VATTENFALL

LEADING THE WAY TO FOSSIL FREEDOM

Annual and
Sustainability Report
2022

Contents

● Administration report and financial statements
● Statutory sustainability report

About the report: The Annual and Sustainability Report 2022 for Vattenfall AB (publ) is submitted by the Board of Directors and describes the company's overall targets and strategy as well as the year's results. The administration report and accounts are found on pages 1, 4–5, 8, 21, 82–92, and 107–161 and are assured by our auditors. Pages 6, 20, 26–27, 53–77, 82–88, 99–100, and 171–182 include Vattenfall's statutory sustainability report according to the Swedish Annual Accounts Act. Vattenfall has prepared its reporting in accordance with the Global Reporting Initiative's (GRI) Universal Standards 2021. Vattenfall uses the GRI framework as a basis for reporting and is inspired by the Integrated Reporting Framework with the ambition that the report will reflect how sustainability is embedded in the overall strategy as well as in the daily work. Vattenfall mainly uses the Annual and Sustainability Report as a source for its Communication on Progress for the UN Global Compact (UNGC).

Further information about Vattenfall's operations and sustainability work can be found at: **group.vattenfall.com/who-we-are/sustainability**

In focus


Energy crisis


Flexibility


Hydrogen


Decarbonising customers


Biodiversity

LEADING THE WAY TO FOSSIL FREEDOM

We are making real progress towards fossil-free living. It is important for the climate, to meet customer demand and to build competitiveness. When society and industry accelerate the energy transition, it comes with great challenges. But it also opens up for new business opportunities.

Vattenfall shall deliver fossil-free electricity and heat while being a leader in the transition. We identify industries and sectors where we can have the biggest impact, create collaborations and partnerships throughout full value chains, put high sustainability demands on ourselves and our suppliers, and we drive and inspire others to act as well.

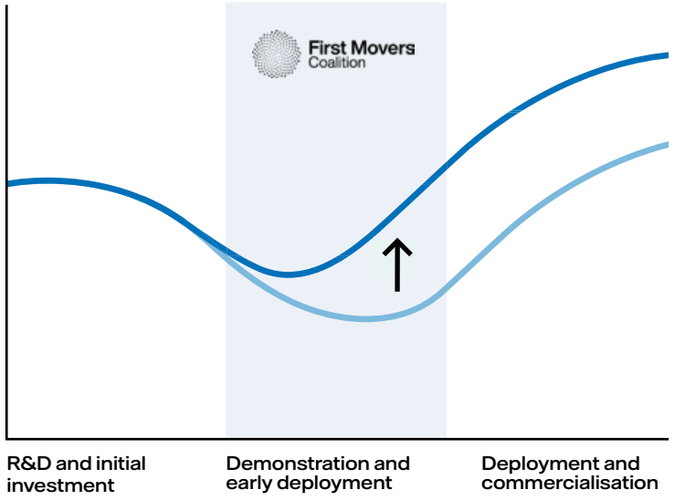
During 2022, we showed how we lead the way towards fossil freedom in several ways. From buildout of renewable capacity and exploring possibilities of new nuclear, to upgrading the grid and expanding storage and flexibility solutions. From working for biodiversity to collaboration with industry to electrify processes. Together we can succeed.

Thinking beyond boundaries

Thinking beyond boundaries means collaborating with stakeholders throughout the value chain. A fossil-free society will require, at a minimum, developing sustainable and commercially viable goods, services, and technologies, partnering to decarbonise high-emitting industrial processes, and addressing human impacts.

Boosting demand for breakthrough goods and services
As a part of the First Movers Coalition[1], we use our combined purchasing power to accelerate investment in developing goods, services, and technologies needed for the energy transition, particularly during the difficult demonstration and early deployment phases.

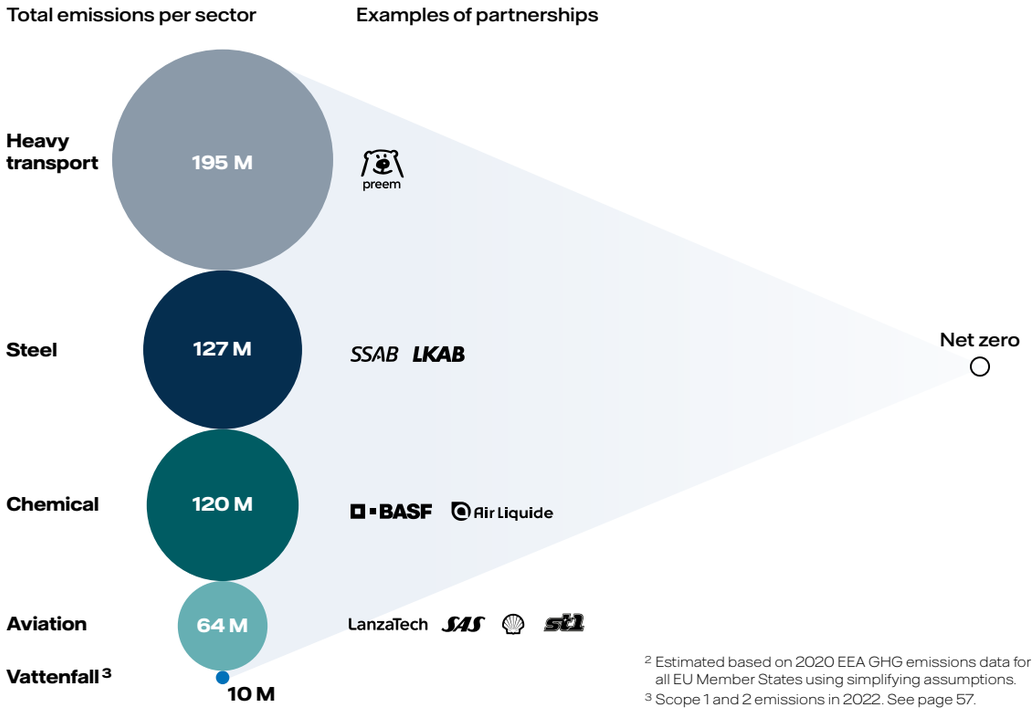
Financial resources available, by stage of technology maturit



[1] The First Movers Coalition is a global initiative of 50+ companies aiming to harness the purchasing power of companies to decarbonise seven "hard to abate" industrial sectors that currently account for 30% of global emissions.

Multiplying our impact through partnerships
We significantly increase the positive impact we can have on the climate by partnering with high-emitting sectors on decarbonisation projects.

Estimated GHG emissions of select high-emitting sectors in Europe[2], tonnes CO_2e



[2] Estimated based on 2020 EEA GHG emissions data for all EU Member States using simplifying assumptions.
[3] Scope 1 and 2 emissions in 2022. See page 57.

Ensuring a just transition
The concept of a "just transition" is placing additional focus on the human impacts of the transition to a low-carbon society across the full value chain. It broadly encompasses...

- **Importance of social dialogue**
- **Fair distribution of costs**
- **Benefits shared with stakeholders**
- **Safeguarding the environment**

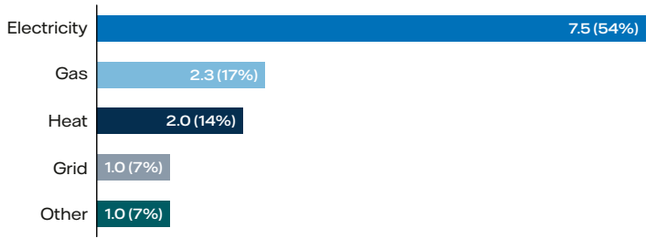
Vattenfall in 2022

Customers

14

million customers

Numbers of customer contracts, by type

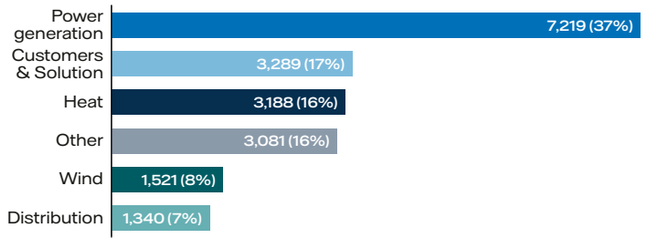


Employees

20

thousand employees

Number of employees, by operating segment

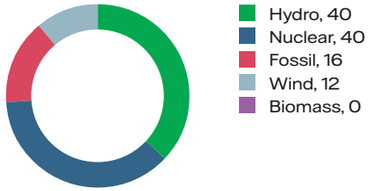


Electricty production

108.9

TWh electricity

Electricity generated, by source



Economic

Vattenfall's Articles of Association stipulate that the company is to generate a market rate of return by operating a commercial energy business that enables the company to be among the leaders in developing environmentally sustainable energy production.

See more on page 109

37.3 (31.2)

SEK billion in underlying operating profit

Social

Vattenfall is committed to having an engaged, safe and empowered workforce that are treated fairly and compensated well. And for people across our supply chain and in local communities to be justly treated.

See more on pages 66-74

80% (75)

Employee engagement index

Environmental

Decarbonisation of power is imperative to reach fossil freedom and our climate impact decreased further in 2022. But our commitment does not stop here; biodiversity and other environmental aspects are also core to our business.

See more on page 56

78 (82)

gCO_2e/kWh

Overview of Vattenfall's assets and production plants

Vattenfall is one of Europe's largest producers and retailers of electricity and heat and has approximately 20,000 employees. Our main markets are Sweden, Germany, the Netherlands, Denmark, and the UK. The parent company, Vattenfall AB, is wholly owned by the Swedish state, and its headquarters are in Solna, Sweden.

Largest plants

Largest plants	Type	Country	Capacity
Wind farms			
Kriegers Flak	Offshore	Denmark	604 MW
Horns Rev 3	Offshore	Denmark	407 MW
Thanet	Offshore	United Kingdom	300 MW
DanTysk	Offshore	Germany	288 MW
Sandbank	Offshore	Germany	288 MW
Power plants			
Ringhals	Nuclear	Sweden	2,204 MW
Forsmark	Nuclear	Sweden	3,307 MW
Hydro power			
Harsprånget	Hydro	Sweden	871 MW
Stornorrfors	Hydro	Sweden	599 MW

District heating

Vattenfall's largest district heating networks are in Amsterdam, Berlin, and Uppsala.

Other operations

Distribution
Vattenfall's Distribution business owns and operates electricity distribution grids in Sweden and the UK.

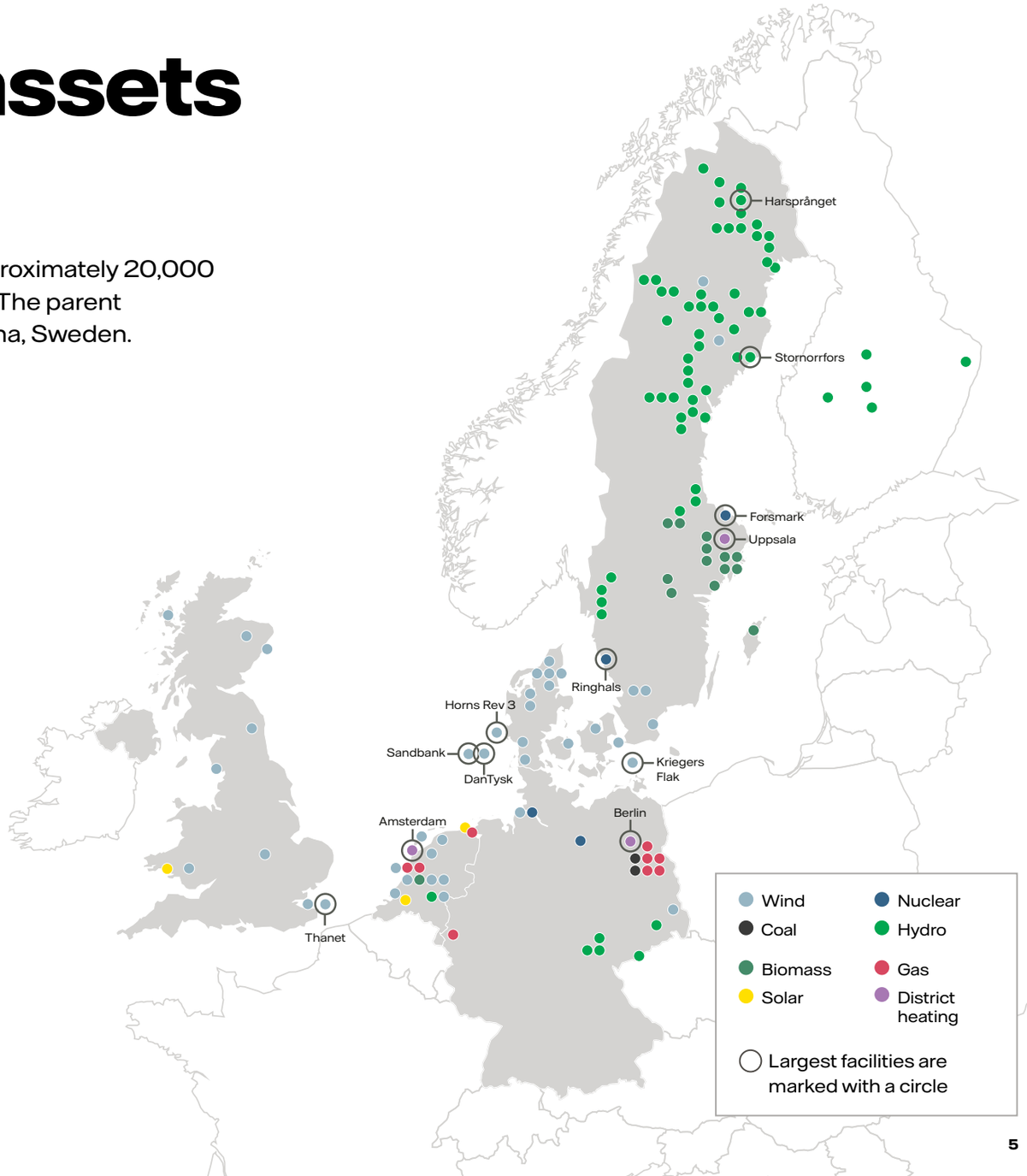
Sales
Serves B2B and/or B2C customers in Sweden, Germany, the Netherlands, Denmark, the UK, France, Finland and Norway.

