax	SEK 4.0 bn	SEK 4.0 bn	

[1] Target for 2025
[2] The key ratio is based on EBIT and average capital employed

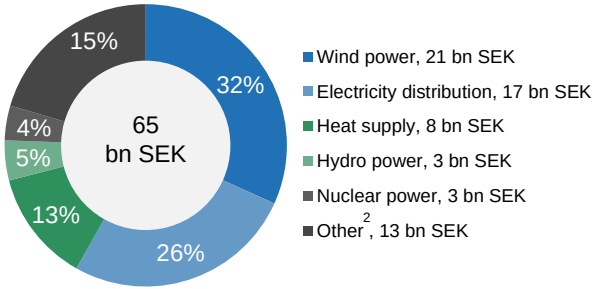
Investment plan 2024-2025

Net investments

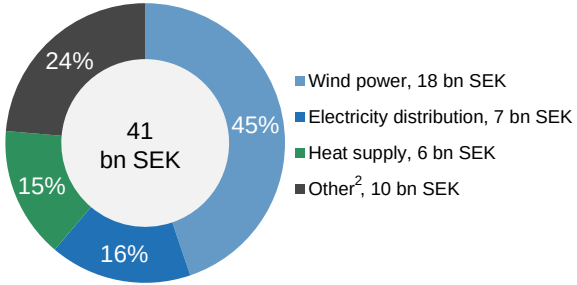
Total[1] capex 2024-2025



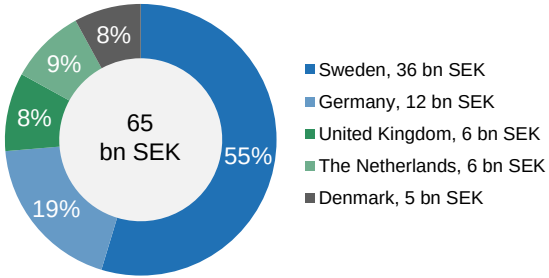
Total[1] capex per technology



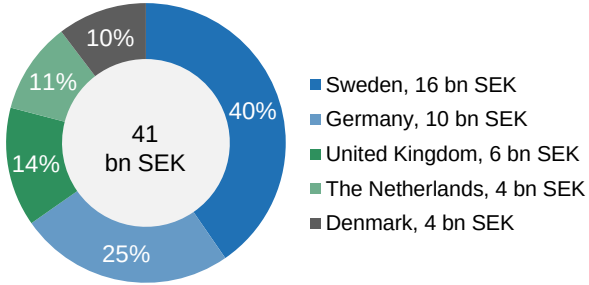
Growth[1] capex per technology



Total[1] capex per country



Growth[1] capex per country



[1] Investment plan excludes investments in Heat Berlin, which is to be divested to the State of Berlin during 2024

[2] Mainly E-mobility, solar and battery projects

Major investment projects

Decided on and in progress[1]

Project	Country	Type	Capacity	Est. CO_2 reduction[2] (ktonnes)	Vattenfall's share (%)	Completion	Total investment
Hollandse Kust Zuid 1-4[3]		Wind offshore	1.509 MW	1 563	51%	2024	2.600 MEUR
Vesterhav projects[3]		Wind offshore	344 MW	196	100%	2024	657 MEUR
Bruzaholm[3]		Wind onshore	138 MW	3	100%	2025	2.124 MSEK
Windplan Blauw[3]		Wind onshore	77 MW	59	100%	2024	213 MEUR
Tützpatz[3]		Solar	76 MW	29	100%	2024	57 MEUR
Battery Toledo[3]		Battery	55 MW	n/a	50%	2024	43 MEUR
E-boiler Diemen		Electricity as fuel	150 MWth	n/a	100%	2025	45 MEUR
E-mobility - Netto[3]		E-mobility	n/a	n/a	100%	2025	68 MEUR
E-mobility - Bünting[3]		E-mobility	n/a	n/a	100%	2024	50 MEUR

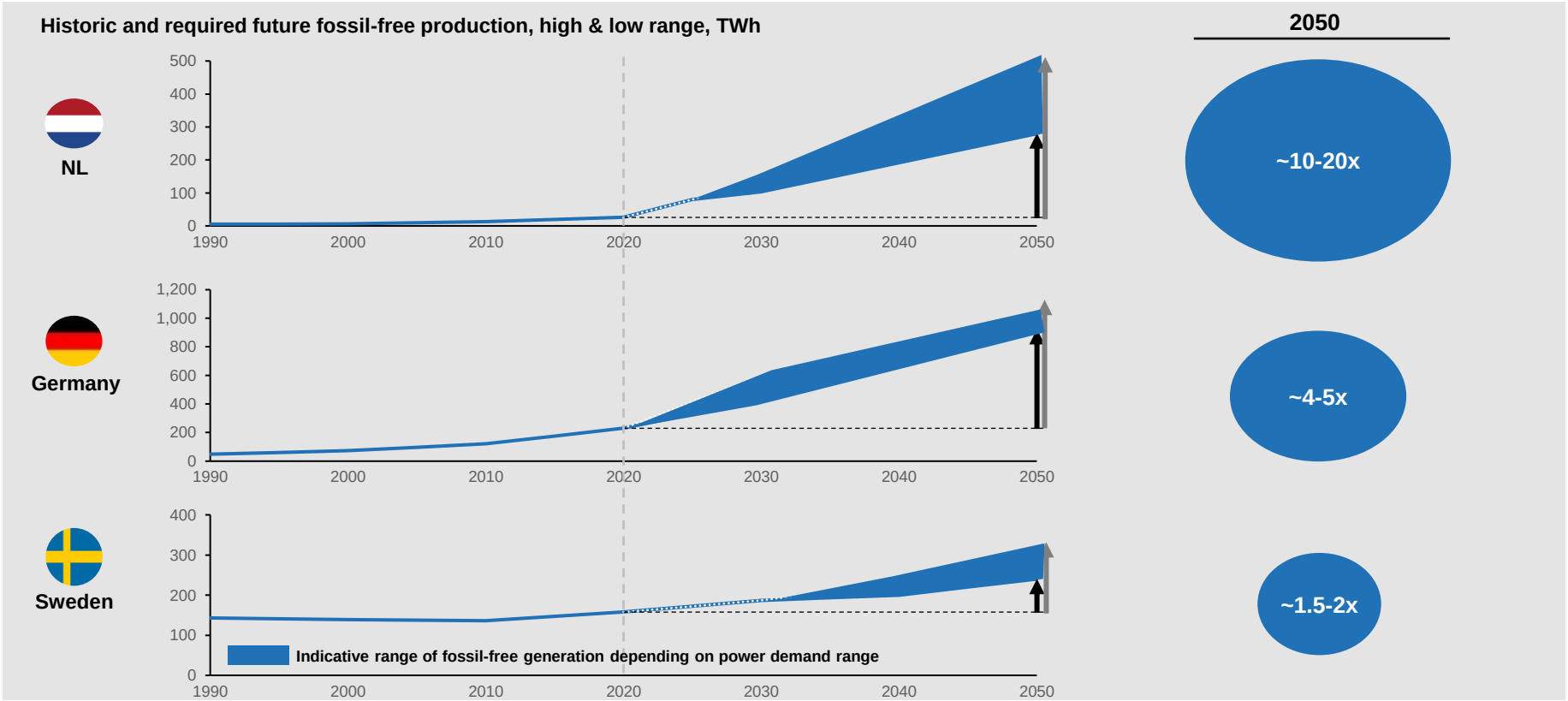
[1] All numbers in the table reflect the status as per 31 December 2023

[2] Production from onshore wind estimated to 2.6 GWh/MW installed, from offshore wind to 3.5 GWh/MW installed, and from solar to 1.0 GWh/MW installed. Resulting production is compared against grid average emission factors which will decline over time as the energy system decarbonises. Actual production emission factors and savings will vary. Other projects are compared to project-specific reference cases.

[3] The project is EU taxonomy-eligible and aligned.

Rapidly growing demand for fossil-free power

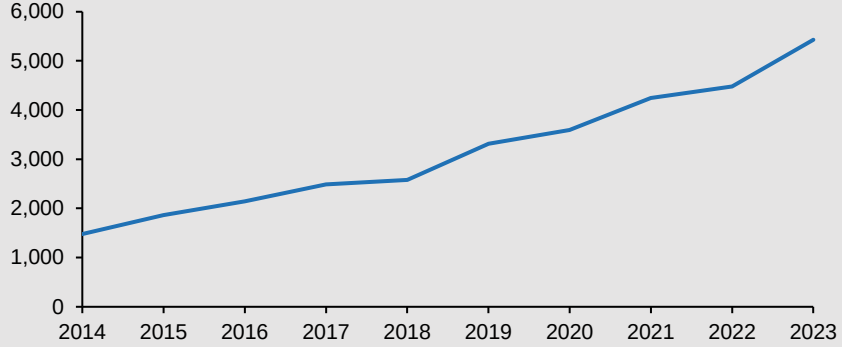
Starting points in terms of current fossil-free generation differ widely across markets



Source: Governmental targets and country-specific net zero scenario studies

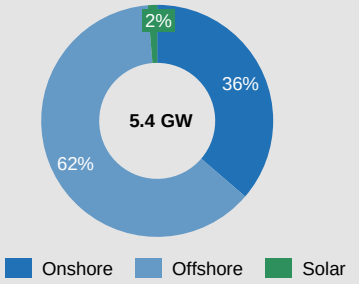
Growing capacity of wind and solar power

Installed wind and solar capacity 2014-2023

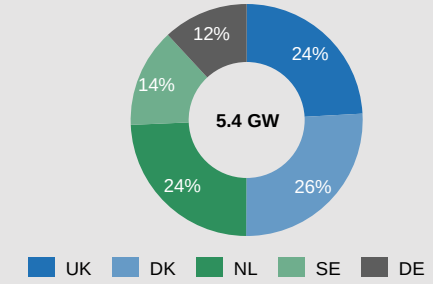


Capacity in operation, year-end 2023

Split by generation type



Split by geography



- Continued growth in wind and solar: 5.4 GW installed capacity (21% growth year-over-year)
- Leading player in developing, constructing and operating On- and Offshore Wind, large-scale Solar PV and Batteries. Aim to strengthen project pipeline further by own development, bidding for, or acquiring additional attractive projects in wind and solar.

Projects under construction and pipeline:

~2.3 GW Wind projects under construction

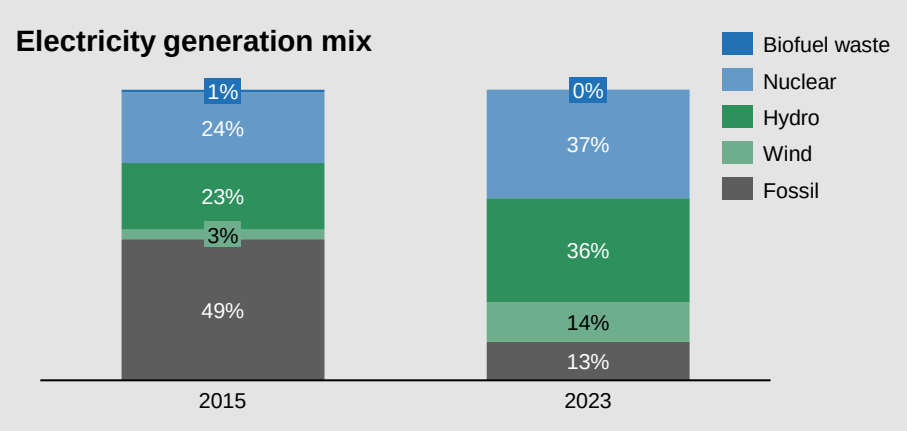
~2.7 GW Wind projects in mature-stage development

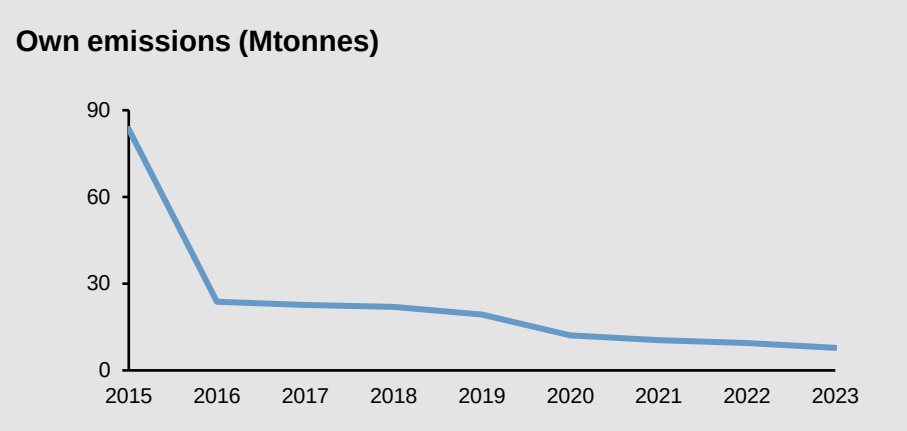
>8.8 GW Solar projects in development

>1.6 GW Batteries pipeline

Significant shift in production portfolio

With dramatic effects on our emissions profile





Milestones

2017 - Phase out of lignite with closure of Klingenberg CHP plant in Berlin, Germany. Inauguration of Pen y Cymoedd onshore wind farm in Wales

2018 - Phase out of peat in Uppsala, Sweden and the start of SamEnergi (third party integration of commercial heat surpluses to district heating networks)

2019 - Closure of coal-fired Hemweg-8 power plant in Amsterdam (NL)

2020 - Closure of coal-fired Moorburg power plant in Hamburg (DE) and opened Princess Ariane Wind Farm, the largest Dutch Onshore wind farm

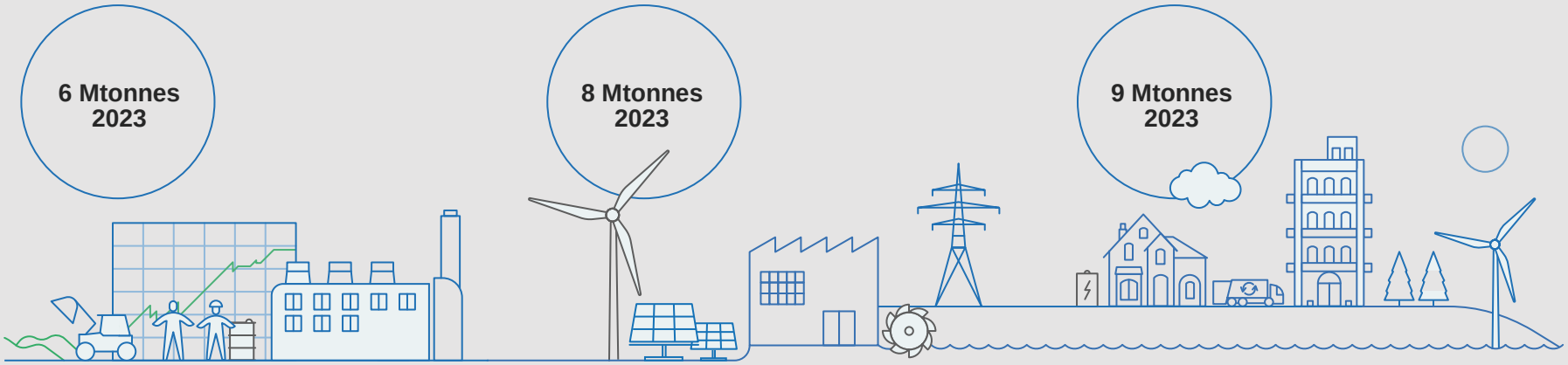
2021 - Kriegers Flak in Denmark operational as Scandinavia's largest wind farm

2022 - Inauguration of Vattenfall's largest onshore wind farm, Blakliden Fäbodberget, in Sweden

2023 - Inauguration of South Kyle onshore wind farm in the UK and Hollandse Kust Zuid in the Netherlands

Cutting CO_2 emissions throughout the value chain

Examples of actions



Suppliers

Supplier dialogues
and sustainability requirements in tenders

Lifecycle Assessments

Industry collaborations

Own operations

Reducing emissions in
line with climate science

Growth in renewables

Phase out of fossil fuels

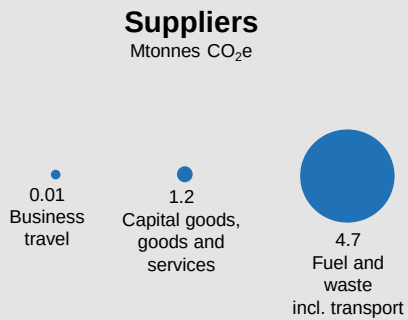
Customers

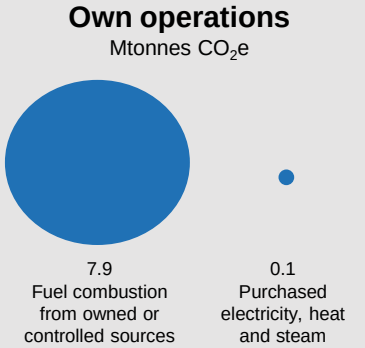
Climate-smart solutions
for homes and cities

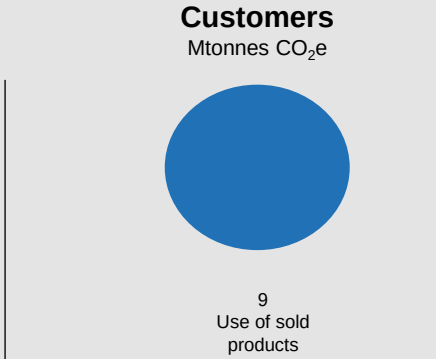
City partnerships

Environmental product
offerings

Current CO_2 emissions and reduction targets







Targets[1]

2030

Business travel: Remain under 50% of 2019 emissions
Capital goods, purchased goods and services: 50% reduction in emission intensity compared to 2020

–77% in emissions intensity

Use of sold products >54% reduction in absolute emissions by 2030

2040

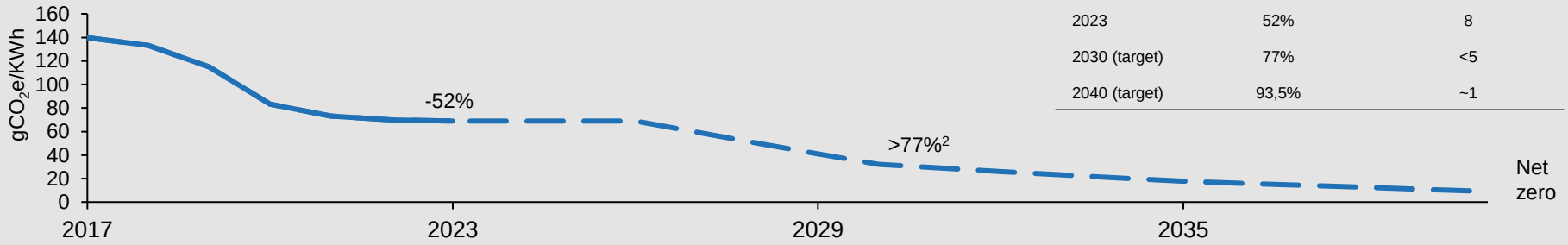
NET ZERO: 90% or more reduction in absolute emissions across the full value-chain

1 Base year 2017 except for suppliers emissions that have base year 2020

The road to net zero emissions

Vattenfall's targets and reductions align with the 1.5°C-scenario according to the Science Based Target initiative (SBTi)[1]

Trajectory for CO_2e emissions intensity (Scope 1 + 2), 2017-2040



Year	Emissions intensity reduction vs 2017	Absolute emissions (Mtonnes)
2017	N/A	19
2023	52%	8
2030 (target)	77%	<5
2040 (target)	93,5%	~1

Key priorities

- Complete phase-out of coal by 2030
- Phase-out of natural gas requires a combination of all fossil-free technologies, such as biomass, waste heat, green hydrogen, large-scale heat pumps and heat storage
- Ambition to commission four times our 2020 wind and solar capacity by 2030 → would bring Vattenfall's total commissioned capacity to over 16 GW
- Develop a carbon capture, storage, and utilisation solution for the biomass and waste plant in Uppsala, Sweden.

[1] Trajectory as of 31-12-2023. Emission base year and trajectory adjusted for divestments in accordance with GHG protocol.
[2] Reduction trajectory for 2030 compared to base year 2017.

Governance

VATTENFALL

State Ownership

State Ownership Policy and principles for state-owned enterprises 2020

The Government's management mandate

Chapter 9, Article 8, of the Instrument of Government (Regeringsformen, IG) provides that, with certain exceptions, state assets are at the disposal of and administered by the Government. Under Chapter 9, Article 9 of IG, the Parliament (Riksdag) decides the principles for the administration and disposition of state assets. The Swedish Budget Act (2011:203) contains provisions on acquisition and transfer of property, including shares and participations in companies. Chapter 8, Section 3 of the Budget Act provides that the Government must not acquire shares or participations or increase the State's share of the voting power or ownership in a company in any other way without an authorisation from the Riksdag. Nor may the Government inject capital in a company without authorisation from the Riksdag. Moreover, Chapter 8, Section 4, second paragraph of the Swedish Budget Act provides that, without the authorisation of the Riksdag, the Government must not, by sale or other means, reduce the state holding in companies in which the State holds at least half of the votes for all shares or participations. In addition to what is stated in these provisions, the approval of the Riksdag is required for material changes in the business purposes of the state-owned enterprises. In contrast, dividend payments, for example, do not require a Riksdag decision since they form part of the ongoing investment management.

Targets and assignments for state-owned enterprises

In the articles of association the owner determines the business purpose of the enterprise's operations and certain specific limits for its operations. The business purpose of the operations of state-owned enterprises is based on decisions of the Riksdag. The articles of association for state-owned enterprises are based on the rules in the Companies Act for public limited companies whose shares are admitted to trading on a regulated market in Sweden, the Swedish Corporate Governance Code and the State Ownership Policy.

Owner instructions

The owner gives instructions to the enterprise's board of directors in owner instructions. In state-owned enterprises, owner instructions are mainly used when an enterprise has a specifically adopted public policy assignment; receives budget appropriations; or is being restructured and also in the context of deregulation or other similar material changes. The content of owner instructions has to be relevant, specific and clear and is formalised through decisions at general meetings. Where an assignment is given in owner instructions, the instructions have to state clearly how the assignment will be financed, reported and tracked.

State-Ownership-Policy-2020

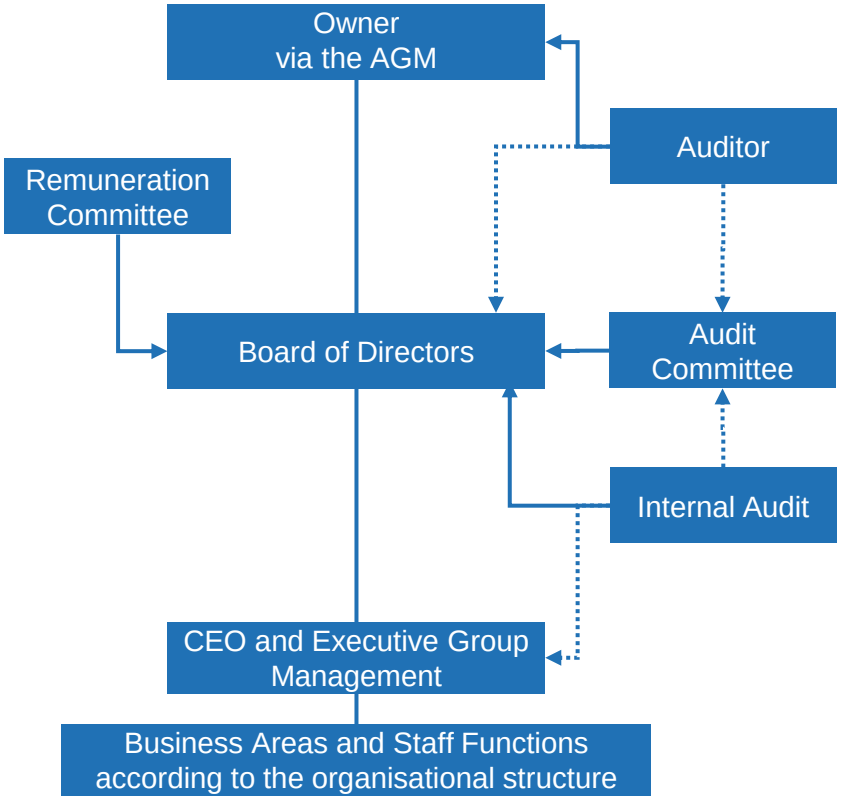
Articles of Association

Vattenfall AB is wholly owned by the Swedish state. Through a general meeting resolution on the content of the Articles of Association, the shareholder (the owner) makes decisions on the company's operations. The Swedish state's ownership policy and the principles for state-owned companies are decided on at the General Meeting. In accordance with the Swedish state's ownership policy, the company's financial targets are also decided on by a general meeting.

The object for the Company's activities is to generate a market rate of return by, directly or indirectly through subsidiaries and associated companies:

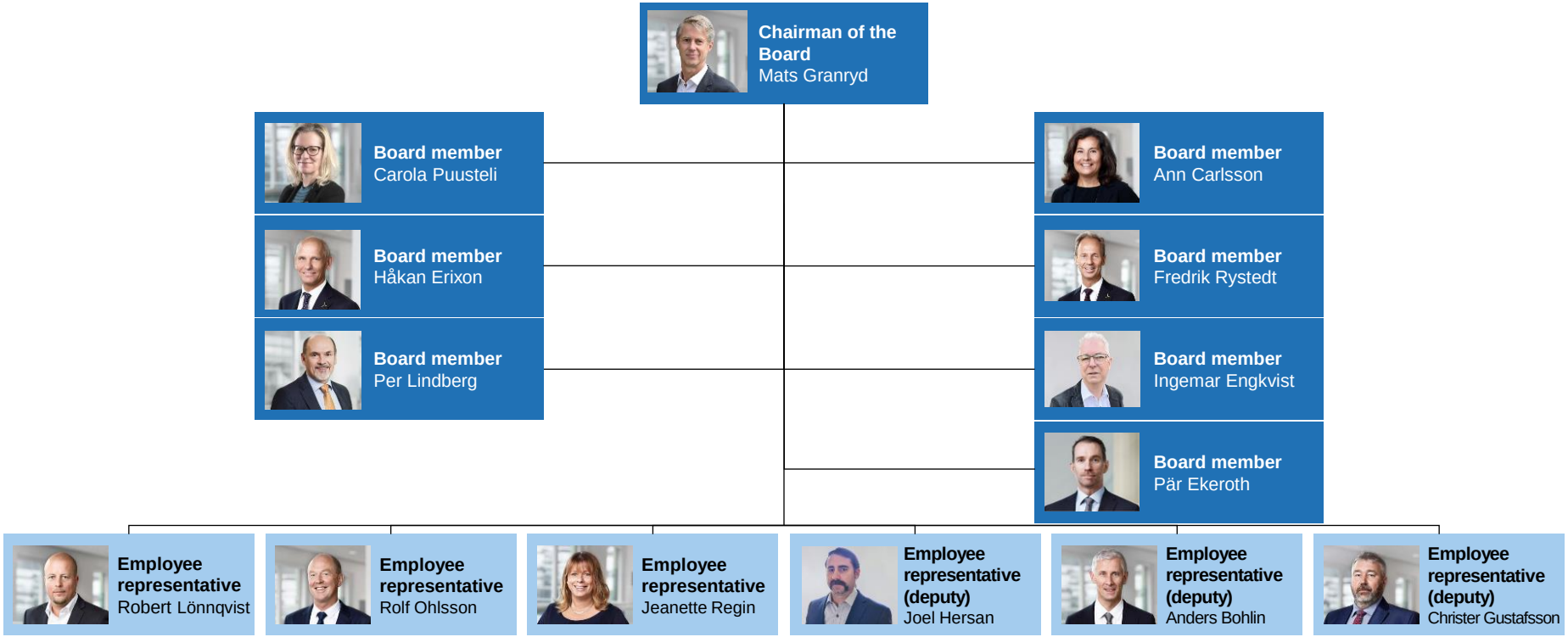
a. operating a commercial energy business that enables the company to be among the leaders in developing environmentally sustainable energy production,
b. carry on trading with products and services within branches that are promoting, supporting or supplementing the energy business, mainly within the IT and telecom branches, as well as products and services related to subscription,
c. carry on contracting and consulting activities mainly within the energy sector,
d. own and administer real estate, shares and other securities associated to the aforesaid business activities,
e. on behalf of the Group carry on capital and liquidity management operations and engage in trading securities,

and carry on other activities consistent therewith.



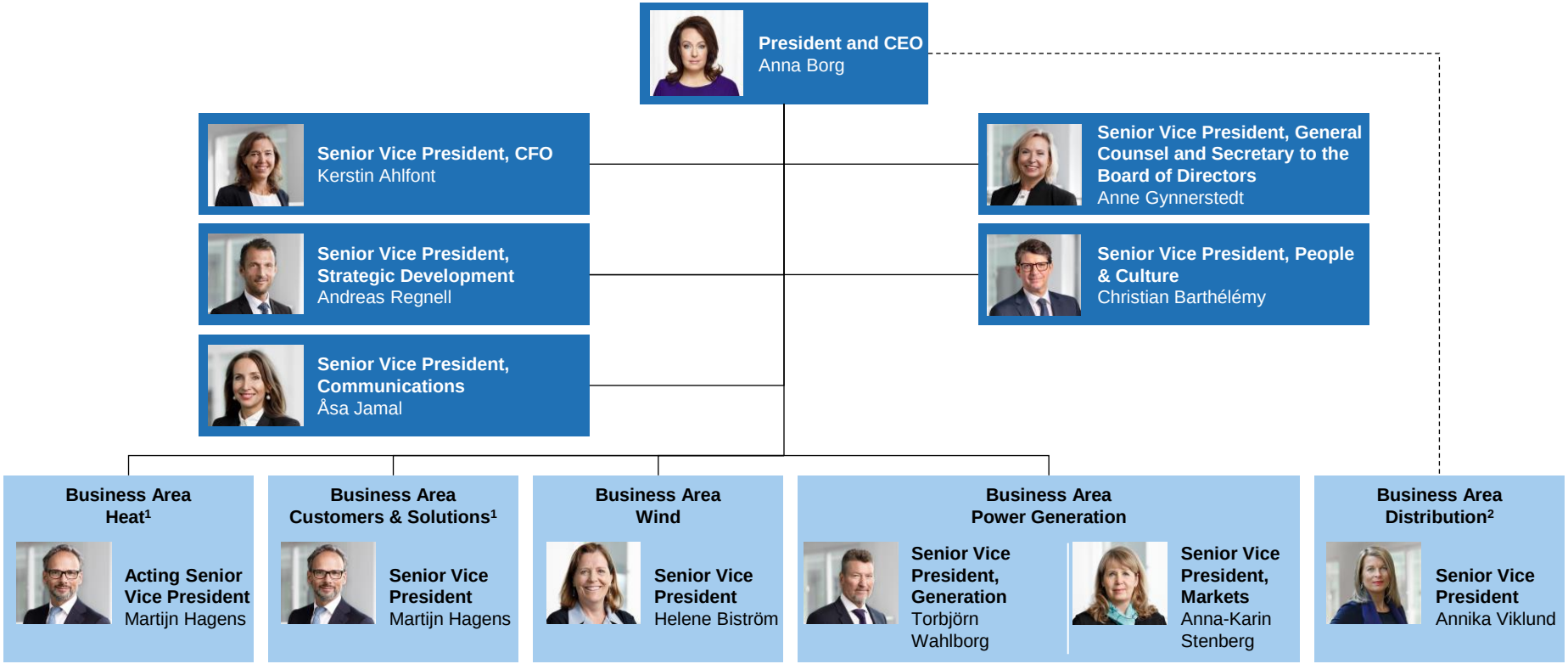
Articles of Association.
The Governance Structure

Vattenfall Board of Directors



For more info: see page 106-107 in the Annual- and Sustainability Report 2023

Vattenfall Executive Group Management



For more info: see page 108-109 in the Annual- and Sustainability Report 2023

1 As per 31st of December 2023

2 The electricity distribution operations are unbundled from Vattenfall's other operations in accordance with Swedish and British legislation. The head of Business Area distribution is therefore not a member of the EGM.

Customers & Solutions

VATTENFALL

Customers & Solutions

Providing sustainable energy solutions and services to retail and business customers

Overview

- Strong incumbent positions in core markets
- A growing customer base with high loyalty
- Strong expertise across the full energy value chain means that we can offer simple integrated solutions to satisfy increasingly sophisticated customer needs
- Brand perception on positive trend according to several surveys
- Well-developed IT infrastructure keeps operations cost-effective
- Our public charging network - InCharge - is one of the largest in northern Europe

Highlights

11.4 million customer contracts in Europe

113.5 TWh of electricity sold in 2023

51,000 connected charging points for electric vehicles

Key data

	FY 2023	FY 2022
Net sales (SEK bn)	216.3	183.2
External net sales (SEK bn)	207.3	174.0
Underlying EBIT[1] (SEK bn)	7.6	7.4
Sales of electricity (TWh)	113.5	93.5
- of which, private customers	27.6	27.1
- of which, resellers	36.3	20.7
- of which, business customers	49.6	45.7
Sales of gas (TWh)	44.1	46.4
Net Promoter Score (NPS)[2]	+11	+16

[1] Operating profit excluding items affecting comparability

[2] NPS is a tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services. Weighted 80% from Customers & Solutions and 20% from Heat

E-mobility – Charging the road to fossil freedom

Vattenfall InCharge is active in the full value chain of e-mobility – from infrastructure to connected services

VATTENFALL InCharge

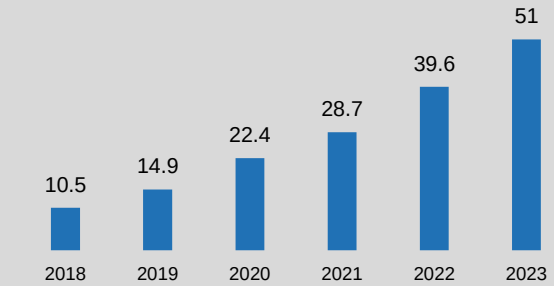
Vattenfall InCharge is owned by Vattenfall and serves the full value chain of e-mobility charging. We have established ourselves as one of the leading charge point operators in Europe. We are offering everything from infrastructure and hardware installation to software and connected services – all backed up with expertise and advice.

In close collaboration with government officials and planners, Vattenfall InCharge makes it easier for cities to become greener and cleaner. Businesses, large and small, housing associations and estates, as well as private homeowners all have flexible options to choose from our portfolio.

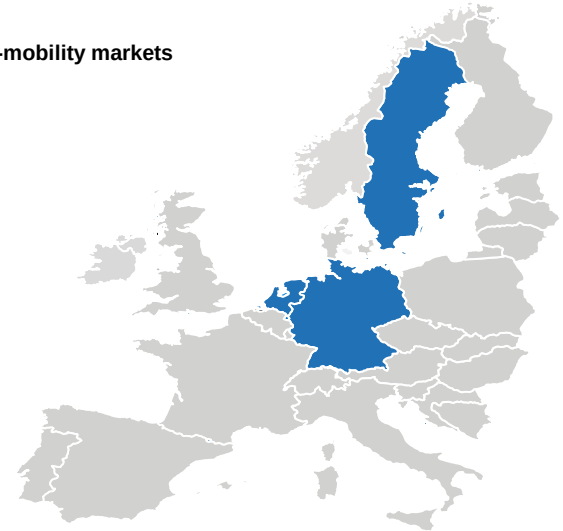
The e-mobility market is rapidly developing, and new players are shaping their roles in the value chain. With our positioning, Vattenfall InCharge contributes significantly to the electrification of European transport.

We have a strong footprint in the public charging infrastructure market in the Netherlands, are the most important e-mobility service provider in Sweden and entered important business partnerships in Germany.

Number of charging points (thousand)



E-mobility markets



Partners (examples)

bp, ARAL, McDonald's, Volvo, Hyundai, Taxi Stockholm 150000, Trafineo, Netto, Athlon, aimo, tanka, Castrol, nh Hotels, metropool regioamsterdam, Deloitte, Das Futterhaus, Honda, Provincie Noord-Brabant

Heat

VATTENFALL

Heat

One of Europe’s most experienced players in district heating

Overview

- One of Europe’s most experienced players in district heating
- Building and operating district heating assets and grids in 4 countries and ~ 25 cities[2]
- Solid, semi-regulated revenue streams
- Attractive growth prospects supported by urbanisation trend and increasing regulatory support for low carbon heating
- Considerable contributions to realise carbon reduction plans/target of cities where we operate heat assets/networks
- Heat generation & distribution systems are a platform to integrate other energy solutions, e.g. cooling, energy from waste, wind and solar

Highlights

~ 5,600 km heat grids in operation

~ 9.9 GW heat capacity

~ 4.3 GW electricity capacity

~ 2.1 mn heat related household equivalents

< 0.5% churn rate

Key data

	FY 2023	FY 2022
Net sales (SEK bn)	44.2	60.5
External net sales (SEK bn)	25.8	20.9
Underlying EBIT[1] (SEK bn)	3.2	-3.6
Electricity generation (TWh)	13.6	16.6
Sales of heat (TWh)	13.5	14.1

1 Operating profit excluding items affecting comparability

2 In December 2023 Vattenfall finalised the strategic review of its Berlin heat business and decided to sell the entire district heating business to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

Heat

Overview of markets and installed capacity

The Heat operating segment includes VF's heating & condensing businesses. Our core business is district heating, where we have growing end customer base in metropolitan areas like Berlin[1], Amsterdam, Uppsala & London. In the UK, Vattenfall has secured several contracts to supply low carbon district heating and help decarbonise the real estate sector. The condensing business consists of gas-fired power plants in the Netherlands.