E-mobility charging solutions
Vattenfall operates 39,600 charging points throughout Sweden, Germany, Norway, and the Netherlands.

Power-as-a-Service
Designing, building, owning, and operating necessary electrical infrastructure for industry and heavy transport. It is an established business in Sweden and the UK with recent market entries in the Netherlands and Denmark.

Offices

Vattenfall also has offices in Finland, France, Norway, Poland, and Belgium.



Business model

Vattenfall is an integrated energy company with the customer at the centre. Sustainability is at the core of our business and our goal is to enable fossil-free living within one generation. The following section describes our business model and the value we create for our stakeholders. One way we are doing this is by applying the International Integrated Reporting (IR) framework.

Inputs

Natural capital
- Hydro, wind and solar
- Coal and gas
- Uranium
- Biomass and waste.

Financial capital
- Growth investments in renewables
- Maintenance investments (e.g. in safety)
- Investments in the energy transition and smart grids.

Human capital
- Engineering and service skills
- Market analysis, trading, and commodities market knowledge
- Digital competence and technical innovation
- Business development.

Manufactured capital
- Wind, solar, thermal, and nuclear power plants
- Electricity and district heating grids
- Decentralised solutions (e.g. solar panels, heat pumps etc.).

Social and relationship capital
- Customer relationships
- Values and brand recognition
- Credibility and trust as a partner and a driver of the energy transition
- Responsible relationships with suppliers
- Active dialogue with local communities, stakeholder organisations, and investors, and more.

Intellectual capital
- Research & Development
- Patents
- Proprietary data, algorithms, modeling tools, and sustainable value creation frameworks

Vattenfall's business activities

Electricity generation
Vattenfall generates electricity from many types of energy sources, including hydro, nuclear, coal, natural gas, wind, solar, biomass, and waste. We are actively phasing out fossil fuels and investing to expand renewable generation.

District heating
Vattenfall is one of Europe's largest producers and distributors of district heating, supplying households and industries in metropolitan areas. In partnership with cities and regions we are driving the transition to fossil-free heating solutions, such as by integrating surplus or waste heat from third parties in to our district heating grids.

Electricity distribution
Vattenfall conducts electricity grid operations in Sweden, a component of which is enabling customers to feed self-generated electricity into the grid. Electricity distribution is a regulated monopoly business that is supervised by national grid authorities.

Sales of electricity, heat, and gas
Vattenfall sells electricity, heat, and gas to consumers and business customers. We focus on optimising the customer experience by offering various price and service models and by providing customers with opportunities to reduce their environmental impact.

Energy services and decentralised production
Vattenfall offers energy services, including battery storage, network services, e-vehicle charging solutions, solar panels, heat pumps and smart meters. We also provide market services and access to marketplaces where customers can buy and sell electricity, as well as solutions for customers to optimise their energy use.

Outputs

For customers
In seven countries
we supply safe, stable, and affordable energy with low-CO_2 to customers

39,600
charging points in operation to electrify transport among other decentralised energy solutions.

For partners
Industry and city partnerships
to develop and implement climate neutrality plans and products.

For society
93 TWh
of fossil-free electricity generated

SEK 8.8 billion
in paid taxes

Numerous
environmental conservation projects, see pages 60–61

For Vattenfall's owner and employees
19,600
employees

SEK 4 billion
Divended proposed by the Board of Directors for our owner for 2022.

Outcomes

Economic value

SEK 20.1 billion

Social value

SEK 24.4 billion

Environmental value

SEK -8.0 billion

See page 51

The UN's Sustainable Development Goals

See page 41

See page 45

See page 37

See page 43

See page 87

See page 39

Electricity and heat – from generation to customer

It takes several steps for electricty and heat to reach the end consumers and Vattenfall is present throughout the value chain in accordance with our strategy as an integrated utility.

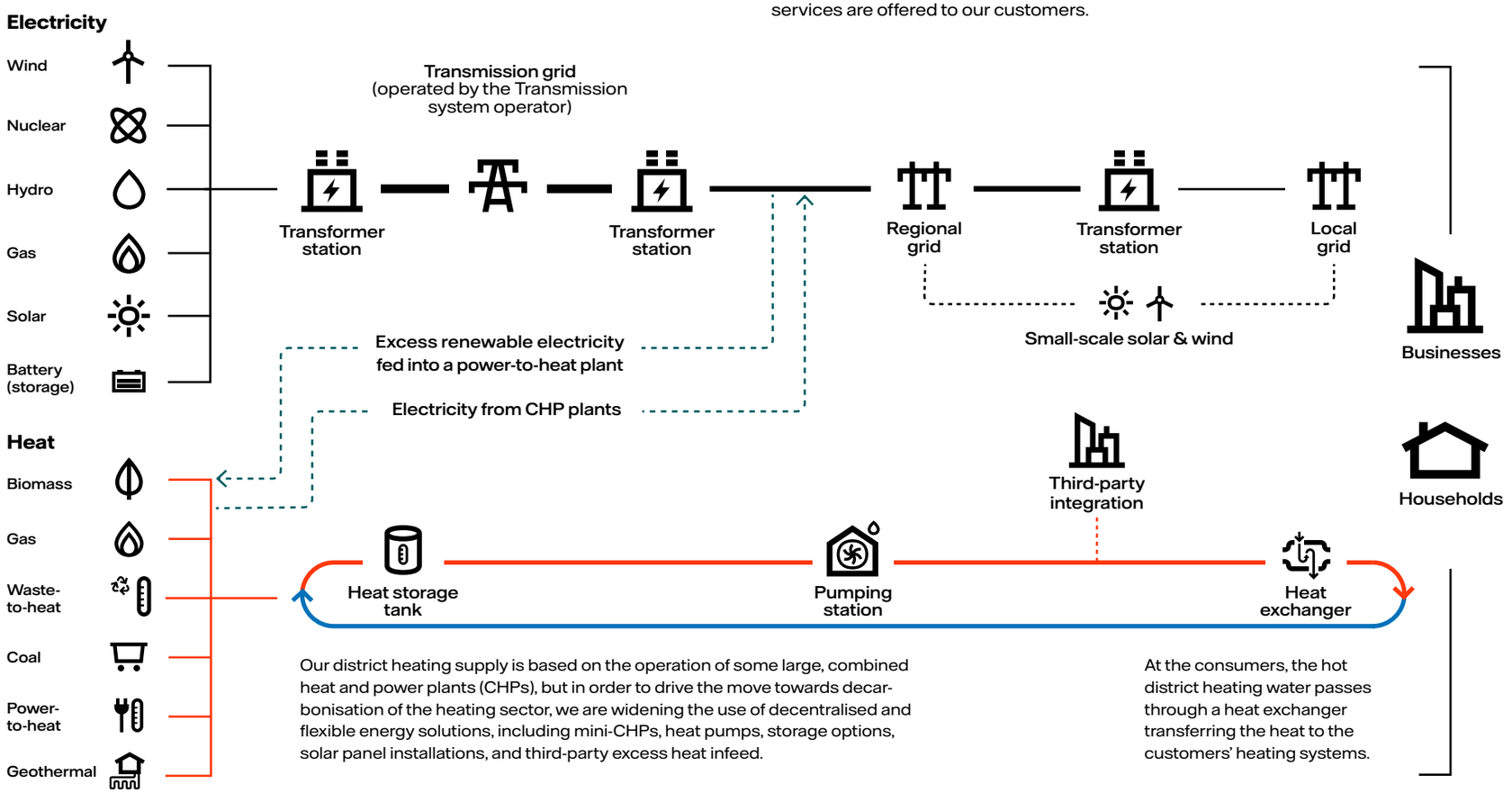
Electricity generation and supply
Electricty goes through three main steps before it can be used by end customers: generation, transmission, and distribution. Generation is typically a competitive market both in terms of energy sources and the number of actors. The transmission grid is typically a national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

Heat generation and supply
District heating systems transport hot water in underground pipe networks 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. District heating networks can manage supply and demand by storing and releasing heat to meet actual demand. Heat can also be integrated from third-party sources such as waste heat from industrial processes and data centres that is fed into the heat network.

Two integrated energy systems
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.

Plants used for district heating can also produce electricty. These are called combined heat and power (CHP) plants and the co-generation makes more effiecient use of the utilised fuel. Electricty from CHP plants are typically fed directly into the grid.

Vattenfall contributes to the electricity generation and supply system with its portfolio of hydro and nuclear power, strong growth in large-scale renewables such as wind, solar power, and battery facilities as well as regional and local grids. Also decentralised solutions with solar PV panels, e-vehicle charging solutions, battery storage, smart meters, and network services are offered to our customers.



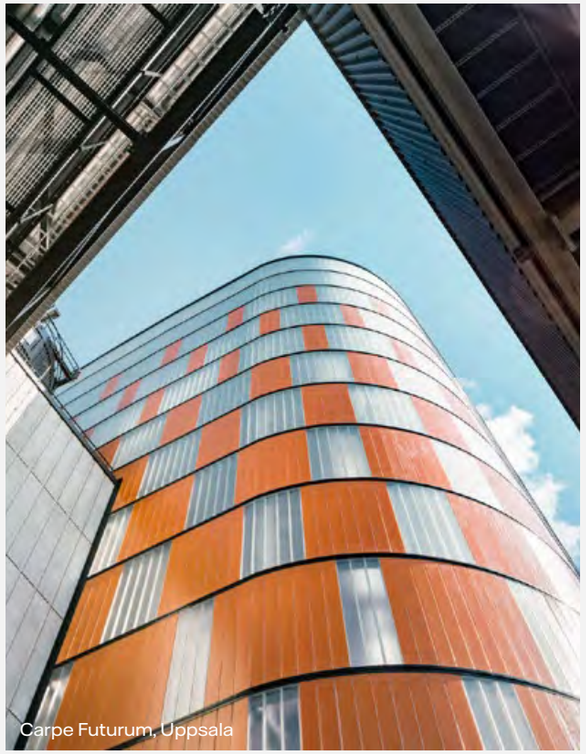
Our district heating supply is based on the operation of some large, combined heat and power plants (CHPs), but in order to drive the move towards decarbonisation of the heating sector, we are widening the use of decentralised and flexible energy solutions, including mini-CHPs, heat pumps, storage options, solar panel installations, and third-party excess heat infeed.

At the consumers, the hot district heating water passes through a heat exchanger transferring the heat to the customers' heating systems.

Important events during the year

Q1

- Planning consent granted for the offshore wind farm Norfolk Vanguard in the UK Page 42
- Inauguration of the biofuel-fired heat plant, Carpe Futurum, in Uppsala. Page 44


Carpe Futurum, Uppsala


Blakliden Fäbodberget

Q2

- Vattenfall's largest onshore wind farm Blakliden Fäbodberget inaugurated Page 42
- Strategic review of Berlin district heating business Page 44
- Feasibility study to investigate construction of small modular reactors near Ringhals Page 40
- Sale of gas-fired Magnum power plant in the Netherlands Page 44
- Partnership with Preem to phase out fossil fuels using offshore wind power and hydrogen Page 12
- Partnership with St1 to develop sustainable aviation fuel. Page 12

Q3

- Foundation installation completed and delivery of first electricity from offshore wind farm Hollandse Kust Zuid in the Netherlands Page 42
- Exercised option to continue to develop the offshore wind power project Nordlicht I in Germany which is expected to cover the electricity consumption for over one million households Page 42
- Joint venture with Midlothian Council to invest in low carbon energy solutions in Scotland Page 44
- HYBRIT's pilot plant for storing fossil-free hydrogen up and running in September. The project received EUR 143 million from the EU Innovation Fund earlier in the year and test results indicate that hydrogen-reduced iron has superior properties to its fossil-based equivalent. Page 12

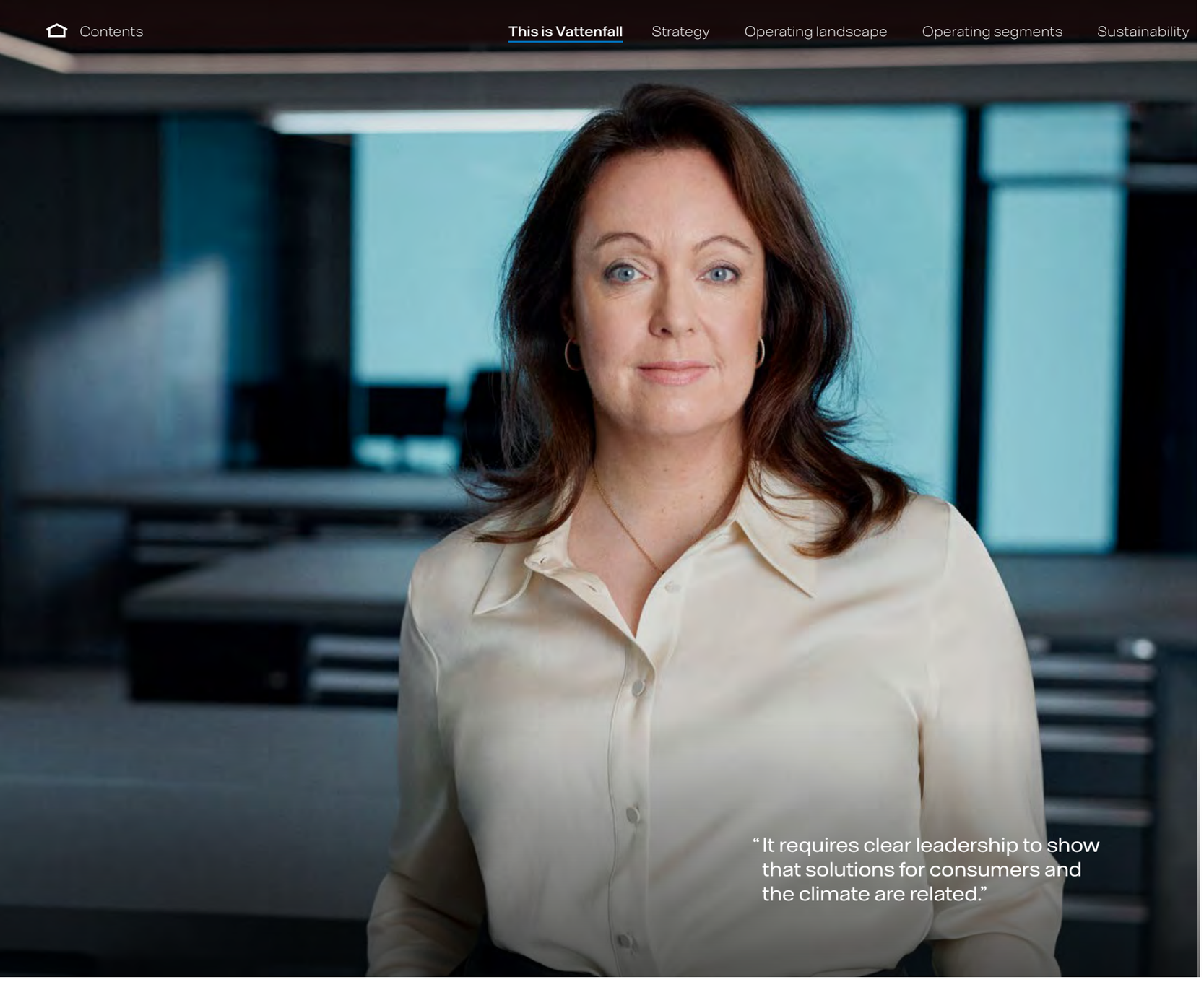
1 million

households could recieve fossil-free electricity from Nordlicht I


Diemen, The Netherlands

Q4

- Vattenfall to build and operate Finland's first major offshore wind farm Page 42
- Investment decision for a 150 MW power-to-heat boiler in Diemen in the Netherlands Page 44
- Grid concession granted for overhead power lines from Hedelunda to Oxelösund to enable the connection of SSAB's electric arc furnace Page 46
- Acquisition of an early-stage pumped storage hydro power project in Germany. Page 40



Focus on supporting customers and continuing the transition

In the morning of 24 February 2022, the world woke up to the news that Russia had invaded Ukraine. Many of us will always carry that moment with us and remember what we were doing at the time.

Russia's invasion was and is a flagrant breach of international law and has had terrible consequences for the people of Ukraine. It is hard to imagine the horrors and difficulties they are going through. Many of Vattenfall's employees have personal connections or family ties to Ukraine. And a lot of people have done great work to help people in the country as well as those who have fled.

The war also impacted the energy market in Europe. Even though we had already seen an increasingly turbulent energy market with volatile prices in the second half of 2021, 2022 was unlike anything we could have imagined.

The first thing Vattenfall did, the same morning Russia attacked Ukraine, was to cancel the planned deliveries of Russian nuclear fuel for our Swedish nuclear reactors. We also stopped all purchases of Russian coal. Instead, we were able to secure deliveries from other countries to maintain operational reliability within nuclear power and within our heating operations in Berlin.

Safeguarding future security of supply while supporting customers
Nobody knows how long the war will last. The effects on Europe's energy markets have been substantial. We are continuously monitoring developments and taking the measures we consider necessary to safeguard both our financial stability and the safety of our operations. It has been crucial for us to maintain the safe operation and supply of electricity and heating both during the pandemic years and now, that Europe is undergoing a challenge of a different kind. I am proud that we have succeeded in this and grateful of the work Vattenfall employees have done under circumstances that have sometimes been hard.

Before the war, 40 per cent of natural gas sold on the European market came from Russia. Europe's efforts to shed its dependence of Russian gas have been in focus for much of the year. As a result of this and the fact that no more Russian gas is coming into Europe, gas prices have soared, which has also had a direct impact on electricity prices. Spot prices for electricity and gas more than doubled between 2021 and 2022 across all of our markets. The situation has become very difficult for customers all over Europe and I have personally been deeply moved by all the conversations I have had with customers who are worried about their utility bills and their household finances. Therefore, it is understandable that the EU and its Member States are taking concrete measures to mitigate the consequences for the most severely affected customers.

Most important in the short term are measures to reduce consumption of electricity and heat. This has a direct effect on both each individual customer's bill and on the market price. Basically, the high prices are caused by reduced supply and high gas prices. If demand decreases, so does the price. Vattenfall is helping its customers with advice on the best ways to save energy, which electricity contract is best suited to the household in question, and for those who need it, we are helping with instalment plans. We are also taking steps to save energy in our own operations, for example by lowering the heating in our offices, and switching off unnecessary lights.

> "It is very welcome that the EU and its Member States are taking concrete measures to mitigate the consequences for the most severely affected customers. Most important in the short term are measures to reduce consumption of electricity and heat. This has a direct effect on both each individual customer's bill and on the market price."

Reducing the dependence on fossil fuels
The only way to solve the energy crisis in the longer term is building more electricity generation in Europe and eliminating our dependence on fossil fuels. For this to succeed, we need to rapidly expand both fossil-free electricity generation and the electricity grids. This is important for customers, for the competitiveness of Swedish and European industry, for the climate, and for security policy reasons.

In order to gain support and acceptance for the energy transition, it has to be perceived as reasonable, affordable, and lead to long-term improvements for customers and citizens. The current situation with high electricity prices and high inflation only makes it particularly challenging. It requires clear leadership to show that solutions for consumers and the climate are related.

Financially, environmentally, and socially sustainable
We have to be able to offer our customers attractive solutions to live modern and comfortable lives in a sustainable way. Market conditions have changed dramatically in recent years. To stay competitive now and in the future, companies need to be sustainable both financially, environmentally, and socially.

The underlying operating profit during the year increased by SEK 6.1 billion to SEK 37.3 billion. Wind power doubled its contribution thanks, in part, to new capacity from Kriegers Flak in Denmark. We also saw a positive effect from more customers choosing Vattenfall in these uncertain times. During the year, 400,000 additional customers chose Vattenfall, with growth in all markets and especially in Germany.

Reported profit for the period broke even for the full year, mainly owing to the realisation and valuation of electricity and fuel contracts entered into in previous years. These are reported on an ongoing basis at current market value, which creates temporary shifts in our reported results. Historically, this impact has been limited, but as a result of the wide price fluctuations since the second half of 2021, the effect from market value changes amounted to SEK -20.1 billion. In contrast, in 2021 we had several positive events of one-off character which impacted the results by SEK 29.1 billion, which included the compensation for the early closure of German nuclear power. Vattenfall continues to be in a strong financial position and has good liquidity. Based on this, the Board of Directors has proposed a dividend of SEK 4 billion.

Strong underlying operating profit

SEK 37.3 billion

an increase of SEK 6.1 billion

Wind power doubled its contribution

2x

in part due to new capacity from Kriegers Flak in Denmark

Customers chose Vattenfall in these uncertain times

400,000

new customers in 2022

Speeding up the pace of transition
The pace of the transition must be accelerated and we need to build large amounts of fossil-free generation and expand the electricity grid in a short time. To make this possible, regulatory frameworks are needed to stimulate investments. For the next two years, we plan to invest a total of SEK 77 billion, of which SEK 38 billion will be growth investments in renewable electricity production and SEK 11 billion will be investments in our electricity grids.

In 2021, Vattenfall tightened its emission targets to be in line with the Paris Agreement's 1.5 degree scenario, which was certified by the Science Based Targets Initiative. In 2022, emissions from our own operations decreased by 51% since 2017.

Our impact on the world around us
We are a major producer of electricity and heat, and our facilities have an impact on nature and the environment. Vattenfall is a leader in biodiversity, according to the independent Ecogain Biodiversity Index. However, this does not mean that we can rest on our laurels. We have a net-positive approach to biodiversity and we are working hard to deliver on it through scientific research programme, concrete efforts at our different sites, and through activities to measure the impact on biodiversity and improve it with different measures.

Vattenfall is a worldleader in biodiversity according to the independent Ecogain Biodiversity Index.

Human rights and health and safety are also important strategic priorities. We continue to focus on contributing to a positive impact on human rights throughout our value chain and we are continuously working to raise awareness and create new tools and ways of working to identify and manage our own impact. In this effort, we collaborate with stakeholders to increase our leverage and ability to do so.

> "We welcome the new Swedish government's clarification that nuclear power is an integral part of the country's energy system now and in the future..."

We have developed a new health and safety strategy during the year and plans for how we will achieve our ambition: a world-class working environment for everyone who works at and for Vattenfall. We have seen several tangible improvements during the year, including a reduction in the accident rate.

Our dedicated employees are one of our greatest strengths as a company. Therefore, I am very pleased that – according to our large-scale employee survey – we are now seeing a record high level of engagement among our employees in their work for Vattenfall. Competition for talent is intensifying due to the energy transition. That is why we are constantly trying to improve our ability to attract and develop talent and retain the key skills we have here.