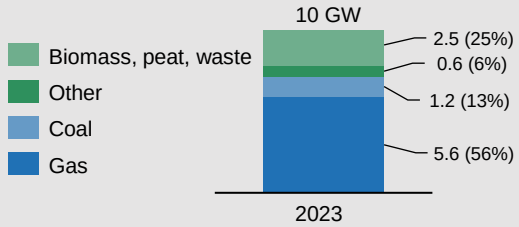
Heat cluster 2023

	Heat (TWh)	Power (TWh)
Germany[1]	8.9	6.1
Sweden	3.1	0.2
Netherlands	1.5	0.1
Total	**13.5**	**6.4**

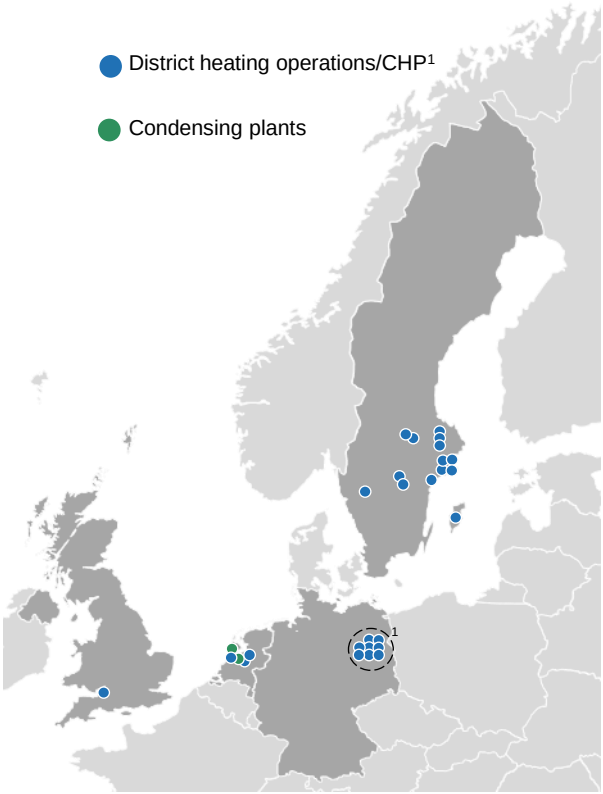
Condensing cluster 2023

	Heat (TWh)	Power (TWh)
Netherlands		7.0
Total		**7.0**

Installed capacity by GW heat



Transformation into fossil-free heat supply by 2040

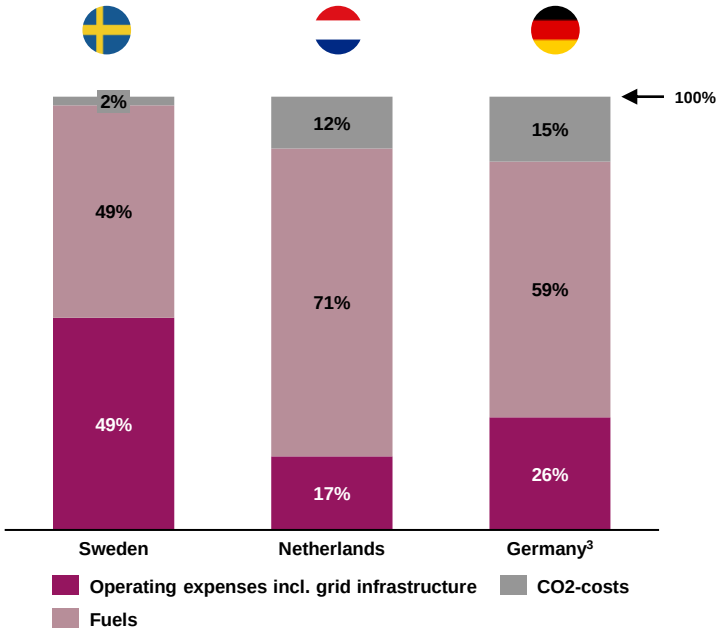


[1] In December 2023 Vattenfall decided to sell its entire district heating business in Germany to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

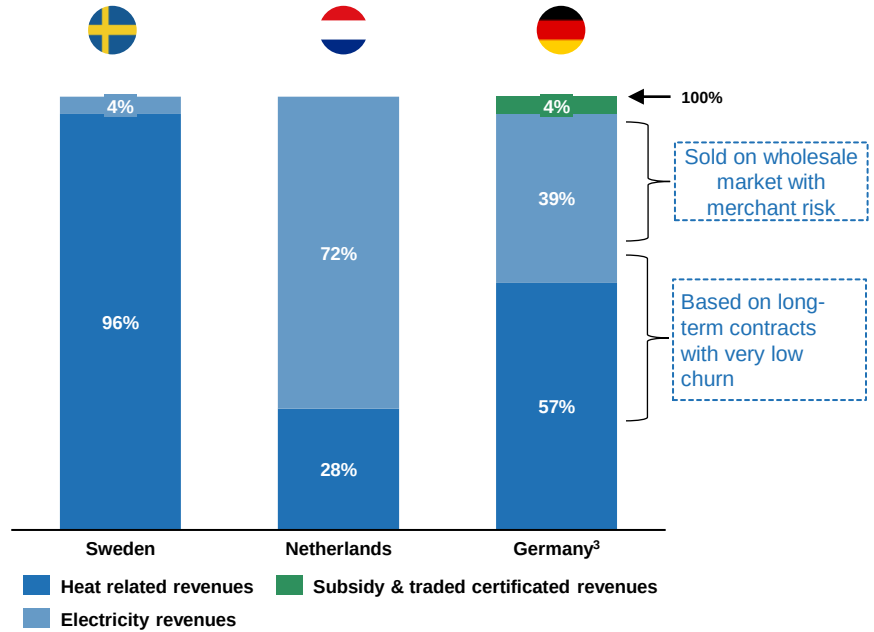
District heating & condensing revenue and cost structure

Business model differs per country – in Sweden stable heat revenues account for 96% of the total

Cost split (indicative)[1,2]



Revenue split (indicative)[2]



[1] SWE: including Heat SWE, Heat Projects SWE, BA Staff SWE | NL: including Heat NL, Condensing NL, Heat Projects NL, BA Staff NL | GER: including Heat Berlin, Heat Projects GER, BA Staff GER

[2] Split as of average 2020-2023 I

3 In December 2023 Vattenfall decided to sell its entire district heating business in Germany to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

Political recognition for district heating across our markets

District heating can be an attractive option for cities to decarbonise their building sectors

As of 2024-03-11

„Fit for -55% package“ widely finalized by end of 2023. Next step national transposition

2030 climate target**: -55% net GHG[4] emission (compared to 1990 levels);** 2050 target: EU-wide climate neutrality

Increased requirements for heating/cooling and buildings sector: share of renewables, phase out fossil fuels incl. natural gas, demand reduction/energy efficiency | energy system integration; heat from RES-based power-to-heat becomes countable as renewable based heat, generally positive perception for efficient district heating and cooling in the sense of the EED; avoid “lock in” of gas -> 100% climate neutral/hydrogen based CHP; Hydrogen one priority area; CO_2 pricing in the building sector; recognition of CHP delivering *plannable capacity* for volatile electricity system.

	Market maturity[1]	Political support	Competitiveness	Concession based	Price setting (heat)	Typical customer contract length
	Young	Low carbon district heating market share 20% by 2030 in metropolitan areas[2] (3% today)	**Highly competitive** once plans to mandate district heating for new build are put in place allied with stronger government focus on district heating as a key net zero enabler	Mainly yes, (e.g. for Brent Cross South > 40 years)	Price escalation formula for heat	30 years
	Mature + Transition to fossil free[5]	Prolonged CHP production support / subsidies Green heat funding program approved by EU	**Highly competitive** Low primary energy factor for new houses Reliable and comfortable delivery of city heating	No	Price escalation formula for heat	up to 10 years
	Mature + Transition to fossil free	Desire to phase out natural gas boosts renewable energy projects, e.g. district heating. Subsidy schemes for (renewable) heat sources, district heating infrastructure and for homeowners/landlords/etc	**Competitive pricing** under pressure due to rising costs, structurally lower demand (GJ used) and Heat Act 2 (draft). Heat Act 2 will be discussed in Lower House Autumn 2024. Competitiveness between sustainable options highly depends on the individual situation	Mainly concession based, a typical term is 30 years[3]	Current: price formula based on gas price and average sector cost. Heat Act 2 wants to drop reference with gas price and introduce cost-based price	15-25 years
	Mature (already fossil free)	Supportive but few special incentives	**Competitive position** that is being challenged by heat pumps	No	No heat price regulation	Until further notice

[1] Referring to how established the technology is on the market and the future growth prospects

[2] District heating market share of 30% in metropolitan areas follows governmental goal to reach low carbon heat supply by 17% district heating UK wide

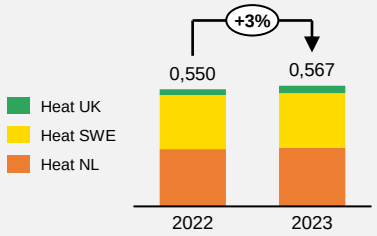
[3] The other type of contract is the heat delivery contract. Contracts are then building-specific with a typical contract length of 10 years | [4] GHG: greenhouse gas emissions

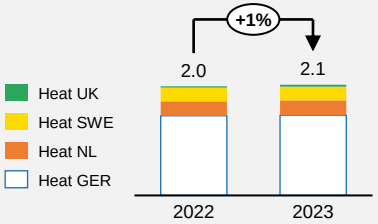
[5] In December 2023 Vattenfall decided to sell its entire district heating business in Germany to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

District heating volumes set to increase significantly in the UK and the NL portfolio …

… with a stable trend in Swedish portfolio as population growth is offset by energy efficiency measures

# of household equivalents (end-consumers)[1] [in mn]

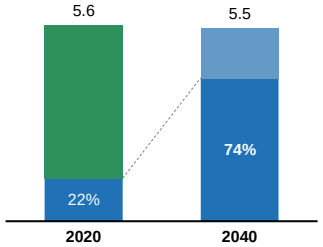




[1] In December 2023 Vattenfall decided to sell its entire district heating business in Germany to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

Heat consumption (TWh) and district heating market share (%) by City, 2020 vs 2040

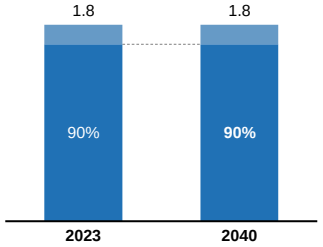
Amsterdam[2]



Gas boiler phase out set to spur dramatic increase in district heating

Stable total heat demand – population growth offset by energy efficiency measures

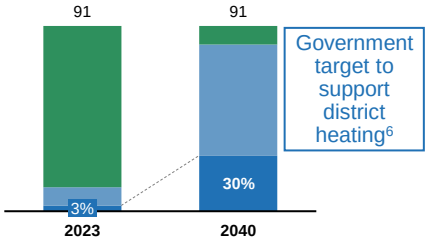
Uppsala[3]



Mature market with dominant market share of district heating

Stable heat demand – population growth offset by energy efficiency measures[4]

London, Bristol & Edinburgh[5]



Dramatic growth of district heating expected as market share increases to 30% in 2040

Stable heat demand – population growth offset by energy efficiency measures

[2] Simplified to reflect connections in Amsterdam/Almere (= 70% of Heat Netherlands); Source for 2040: Study by Municipality of Amsterdam

[3] Simplified reflecting Uppsala demand (= 52% of Heat Sweden supply, excluding daughter companies)

[4] Energimyndigheten report: Scenarier över Sveriges energisystem 2023 med fokus på elektrifieringen 2050

[5] First cities VF has entered the Heat UK market

[6] District heating market share of 30% in metropolitan areas follows governmental goal to reach low carbon heat supply by 18% district heating UK wide

VATTENFALL

Overview of largest heat and condensing plants

Germany*

Power and heat plants	Fuel	Capacity heat (MW)	Capacity electricity (MW)
Marzahn		924	256
Reuter West		840	564
Klingenberg		760	164
Mitte		680	484
Lichterfelde		609	288
Moabit		315	123
Charlottenburg		300	144
Reuter		219	36
Scharnhorststraße		167	1
Wilmersdorf		120	0
Märkisches Viertel		106	6
Buch		104	13
Lange Enden		111	4
Köpenick		50	11
Treptow		39	0
Altglienicke		20	1
Friedrichshagen		29	1
Blankenburger Straße		27	1

The Netherlands

Power and heat plants	Fuel	Capacity heat (MW)	Capacity electricity (MW)
Diemen		815	684
Almere		517	0
A'dam South East		501	2
WPW		310	2
Arnhem		215	0
Leiden		150	0
Rotterdam		150	0
Velsen		105	869
Nijmegen		87	0
Lelystad		51	0
Hemweg		0	440
Ede		10	0

Sweden

Power and heat plants	Fuel	Capacity heat (MW)	Capacity electricity (MW)
Uppsala		814	27
Drefviken		326	19
Nyköping		185	35
Vänersborg		80	0
Motala		65	4
Ludvika		50	0
Gotland Visby		44	155

United Kingdom

Power and heat plants	Fuel	Capacity heat (MW)	Capacity electricity (MW)
Castle Park		6	0
Broughton House		5	0
100 Temple St		4	1
Gardiner Haskins		4	0

Biomass Coal Gas Steam Electric

* In December 2023 Vattenfall decided to sell its entire district heating business in Germany to the State of Berlin. Vattenfall and the State of Berlin plan to close the transaction in the second quarter of 2024.

VATTENFALL

Power Generation

VATTENFALL

Power Generation

One of Europe’s largest providers of fossil-free electricity

Overview

- Largest segment by power production volume in Vattenfall, contributing to our position as Europe’s second largest provider of fossil-free electricity
- Century-long roots in hydro power and a leading position in Sweden's hydro power development
- Major owner of nuclear power with vast experience of nuclear operations, decommissioning and management of radioactive waste and spent nuclear fuel
- One of the leading energy trading companies in Europe offering reliable, responsible and flexible access to all relevant commodity wholesale markets
- Sourcing of gas, biomass and carbon credits for Vattenfall and third parties
- Maximising value and managing risk by optimising and dispatching as well as hedging of Vattenfall's assets and sales positions
- Proprietary trading within the risk mandate set by Vattenfall's Board of Directors
- Offer PPAs to renewable asset owners and offer fossil-free energy to large customers
- Responsible for Sweden’s leading maintenance service business in the energy sector

Highlights

5.5 GW nuclear power

11.5 GW hydro power

10.8 GW managed capacity of renewable generation assets

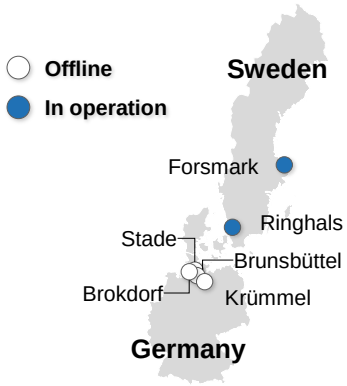
Laxede power plant, Sweden

Key data

	FY 2023	FY 2022
Net sales (SEK bn)	207.5	205.8
External net sales (SEK bn)	37.8	28.2
Underlying EBIT (SEK bn)	3.1	14.3[1]
Electricity generation (TWh)	73.5	80.1
- of which, hydro	36.1	40.5
- of which, nuclear	37.4	39.6
Customer sales of electricity (TWh)	11.3	15.6
- of which, resellers	9.4	13.8
- of which, business customers	1.9	1.8

[1] The value has been adjusted compared with information previously published in Vattenfall’s financial reports, see note 1 Accounting policies, risks and uncertainties.

Nuclear power



Vattenfall's nuclear power plants

- Vattenfall owns eleven nuclear reactors. Seven reactors are located in Sweden (four at Ringhals, three at Forsmark), and four in Germany (Brunsbüttel, Krümmel and minority stakes in Brokdorf and Stade)
- Five of our reactors are in commercial operation in Sweden
- Our last operational nuclear asset in Germany, Brokdorf, was decommissioned at year-end 2021
- Vattenfall's nuclear power generation in 2023 amounted to 37.4 TWh (39.6). Combined availability was 80.5% (83.6%)

Nuclear Power Plant list

Nuclear Power Plant	Country	Installed Capacity (MW)	Vattenfall ownership share	Co-Owners	Commission Year	Final operating year	Operation status	Decommissioning status
Ringhals	Sweden	3,967	70.4%	Sydkraft Nuclear Power AB (29.6%)	Ringhals 1: 1976; Ringhals 2: 1975; Ringhals 3: 1981; Ringhals 4: 1983	Ringhals 2: 2019; Ringhals 1: 2020	In operation	Ringhals 1 & 2: Shutdown, in pre-decommissioning planning
Forsmark	Sweden	3,271	66.0%	E.ON (8.5%) and Mellansvensk Kraftgrupp (25.5%)	Forsmark 1: 1980; Forsmark 2: 1981; Forsmark 3: 1985	-	In operation	-
Brunsbüttel	Germany	771	66.7%	E.ON (33.3%)	1977	2007	Offline	Decommissioning mode
Krümmel	Germany	1,346	50.0%	E.ON (50.0%)	1984	2011	Offline	Planned to initiate decommissioning in 2021
Stade	Germany	640	33.3%	PreussenElektra GmbH (66.7%)	1972	2003	Offline	Undergoing decommissioning since Oct 2005
Brokdorf	Germany	1,410	20.0%	PreussenElektra GmbH (80.0%)	1986	2021	Offline	Decommissioned in 2021

The financing system for post-operational nuclear costs

Financial implications of the various steps in the financing systems in Sweden and Germany

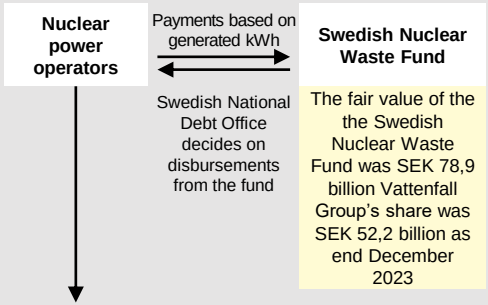
In Sweden

Nuclear power plant owners in Sweden are obligated to finance the costs for dismantling and management of spent nuclear fuel. The financing is handled by payment of fees for each generated kWh to the Swedish Nuclear Waste Fund, which manages paid-in funds. The fund also reimburses owner for the payment to SKB (responsible for long term safe-handling of radioactive waste) meeting the obligation based on Swedish law.

In Germany

Following the nuclear accident in Fukushima, Japan in 2011, Germany's government decided to shut down all the 17 nuclear power plants by 2022. The German state took over the responsibility for interim and final storage of low and intermediate level spent nuclear fuel in 2017, funded by the contributions that the NPP operators paid to state-controlled fund. The German Federal Council must agree on a suitable location for permanent storage of spent nuclear fuel by 2031 and final repository by 2050. The spent nuclear fuel and radioactive waste must be stored in interim storage close to the nuclear power plant.

Sweden

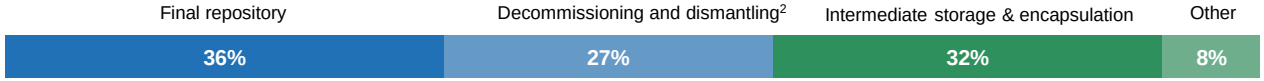


Financial implications	EBIT	Funds from operations (FFO)	Adjusted net debt (AND)
Valuation of nuclear provisions	Provision value depreciated over operating life-time of nuclear power plant[1]	N/A	Included in AND
Payments to the Swedish Nuclear Waste Fund	No impact	Negative impact through payment to the Swedish Nuclear Waste Fund	Increase fund balance (offset AND)
Decommissioning activities	No impact	FFO neutral	AND neutral

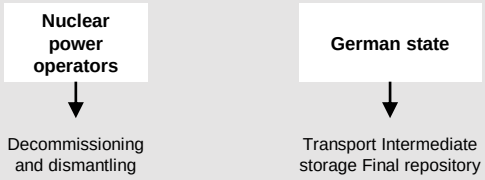
Swedish Nuclear Fuel and waste Management Company (SKB)

Remaining post-operational costs for the entire Swedish nuclear fleet

100,2
SEK billion



Germany



Financial implications	EBIT	Funds from operations (FFO)	Adjusted net debt (AND)
Valuation of nuclear provisions	Non-operating plants – change in provision valuation directly impacts EBIT	N/A	Included in AND
Decommissioning activities	N/A	Negative impact	AND neutral

[1] For reactors no longer in operation, nuclear provisions has an immediate effect on EBIT

[2] Decommissioning and dismantling are the responsibility of the nuclear power operators and are not included in SKB's operations

Hydro power

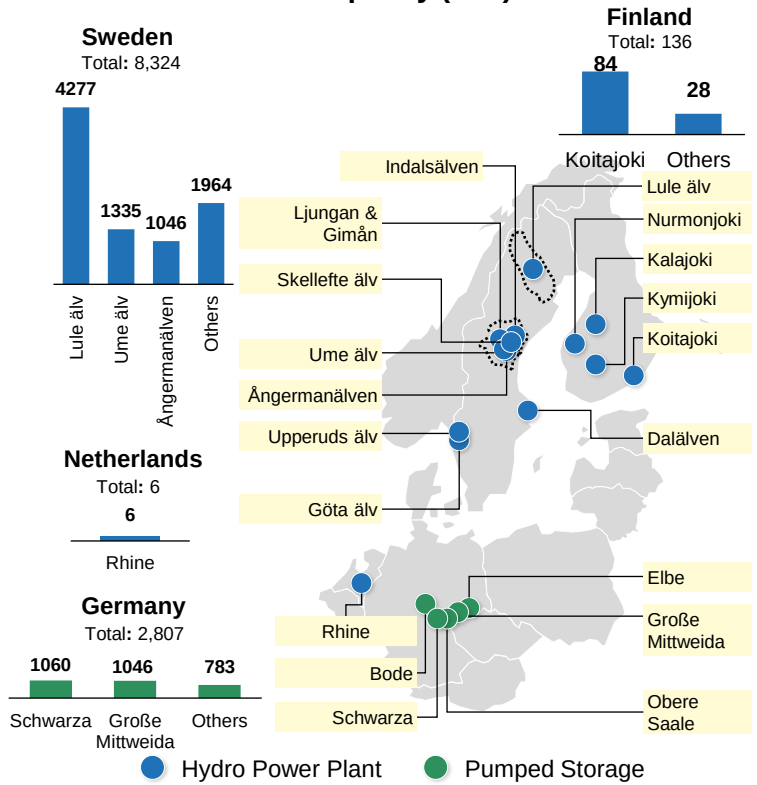
Hydro overview

- We own and operate hydro power plants, most of which are located in Sweden (79 sites). Additional sites are located in Germany (pumped storage, 8 sites), Finland (9 sites) and the Netherlands (1 site). In 2023, Vattenfall's hydro power capacity of 11.5 GW generated 36.1 TWh (40.5 TWh in 2022)
- In response to the increasing value of dispatchable production, investments in our hydro power stations have focused on refurbishments and upgrades that increase availability and flexibility. We are also undertaking a number of initiatives to reduce the negative effects of hydro power on ecosystems and biodiversity