Continuing to expand capacity
Vattenfall's goal is to enable fossil-free living within one generation, and over the past year we have taken several important steps to that end. We have continued to expand renewable capacity and have been able to supply the first electricity from what will become the world's largest offshore wind farm once it is completed, Hollandse Kust Zuid in the Netherlands. We have also exercised our option to build a large offshore wind farm in Germany, Nordlicht I, which means that we can continue developing the project. We have been granted permission to build two wind farms in the Norfolk zone in the UK, which will provide the equivalent of more than four million households with electricity. In Sweden, Vattenfall's largest onshore wind farm, Blakliden Fäbodberget in Västerbotten, was inaugurated during the spring.

Hollandse Kust Zuid in the Netherlands will be the world's largest offshore wind farm when it is completed,

All fossil-free energy sources are needed
We welcome the new Swedish government's clarification that nuclear power is an integral part of the country's energy system now and in the future, which they have demonstrated in a number of decisions. Vattenfall has initiated a pilot study to investigate the potential for building at least two small modular nuclear reactors (SMRs) at Ringhals. This – together with the government's decision to grant a licence for the final repository for spent nuclear fuel at Forsmark and the fact that we are now also looking into extending the lifetime of our five existing reactors at Forsmark and Ringhals – means that nuclear power has an obvious place in Sweden's future energy system. Vattenfall operates in a complex regulatory environment and the commercial potential always forms the basis for our decisions. The transition opens up many opportunities.

We are constantly upgrading and optimising hydro power in order to supply as much electricity as possible. Among other things, we are rebuilding our dam at Lilla Edet with a new type of concrete that contains less cement and thus has a lower carbon footprint.

All fossil-free energy sources will be needed in order to enable the electrification of industries and transport. There is also a need for a vastly

expanded electricity grid. We are receiving record numbers of requests for grid connections. We are upgrading the regional grid, including in the Stockholm area and in Norrbotten, to meet the needs of new, electricity-intensive industries and the increased number of requests. We have also been issued a permit to build a new power line for SSAB's steel plant at Oxelösund. This project will contribute to SSAB's transition and enables the production of the fossil-free steel thet we have developed jointly through the HYBRIT project.

Electricity grids are key for our ability to meet society's ambitions for electrification, and there is big need for investments. Ahead of the upcoming regulatory period of 2024–2027, the Energy Market Inspectorate has announced major changes in how revenue frames are calculated. Rapid changes risk affecting business conditions adversely, and we therefore advocate stable, predictable and forward-looking regulation. We will learn more about how this will affect our investments going forward once the method is presented in its entirety this autumn.

In Sweden, we have inaugurated the biofuel-fired heat plant Carpe Futurum in Uppsala and in the UK, together with the Midlothian Council, we will be investing in climate-smart heating solutions in Scotland. Together with Bristol city council and the American company Ameresco, Vattenfall will be contributing towards reducing Bristol's CO_2 emissions from energy and heating over a period of 20 years in the so-called City Leap project.

→ Read about our operating segments

Prioritising the right opportunities

The business opportunities related to the transition are endless. In order to ensure that we focus our efforts where we have the greatest competitive advantage and can create the greatest value, we are continuously reviewing our operations; which investments should be prioritised; and how we can best deliver on our strategy. As part of this, we have initiated a strategic review of our heating business in Berlin during the past year. This is a well-functioning business with great potential for the future, but major investments are needed in order to switch to fossil-free fuel. The process of finding a buyer has begun and will continue into 2023. Irrespective of whether Vattenfall continues to own the business, Germany will remain an important market for Vattenfall.

The Carpe Futurum heat plant in Uppsala will cut CO_2 emissions by

200,000 tonnes

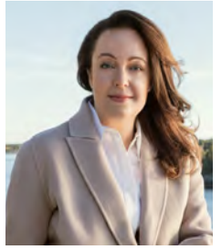
annually

Vattenfall is involved in a number of partnerships with industry to develop new business models that make companies competitive by phasing out fossil fuels through electrification. HYBRIT, our collaborative project with SSAB and LKAB, has progressed according to plan. In 2021, the world's first fossil-free steel was produced and delivered by SSAB to Volvo AB. In 2022, the project was granted support from the EU Innovation Fund of EUR 143 million (SEK 1.5 billion) and we inaugurated the hydrogen storage facility, built in an underground cave in Luleå. Vattenfall and Preem have initiated a pilot study on the possibilities of developing a value chain in which offshore wind power and hydrogen are connected to the refinery industry on the west coast of Sweden to enable a rapid transition to fossil-free fuels, starting by 2030 at the latest. Vattenfall and St1 will jointly develop a fossil-free value chain using hydrogen to produce electrofuel for the aviation industry on a large scale.

> "The energy transition can only take place if we all, in business, as well as in politics are pulling in the same direction."

During the year, we spoke to more than 4,000 stakeholders, including the general public, customers, employees, suppliers, and partners, in connection with our materiality analysis about how different sustainability aspects affect us as a company and how we affect them. Fossil-free electricity generation, the climate, and affordable electricity prices continue to be the most prioritised areas. This is well in line with our strategy. The IPCC's latest report, published in March 2023, reinforces the picture of how severe the situation is.

The energy transition can only take place if we all, business, as well as in politics, are pulling in the same direction. The solutions exist, we know what needs to be done, and in most cases the capital is also already there. Now we just need to accelerate the pace.



Anna Borg, President and CEO

In focus

It is difficult to sum up 2022 in any other way than that it was a turbulent and very challenging year with Russia's invasion of Ukraine having major consequences on an already strained energy market.

A turbulent year in the energy market

Q1 – Beliefs of lower prices shattered by Russia's invasion of Ukraine

Electricity and fuel prices started to rise in the second half of 2021 owing to the higher gas prices caused by lower supply from Russia and unfavourable weather conditions. Prices declined briefly over the turn of the year, but in the wake of the Russian invasion of Ukraine, prices of both fuels and electricity surged to what was then record-levels. In both Germany and France, politicians were quick to signal the potential need to ration gas in the coming winter.

The price of coal was also driven up by the higher gas prices, and likewise emission allowances were impacted to some extent. Accordingly, electricity prices on the Continent increased significantly, with a major effect on electricity prices in southern Sweden. In the Nordic countries, the differences in electricity prices between price areas started to diverge even further from what had been record-levels in 2021, as mild, wet, and windy weather drove prices down in the north while transmission network constraints prevented electricity from reaching the south.

Q2 – Turbulent electricity markets when gas sets prices

Turbulence in the electricity market increased in the second quarter. The big question about what the natural gas supply would look like in Europe the coming winter was urgent, and rationing was becoming an increasingly likely scenario. The uncertainty sent electricity prices to new record levels despite being in the middle of the summer when prices are usually lower. In continental Europe, prices were three to four times higher on average than for the corresponding period in 2021.

In Sweden, average prices nearly tripled compared to 2021, but price differences between the country's southern and northern regions remained substantial. In southern Sweden, prices were clearly linked to continental Europe and the price of gas, while average prices in the northern areas were comparable to 2021.

Q3 – Major market uncertainty following summer

Electricity market prices continued to fluctuate widely around historically high levels. High fuel prices remained the primary driver of electricity prices on the Continent but there were also other issues that worsened the situation such as outages in the French nuclear fleet. In the Nordic countries, particularly in southern Sweden, prices were affected by the Continent, but unfavourable weather and wind conditions also had an impact, especially in August. Even as fuel and electricity prices declined somewhat, the situation remained strained. Prolongations of outages were also announced for Vattenfall's nuclear reactor Ringhals 4 and Uniper-owned Oskarshamn 3.

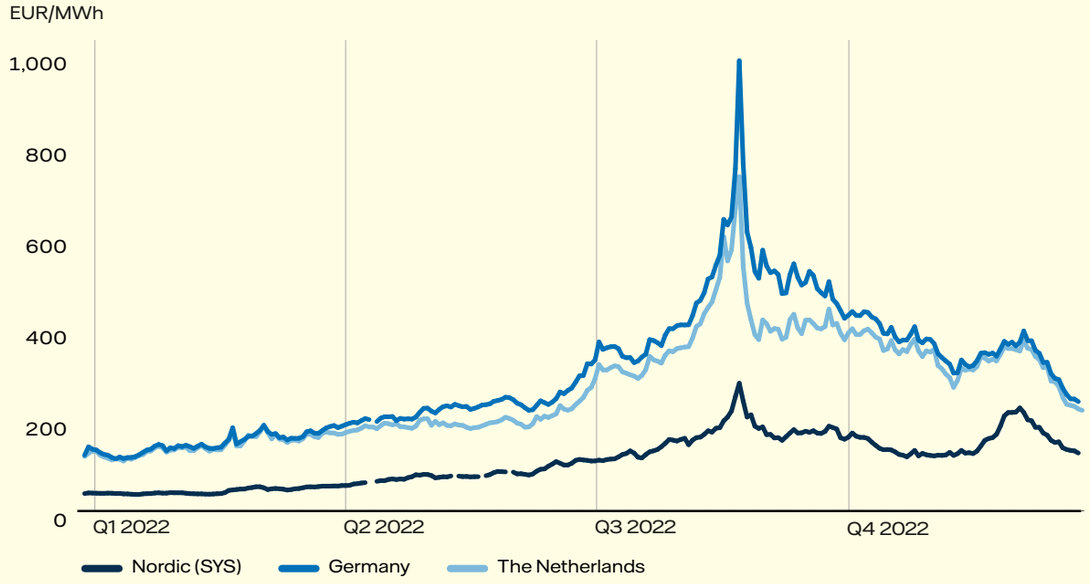
Q4 – Calmer markets in year's final quarter

The weather was relatively mild in the fourth quarter and gas storage on the Continent remained at good levels, which meant that the risk of winter rationing decreased significantly. As a result, fuel and electricity prices declined on the Continent and average gas prices halved compared with Q3. In the Nordic countries, prices started out low at the beginning of the quarter but then rose, primarily in December, because of dry weather with less wind as well as impediments to nuclear power output. Higher transmission capacity between price areas SE2 and SE3 resulted in a dramatic narrowing of price area differences in Sweden.

Rude awakening

Russia's invasion of Ukraine made clear the consequences of Europe's dependence on fossil fuels. The energy issue is now at the top of the public agenda. To alleviate the immedate crisis, acute measures such as reducing demand (see the following pages) and political emergency measures (see pages 31–32) are key. In the long run, investments are needed to bridge the gap between energy supply and demand and Vattenfall is contributing to this in several ways (see page 22).

Year-ahead prices for electricity in the Nordic countries (SYS), Germany, and the Netherlands



Guiding customers through turbulent times

Customer service was never more important than in 2022. In response, Vattenfall staffed up its customer centres, and offered general information, concrete advice, and even hands-on assistance to customers.

Widespread concern for soaring energy bills and the upcoming winter

Confronted with soaring electricity and heating costs, high inflation, and potential unavailability of electricity, heat, and gas, many customers across Vattenfall's markets were nervous and uncertain what to do ahead of the winter. Media attention related to the energy market and the war in Ukraine further fuelled customers' concerns.

Especially in Sweden and the Netherlands it drove customers to reach out to Vattenfall's customer service centres in numbers never seen before. In Sweden, customer service calls doubled from 2,500 calls a day in 2021 to 5,000 calls in 2022 and in the Netherlands, customers calling by phone experienced waiting times of as much as 90 minutes while online logins to Vattenfall App and My Vattenfall increased by 390%.

With the heightened interest in energy, customers were often more well-informed than before and requested more detailed information, such as the difference between fixed and variable prices and how the energy market functions. To be able to maintain a high service level to our customers, Vattenfall's customer centres took steps to staff up. In Sweden two new customer service centres were set up and the number of staff was doubled. Similar steps were taken in the Netherlands.

In Germany, where regular advance payments are made for energy, customer concerns focused primarily on anticipated high additional payments to settle deviations at the end of the billing cycle. Large waves of calls were expected both when price increases were announced and many customers wanted advice on how to adjust their pre-payments, and when customers received their energy bills and realised how much they would have to pay. Therefore, preparations focused on that and on offerings to alleviate these problems.

From online advice to hands-on assistance

Vattenfall offers both general information, concrete advice, and hands-on assistance adapted to each individual markets and the official steps and regulations introduced to tackle the crisis. In Germany and the Netherlands, the availability and price of gas were very much in focus, while electricity prices were the major concern in the Nordics.

> **"During the 2019 Alfrida storm, we had a peak of customer service calls that was almost three times higher than usual. During autumn of 2022 our peak was 3.5 and most days around 2.5 times higher than usual. So, we were almost handling an Alfrida storm every day for a long period."**
>
> **Carolina Häggström**, Head of Customer Services Nordic

Customer service was never more important than in 2022 and was offered digitally, by phone, and in person. In the Netherlands, the main advice to customers was to prioritise lowering their energy consumption. The Energy App allows customers to follow their energy consumption on an hourly basis which is important, as energy savings starts with insights in one's consumption. Customers also received advice on how to save energy with online tools and tips on Vattenfall's website. If more assistance was needed, customer energy advisors were available who could give personal energy advise via a video call.

In Sweden, our online Energy Saver tool offers individual advice and solutions in the form of bespoke energy savings plans and it was also possible to book a 45-minute phone meeting with an energy coach who would assess the whole house to identify places to save energy.

In Germany, extensive information about energy savings was offered in videos, booklets, and online information hubs with simple tips and tricks to save costs and on the online German Tink Shop and the Dutch Exclusief shops customers could buy energy savings products at a discount. The number of customers requesting quotes for solar panels in the Netherlands also surged. In Sweden, there was increased interest in installing heat pumps, radiators, and wood stoves, while the interest in solar panels more than doubled

Since about 77 per cent of district heating in Berlin relies on gas, it was likely that an acute gas shortage coulds arise, unless 20 per cent energy savings could be achieved by society at large. Together with eight associations and companies, Vattenfall therefore founded a public initiative in Berlin to reach that target. The initiative presents ideas and solutions for tenants, owner-occupiers, small business owners, restaurants etc. with specific information and offers.

In-person meetings

As partner of the so-called FIXbrigade, Vattenfall in Amsterdam even went full hands-on to help customers with installing energy saving measures, such as draught excluders, sealing gaps, and installing LED lights and water-saving shower heads. The result was energy savings per household ranging from EUR 300 to as much as EUR 1,200 per year.

Moreover, Vattenfall's German energy experts provided consulting in people's homes or in Vattenfall's stores to produce individualised action plans for people to save energy.

Energy consumption in Swedish detached houses

Heating – 60%

Hot water – 20%

Household electricity such as TV, lighting, washing machine – 20%

In the media
In Sweden, Vattenfall's energy coach Lasse Ejeklint became a well-known public figure, as he was providing newspapers, TV, and other media with background materials and advice on how to increase energy efficiency for households. Along the same lines, Vattenfall in Germany launched a public campaign to help our customers save energy. The campaign is partly run together with regional media channels to raise awareness of energy savings.

When money is the problem
In the Netherlands, Vattenfall ran several initiatives, local and nationwide, to either help our customers with tailor-made payment arrangements or refer them to Geldfit, an organisation that is helping people with financial problems and with whom we have an established cooperation. Apart from our internal processes, we also played a leading role in several other nationwide initiatives, working in close cooperation with the Dutch government in designing and implementing their support package for vulnerable customers.

In Germany, Vattenfall is supplier of last resort for electricity in Berlin and Hamburg, and in both cities, we took part in round tables set up to protect vulnerable customers. One of the measures implemented was a special hotline for customers, who can contact the participating companies and institutions for assistance in paying off their energy-related debts. For vulnerable customers at risk of being disconnected for lack of payment, Vattenfall offers special tariff reductions and installment plans.

Vattenfall also supports a hardship fund in Hamburg set up by the Senate to help people who are in danger of being cut off from electricity and gas. And we proactively inform our customers of the need to spread their costs out by adapting their regular advance payments to the rising energy costs, thereby avoiding excessive end-of-year settlements.

Vattenfall has introduced measures in Sweden such as lower requirements for collateral deposits to be made by customers with a history of payment issues and has reviewed its routines for deferral of payments and instalment payments. We also contact customers to advise them to choose monthly payments. The process for non-paying customers is regulated by the Swedish Electricity Act, and we are required to notify the social authorities of customer non-payment, so that they have a chance to assist the customers with their bill payment to avoid that they are disconnected.

Expansion of fossil-free supply the only sustainable solution
The current situation is challenging for many of our customers. Demand reduction and financial support are key in alleviating the immediate crisis, but the root cause is a that the available power supply does not match demand. In the longer term, fossil-free electricity consumption needs to increase further in order to meet climate targets, which means that we must expand generation capacity and infrastructure rapidly. Strong public and regulatory support for all fossil-free energy sources and investments are needed in generation, grids, flexibility, as well as the conversion of industrial processes to fossil-free alternatives. Vattenfall contributes by leading the development in many of these areas both through investments and as a partner.

Preparing for a worst-case scenario in Berlin
Vattenfall took preventive measures in preparing for worst-case scenarios by cutting its own energy consumption while motivating both B2C and B2B customers to do the same. All stocks of coal and – in the event of a crisis situation also – oil were filled; Russian coal was substituted with South African coal; and the Märkisches Viertel biomass plant (106 MW heat) managed to increase production by 10%. As a last step, plans were prepared to switch off district heating to so-called first line unprotected customers, if required by government regulations.

Two times gold for Vattenfall in the International Customer Experience Awards 2022

In November, Vattenfall in the Netherlands won gold in two categories at the International Customer Experience Awards: Best Customer Experience Strategy in Crisis and Best Customer Experience Team. Comments from the jury: "I really enjoyed the enthusiasm, pride, and energy that was shared in this case. It was interesting to see how an energy company reacted to energy crises, and where the biggest challenges were when it started. Also, an impressive story where customer strategy was at the heart of crisis response".

Strategy

We are at the epicentre of the energy transition that is accelerating. This creates major challenges but also brings a lot of opportunities. Vattenfall has formulated a strategy to reach our goal of enabling fossil-free living within one generation. It steers our direction: How we prioritise business opportunities, focus our efforts, and engage our employees, so that we can remain truly customer centric while creating value for our stakeholders and continue to lead the decarbonisation of both our sector and far beyond.

- Our strategy →
- Strategic targets →
- Financial targets →
- Investment plan →
- Green bond investor report →
- Research & Development →
- Our people →
- In focus: Flexibility →

Fossil-free living within one generation

Vattenfall operates in a complex business environment, that is influenced by many different factors such as macroeconomics, geopolitics, technology developments, and regulations. Our strategic direction is continuously evolving to create value for our customers and other stakeholders, remain financially robust, and reach our goal of a net-zero value chain by 2040.

Beyond the current energy crisis, we believe the market will eventually stabilise and that Europe will return its focus on becoming a net-zero economy in 2050, mainly through electrification. However, issues such as security of supply and ensuring a just transition need to be considered at the same time. The growth opportunities within the sector have led and continues to lead to an inflow of large amounts of low-cost capital. This comes in part from large oil and gas companies that are incentivised by investors looking to decarbonise their investment portfolios. The competition in the end consumer business is also fierce and customers are increaslingly expecting a seemless and digital customer service experience and Vattenfall is working hard to live up to these demands (see pages 14–15).

Our strategy in a nutshell

Setting out to be a leader in the energy transition

Today a successful energy company needs to be much more than just profitable. Our goal is to enable fossil-free living within one generation, which is in line with our owner's as well as our customers' expectations. Our employees' dedication and expert knowledge provide us with a great foundation for taking on this leadership role. But for the energy transition to become reality, it must be considered just. Hence, being a trusted and collaborative partner in the societies where we operate is key for reaching our goal.

Sustainability is the business

We see sustainability as a competitive advantage and an opportunity to grow in new product and market segments. We drive and support the energy transition with most of our growth investments along the fossil-free electricity value chain. So, when we say "sustainability is the business", it is rooted both in continuously increasing sustainability ambitions and investments to differentiate ourselves from our competitors.

Fossil-free electricity generation is the foundation for value creation

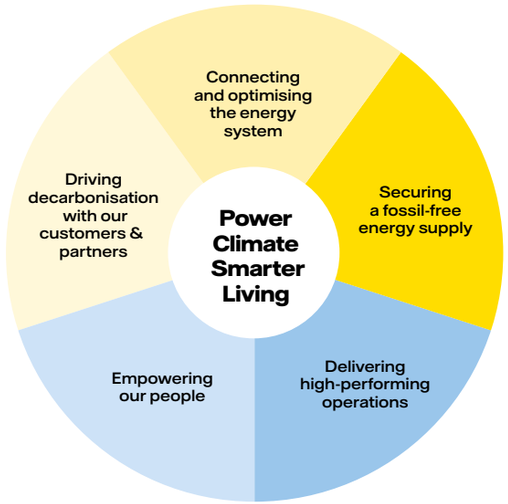
Our portfolio in hydro and nuclear power and electricity distribution in Sweden will generate value for a long time to come, as these assets constitute the backbone of the accelerating electrification revolution. In addition, on the continent we have built a portfolio and pipeline for growth in fossil-free electricity generation, especially in renewables. Also, we are in a position where we can leverage our track record to seize further growth opportunities across our core markets while continuing to phase out fossil production.

Value and robustness through integration and diversification

As an integrated utility, we are active throughout the energy value chain. We believe this increases our competitiveness, for example by allowing us to differentiate in wind tenders where Power Purchase Agreements (PPAs) need to be secured or where system integration is required. Furthermore, our broad industry expertise makes us an attractive counterparty for decarbonising industrial companies. A diversified portfolio that spans the full value chain and a range of markets, regulatory regimes, and business models also lower our overall risk level. This, in turn, increases our investment capacity. The wholesale market exposure in our generation portfolio is balanced by our regulated distribution business as well as margin-based revenues from sales of heat and electricity. A growing portfolio of fossil-free and renewable assets also makes it easier and less risky to service and acquire customers. In sum, diversification is the basis for a robust portfolio that can secure growth and value creation over time.

The Vattenfall strategy wheel illustrates our integrated business model and what is needed to succed with our strategy

- **Driving decarbonisation with our customers & partners** with focus on greater customer centricity and promotion of electrification and climate smart energy solutions in areas where we have a competitive advantage.
- **Connecting and optimising the energy system** with focus on maximising the value of flexibility and promoting stable and cost-efficient grid infrastructure.
- **Securing a fossil-free energy supply** with focus on growth in renewables, maximising the value of our existing fossil-free assets and implementing our CO_2 roadmap.
- **Delivering high-performing operations** by being both competitive and cost-effective, and by leveraging opportunities in digitalisation and taking social and environmental responsibility throughout the value chain.
- **Empowering our people** with focus on securing necessary competence while improving the employee journey and providing a safe work environment.



Beliefs that underpin our strategy

Our strategic direction and capital allocation are based on how we believe the market will evolve, how customer behaviour will change, and how we can remain competitive. Some of the key beliefs that underpin our strategy are:

There will be a shortage of fossil-free electrons on the market for some time to come
We invest heavily in renewables and believe that there will be a shortage of fossil-free electrons for some time to come. Therefore we believe that industry partners will continue to seek collaborations with us, both through PPAs and direct ownership shares in projects. We also believe that new fossil-free assets will continue to be attractive to finanical investors.

We can attract and retain the people and competencies we need
As the transition of the energy sector progresses, companies compete for a scarce supply of people, creating a challenge to attract and retain critical competencies. We believe that we can secure the necessary competencies through our strong purpose, focus on diversity and inclusion as well as by offering opportunites to work across the energy value chain.

We can secure enough sustainable supplies in the long term
As an infrastructure-intensive business, with ambitious investment plans and climate targets, Vattenfall relies heavily on a resilient and sustainable supply chain. We believe this can be secured through close collaboration with suppliers and partners that see value in working and co-innovating together with us.

The value of flexibility will increase over time
As the share of intermittent renewables increases, price volatility will follow. We believe that the value of a fossil-free, flexible demand and generation portfolio will increase over time and allow us to monetise this volatility. We are investigating and evaluating technologies such as pumped hydro power, batteries, and hydrogen to ensure a flexible and robust portfolio also in the future. To that end, plannable production, such as hydro and nuclear, will also have a valuable role to play.

Our role in the hydrogen value chain is primarily to provide fossil-free electricity
So far, our role in the growing hydrogen market has primarily been to provide fossil-free electricity to industry partners and other customers. This is where we see our competitive advantage and where we believe that there is most value concentrated for Vattenfall. Our focus therefore continues to be on opportunities where electricity supply is a key driver for value creation, and where the end-to-end business case is attractive. However, this could change as the market develops and we have some pilot projects with in-house production, for example by integrating hydrogen production with offshore wind.