Major Hydro Power Plants

	Project	Turbine Type	Installed Capacity (MW)	Country	River	Vattenfall ownership share	Commission Year
Hydro Power	Harsprånget	Francis	871	Sweden	Lule älv	100%	1951
	Letsi	Francis	486	Sweden	Lule älv	100%	1967
	Messaure	Francis	463	Sweden	Lule älv	100%	1963
	Porjus	Francis	430	Sweden	Lule älv	100%	1915
	Stornorrfors	Francis	604	Sweden	Ume älv	75%	1958
Pumped storage	Goldisthal	Francis/Ossberger	1,060	Germany	Schwarza	100%	2004
	Markersbach	Francis/Ossberger	1,046	Germany	Große Mittweida	100%	1981
	Hohenwarte II	Francis	320	Germany	Obere Saale	100%	1966

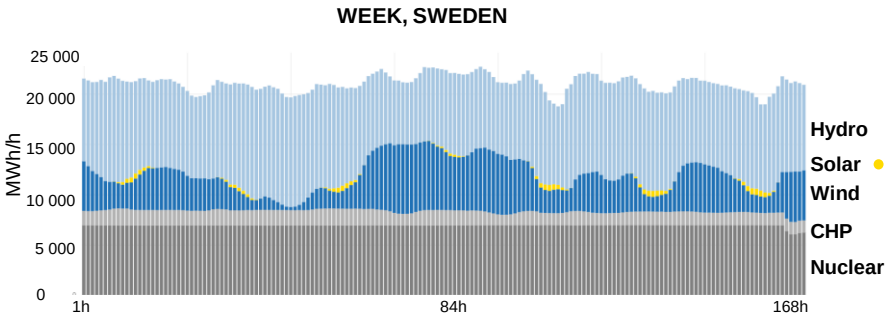
River stream installed capacity (MW)

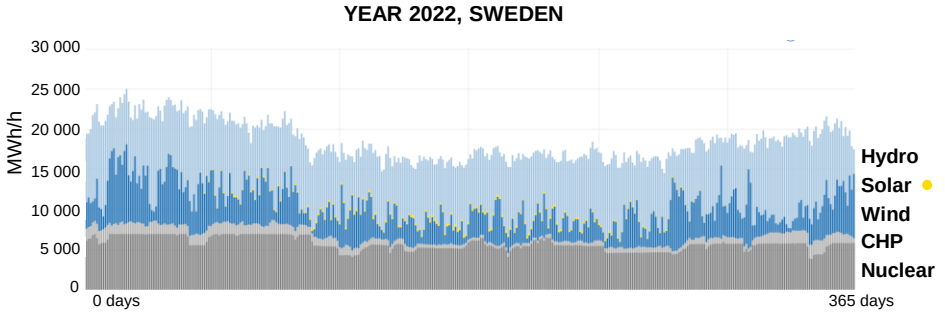


The inherent flexibility of Vattenfall's hydro power visualised

Intrahourly fluctuations	Hourly fluctuations	Daily fluctuations	Seasonal fluctuations	Yearly fluctuations
Balancing and Intraday	*Intraday & Day Ahead markets/ contracts*	*Day Ahead markets/ contracts*	*Forwards, markets for futures*	*Forwards, markets for futures*
Hydro	Hydro	Hydro	Hydro	Hydro

Up and downward regulation





Flexible hydro power hydro power plays an instrumental role in the decarbonisation of the energy system

The intensified focus on climate change and CO2 emissions has contributed to significant growth in installed capacity of renewable energy sources. However, the intermittent nature of these energy sources makes it more challenging to balance the energy system. Flexible hydro power offers its huge reservoirs of stored water as a giant "green" battery. This capacity can be increased by upgrading existing plants and building new pumped storage plants.

*Combined heat and power plant (CHP)

Major deals on Corporate PPAs and PPAs

During 2023 our contracted volume has increased to 7.3 TWh of renewable electricity (Corporate PPAs).

Contracted volume CPPA: 7.3 TWh	VOLVO	225 GWh	Vattenfall will provide wind power to Volvo from onshore wind farm Bruzaholm over a tenor of 10 years. Wind farm Bruzaholm is located in Jönköping County, southern Sweden.
	EVONIK Leading Beyond Chemistry	120 GWh	Vattenfall will provide solar power to chemical company Evonik from 100 MW solar farms Juliusburg/Krukow and Silberstedt over a tenor of 10 years. The solar farms are located east and north of Hamburg.
	wieland	46 GWh	Vattenfall will provide solar power to copper producer Wieland Werke AG from 46 MW solar farm Nauen in over a tenor of 10 years. The solar farm is located in Brandenburg, west of Berlin.
	e·on	650 GWh	Vattenfall will provide wind power to E.on UK from onshore wind farm South Kylie over a tenor of 10 years. Wind farm South Kyle is located in Scotland, south of Glasgow.
Current capacity PPA: 11 GW	ILOS	220 MW	Vattenfall has signed an agreement with ILOS Energy for a 10-year PPA for 6 newly developed solar farms of Ilos in the UK.

Wind

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Wind

One of the biggest renewable energy players in Europe

Overview

- Strong position within Offshore Wind with an extensive pipeline
- A pioneer within Offshore Wind from the outset and a leader in the reduction of levelised cost of energy
- One of the largest producers of Onshore Wind power in Denmark and the Netherlands
- Highly experienced team managing all key processes with close supplier collaboration along the value chain
- Strong platform and project execution track record
- Reputation as a trustworthy partner helps securing financing and off-takers
- Front-runner on innovative solutions within Solar PV & Batteries such as co-location with wind farms and shared infrastructure

Highlights

4.1 GW installed Offshore Wind capacity

2 GW installed Onshore Wind capacity

~9.2 GW Solar PV pipeline (all stages)

~2,4 GW Batteries pipeline

Blakliden Fäbodberget, Scandinvia's largest onshore wind farm to date

Key data

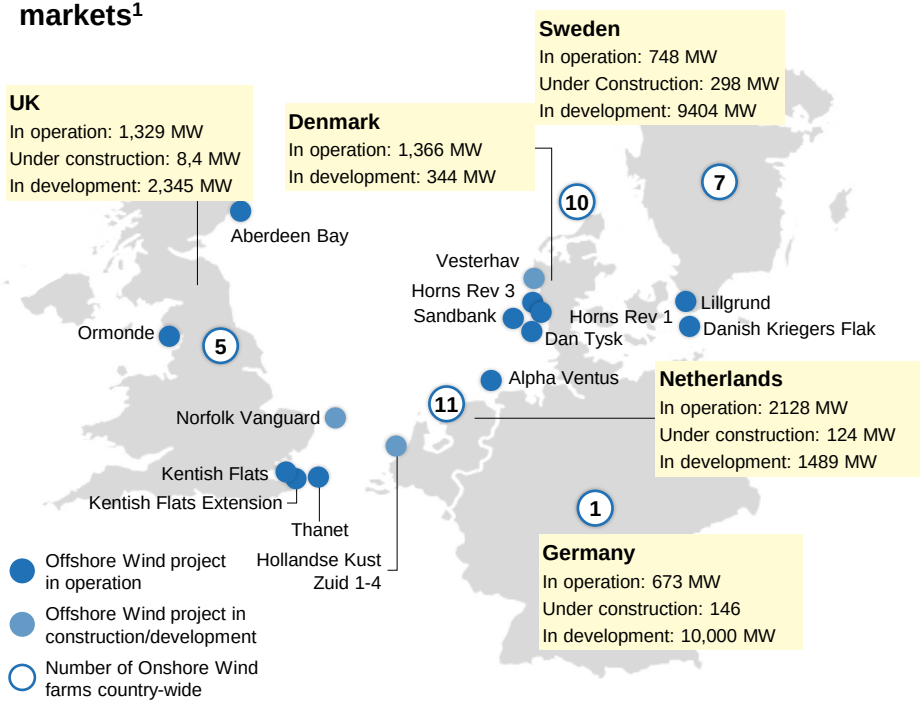
	FY 2023	FY 2022
Net sales (SEK bn)	25.4	29.1
External net sales (SEK bn)	8.5	4.3
Underlying EBIT[1] (SEK bn)	6.5	16.5
Electricity generation (TWh)	13.8	12.2

[1] Operating profit excluding items affecting comparability

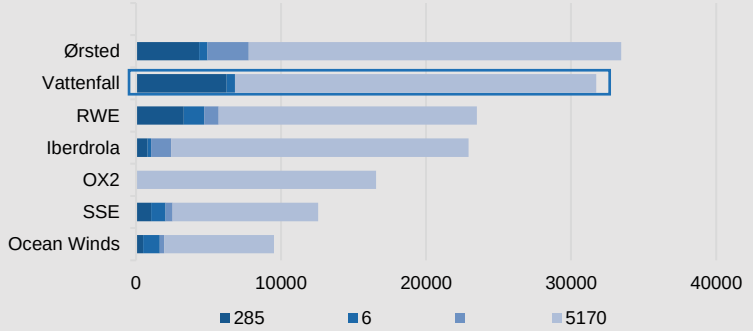
A leader in the European renewables transition

Strong position within Offshore Wind and extensive European pipeline ahead

Geographical overview – we develop, construct and operate Wind and Solar PV farms and batteries in our core European markets[1]



Capacity of top 10 European Offshore Wind Players (MW)[2]



[2] 4COffshore database as of February 2023; net capacity (i.e. only showing owned capacity)

Under construction and pipeline[1]

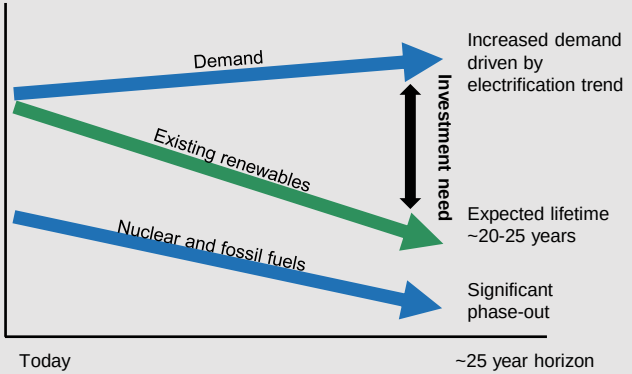
> 2,7 GW	> 16 GW	> 8,8 GW	> 2,4 MW
Wind projects under construction	Wind projects in development	Solar PV & batteries projects in development	Batteries pipeline

[1] As of March 2024

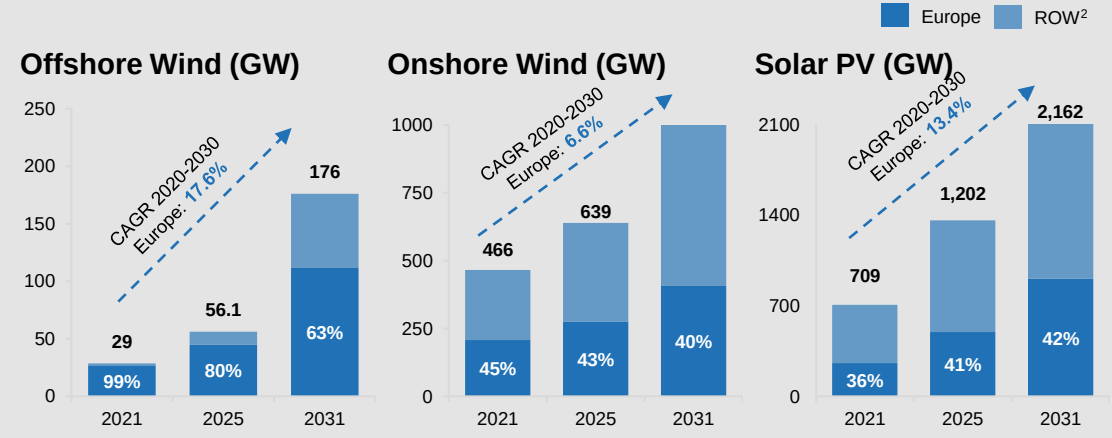
Europe continues to be a highly attractive growth market

Despite significant ramp-up in renewables, much more growth is expected in the coming decade

Increasing demand and phase-out of coal gives plenty of room for growth in Europe



Double-digit growth across renewables technologies until 2030[1]

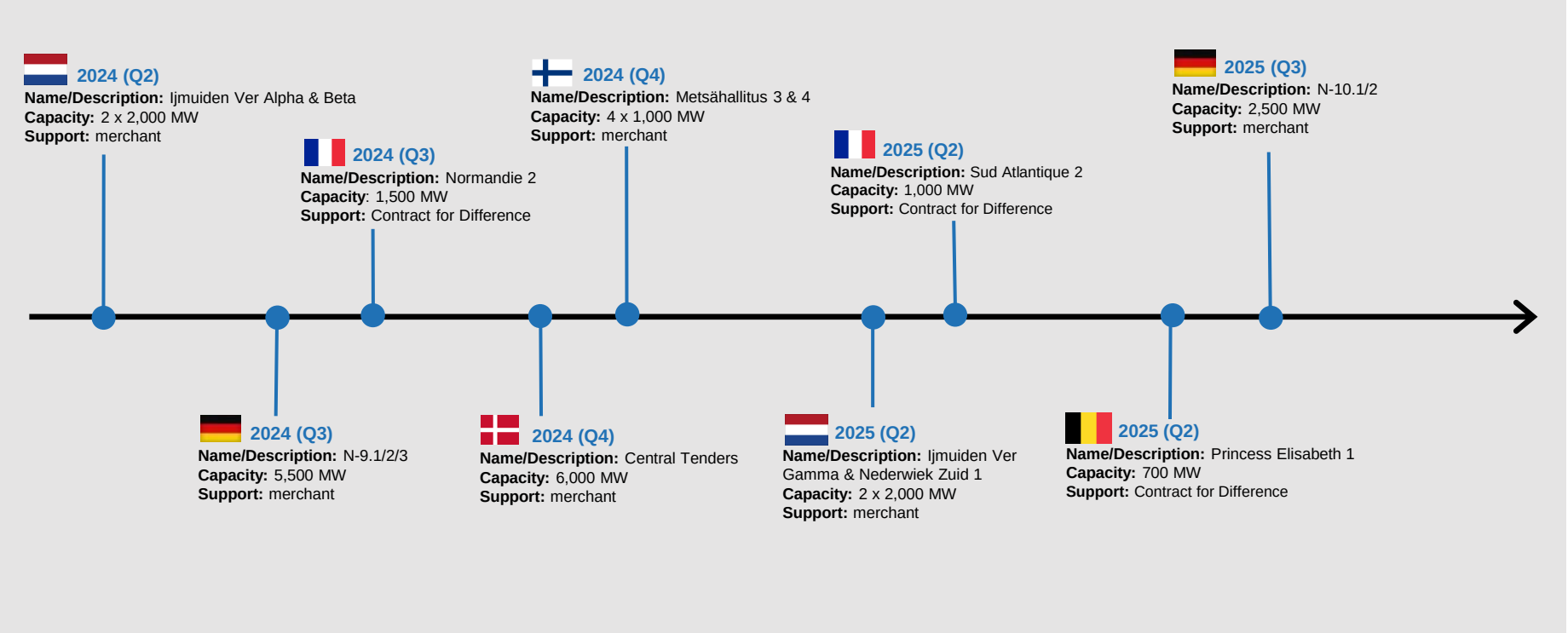


	Offshore Wind (GW)			Onshore Wind (GW)			Solar PV (GW)		
	2021	2025	2031	2021	2025	2031	2021	2025	2031
Europe	27 GW	45 GW	112 GW	208 GW	276 GW	407 GW	257 GW	498 GW	912 GW
ROW	1,5 GW	11,1 GW	64 GW	258 GW	363 GW	608 GW	452 GW	864 GW	1,711 GW

[1] Source: Wood Mackenzie, cumulated capacity
[2] ROW excludes China

Pipeline of opportunities supports Vattenfall ambitions

Several upcoming offshore wind tenders in relevant markets*



* Listed by expected award date

Accelerate fossil-free living with the power of wind and solar

Kogel
First large-scale Solar PV farm in Germany commissioned (30 MW)

Danish Kriegers Flak
Commissioning of Scandinavia's largest Offshore Wind farm (605 MW)

Blakliden Fäbodberget
Commissioning of Scandinavia's largest Onshore Wind farm (353 MW)

Bruzaholm
Onshore wind farm. Construction started in 2023 (140 MW). Commissioning expected in 2025

South Kyle
Commission of the largest Onshore Wind farms in the UK (240 MW)

Tützpatz AgriPV
Solar farm under construction (76 MWp)

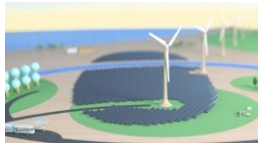
2021

2022

2023

Hollandse Kust Zuid 1-4
Divestment of 49% of the project (1.5 GW) to industrial partner BASF

Haringvliet
Commissioning of first hybrid project (Onshore Wind + Solar PV + Battery)



Eemshaven West
Onshore Wind, Solar, Batteries and Electrolyser 2022-2024 permitting in process

Solizer
Acquisition of solar farm with a 4GW pipeline for development

Hollandse Kust Zuid 1-4
Inauguration of the wind farm (1.5 GW).

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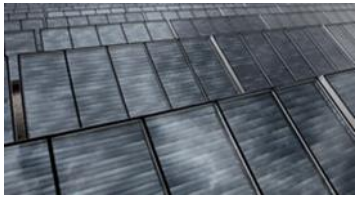
Examples of partnership structures within wind and solar

DanTysk and Sandbank (DE)
Status: in operation

Specs: Offshore Wind (288 + 288 MW)

Partner: Stadtwerke München

Deal structure: jointly owned subsidiary (Vattenfall share: 51%) that constructed and now operates the wind farm.



Coevorden (NL)

Status: in operation

Specs: Solar PV (7 MW)

Partner: Patronale

Deal structure: sale of 100% stake in operating Solar PV farm.

Blakliden/Fäbodberget (SE)
Status: in operation

Specs: Onshore Wind (353 MW)

Partners: Vestas and PKA

Deal structure: sale of 70% stake before construction. In addition, ~60% of the production is covered in 20-year PPA (with Norsk Hydro).

South Kyle (UK)

Status: commissioned

Specs: Onshore Wind (240 MW)

Partner: Greencoat UK Wind

Deal structure: sale upon completion and operation of the wind farm for a minimum of 10 years. Vattenfall will also purchase the power for a period of 15 years.

Hollandse Kust Zuid (NL)
Status: Commissioned

Specs: Offshore Wind (1,500 MW)

Partners: BASF and Allianz

Deal structure: sale of 49.5% stake in post-FID project.