Our portfolio

Our strategic beliefs materialise in our portfolio, where we continuously evaluate our view on where we want to grow, develop, or assess our business scope. In general, our portfolio targets strong growth in the electricity value chain, combined with efforts to decarbonise gas sales and district heating on the continent. Key elements of our portfolio are:

- **Offshore wind** – Our primary growth area, where we aim to capture the value of fossil-free electrons by securing PPAs and partnering with industry offtakers and financial investors. Our current offshore strategy focuses on north-western Europe, where we have a strong pipeline and seek to differentiate ourselves through additional capabilities such as system inte gration and deep integration of hydrogen.
- **Onshore wind** – We are active primarily on the continent where partnerships with offtakers are key to secure attractive development sites. There are also potential opportunities in northern Sweden where the focus would be on supporting electrification of industry. There, the targeted growth is closely linked to demand growth to manage the risk of system oversupply.
- **Nordic nuclear and hydro** – Our existing nuclear and hydro portfolio is the backbone of the Swedish energy system and an important enabler for both the energy transition and additional growth for Vattenfall. We are looking into several options to increase capacity, including potential lifetime extensions of our existing nuclear fleet and a planned power upgrade of Forsmark Reactor 1. We have also initiated a feasibility study on the potential to build Small Modular Reactors (SMRs) in the vicinity of the Ringhals nuclear power plant, which could meet the future growth in electricity demand in southern Sweden. Capacity increases are also being prepared for our hydro business, while we are closely monitoring policy developments regarding new environmental permits.
- **Swedish distribution system operator (DSO)** – There is an unprecedented need for new grid capacity and interconnections, and we will continue to make significant investments in our Swedish grids to enable the energy system build-out.
- **District heating** – We are currently conducting a strategic review to assess whether we are the right owner for our district heating business in Berlin. In the Netherlands, we are focusing on decarbonising our operations by exploring ways to reduce dependency on natural gas and finding sustainable alternatives such as biomass, heat pumps, and third-party excess heat. Both markets, as well as in the UK where we are pioneering district heating development, have strong growth potential in the coming years. In Sweden the district heating market is mature and, as such, organic growth opportunites are limited.
- **Customer gas and electricity sales** – This is a mature market where focus is on remaining competitive in a very competitive environment, while helping our customers to decarbonise, especially in Germany and the Netherlands (see page 47). We also venture deeper into the electricity value chain, for example by offering services such as heat pump installations. Our e-mobility offerings also contributes to retaining and attracting customers – and the associated power contracts.

A clear strategic direction

Our overall strategic direction is clear. We are continuing to grow in fossil-free electricity generation and distribution and are sharpening our focus on decarbonising gas sales and district heating on the continent. PPAs and industry partnerships are key avenues to realising the value in our assets, and growth investments are enabled by our nuclear, hydro, and customer sales businesses. Managing risk in the short-term by staying flexible without losing sight of our long-term ambition will be important.

As the world moves towards net zero, we see investment opportunities in different decarbonisation technologies such as hydrogen, onshore wind, batteries, fossil-free gas, and nuclear, and we are evaluating several of these opportunities.

Vattenfall will continue to support our customers and society at large in the energy transition, while pursuing our path towards net zero by 2040.

Investments along the electricity value chain in 2023-2024

27 SEK billion

Develop

Maintaining and optimising our assets within hydro, nuclear, and district heating

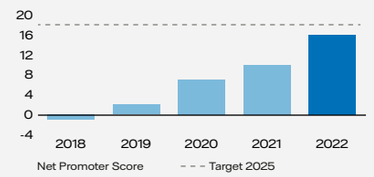
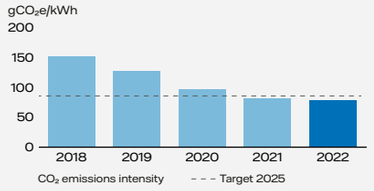
50 SEK billion

Grow

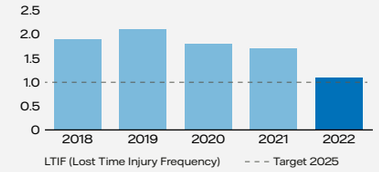
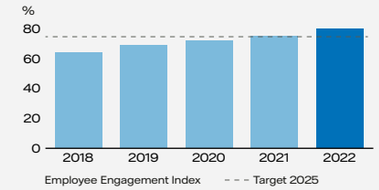
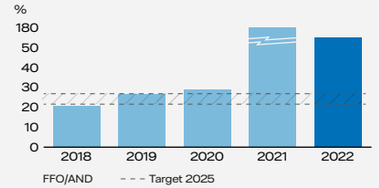
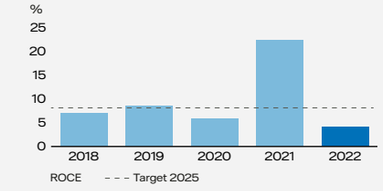
Growth primarily in renewables and and electricity grids

Strategic targets

Vattenfall wants to contribute to a sustainable energy system across all parts of our value chain. Our goal is to be a truly customer-centric company as we transition towards a production portfolio that is sustainable in the long-term. In 2020 Vattenfall set six strategic targets for 2025 for the Group to track and steer our performance towards our goal of a fossil-free living.

Target for 2025	Outcome 2022	Comments	Five-year trend
Driving decarbonisation with our customers and partners			
+18 Customer engagement, Net Promoter Score (NPS)[1]	+16 (+10)	Higher NPS mainly owing to the Customers & Solutions operating segment with strong performance especially in Germany and the Netherlands.	
Securing a fossil-free energy supply			
≤ 86 gCO_2e/kWh CO_2 emissions intensity[2,3]	78 (82)	Improvement due to lower fossil-based generation following a lower share of fossil-based production in the wake of a mild winter and high energy prices which reduced overall consumption of electricity and heat (see page 57).	

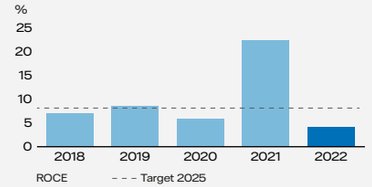
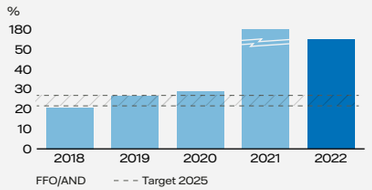
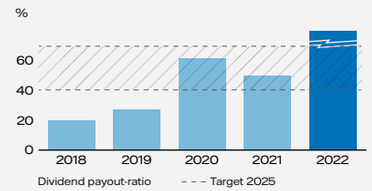
[1] NPS is a tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services.
[2] Including other greenhouse gases, such as N2O and SF6.
[3] Direct emissions (Scope 1) and indirect emissions from purchased electricity and heat (Scope 2) as defined in the Greenhouse Gas Protocol standard.

Target for 2025	Outcome 2022	Comments	Five-year trend
Motivating and empowering our people			
≤1.0 Lost Time Injury Frequency (LTIF)[4]	1.1 (1.7)	Improved results after initiatives to improve safety, including common H&S strategy and framework for following up throughout the organisation (see pages 76-77).	
75 Employee Engagement Index[5]	80 (75)	Outcome above target level after continued improved performance with more engaged employees (see page 26).	
Conduct high-performing operations			
22–27% Funds from operations (FFO)/adjusted net debt	55.0% (171.2)	Above target interval as a result of continued strong underlying EBITDA. The metric continues to be positively affected by temporary decrease in adjusted net debt following a positive net change in margin calls received related to our price hedging.	
≥ 8% Return On Capital Employed (ROCE)[6]	4.2% (22.2)	Outcome below target, and was heavily impacted by temporary effects from changes in the fair value of energy derivatives and inventory.	

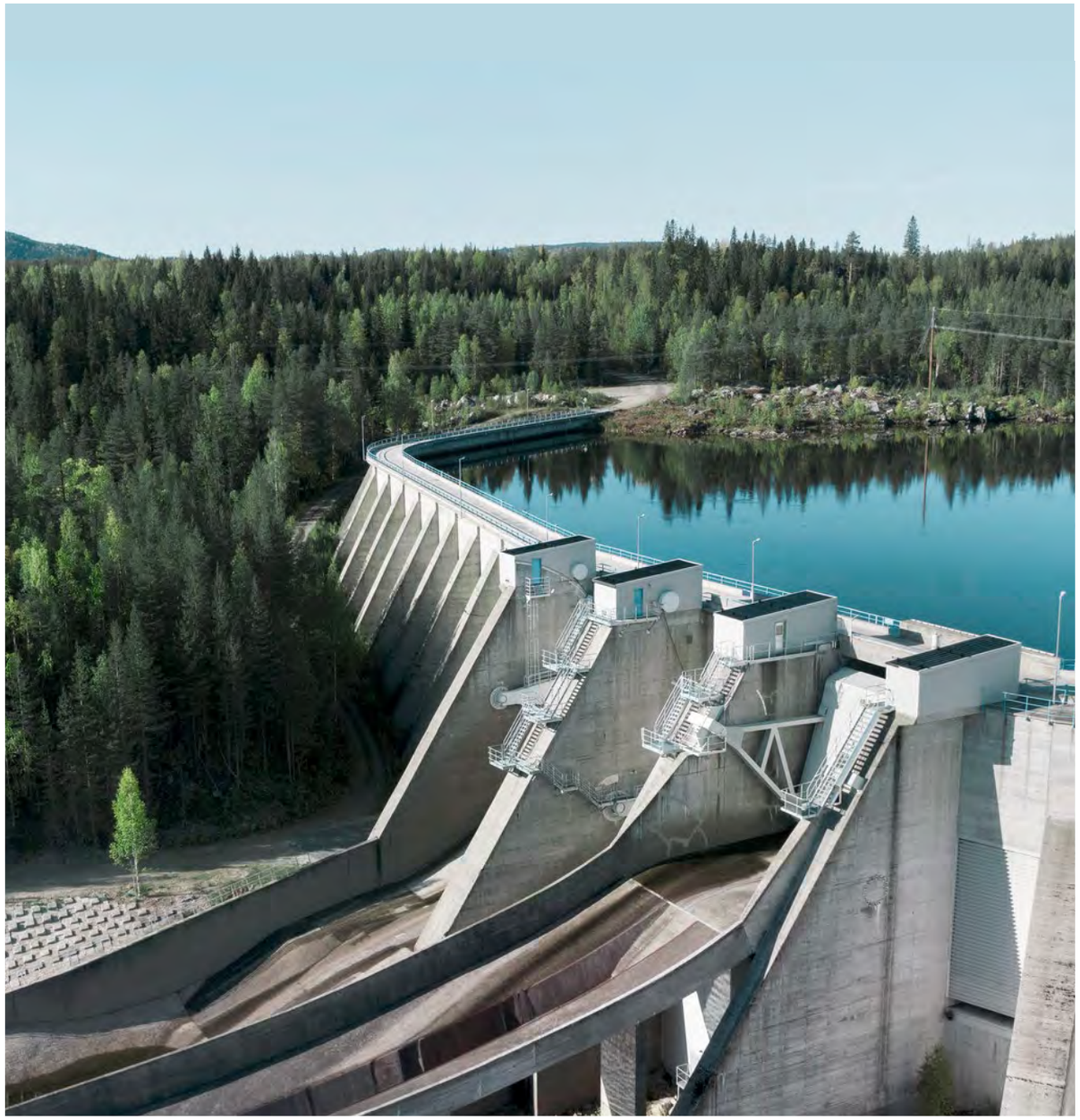
[4] Lost Time Injury Frequency (LTIF) is expressed as the number of lost time work injuries (per 1 million hours worked), i.e. work-related accidents resulting in absence longer than one day, and accidents resulting in fatality. The ratio pertains only to Vattenfall employees.
[5] Documentation for measurement of target achievement is derived from the results of the My Opinion employee survey, which is conducted on an annual basis.
[6] The key ratio is based on EBIT and average capital employed (see page 193).

Financial targets

Vattenfall's owner has set three financial targets for the Group, which pertain to profitability, capital structure, and dividend policy. These targets are intended to ensure that Vattenfall creates value and generates a market rate of return; that its capital structure is efficient, and that financial risk is kept at a reasonable level.