Overview of current regulatory regimes

Country	Name	Founding year/ Status/Technology	Overview	Time period
	Contracts for Difference (CfD)	Founding year: - Status: in force Eligible technology: 	• A settlement price is guaranteed to the Offshore power provider. The support is based on the difference between agreed and market price • If market price is lower than the agreed price, the project owner receives the support. If the market price is higher than the agreed price, the profit is divided between the project owner and the government	• Maximum of 20 years (after the wind farm has been connected to the grid)
	Feed-in premium	Founding year: 2009 Status: in force Eligible technology: 	• Since 2020, all onshore solar and wind run at merchant risk. However, projects before 2020 receives subsidies equivalent to the difference between the spot market price and the fixed support income. Vattenfall has disinvested from onshore wind and solar development. Four existing onshore wind farms receive subsidies.	• Depends on the type of technology and date of commissioning
	Contracts for Difference (CfD)	Founding year: 2014 Status: in force Eligible technology: 	• A Contract for Difference (CfD) is a private law contract between a renewable electricity generator and the CfD counterparty – Low Carbon Contracts Company (LCCC) • The CfD is based on a difference between the market price and an agreed “strike price” • If strike price > market price: The CfD counterparty must pay the difference between the two to the generator • If strike price < market price: The generator must pay the difference between the two to the CfD counterparty	• CfD contracts are awarded for a period of 15 years, index linked to CPI
	MEP[1] / SDE+ / SDE++	Founding year: 2011 Status: in force Eligible technology[2]: 	• Provides a feed-in-premium subsidy that covers the financial gap between the cost of the subsidised sustainable technology and the cost of the fossil alternative, e.g. difference between wholesale electricity prices and cost of electricity from renewable sources • The budget is based on an auction system, where the lowest bidder receives the premium • Total budget of SDE++ 2022: at least € 8 billion • 2022: lifting of the overall 35 TWh subsidy ceiling for renewable electricity in 2030.	• Premium is paid for a period of up to 15 years
	EEG	Founding year: - Status: in force Eligible technology: 	• Several models deployed over the years. Prior to 2017, FIT system. This has now been replaced with a tendering process (prices set by competitive auctions) where projects receive contracts to sell the produced electricity at the bid price • Bids are based on floating market premium • Market Premium: reference value of the respective renewable energy plant minus its technology-specific market value	• Market premium is paid for a period of 20 years
	The Electricity Certificate System	Founding year: 2003 Status: in force Eligible technology: 	• The demand for certificates is regulated by a quota system, which is fixed in proportion to total electricity use (energy intensive industry is exempted) • The electricity producer receives a certificate for each MWh from renewable sources and sells it to electricity consumers on the open market • Since December 2021, the Electricity Certificate system is closed for new plants.	• The system will be entirely closed down by 2036
	Contracts for Difference (CfD)	Founding year: 2010 Status: in force Eligible technology: 	• A Contract for Difference (CfD) is in place and is based on a difference between the market price and an agreed “strike price” • If strike price > market price: State must pay the difference to the producer • If Strike price < market price: Producer must pay the difference to the State	• 20 years, partially indexed on labour and industrial production

[1] Older version of the SDE+ scheme

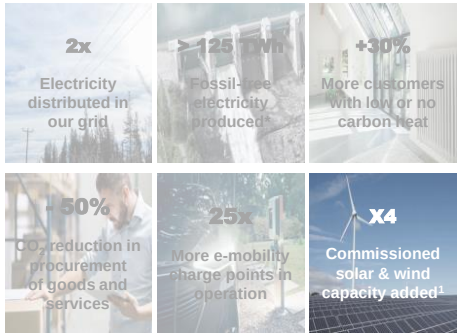
[2] including other renewable sources and CO_2 abatement technologies such as biomass, geothermal, aquathermal, CCS, heat pumps, e-boilers, hydrogen, etc.

Pipeline of opportunities supports Vattenfall's ambitions

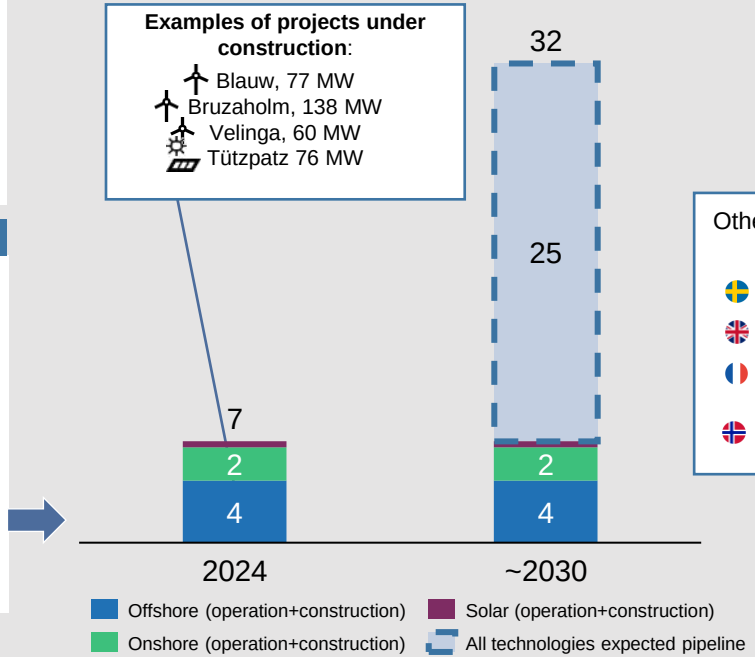
Many projects in pipeline and several upcoming tenders in relevant markets

SCIENCE BASED TARGETS

Commitments related to 1.5 degree target



Commissioned and under construction capacity (2024) & development pipeline towards ~2030 (GW)



Other opportunities: ~**5 GW**, e.g.:

- Swedish Kriegers Flak: 640 MW (secured)
- Mara Mhòr: 798 MW (secured)
- Normandie (1,000 MW), Bretagne (270 MW), Mediterannée (500 MW) (pre-qualified for all 3)
- Sørlige Nordsjø 2 (1,500 MW)

[1] Base year 2020 (4 GW commissioned)

[1] Vattenfall has divested Norfolk Boreas

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Wind & Solar - Installed capacity (MW[1]) Q4 2023

	Solar	Onshore	Offshore	Total	
United Kingdom	-	623	686	1.309	24%
Denmark	-	213	1.195	1.408	26%
The Netherlands	69	487	760	1.316	24%
Sweden	-	638	110	748	14%
Germany	2	7	636	645	12%
Total (MW)	**72**	**1.968**	**3.387**	**5.427**	100%

United Kingdom – ROC scheme	
Thanet	300,0
Ormonde (51%)	150,0
Aberdeen	96,8
Kentish Flats	90,0
Kentish Flats Extension	49,5
South Kyle	240,0
Pen Y Cymoedd	228,0
Ray	54,4
Edinbane	41,4
Clashindarroch	36,9
Swinford	22,0
Installed capacity (MW)	**1.309,0**

Sweden – certificate scheme	
Lillgrund	110,4
Blakliden + Fäbodberget	352,8
Stor-Rotliden	77,8
Grönhult	67,2
Högabjär-Kärsås (50%)	38,4
Höge Väg (50%)	36,9
Hjuleberg (50%)	36,0
Juktan (50%)	28,8
Installed capacity (MW)	**748,3**

Denmark – FIT scheme	
Kriegers Flak	604,8
Horns Rev 3	406,7
Horns Rev 1 (60%)	158,0
Vesterhav	25,2
Klim (98%)	67,2
Nørrekær Enge 1 (99%)	29,9
Rejsby Hede	23,4
Hagesholm	23,0
Nørre Økse Sø	17,3
Tjæreborg Enge	16,8
Bajlum (89%)	15,0
DræbyFed	9,2
Ejsing (97%)	6,9
Lyngmose	4,6
Installed capacity (MW)	**1.407,9**

Germany – EEG scheme	
DanTysk (51%)	288,0
Sandbank (51%)	288,0
alpha ventus (26%)	60,0
Westküste (20%)	7,0
Decentral Solar installations	2,2
Installed capacity (MW)	**645,2**

The Netherlands – MEP/SDE(+)	
Hollandskust Zuid (51%)	760,0
Princess Ariane	183,8
Princess Alexia	122,4
Windplan Blauw	49,5
A16 / Klaverspoor	34,2
Slufterdam	29,0
Moerdijk	27,3
Haringvliet	22,1
Echteld	8,0
Oom Kees (12%)	6,0
Oudendijk	4,8
Haringvliet	37,8
Velsen	2,3
Hemweg	2,4
Diemen	1,3
Symbizon	0,7
Decentral Solar installations	24,8
Installed capacity (MW)	**1.316,3**

[1] Capacity in operation: total capacity of the wind farms that Vattenfall has an ownership or is responsible for the operation. Minority shares included as 100%

Main projects BA Wind in our 5 core countries

Country	Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Owner-ship (%)	Commission-ing	Current status
NL	Hollandse Kust Zuid 1-4	1.520	-	X	-	51	2023/2024	Commissioning ongoing, Partnering with BASF
DK	Vesterhav	344	FIT	X	50.000hrs	100	2023/2024	Commissioning ongoing
NL	Windplan Blauw	77	SDE+	X	15 yrs	100	2023/2024	Commissioning ongoing. 9 commissioning certificates signed
SE	Bruzaholm	139				100	2025/2026	Under construction
SE	Velinga	60				100	2026	Under construction
UK	Battery@Ray	55	-		-	100	2023/2024	Partly operating, but no commissioning certificate yet
SE	Battery@Bruzaholm	38				100	2025/2026	Under construction
SE	Battery@Toledo	20	-		-	100	2024	Under construction
In construction		**2.253**						
UK	Muir Mhor (Scotwind)	750	CfD			50	2030	Under development with consenting and permitting progressing to ensure participation in the CfD bid, JV with Fred Olsen
GE	Nordlicht I (N 7.2)	980	-		-	50	2028	Development rights received in September 2022, FID planned for 2025
GE	Nordlicht II (N 6.6)	630	-		-	50	2028	Development rights received in September 2023, FID planned for 2025
DE	Wolfsberg	17	EEG			100	2026	FID planned for 2024
SE	Vargtrask	84				100	2027	FID planned for 2024
DE	Big Battery @ Brunsbuttel	230	-		-	100	2028	FID planned for 2024
DE	Battery @ Tutzpatz	50	-		-	100	2025	FID planned for 2024
In development (in mature stage)		**2.741**						

Offshore
Onshore
Solar
Batteries

Distribution

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Distribution

Leading owner and operator of electricity distribution grids in Sweden

Overview

- Largest operator of regional electricity distribution grids in Sweden and top-3 position in local grids
- Regulated business with stable demand
- Enabler of the energy transition by connecting renewable production to the grid
- Demand set to grow – Vattenfall grids are located in areas with population growth and strong demand for industrial electrification
- High operational efficiency compared to industry average

Highlights

~1 000 000 household and business customers

~139,000 km of electricity grids

SEK 7 billion in investments 2023

SEK 89 billion RAB 2023

Key data

	FY 2023	FY 2022
Net sales (SEK bn)	11.1	12.5
External net sales (SEK bn)	10.4	11.7
Underlying EBIT[1] (SEK bn)	1.5	2.1
Investments (SEK bn)	7	5.5
SAIDI[2] (minutes/customer)	132	157
SAIFI[3] (number/customer)	1.91	2.08
RAB	89	68

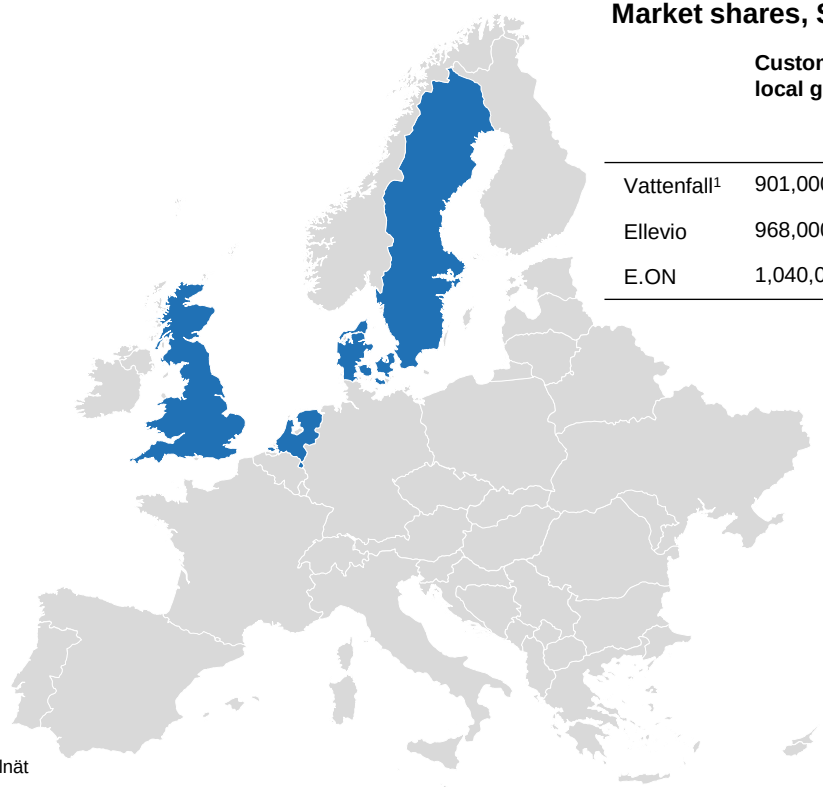
[1] Operating profit excluding items affecting comparability
[2] SAIDI: System Average Interruption Duration Index
[3] SAIFI: System Average Interruption Frequency Index

Distribution

Market and business overview

In brief

- Vattenfall's Distribution business owns and operates electricity distribution grids in Sweden.
- Approximately 1 000 000 business and household customers[1]
- A new business unit for operation and ownership of new grids in the UK was established in 2017. Vattenfall is one out of 16 established IDNOs[4] in the UK
- In early 2021, Vattenfall entered the Dutch and Danish markets and the first Power-as-a-Service deals have now been signed



Market shares, Sweden

	Customers local grids	Markets share regional grid[2]	Market share local grid[3]
Vattenfall[1]	901,000	54%	16%
Ellevio	968,000	24%	17%
E.ON	1,040,000	22%	19%

[1] Excluding Vattenfall's subsidiaries Gotlands Elnät and Västerbergslagens Elnät
[2] Based on volume of transited energy excluding grid losses
[3] Based on number of contracts
[4] Independent Distribution Network Operator

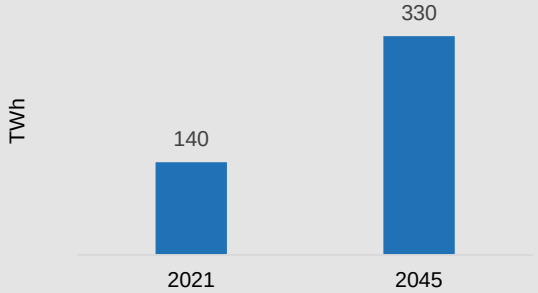
Energy transition to spur dramatic growth in electricity demand in Sweden

Electrification, growth in renewable production capacity and ageing assets call for large grid investments

Electricity demand set to grow due to electrification and new electricity intensive businesses

- Electrification of industry and transports to increase total electricity demand
- Businesses such as hydrogen industry and battery factories are also likely to have a significant impact
- Efficiency improvements in the residential sector only have a small mitigating effect on total demand

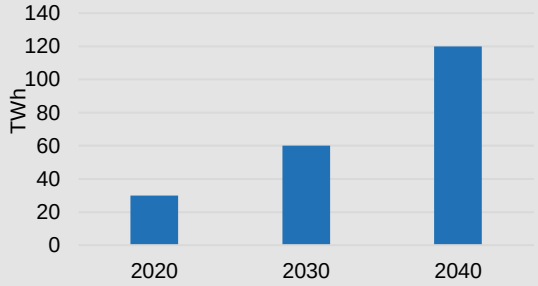
Forecast – Total electricity demand (Sweden)[1]



Installed wind capacity continues to grow

- More capacity will be intermittent and decentralised
- Wind production is set to continue the growth in Sweden, mainly in the North and off the coast in Southern Sweden which increases the need for grid capacity

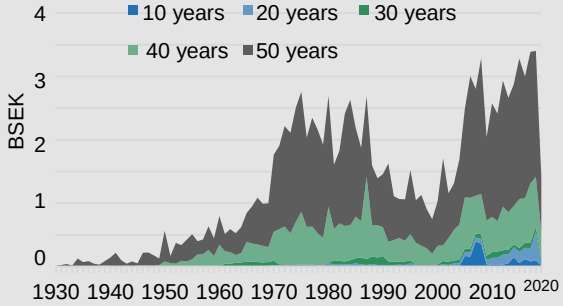
Forecast – wind power generation (Sweden)[2]



Existing grid assets are increasingly in need of reinvestments

- There was a large build out of grid assets in 1970-1990. These assets are now reaching the age when they need to be reinvested in
- This is on top of the need to make new investments in the grid to accommodate more renewable energy and electrification

Asset age structure – Vattenfall Eldistribution[3]



[1] Source: Energiföretagen Sverige, Sveriges elbehov 2045, 2023
[2] Source: Svensk vindenergi, Färdplan 2040, 2021
[3] Asset base per 2020-01-01

Financial performance

FY 2023

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Vattenfall FY Results 2023

Financial highlights

Key data

SEK bn	FY 2023	FY 2022
Net Sales	290.2	239.6
EBITDA	39.7	30.5
Underlying operating profit (EBIT)	20.0	35.1[1]
EBIT	17.0	12.6
Profit for the period	10.4	0.0
Funds from Operations (FFO)	30.1	42.2
Cash flow operating activities	-24.6	1.2
Net debt	68.4	3.9
Adjusted net debt	139.5	76.8
Adjusted net debt/EBITDA (times)	3.5	2.5
Financial targets		
ROCE (≥8%)[2]	5.3	4.2
FFO/adjusted net debt (22-27%)	21.5	55.0

Key developments

- Net sales increased by SEK 50.5 bn to SEK 290.2 bn due higher prices in the customer business and partly higher volumes in the business segment in France
- Underlying EBIT decreased by SEK 15.1 bn mainly as a result of decreased earnings in the Power Generation segment due to a negative effect from continental hedges, lower prices in the Nordics as well as lower production volumes. Lower contribution from the Wind segment due to lower spot prices. Increased underlying profit in segment Heat due to price adjustments for heating in Berlin and the Netherlands
- Profit for the period increased to SEK 10.4 bn and is mainly attributable to the large temporary negative effects in 2022 from realisation and valuation of electricity and fuel contracts
- ROCE increased to 5.3% due to increased EBIT
- FFO/Adjusted net debt decreased to 21.5% due to decreased funds from operations as a result of lower underlying EBITDA and an increase in the adjusted net debt primarily attributable to increased investments. Adjusted for margin calls, the key ratio was 25.6%

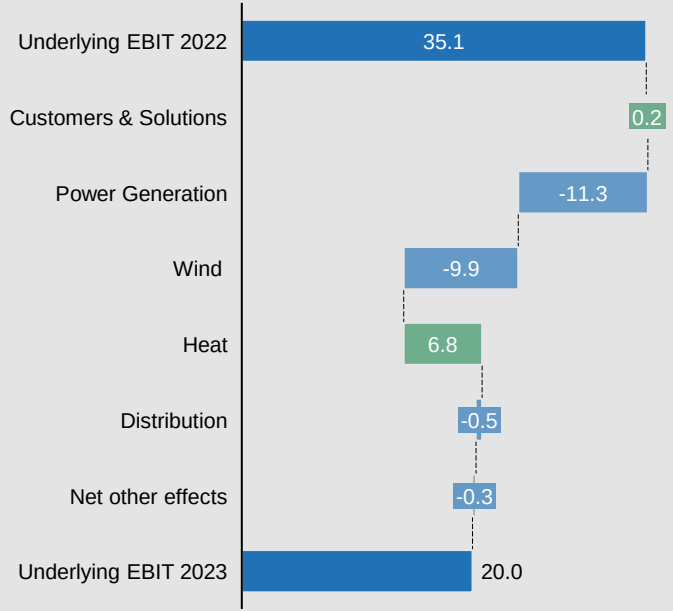
[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports
2 Last 12-month values

Development of underlying EBIT FY 2023

Decrease from Power Generation and Wind partly offset by higher earnings in Heat and C&S

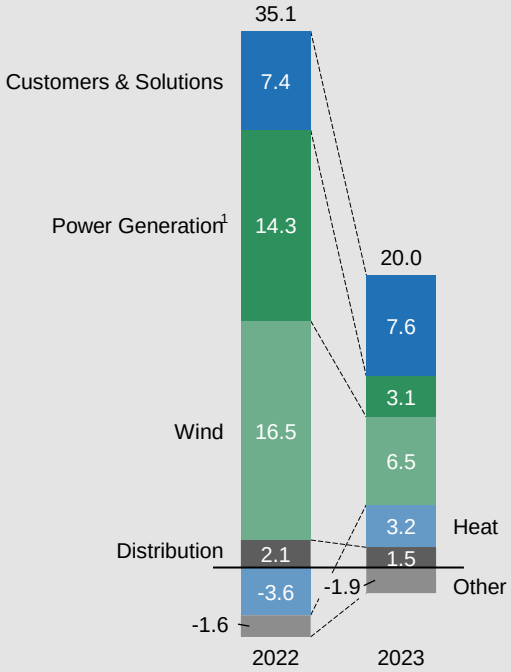
Change in FY 2023 vs. FY 2022

SEK bn



Breakdown per operating segment

SEK bn



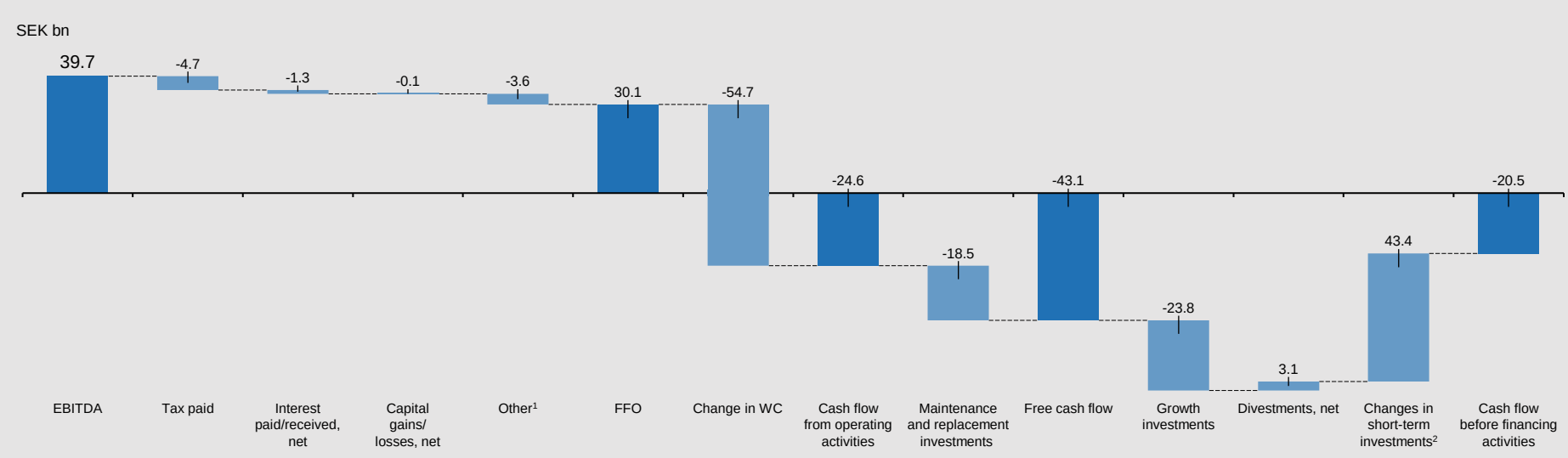
Highlights

- Power Generation: negative effect from Continental hedges, lower prices in the Nordics as well as lower production volumes
- Wind: lower electricity prices
- Distribution: temporary reduction of the electricity grid tariff during 1st July – 31st December 2023, as well as higher personnel costs, maintenance costs and depreciation as a result of growth
- Heat: higher heat prices mainly due to price adjustments for heating, which compensates for higher fuel costs in 2023
- Customers & Solutions: growing customer base in Germany as well as higher sales to business customers in the Netherlands and retail customers in France

1 The value has been adjusted compared with information previously published in Vattenfall's financial reports, see note 1 Accounting policies, risks and uncertainties

Cash flow development FY 2023

Negative working capital development mainly related to changes in margin calls



Main effects

- Change in working capital mainly driven by changes related to net change in margin calls (SEK -74.1 bn). This was partly offset by a reduced working capital in operating segment Power Generation (SEK +6.3bn), Customers & Solutions (SEK +3.6 bn), and the decrease of Inventories (SEK +2.1bn)
- Changes in short-term investments are related to sales of short-term papers in order to offset the negative impact from the net change in margin calls paid

[1] "Other" includes non-cash items included in EBITDA, mainly changes in fair value of commodity derivatives

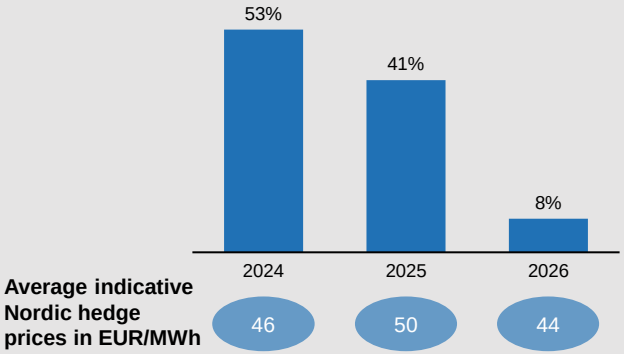
Hedging, debt and funding

FY 2023

VATTENFALL

Price hedging

Estimated Nordic[1] hedge ratio (%) and indicative prices



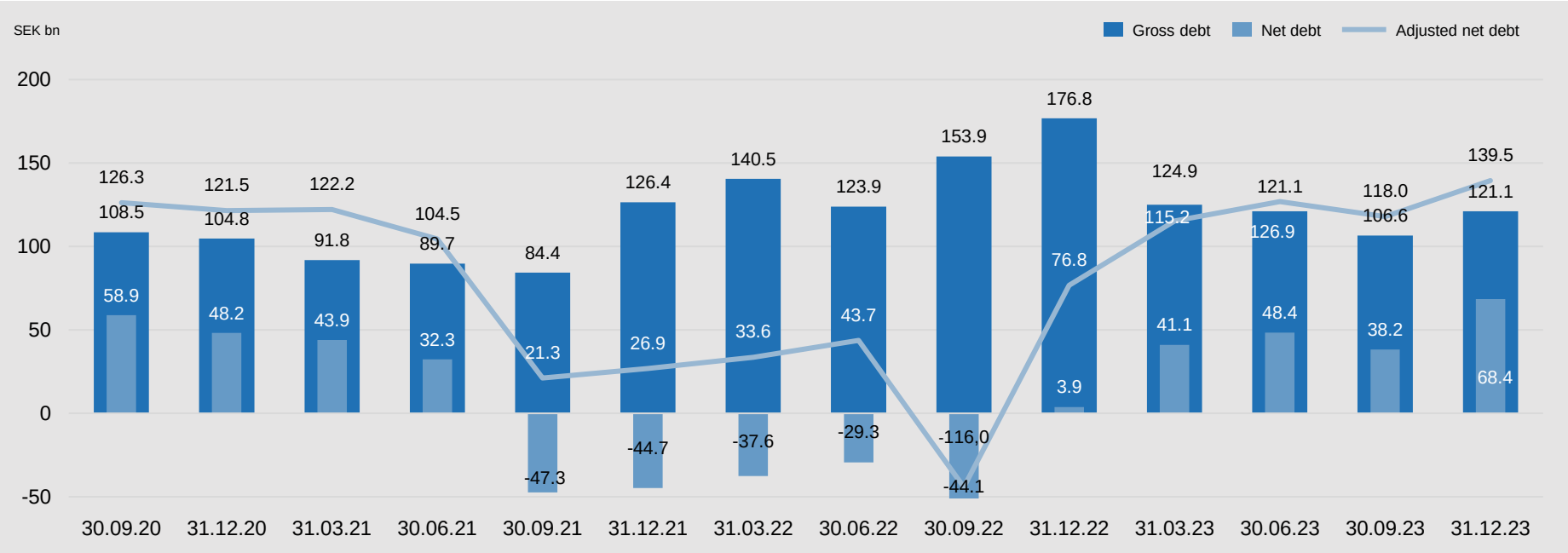
Achieved prices[2] - Nordic portfolio, EUR/MWh

FY 2023	FY 2022	Q4 2023	Q4 2022
37	27	42	55

Vattenfall's hedging strategy has the objective to stabilize profits by selling parts of the planned production in the forward markets. The main exposures arise from outright power in the Nordics (nuclear and hydro), with a growing exposure in wind both in the Nordics and on the Continent/UK. Hedging is mainly based on the Nordic system price (SYS) while delivery takes place in the price areas where generation assets are located. The achieved price during the full year of 2023 increased due to price hedges and lower price area differentials

[1] Nordic: SE, DK, FI
[2] Achieved prices from the spot market and hedges. Includes Nordic (SE, DK, FI) hydro, nuclear and wind power generation

Debt development



Net debt increased by SEK 64.6 bn compared with the level 31 December 2022 to SEK 68.4 bn. Adjusted net debt increased by SEK 62.8 bn to SEK 139.5 bn compared with the level 31 December 2022. For the calculation of adjusted net debt, see slide 25.

Reported and adjusted net debt

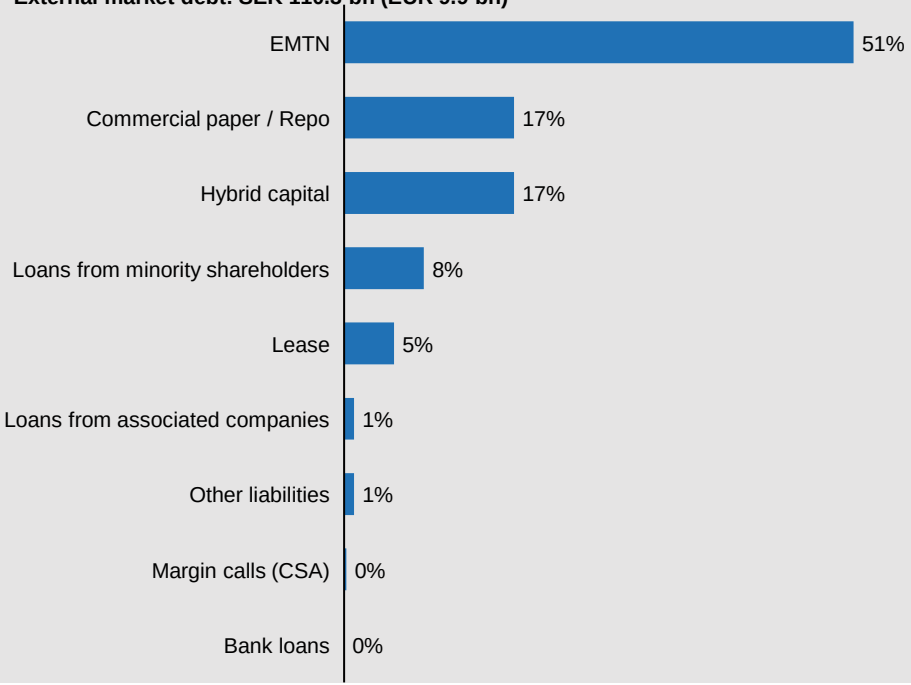
Reported net debt (SEK bn)	31 Dec. 2023	31 Dec. 2022
Hybrid capital	21.0	21.9
Bond issues and liabilities to credit institutions	62.0	63.9
Commercial papers and Repos	20.1	71.0
Liabilities to associated companies	0.7	0.9
Liabilities to minority shareholders	10.1	9.7
Lease liabilities	6.3	6.7
Other liabilities	1.0	2.6
Total interest-bearing liabilities	**121.1**	**176.8**
Reported cash, cash equivalents & short-term investments	52.3	172.4
Loans to minority owners of foreign subsidiaries	0.4	0.5
Net debt	**68.4**	**3.9**

Adjusted net debt (SEK bn)	31 Dec. 2023	31 Dec. 2022
Total interest-bearing liabilities	121.1	176.8
50% of Hybrid capital	-10.5	-11.0
Present value of pension obligations	28.1	27.8
Wind & other environmental provisions	15.4	11.5
Provisions for nuclear power (net)	46.0	53.9
Margin calls received	-0.3	-2.1
Liabilities to minority owners due to consortium agreements	-10.1	-9.7
Adjustment related to assets/liabilities held for sale	-3.4	-1.0
= Adjusted gross debt	**186.9**	**246.2**
Reported cash, cash equivalents & short-term investments	52.3	172.4
Unavailable liquidity	-5.4	-3.0
= Adjusted cash, cash equivalents & short-term investments	**46.8**	**169.4**
= Adjusted net debt	**139.5**	**76.8**

Breakdown of gross debt

Total debt: SEK 121.1 bn (EUR 10.9 bn)

External market debt: SEK 110.3 bn (EUR 9.9 bn)

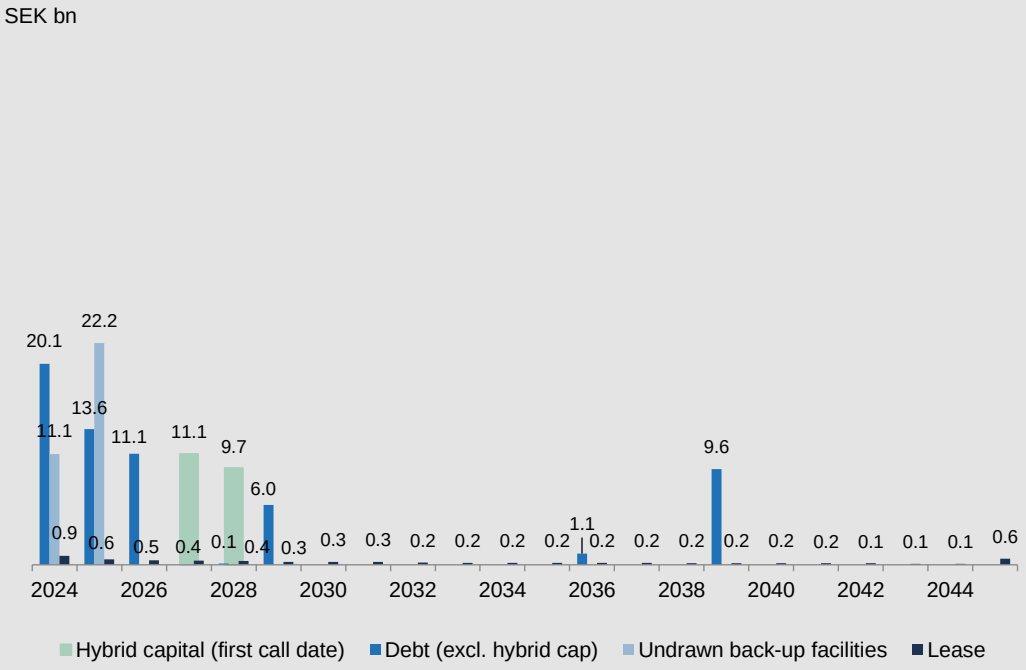


Debt issuing programmes	Size (EUR bn)	Utilization (EUR bn)
EUR 10bn Euro MTN	10.0	5.5
EUR 10bn Euro CP	10.0	1.9
Total	20.0	7.5

- All public debt is issued by Vattenfall AB.
- The main part of debt portfolio has no currency exposure that has an impact on the income statement. Debt in foreign currency is either swapped to SEK or booked as hedge against net foreign investments.
- No structural subordination.

[1] EMTN= Euro Medium Term Notes

Debt maturity profile[1]



	31 Dec. 2023	31 Dec. 2022
Duration (years)	3.5	3.2
Average time to maturity (years)	4.2	5.0
Average interest rate (%)	3.9	3.5
Net debt (SEK bn)	- 68.4	- 3.9
Available group liquidity (SEK bn)	46.8	169.4
Undrawn committed credit facilities (SEK bn)	33.3	70.1

Cumulative maturities excl. undrawn back-up facilities

	2024-2026	2027-2029	From 2030
Debt incl. hybrid capital	46.7	27.9	14.0
% of total	*53%*	*31%*	*16%*

[1] Short term debt (Repo's and Commercial paper: 20.3), loans from associated companies, minority owners, margin calls received (CSA) and valuation at fair value are excluded.
Currency derivatives for hedging debt in foreign currency are included.

Liquidity position

Group liquidity	SEK bn
Cash and cash equivalents	27.7
Short term investments	24.6
Reported cash, cash equivalents & short term investments	**52.3**
Unavailable liquidity[1]	-5.4
Available liquidity	**46.8**

Committed credit facilities	Facility size, EUR bn	SEK bn
Committed credit lines (2024)	1.0	11.1
RCF (2025)	2.0	22.2
Total undrawn		**33.3**

Debt maturities[2]	SEK bn
Within 90 days	0.1
Within 180 days	20.1

[1] German nuclear ”Solidarvereinbarung” 1.1 SEK bn, Margin calls paid (CSA) 3.6 SEK bn, Insurance “Provisions for claims outstanding” 0.8 SEK bn.
[2] Excluding loans from minority owners and associated companies.

Nuclear provisions

Reactor[1]	Net capacity (MW)	Start (year)	Vattenfall share (%)	Vattenfall provisions, SEK bn (IFRS accounting)	Vattenfall provisions, SEK bn (pro rata)	Sw nuclear waste fund SEK bn (Vattenfall pro rata share)
Ringhals 1	879	1976	70.4			
Ringhals 2	809	1975	70.4			
Ringhals 3	1,070	1981	70.4			
Ringhals 4	942	1983	70.4	**Total Ringhals: 42.9**	**Total Ringhals: 42.9[2]**	
Forsmark 1	984	1980	66.0			
Forsmark 2	1,120	1981	66.0			
Forsmark 3	1,170	1985	66.0	**Total Forsmark: 39.7**	**Total Forsmark: 26.2**	
Total Sweden	**6,974**	**-**		**86.4[3]**	**71.1[3]**	**43.5[4]**
Brunsbüttel	771	1977	66.7	11.7	7,8	
Brokdorf	1,410	1986	20.0	-	3.2	
Krümmel	1,346	1984	50.0	7.8	7.8	
Stade	640	1972	33.3	-	0.4	
Total Germany	**4,167**	**-**	**-**	**19.5**	**19.1**	
Total SE & DE	**11,141**			**105.8**	**90.3**	

[1] Five reactors are in commercial operation in Sweden; Ringhals 3 & 4 and Forsmark 1, 2 & 3. Ringhals 1 & 2 and all reactors in Germany are taken out of commercial operation. Stade is being dismantled.
[2] Vattenfall is 100% liability of Ringhals decommissioning, while owning only 70.4%
[3] Total provisions in Sweden (IFRS accounting) include provisions of SEK 0.3 bn (pro rata SEK 0.3 bn) related to Ågesta, SEK 3.1 bn (pro rata SEK 1.7 bn) related to SVAFO and SEK 0.3 bn (pro rata SEK 0.0 bn) related to SKB.
[4] Vattenfall's share of the Nuclear Waste Fund. IFRS consolidated value is SEK 52.1 bn.