Target over a business cycle[1]	Outcome 2022	Comments	Five-year trend
Profitability			
≥ 8% Return On Capital Employed (ROCE)[2]	**4.2%** (22.2)	Outcome below target, which was heavily impacted by temporary effects from changes in the fair value of energy derivatives and inventory.	
Capital structure			
22–27% Funds from operations (FFO)/adjusted net debt	**55.0%** (171.2)	Above target interval as a result of continued strong underlying EBITDA. The metric continues to be positively affected by temporary decrease in adjusted net debt following a positive net change in margin calls received related to our price hedging.	
Dividend policy			
40–70% Dividend share of the year's profit after tax	**4.0** SEK billion[3] (23.4)	The Board of Directors has proposed a dividend of SEK 4 billion.	

[1] 5–7 years.
[2] The key ratio is based on EBIT and average capital employed (see page 193).
[3] Dividend proposed by the Board of Directors.



Investment plan

Vattenfall's investment strategy reflects our commitment to the 1.5-degree target and enabling fossil-free living. Substantial growth investments will be made in fossil-free generation. Other key investment areas are expanding and maintaining our electricity grids and decarbonising our district heating business.

Total investments
Total planned net investments for 2023 and 2024 amount to SEK 77 billion. Gross investments total SEK 87 billion, where the difference is mainly attributable to partnering on Hollandse Kust Zuid as well as some develop-to-sell assumptions within onshore wind and solar projects. The following figures pertain to net investments.

Growth investments
Growth investments account for around 65% (SEK 50 billion) of the total investment budget. Approximately SEK 35 billion are planned for the development and construction of new wind farms (see table on page 23 for major decided projects). The largest projects are the Norfolk projects (up to 3,600 MW) in the UK, Hollandse Kust Zuid in the Netherlands (~1,500 MW) and the Vesterhav projects in Denmark (344 MW). Growth investments also include development costs for potential wind power projects further ahead in the future, like IJmuiden Ver in the Netherlands, Nordlicht I in Germany and additional offshore projects in Sweden, the UK, France, and Finland. This means that a number of projects in the investment plan will take more than five years to complete as large-scale offshore projects require many years from design to completion.

Other major growth areas include the development of electricity grids and district heating networks, with investments of approximately SEK 8 billion. These mainly cover connecting new customers and residential and industrial areas. In the electricity distribution operations the investments are in response to increased capacity requirements, to realise the connection of new renewables capacity, as well as customer connections. In the heat business, these include projects in the Netherlands such as in Diemen, where we are installing a new Power-to-Heat boiler with a capacity of 150 MW and analysing opportunities for a biomass-fired heat-only boiler (100 MW heat).

In the UK there are several growth activities ongoing within our heating business, where one project is to decarbonise the Bristol heat network (see page 44).

Further growth activities total around SEK 7 billion and include investments in electric vehicle charging stations, solar, and battery projects.

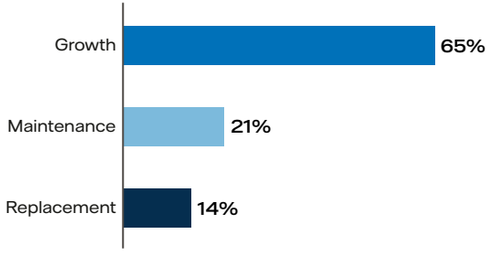
Maintenance and replacement investments
Vattenfall is also investing heavily in the maintenance, modernisation, and replacement of facilities. Planned maintenance and replacement investments amount to approximately SEK 27 billion over the next two years. These include several projects to decarbonise our heat assets in Berlin, where we are currently undertaking a strategic review to assess whether we are the right owner for the business (see page 44).

We plan to invest SEK 9 billion in our electricity grids in Sweden to secure the quality of supply and reinforce the grids. We are further, investing approximately SEK 2 billion to ensure the safe operation of our Swedish nuclear plants by completing safety and modernisation measures at Ringhals and Forsmark. Investments in dam safety as well as in the maintenance and refurbishment of our Nordic hydro power fleet are also planned with more than SEK 2 billion.

Vattenfall's investment plan 2023-2024

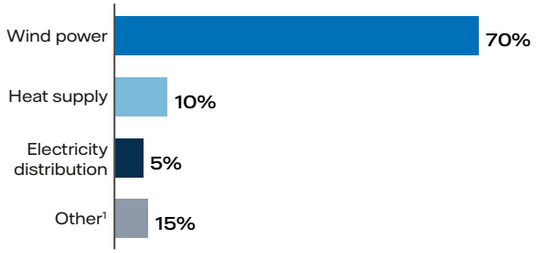
Total capex per category

77
SEK billion



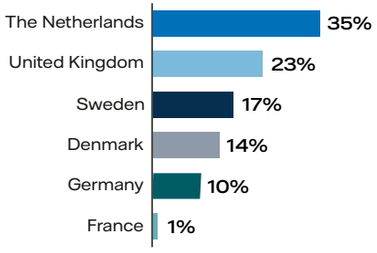
Growth capex per technology

50
SEK billion



Growth capex per country

50
SEK billion



[1] Mainly charging solutions, solar and battery projects as well as heat and energy solutions.

Major investment projects – decided on and in progress[1]

Project	Country	Type	Capacity	Est. CO_2 reduction[2] (ktonnes)	Vattenfall's interest (%)	Completion	Total investment
Hollandse Kust Zuid[3]	Netherlands	Wind offshore	1,500 MW	1,900	51	2023/24	2,600 MEUR
Vesterhav projects[3]	Denmark	Wind offshore	344 MW	200	100	2023	770 MEUR
South Kyle[3]	United Kingdom	Wind onshore	240 MW	100	100[4]	2023	255 MGBP
Windplan Blauw[3]	Netherlands	Wind onshore	77 MW	70	100	2023	185 MEUR
Heat storage Reuter[3]	Germany	Heat storage	2,750 MWh	n/a	100	2023	50 MEUR
A16 Klaverspoor[3]	Netherlands	Wind onshore	34 MW	30	75	2023	45 MEUR
E-boiler Diemen	Netherlands	Power-to-Heat	150 MWth	n/a	100	2024	45 MEUR
E-mobility – Netto	Germany	E-mobility	n/a	n/a	100	2025	85 MEUR

[1] All numbers in the table reflect the status as per 31 December 2022.

[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.

[4] Agreement is in place for sale post-construction.

EU Taxonomy reporting

The EU taxonomy regulation aims to establish a common classification system that defines when an economic activity can be considered sustainable, so-called taxonomy-aligned. Its ultimate aim is to steer investments into activities that help to achieve the ambitions of the EU Green Deal.

90% of Vattenfall capex in 2022 eligible and aligned

Wind power accounted for 54% of investments in 2022. Other key investment areas were electricity grids (18%), existing nuclear power plants (6%), and district heating and cooling (5%).

Eligible but not aligned capex

3% of Vattenfall's investments during the year was made in eligible but not aligned activities. These consist of investments in gas-fuelled heating and/or cooling or gas-fuelled combined heat and power generation, that do not meet the substantial contribution to climate change mitigation criteria.

Non-eligible activities

For Vattenfall, this mainly includes sales, some service-related capex as well as maintenance investments that are not covered by the taxonomy regulation. Activities being reported as non-eligible does not necessarily indicate that the activities are considered to be not sustainable. It only indicates the activity is not listed in the taxonomy and therefore not assessed under the taxonomy regulation.

Capex

- Eligible – aligned, 90%
- Eligible – not aligned, 3%
- Non-eligible, 7%

Read our EU taxonomy reporting on page 171

Green bond investor report

Vattenfall issued its first green bond in June 2019 and had a total of EUR 2 billion in green financing outstanding at year-end 2022.

Vattenfall has decided to use green financing in its funding activities, and we expect all future long-term financing to be made under the Green Bond framework[1].

Updated green bond framework
Vattenfall's updated green bond framework from May 2022 consists of four eligible categories: renewable energy, transmission and distribution of electricity, energy efficiency, and clean transportation. The climate research institute CICERO has provided a second opinion on the framework and issued the highest rating, "Dark Green". This Framework has been developed to, more broadly, align with the substantial contribution part of the technical screening criteria of the EU Taxonomy as of December 2021.

Outstanding bonds
Our outstanding green bonds as per year-end 2022 were emitted under our old framework where the eligible categories are: renewable energy and related infrastructure, energy efficiency, electrification of transport and heating, and industry projects.

Investments under Vattenfall's Green Bond Framework

Category / project / country	Type	Capacity (MW)	Est. CO_2 reduction[2] (ktonnes)	Vattenfall's interest (%)	Start/ compl.	Total investment	Of which green bond spent[3] -2021	2022	Total
Renewable energy and related infrastructure									
Kriegers Flak/ Denmark	Wind offshore	604	400	100	2019/2022	7,600 MDKK	8,812	882	9,694 MSEK
Princess Ariane (retained)[4]/ Netherlands	Wind onshore	180	170	100	2018/2020	220 MEUR	1,348	0	1,348 MSEK
Hollandse Kust Zuid/ Netherlands	Wind offshore	1,500	2,000	50.5	2020/2023	2,600 MEUR	2,325	4,499	6,824 MSEK
Vesterhav projects/ Denmark	Wind offshore	344	200	100	2022/2023	770 MEUR	0	1,235	1,235 MSEK
Industry projects									
HYBRIT/Sweden	Fossil-free steel	Pilot project	–	33	2019/2022	858 MSEK	401	59	460 MSEK
Total							**12,886**	**6,675**	**19,560 MSEK**
Not yet used									2,365 MSEK
Grand total									**21,925 MSEK**

Vesterhav projects
The Vesterhav Syd and Vesterhav Nord will add 344 MW of fossil-free electricity capacity to the Danish energy system, which corresponds to the annual elecitricity consumption of approximately 350,000 Danish households. Vattenfall took the final investment decision in December 2021 with expected commissioning in late 2023. The wind farms will consist of 20 and 21 turbines, respectively, with a capacity of 8.4 MW each.

Hollandse Kust Zuid
Hollandse Kust Zuid Wind Farm will be the first subsidy-free offshore wind farm in the world and will have an installed capacity of 1.5 GW and a renewable electricity output equivalent to the annual consumption of over 1.5 million Dutch households. In 2022, the installation of all foundations was completed and the first electricity delivered. The wind farm will be commissioned in 2023 and is jointly owned by Vattenfall, BASF, and Allianz.

[1] All external borrowing is done at corporate level with bonds issued by the parent company, Vattenfall AB for general corporate purposes. Our bonds have a balanced maturity profile and Vattenfall does not refinance any particular bond maturities but rather takes into consideration the total financing need, i.e. cash from operations, existing liquidity, capex needs and maturing financial payments such as bond repayments.

[2] Production from onshore wind estimated at 2.6 GWh/MW installed, from offshore wind to 3.5 GWh/MW installed, and from solar to 1.0 GWh/MW installed. Estimated 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.

[3] Pertains to actual payments to third parties. No acquisition costs or retroactive payments are included. Converted to SEK using year-end exchange rate as per 31 December 2022.

[4] The project was previously called Wieringermeer and Wieringermeer extension. Parts of the project were sold in December 2021 and funds related to this part of the project was returned to portfolio in accordance with our principles for the green bond portfolio.

Innovation for the future of energy

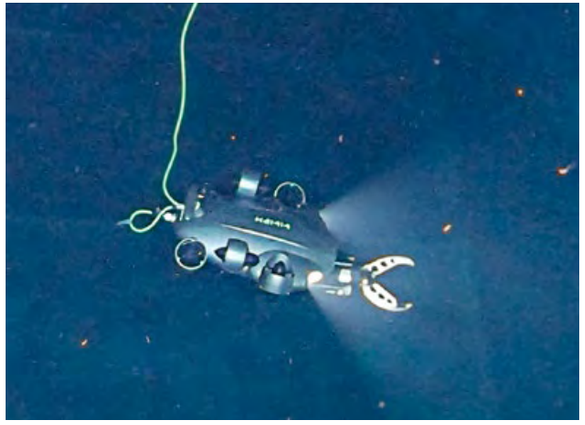
Through research and development (R&D), Vattenfall develops new capabilities to serve its customers better, increase efficiency in its operations, and reduce its environmental impact. Vattenfall's R&D unit, with some 140 experts, supports driving innovation throughout the organisation. In 2022, SEK 479 million was spent on R&D.

Vattenfall has an ambition to be a leader in the energy transition and this means that we need to constantly innovate how and what we do. The core elements of this process are development, demonstration, and deployment, meaning that research – in the word's traditional academic sense – is quite limited. Rather, our R&D activities focus on for example demonstrating how to respond effectively to society's demand for more fossil-free electricity, accelerating electrification in ever wider circles, making negative emissions a reality, and using artificial intelligence to for instance protect or enhance biodiversity.