ESG and Credit ratings

VATTENFALL

Environmental, social and governance (ESG) ratings

Vattenfall is assessed by several sustainability rating agencies on its ESG performance

We aim to be as open and transparent as possible in our sustainability reporting and we are proud to be highly ranked for our sustainability performance. The below table shows the agencies we actively engage with and our most recent rating scores

Rating Agency	Rating focus	Score	Latest assessment
CDP	The leading system globally for disclosing environment data for investors, companies, cities, states and regions.	CDP Climate Score: A / A CDP Water Score: B / A	January 2024
ecovadis	An online platform that enables companies to monitor the performance of their supply chains by providing supplier sustainability ratings.	Score: 85 / 100. "Platinum rating"	March 2023
ISS ESG	ESG rating mainly for the investment community. The assessment spans over a range of ESG issues that are analysed on the basis of up to 100 rating criteria, most of them sector specific.	Score B “Prime”: highest decile of companies assessed in the sector	December 2022
MSCI	ESG rating mainly for the investment community. Uses a rules-based methodology to identify industry leaders and laggards. Ranks companies according to their ESG risk exposure and how well they manage those risks relative to peers.	Score AAA/AAA: meaning top 10% of companies assessed in the sector	December 2023
SUSTAINALYTICS a Morningstar company	ESG rating mainly for the investment community. Uses a two-dimensional materiality framework that measures a company’s exposure to industry specific material risks and how well a company is managing those risks.	ESG risk rating: Medium 25.3 (strong management score and high exposure)	December 2023

Credit ratings overview

Long term rating: A3[1]

Short term rating: P-2

Outlook: Stable

Latest publication: 6 July 2023

- "Vattenfall's 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 more than 50% (or around the high 30s in percentage terms excluding the temporary impact from positive margin calls on net debt)."
- "Throughout 2023, we expect credit metrics to weaken, driven mainly by a high level of capital spending [more than SEK40 billion] an some impact still from unwinding of margin payments. As a consequence, we expect free cash flow to be largely negative for the year and lead to FFO/net debt in the low 20s. However, metrics should again strengthen quite substantially in 2024, and we expect the company's credit metrics to remain solidly positioned for the rating category over the medium term."

Long term rating: BBB+[1]

Short term rating: A-2

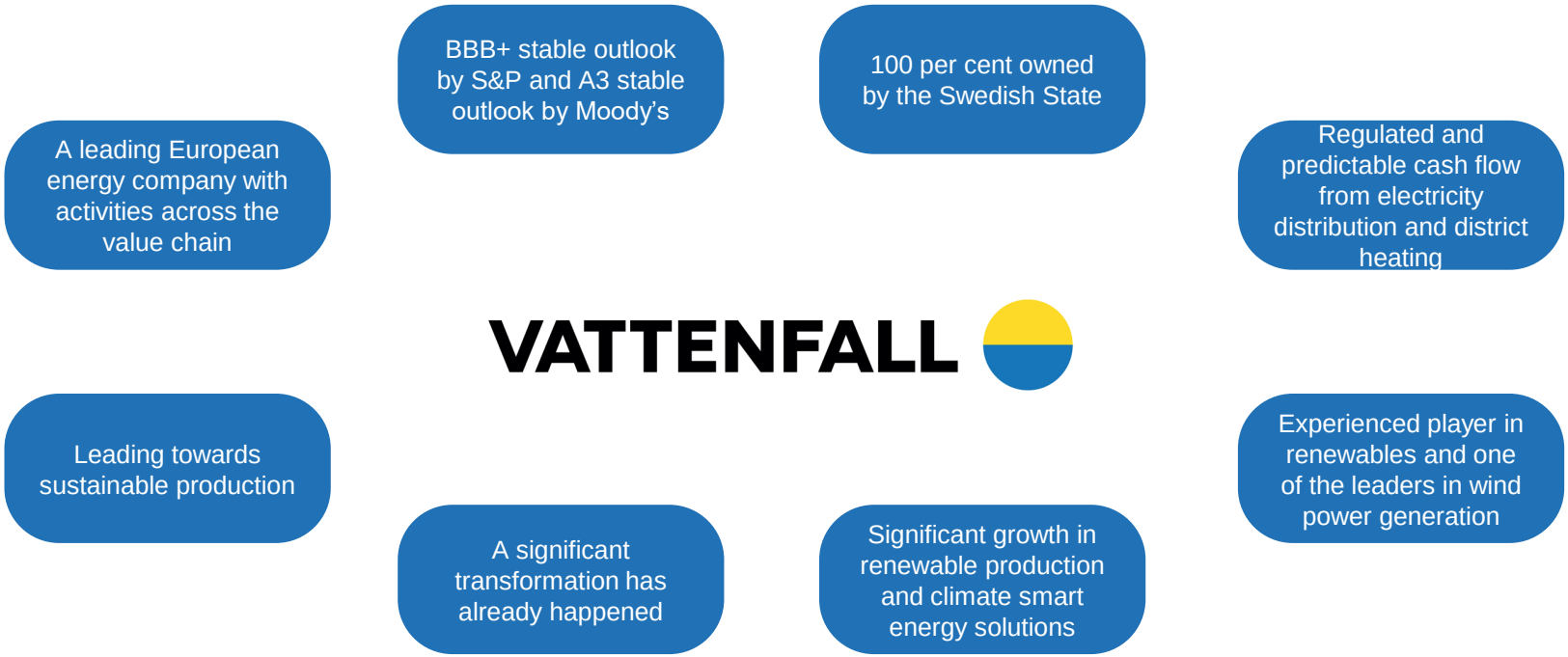
Outlook: Stable

Latest publication: 15 December 2023

- "We believe that risks in the Nordic power market have increased over the last few years, and that price volatility will be larger in the future. We also anticipate that Vattenfall's underlying EBITDA exposure to unregulated power production will gradually increase over 2024-2026, likely to 80%-85%.''
- "Vattenfall AB's business risk has therefore not developed as favorably as we expected when we assigned a positive outlook in November 2021, and, because of likely increased investment, we expect management to steer toward the upper end of its financial policy of funds from operations (FFO) to debt of 22%-27% over the medium to long term. Nevertheless, we continue to view Vattenfall's position in Sweden as very strong, generating about 45% of the electrical power in the country, with an already very low emission profile and a diverse generation mix, which support a strong business risk profile. We also expect Vattenfall's financial position to remain robust and supportive for the rating over the coming years. "
- "The stable outlook indicates that we expect Vattenfall's current ample rating headroom will decrease over time, returning to FFO to debt below 30%."

1 Rating factors in a one notch uplift given that Vattenfall is 100% owned by the Swedish state

Vattenfall credit highlights



Green financing

VATTENFALL

Vattenfall’s green financing framework

Use of proceeds - eligible categories with examples of technologies[1]

Renewable energy

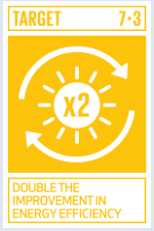
- Solar power
- Wind power
- Hydro power
- Geothermal power
- Bio power
- Hydrogen
- Heat/cool using waste heat

Clean transportation

- Infrastructure for clean transportation

Energy efficiency

- Smart grids
- District heating
- Power to heat



Transmission and distribution of electricity

- Transmission and distribution of electricity

[1] The complete green financing framework can be found on Vattenfall’s website: green_financing_framework_220913.pdf (vattenfall.com)

Green bond investor report

Investments under Vattenfall's Green Bond Framework, as of year-end 2023

Category	Project/country	Type	Capacity/ impact	Est. CO_2 reduction (ktonnes)[1]	Vattenfall's share	Start/ completion	Total investment	2023	-2022	Total
Renewable energy and related infrastructure	Hollandse Kust Zuid 1–4 / Netherlands	Wind offshore	1,509 MW	1,563	51%	2020/2024	2,600 MEUR	7,814	17,935	25,750 MSEK
	Kriegers Flak / Denmark	Wind offshore	604 MW	345	100%	2019/2021	7,600 MDKK	0	9,694	9,694 MSEK
	Vesterhav-projects / Denmark	Wind offshore	344 MW	196	100%	2022/2023	657 MEUR	4,262	1,806	6,068 MSEK
	Princess Ariane (retained)[2] / Netherlands	Wind onshore	180 MW	139	100%	2018/2020	220 MEUR	0	1,348	1,348 MSEK
	Bruzaholm /Sweden	Wind onshore	139 MW	3	100%	2023/2025	2,124 MSEK	226	0	226 MSEK
	Velinga / Sweden	Wind onshore	67 MW	1	100%	2024/2026	1,200 MSEK	0	0	0 MSEK
Industry projects	HYBRIT / Sweden	Fossil-free steel	Pilot project	–	33%	2019/2021	858 MSEK	20	460	480 MSEK
Total								**12,322**	**31,243**	**43,565 MSEK**
Outstanding green bonds										**25,217 MSEK**

[1] Production from onshore wind estimated to 2.6 GWh/MW installed, from offshore wind to 3.5 GWh/MW installed, and from solar to 1.0 GWh/MW installed. Resulting production is compared against grid average emission factors which will decline over time as the energy system decarbonises. Actual production emission factors and savings will vary. Other projects are compared to project-specific reference cases.

[2] The project was formerly called Wieringermeer and Wieringermeer extension

Dark green shading by CICERO

"Vattenfall has a clear strategic commitment to become fossil free within a generation with clear, timebound quantitative targets for greenhouse gas emission intensities validated by the Science Based Targets initiative as aligning with a 1.5 degree C warming scenario"

"Based on the overall assessment of the projects that will be financed under this framework, and governance and transparency considerations, Vattenfall's green financing framework receives a ***CICERO Dark Green shading*** *and a governance score of* ***Excellent****."*

	Categories	Green shading
	Renewable energy	Dark Green
	Energy efficiency	Medium to Dark Green
	Transmission and distribution of electricity	Dark Green
	Clean transportation	Dark Green

The complete second opinion from CICERO is available on Vattenfall's website: https://group.vattenfall.com/siteassets/corporate/investors/funding_ratings/doc/green_financing_second_opinion_may_2022.pdf

Hollandse Kust Zuid

Project deep-dive

UN SDG's

Overview

- The world's first subsidy-free offshore wind farm will be put in operation at the latest by 2023
- Project with excellent site conditions (shallow waters, proximity to shore) combined with continuous cost reduction focus and portfolio approach
- Attractive opportunity to support the Dutch energy transition; strong customer base demanding renewable energy

Key data

Capacity	2 x 760 MW
Country	The Netherlands
Technology type	Offshore Wind
Turbine model	SiemensGamesa SG 11.0-200 DD (11 MW)
Grid connection	provided by TenneT
Distance from shore	18-30 km
Water depth	18-28 m
Foundations	Monopiles
Ownership	50.5% Vattenfall, 25.2% Allianz 24.3% BASF
Completion	2024
Total investment	2,600 MEUR

Project Timeline

2019: Survey of seabed in the North Sea

2019-2020: Design and tendering

2020: Material orders and equipment production

2022-2023: Installation of wind turbines

2024: Commissioning completion

HYBRIT

HYBRIT – towards the world's first fossil-free steel

UN SDG's

HYBRIT FOSSIL-FREE STEEL

A joint initiative by LKAB SSAB VATTENFALL

What is HYBRIT?

- HYBRIT – short for Hydrogen Breakthrough Ironmaking Technology – is a joint venture between Vattenfall, SSAB (steel) and LKAB (mining and minerals)
- The aim is to create a completely fossil-free value chain from mine to finished steel, with fossil-free pellets, fossil-free electricity and hydrogen
- In 2021 the world's first fossil-free steel was manufactured and delivered by SSAB to Volvo Group, that is introducing fossil-free steel in its trucks . In June 2022, a pilot plant for storing fossil-free hydrogen was inaugurated

Why is this important?

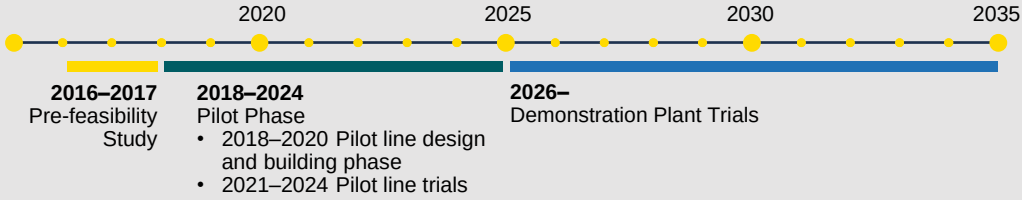
- The steel industry is one of the highest CO_2-emitting industries, accounting for 7% of global and 10% of Swedish total CO_2 emissions
- Steel demand is set to grow due to population and urbanisation → carbon footprint of the industry needs to be addressed

Financing and timeline

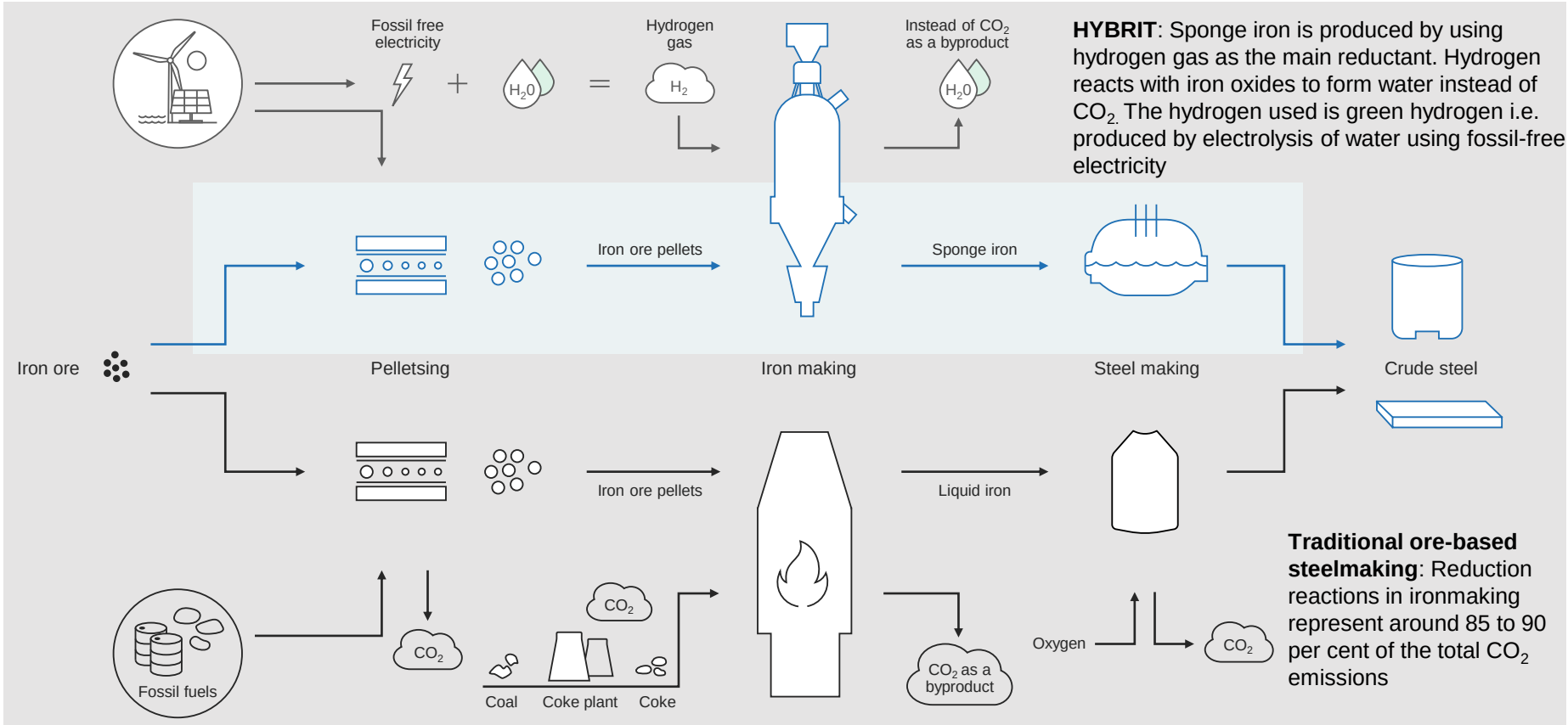
The total cost for the pilot phase is estimated to be more than SEK 2 billion. The Swedish Energy Agency will contribute about SEK 600 million towards the pilot phase. The three owners, SSAB, LKAB and Vattenfall, will each contribute one third of the remaining costs, together approximately 70% of the total investment. The Swedish Energy Agency has earlier contributed SEK 60 million to the pre-feasibility study and a four-year-long research project.

The pilot phase is planned to last until 2024, after which it will move to the demonstration phase with large scale production to start in 2026.

Main project phases



HYBRIT vs traditional steel production



HYBRIT: Sponge iron is produced by using hydrogen gas as the main reductant. Hydrogen reacts with iron oxides to form water instead of CO_2. The hydrogen used is green hydrogen i.e. produced by electrolysis of water using fossil-free electricity

Traditional ore-based steelmaking: Reduction reactions in ironmaking represent around 85 to 90 per cent of the total CO_2 emissions

Sustainability deep-dives

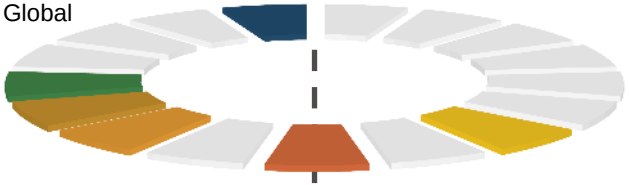
VATTENFALL

A strategy and purpose that reflects UN's agenda 2030

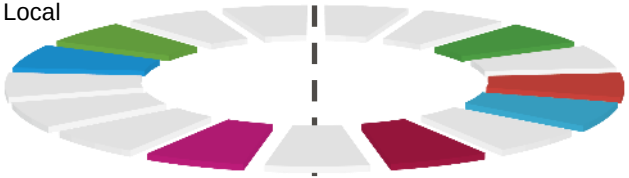
Vattenfall's strategy is driving our contribution to the UN's Global Sustainable Development Goals (SDGs)

SUSTAINABLE DEVELOPMENT GOALS

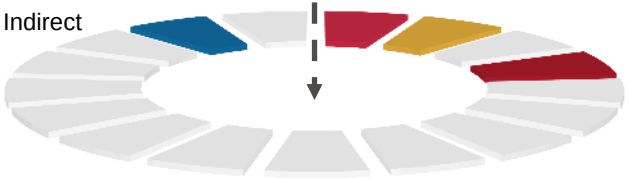
Global



Local



Indirect



Vattenfall's contribution to the UN Sustainable Development Goals

Strategic SDGs with global impact

Vattenfall contributes to the goals through its commercial operations. Contributions to these goals have global impacts and are the result of implementing our strategy, in particular when it comes to climate change and consequences for the energy system.

Responsible operations SDGs with local impact

Vattenfall contributes to the goals through its ways of working. Our responsible operations contribute locally, whether in the form of e.g., health & safety or internal diversity standards, or working to have a net positive contribution to biodiversity at our external operating sites.

Responsible supply chain SDGs with indirect impact

Vattenfall contributes to the goals through its engagement and influence in the value chain via suppliers and partners. By engaging only with suppliers and partners who meet our social and environmental standards, we ensure that they make positive contributions to the goals that are most relevant for developing countries, as exemplified here.

Execution of our strategy contributes the most to six prioritised goals

Overview

- In 2016, Vattenfall identified the most relevant SDG's for the business, where we can have the greatest global impact
- These remain valid internally, as reflected in our strategy, as well as for our stakeholders, as confirmed by our materiality analysis

Examples of contribution to our selected SDGs by sub-category

SDG 7.2

Target: By 2030, substantially increase the share of renewable energy in the global energy mix.

Example: Vattenfall has continued to grow and develop its fossil free energy pipeline that span various renewable energy sources and technologies, such as wind farms, solar parks, and battery storage. Currently, Vattenfall operates 5.4 GW of capacity in wind and solar power.

SDG 9.4
Target: By 2030, upgrade infrastructure and retrofit industries to make them sustainable.
Example: Vattenfall has developed and maintained energy infrastructure for years. Hence, sustainable retrofitting activities, such as those in our heat operations in Berlin or upgrades, like those in our hydro operations, are core to our business.

SDG 11.6
Target: By 2030, reduce the adverse environmental impact of cities
Example: We operate 51,000 charging points, install heat pumps in homes, and develop microgrids for communities to enable the decarbonisation of cities and their surroundings.

SDG 12.2 & SDG 12.5
Target: By 2030, achieve sustainable management and efficient use of natural resources.
Example: Vattenfall strives to maximise the value of resources in its value chain, such as using excess heat from various third parties for local heating networks or recycling or repurposing old wind turbine blades.
Target: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
Example: More than 95 per cent of residual products from our combustion plants are sold for re-use mainly to the construction industry.

SDG 13.1
Target: Strengthen resilience and adaptive capacity in relation to climate-related hazards and natural disasters.
Example: Climate risks are part of our ERM. Some examples of climate adaptation measures include strengthening our hydro power dams and weatherproofing our grid infrastructure against anticipated future climate risks.

SDG 17.17
Target: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.
Example: Together with a plethora of academia, public, and private partners, Vattenfall has magnified its impact. From creating international responsible business conduct agreements to evaluating the feasibility of new nuclear power, these partnerships drive society forward.

6 material topics based on 2023 internal DMA

After an extensive materiality assessment in 2022, where Vattenfall engaged with over 4,100 stakeholders, the 2023 process was based on quantitative and qualitative internal expert assessment. Vattenfall applied a Double Materiality approach which was inspired by the CSRD Principles, due to which we were able to systematically assess the extent to which the company impacts these topics (referred to as impact materiality) and the extent to which these topics could impact the company's financial performance (referred to as financial materiality).

2023 internal DMA

- Internal experts assessed the impact materiality on all ESRS topics, sub-topics and sub-sub-topics.
- Expert group sessions were organized to calibrate results.
- Final calibration and validation done together with experts, business, risk and finance representatives, as well as senior management.
- All results checked against internal documents, including the 2022 materiality assessment.

Material topics			
E1	Climate change	**S1**	Health & Safety (own workers)
E4	Biodiversity and ecosystems	**S2**	Workers in the value chain
E5	Circular economy	**S3**	Rights of indigenous peoples

Industrial partnerships for a fossil-free society

Together with our partners, we pave the way for a new generation of transports, industries and materials

Developing the world's first fossil-free steel

HYBRIT – FOSSIL-FREE STEEL

VATTENFALL

Development of H2 supply from offshore wind to enable fossil-free fuel production

preem st1

VATTENFALL

Northern Europe's largest charging network for e-vehicles

InCharge

VATTENFALL

Electrification of mines and smelters

BOLIDEN

KAUNIS IRON

VATTENFALL

Co-operation for e-mobility

THE Coca-Cola COMPANY

Elektroskandia A Sonepar Company Sverige

DAS FUTTERHAUS

VATTENFALL

Investigate feasibility sustainable aviation fuel

SAS

VATTENFALL

Green guaranteed energy delivery large customers, e.g.

Cargill Helping the world thrive · BASF We create chemistry · Air Liquide

VATTENFALL

Support of a major enterprise for battery production in Sweden

northvolt

VATTENFALL

Investigate feasibility H2 at Swedish Airports

SAS · Swedavia Airports · AIRBUS

VATTENFALL

Powering sustainable datacenters

NODE POLE

VATTENFALL

Developing flexible solutions for grid stability

eramet · GRÄNGES · NOBIAN

VATTENFALL

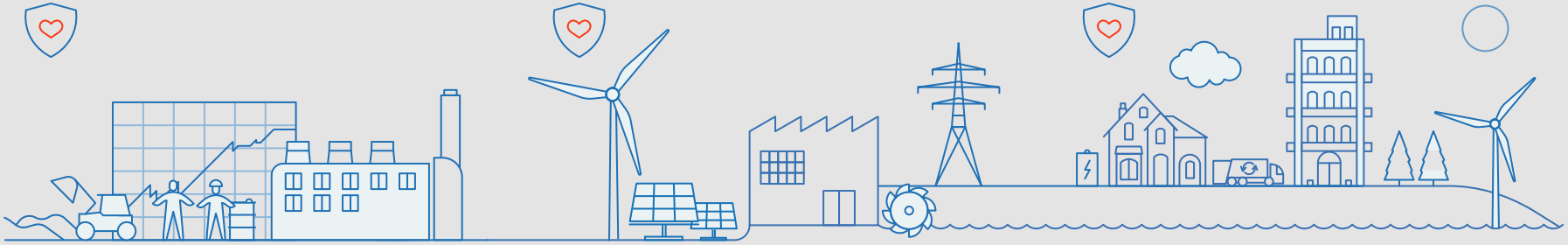
Excess heat from algae cultivation to heat households

AstaReal Be you, Just healthier

VATTENFALL

Respect for human rights throughout our value chain ensures we create value in a sustainable way

Tools, processes and actions to respect human rights



Upstream & suppliers

Supplier risk assessment tool

Supplier screening and self-assessment questionnaires

Audits & corrective action plans

Code of Conduct for Suppliers & Partners

Supplier capacity building & engagement

Operations

Stakeholder consultation, in particular indigenous people

Local community funds

MyOpinion, H&S maturity

H&S contractor management

Just transition & responsible decommissioning

Downstream & customers

Screening large B2B customers

Assessing potential partners or acquisition targets

Evaluating & minimising product end-of-life impacts

We aim to go beyond compliance and deliver positive impact through sustainability in tenders, industry initiatives (WindEurope, Bettercoal, SolarPowerEurope), supplier collaboration and capacity building, and value chain deep dives.

Mapping our value chain-wide impact on biodiversity

A quantitative biodiversity footprint assessment to prioritise areas for further target setting.

"Towards a net positive impact approach"

We are committed not only to reduce impacts, but also positively contribute by implementing biodiversity enhancing measures. Our biodiversity strategy aims to break down our overall ambition into concrete actions and targets. Calculating our biodiversity footprint has increased our understanding of how we can contribute to a net positive impact, prioritise actions, and improve our targets.

Measuring our 2020 baseline

✓ In 2022, Vattenfall finalised a value chain-wide biodiversity footprint assessment to obtain a quantitative measurement of how our economic activities impact nature and species.

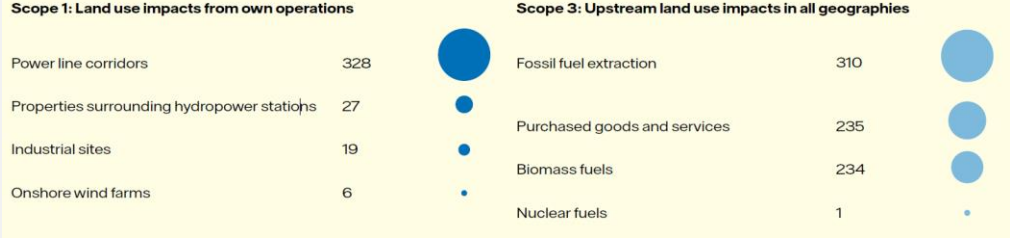
✓ The assessment was done using the Global Biodiversity Score- a tool that uses different types of data such as land use, emissions, water use, and financial data to model impacts on biodiversity.

✓ The model measures the level of impact on pristine nature caused by a company, or an economic activity, measured in a single indicator called Mean Species Abundance (MSA.km^2).

Results

- The result from the GBS assessment is split into so-called static and dynamic impacts[1]
- Nearly two-thirds Vattenfall's total terrestrial static footprint stem from upstream **land use** in our value chain (see figure below). This primarily relates to the extraction of fossil fuels as well as the land use footprint of biomass. Approximately one third stems from land use relating to power line corridors (scope 1).
- 95% of the annually growing footprint (dynamic impact) stemmed from **climate change**[2] impacts caused by GHG emissions in all scopes.

Vattenfall's terrestrial static biodiversity footprint[3], in MSA.km^2



[1] **Static impact** comes from, for example, historically exploited land that has had and still has an impact on biodiversity. Examples of this are hydro power plants and the electricity distribution network. **Dynamic impact** can be linked to new projects, activities, and resource use that take place over a certain period, often measured on an annual basis. Dynamic impact builds onto the static impact.
[2] Climate change and biodiversity are closely interlinked. A changing climate is a significant and a growing driver of biodiversity loss.
[3] Screening based on the GBS methodology. For an accurate assessment more through analysis is needed.

Contributing to biodiversity throughout our operations

Examples of measures

Business area	Aim	Examples	
Hydro power	Identify new solutions to reduce environmental impact of hydro power production Biotope restoration and species protection Knowledge building activities includes both research and pilot studies Preserve and manage biodiversity and enhance recreation values		"Laxeleratorn" is a unique, large-scale laboratory for hydro power-related environmental and hydraulic experiments that was inaugurated in 2018. It combines knowledge of biology and hydraulics to find solutions that allow and attract fish to safely pass by the power plant with the smallest possible effect on operations. During 2022 and 2023 several several initiatives was ongoing. An AI-based fish recognition system is used in the fish ladder in the hydropower plant Stornorrfors in northern Sweden to count and register properties of salmon and trout individuals providing valuable knowledge on behaviour of the fish and status of fish populations. To improve downstream migration of fish several activities was ongoing using both pumps to direct water flows and net as physical barriers to guide the migration.
Wind power	Restore peat land functioning and carbon storage Avoiding sea bird collisions		We have been carrying out habitat restoration work at two of our sites in the UK. In Pen y Cymoedd a larger scale peat land restoration work (up to 1400 ha) began in late 2021 and will continue for several years to come. At the Aberdeen offshore wind farm in Scotland, Vattenfall has conducted a pilot study of specific birds' flight paths during the summer of 2022 to test a promising new technology – a video camera and an AI-based solution from the Norwegian start-up Spoor.
Power distribution	Maintenance of habitats and protecting species		Clearance work for power lines opens meadow-like fields for threatened and rare species, like the butterfly marsh fritillary. With GIS mapping and field inventories, important biodiversity hotspots have been identified, and tailored maintenance plans have been developed for each of the 980 identified hotspots. The tailored maintenance has been conducted on 30% of the hotspots in 2023, and the target is to have introduced the approach at 100% of the hotspots by 2026.

Towards a circular economy

We are committed to enable sustainable use of resources and contribute to a circular economy

A circular economy is based on the principles of keeping products and materials in use, designing out waste and pollution, and using regenerative natural systems. It is a sustainable alternative to the current 'take-make-dispose' linear economic system. The transition to a more circular economy is central to the Green Deal – EU's policy road map towards a low-carbon, sustainable society.

In circular systems, focus is on extending the life-time of products and materials, sharing and pooling of resources, repairing, reusing and recycling to create closed-loop systems, and utilizing smart designs to minimise resource input and the generation of waste, pollution and CO_2 emissions.

Vattenfall contributes to the circular economy:

✓ **We invest in renewable energy**
- We provide fossil-free and renewable energy to power the circular economy.

✓ **We use resources in smarter ways**
- We use life cycle assessments to assess and manage environmental performance across the full value chain. We also work to design our assets and processes to reduce resource consumption, increase reuse and recycling, and extend the lifetime of our assets.

✓ **We offer new products and business models**
- We are developing new products and energy solutions, as-a-service based models and digital solutions to integrate small scale producers.

✓ **We change unsustainable processes and sectors**
- We switch fuels, partner with industry to make materials more sustainable and fossil free (e.g. steel, cement, fuels), and work to electrify the transport sector.

Examples of activities

Recycling excess heat
In the initiative Samenergi, Vattenfall collaborates with SMEs, like cold stores and data centres to help them recycle excess heat and utilise it in the district heating network.

Phase-out of creosote poles
In a circular economy, hazardous substances must be kept out of material flows. Vattenfall is phasing out creosote poles from distribution grids, using alternative materials and methods for new poles.

Declaring life cycle impacts
Vattenfall provides transparent, verified and comparable information about the life-cycle resource utilisation and environmental impacts from our electricity generation through environmental product declarations®.

We are adapting to a changing climate

We continuously monitor, invest in and modernise our assets to ensure safety and resilience

- There is increasing urgency linked to climate change and the reduction of emissions needs to accelerate. Climate change affects Vattenfall through both physical effects on our assets and operations, and through changes associated with the transition to a fossil-free society. We are committed to our goal of enabling fossil-free living within one generation and have a high focus on adapting to change.
- Vattenfall supports the disclosure of climate related risks and opportunities in accordance with recommendations from the Task Force on Climate-related Financial Disclosures (TCFD)[1].

Climate change affects Vattenfall

Today, the world is about 1 ºC warmer than preindustrial levels and it is rising. Climate change leads to physical changes in parameters such as temperature, rainfall and sea level. This will affect Vattenfall's assets and operations.

As an example, changes in the frequency and magnitude of extreme weather events such as strong winds, flooding or forest fires can lead to infrastructure damage. Similarly, changes to rainfall and snowmelt affects river flows, which has relevance for our hydropower production, planning and dam safety aspects. Vattenfall continuously works to improve the safety and robustness of our operations.

Ensuring security of supply and resilient operations

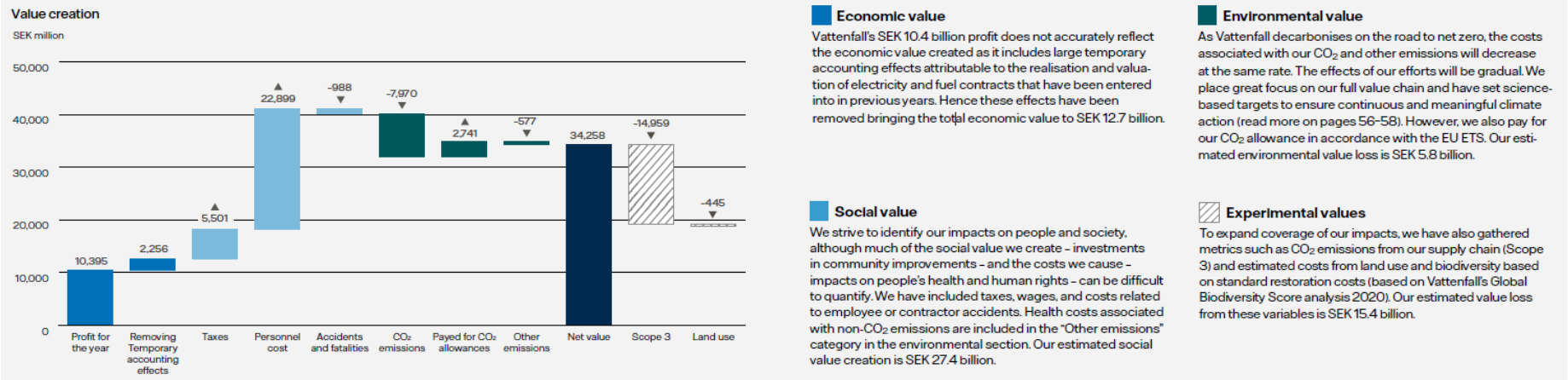
We have assessed physical effects of climate change on Vattenfall's operations, considering both intermediate (+2ºC) and high-end (+4ºC) climate scenarios. Vattenfall is generally well equipped to adapt to a changing climate. Where relevant, measures and margins are adjusted to account for larger changes and variability.

Examples of measures to ensure resilient operation include adapting hydropower dams to be able to manage larger future flows, ensuring cooling solutions for exposed infrastructure, and weather-proofing the distribution networks. Vattenfall will continue to have strong focus on management of climate risks, through e.g. scenario analyses and increased focus on supply chain aspects.

1 For more info see page 90-91 in Vattenfall's Annual- and sustainability report 2023

A holistic view of Vattenfall's net impact

Using our total value creation model[1] to quantify both positive and negative impacts of our activities



Economic value

Vattenfall's SEK 10.4 billion profit does not accurately reflect the economic value created as it includes large temporary accounting effects attributable to the realisation and valuation of electricity and fuel contracts that have been entered into in previous years. Hence these effects have been removed bringing the total economic value to SEK 12.7 billion.

Environmental value

As Vattenfall decarbonises on the road to net zero, the costs associated with our CO_2 and other emissions will decrease at the same rate. The effects of our efforts will be gradual. We place great focus on our full value chain and have set science-based targets to ensure continuous and meaningful climate action (read more on pages 56–58). However, we also pay for our CO_2 allowance in accordance with the EU ETS. Our estimated environmental value loss is SEK 5.8 billion.

Social value

We strive to identify our impacts on people and society, although much of the social value we create – investments in community improvements – and the costs we cause – impacts on people's health and human rights – can be difficult to quantify. We have included taxes, wages, and costs related to employee or contractor accidents. Health costs associated with non-CO_2 emissions are included in the "Other emissions" category in the environmental section. Our estimated social value creation is SEK 27.4 billion.

Experimental values

To expand coverage of our impacts, we have also gathered metrics such as CO_2 emissions from our supply chain (Scope 3) and estimated costs from land use and biodiversity based on standard restoration costs (based on Vattenfall's Global Biodiversity Score analysis 2020). Our estimated value loss from these variables is SEK 15.4 billion.

Vattenfall strives to create value for society and the environment by enabling fossil-free living. In our model for total value creation, we attempt to quantify, in monetary terms, our impacts – both positive and negative – from economic, social, and environmental perspectives.

Translating different forms of value into financial terms is complex and comes with a high level of uncertainty. The figures should therefore be seen as an attempt to quantify impacts.

Compared to 2022, this year's total value creation provides mixed signals:

- ✓ Environmental losses reduced by SEK 2.2 billion
- ✓ Social value increased by SEK 3 billion
- ✗ Economic value fell by SEK 7.5 billion

The economic hurdles of 2023 impacted Vattenfall's profit significantly, overshadowing our gains on the environmental front due to a further reduction of Scope 1 and 2 CO2 emissions. Similarly, more social value was created by spending more on personnel this year.

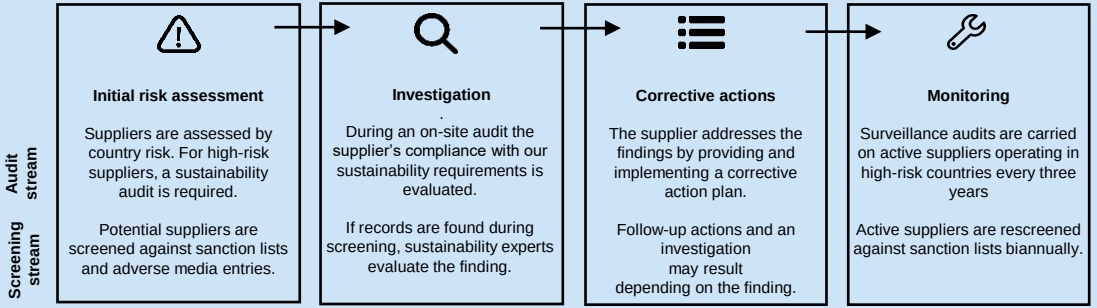
1 See more on page 50 in the Annual and Sustainability report 2023

Promoting responsible business practices throughout the supply chain

Key improvements in supply chain sustainability

- **Continuous supplier monitoring process** was activated in 2023, enabling regular assessment and monitoring of counterparty risk in ongoing business relationships
- **Supplier Risk Assessment Tool** updated the risk heat map, revealing 104 high-risk suppliers across all sourcing streams that were validated through internal dialogues, resulting in several follow-up measures, including sustainability audits, additional sustainability requirements for tenders and supplier awareness sessions.
- **A guide** to Code of Conduct for Supplier and Partners (CoCfSP) published to ensure that our suppliers and partners have access to a range of different examples on how to fulfil the expectations outlined in the CoCfSP
- **Quality and compliance checks** of internal procurement processes and gap analysis to the legal requirements from the German Act on Corporate Due Diligence Obligations in Supply Chains was conducted as well as close monitoring of the legal and regulatory landscape related to supply chain due diligence, such as the EU Corporate Sustainability Due Diligence Directive.

Vetting process to ensure compliance with the Code of Conduct for Suppliers



Sustainable supply chain across four primary sourcing and purchasing streams (2021)

	Number of suppliers	Primary countries	Number of supplier screenings conducted	Number of site audits conducted	% new suppliers that have undergone social/environmental assessments
Goods and services	24,680	Sweden, Germany, Netherlands & other European and Asian countries	4,113	41	100%
Waste & biomass	190	Sweden, Germany, UK, Latvia and other countries	162	48	100%
Coal	1	South Africa	N/A	N/A	N/A
Gas	N/A	European gas hubs	N/A	N/A	N/A
Nuclear fuel	12	Canada, Australia	28	3	100%

For more info: See page 68-71 in Vattenfall's Annual and Sustainability Report 2023