R&D contributes to the execution of Vattenfall's strategy and drives technical innovation to implement strategies, exploit opportunities and solve problems in order to achieve tangible change and help realise fossil-free living. The value creation of these activities is ensured by taking the strategic priorities of each part of our business as a starting point, mapping challenges and projects based on business needs, and developing solutions through a collaborative and iterative process. Our curiosity in new technologies and employee diversity, which enables the application of a mixture of generalist and specialist skills, gives us a higher chance of adapting to changing circumstances, deal with different challenges and reach deployment.

Digital inspections as an enabler

Digital inspections is one example of innovation through emerging technologies and is conducted to guarantee safe and efficient operation of our assets. In the summer of 2022, important inspections were conducted at Forsmark nuclear power plant. The purpose of the first inspection was to document and check important dimensions in the construction of the wet well[1] pool at Forsmark's Reactors 1 and 2 using remotely operated vessels (ROVs).



ROVs have been around for quite some time but the systems used to be expensive and had limited capabilities. Today, there is new, more useful and cheaper equipment on the market, which makes ROVs a relevant choice. Operating ROVs under water is challenging due to factors such as poor visibility and the risk of getting stuck in control cables. The R&D teams' role was to test equipment to assess its function and to act as a catalyst for introducing new technologies into the business.

The traditional approach to this type of inspection is to empty the pool and build a scaffolding inside so that all points of interest can be reached. This is costly and the scaffolding material poses a potential hazard to the walls of the pool.

The new ROV method of performing inspections makes it possible to control relevant dimensions and capture high-resolution images and videos to document the structure for subsequent verification work. Using these new inspection tools reduces costs by significantly increasing the efficiency and quality of inspections.

140
R&D Experts

479
SEK million spent on R&D in 2022

Digital Inspection Laboratory launched

Vattenfall deploys digital inspections in various environments, such as in cold climates, underwater in hydro power stations and nuclear power plants, as well as enclosed spaces. Developments within drone- and digital inspection methods continue to improve performance and expand areas for application, offering cost minimisation, and providing more efficient and safer inspections.

Anders Lindström
Product Owner and Team leader Digital Inspections

Drones above ground and under water, as well as different types of sensors, such as laser scanners, are becoming more frequently used; and we are currently exploring the opportunities for deploying more autonomous systems, such as Drone-in-a-Box solutions[2] and inspection robots.

In 2022, a Digital Inspection Laboratory (DIL) was launched at Vattenfall's R&D facilities in Älvkarleby, Sweden. The laboratory includes workshop areas, a control centre, and spaces for testing new, emerging technologies. "The DIL will vastly improve the way we can find, test, and implement cutting-edge technologies for digital inspections." says Anders Lindström, Product Owner and Team Leader Digital Inspections Vattenfall R&D. "Furthermore, it will be an important enabler for exploring and testing autonomous systems which will further improve the way Vattenfall inspects and monitors its assets in the future."

[1] The wet well is a suppression chamber that stores a large body of water and is part of a reactor's safety system.
[2] Autonomous deployment of drones from a box that also functions as a landing pad and charging base.

Our people

Our people are crucial for Vattenfall's success as our goal to enable a fossil-free living can only happen if the right people with the right competencies and skills choose to join and stay with us. We see empowerment as the key to unlock the potential within each individual, which is why we strive endlessly to make sure that we all feel empowered in our daily work.

We value diversity highly because we are convinced that a breadth of ideas is important; that open dialogue helps us to learn from each other; and that to truly perform we all need to feel welcome and be able to be ourselves at work.

Our commitment

At Vattenfall, we are committed to empowering, engaging, and developing employees so that everyone is able to perform at their peak, while ensuring a safe, inspiring, inclusive and caring workplace. We offer fair remuneration, flexible working hours as well as a challenging and international work environment with the possibility to work with some of the best in the field.

Vattenfall's culture rests on four guiding principles: Active, Open, Positive and Safety. It should empower us all to perform at our best and in a way that drives operational excellence and long-term value creation for the business.

An integral part of creating the culture that we aspire is to promote a diverse and inclusive workplace – a place where everyone can be themselves and succeed on merit. Vattenfall works actively for all employees to have the same opportunities and rights regardless of gender, ethnicity, age, transgender identity or expression, religion or other belief, disability or sexual orientation. Everyone is included in working towards our goal of enabling fossil-free living. Moreover, we are convinced that diversity contributes to building a more profitable and attractive company. We work hard to spread awareness, take concrete actions and measure our progress. To read more about our D&I strategy and results, see page 73.

What our employees say

Each year, our employee survey, My Opinion, is used to track the degree to which our employees feel connected to Vattenfall's purpose and how each individual feels about their contribution. The results show that 83% (78% in 2021) of our employees would recommend Vattenfall as an employer. Furthermore, our survey shows that Vattenfall's culture is collaboration and cooperation based; that there is a high level of trust and respect and good team spirit. Compared to the peer norm in the survey[1], we score significantly higher on psychological safety and D&I measures. Areas for improvement include more clarity of goals, roles, and responsibilities at the departmental level, as well as increasing customer focus. All in all, the engagement index, which is one of our five strategic targets (see page 20) was 80%[2] which is up by 5 p.p. from 2021 and 16 p.p. in five years.

[1] The peer norm is the weighted average of employee survey results from a cross-section of Energy and Utilities companies (Global Energy& Utilities), derived from recent client studies conducted by WTW.

[2] Due to a change in the answering options in the survey in 2022, the results may differ by up to 3 p.p. in both directions.

Anna Musiol
Manager of Service Desk Poland, Vattenfall IT

"There has been a lot of support and encouragement to try different areas and roles to help decide the direction I want to go in."

15 team members

3,100 tickets solved per month

Read more about Anna's employee journey

Daniel Kolleck
Head of Product, Vattenfall Energy Solutions

"Fossil-free living in a generation is a big challenge – but if you like challenges it is a good reason to work!"

10 years with Vattenfall

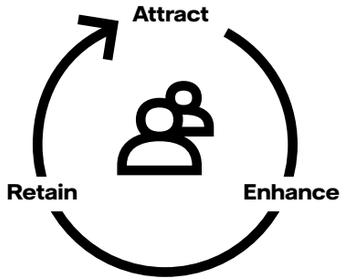
350+ decentralised systems

Read more about Daniel's employee journey

Employer Rankings

We measure our progress e.g. via Universum & Trendence ranking. In 2022 Vattenfall was ranked nine **in Sweden** in the category MSc Engineering (12th place in 2021). **In Germany** we jumped from place 71 in 2021 to 63 in 2022. **In Netherlands** we were ranked 23 in the category STEM (26th place in 2021).

A people strategy fit for the future



There is a strong demand for talent and competence in the energy sector, and this trend only intensified in 2022. The driver is the accelerating energy transition but also because critical competencies necessary to deliver a fossil-free society are scarce. Securing and retaining talent is becoming increasingly central, and from a strategic perspective we are focusing on three key areas.

Focus areas and initiatives

Attract – Attracting the right talent[1]

We want to target the people we need with a differentiated value proposition, recruiting presence and by retaining leaders and experts.

Work with a purpose – we tackle issues that matter both for everyday lives and society at large.

Explore the full energy value chain with continuous opportunities to develop and grow in a challenging but supportive environment.

Open, fun, informal and diverse atmosphere in which to work, where the brightest minds come to collaborate and people are empowered to succeed.

Examples of graduate trainee programmes
- International Trainee Programme
- IT & Strategy Talent Programme
- Nordic Nuclear Trainee Programme
- Framtidsprogrammet within Vattenfall Distribution

Examples of opportunities for students
- Thesis projects
- Summer jobs
- Internships
- Placements for working students.

Enhance – Development through limitless learning

We want to develop our people to secure key competencies and skills for the future and enable a culture of limitless learning.

Fostering an open, active, positive and safe learning culture in which our people continuously grow and develop.

Go beyond skills training and truly increase employee engagement and retention.
- Mentoring and coaching
- Learning catalogue with trainings, certifications and other development opportunities
- Targeted initiatives for different stages in the employee journey.

Examples:
- **New as Manager Programme** – for all new managers
- **Leadership Focus Programme** – gives managers guidance for their leadership
- **Top Talent Programme** – for potential successors to management functions

Read more on our Career page

Retain – A culture of performance and feedback

We focus on building a culture of performance and feedback. This supports our employees in encouraging each other to achieve new heights while maintaining a healthy work-life balance.

Fair compensation for high performance demonstrating continuous improvements through feedback. See page 74

Trust is the basis of a strong feedback culture and requires an inclusive and psychologically safe environment.
- Team workshops
- Recurring discussions in team and leadership meetings.

Remote collaboration in a hybrid office environment. State-of-the-art, flexible offices. See page 75

Mental and physical support-trained colleagues called mental first aiders that serve as a point of contact for employees experiencing mental health issues or emotional distress.

Reinforcement of culture through various culture-building initiatives.
- Young professionals network - Megawatt
- D&I-focused Diverse Energy Network See page 73
- Annual group-wide innovation competition

Work-life balance – Leaders promote employee well-being and are supported by our internal platform – Leadership Toolbox. Other initiatives that are being tested across the organisation are meeting-free Fridays and flexible workplaces.

[1] All activities at Vattenfall in the area of recruitment and selection are carried out with diversity and inclusion in mind. In addition, we take responsibility for public security and safety by having a well-functioning and structured approach to pre-employment screening of all employees as part of our recruitment processes, as well as security vetting for the security classed positions.

In focus

The energy landscape is changing fundamentally with the steep rise in renewable energy and the phasing out of fossil-based flexible facilities. At the same time the grid needs to be balanced at all times.

Flexibility – a key factor in Europe's energy system

Society is facing fundamental changes in the way energy is produced and consumed. Massive investments are being made in weather-dependent renewable energy facilities, plannable fossil-based production is being decommissioned, and consumers and industries increasingly turn to electricity for their energy needs.

Unlike most other commodities, energy cannot be easily stored. An increasing share of intermittent energy sources coupled with increasing demand makes the energy market and system more volatile. Matching demand and supply is becoming increasingly challenging, making flexibility an all-important factor.

To play their part in sustaining a well-functioning society, companies like Vattenfall need to have a generation portfolio that is diversified across businesses, geographies, and technologies.

Energy sources and technologies

Various energy sources and technologies are at work in the energy sector. **Base-load** facilities, such as nuclear power, generate a stable flow of electricity but are difficult or expensive to regulate. **Intermittent renewable capacity** depends on the amount of wind and sun for its production while **flexible power supply facilities** can be easily turned on and off.

Historically supply-side flexibility has been provided by combined heat and power plants (CHP), gas, and conventional hydro power. But with the phasing out of fossil-fueled capacity and limited room for new hydro power, a gap is opening that needs to be filled by other technologies such as batteries, pumped-storage hydro[1], electric boilers, and hydrogen electrolysers.

Pumped storage hydro and batteries both take energy from the grid when supply is plenty and prices low, and return energy back to the grid when demand and prices are high. In contrast, conventional hydro power can offer also more long-term flexibility, as water is accumulated from influx in rivers and energy can thus be stored across seasons and even years.

It is vital for society and the energy market that flexibility is provided somewhere in the system, and to that end facilities need to generate sufficiently high returns. For electricity producers the choice will be whether to invest in their own fossil-free flexible assets and get paid to help balance the market or "buy" the flexibility from other suppliers who have excess flexibility.

Matching supply and demand

Flexibility is a way to even out or match supply and demand over time, and across geographies, if grids are constrained. Flexibility solutions can help alleviate bottlenecks in the grid, thereby complementing grid investments and accelerate the connection of customers. As mentioned, flexibility can be delivered by the supply side, which will play the largest role in the short term, but demand-side flexibility is also a very potent lever in matching the two sides, and it will have to grow for the ends to meet in the long term.

Demand-side flexibility involves the ability to shift electricity consumption to periods when demand is low, such as during nighttime. This supports the energy system and saves money for customers, and it is an area where both households and businesses can contribute.

For many industries like steel, fertiliser, and chemical processes, energy is a major cost component. Increased electrification, off-peak production, and the use of batteries or hydrogen can provide significant cost savings in their production processes. For industries that have the option to stock raw materials or final products, demand-side flexibility might involve shutting down individual processes, reducing output when electricity prices are high, or introducing night shifts.

Households also have an important role to play by optimising their electricity usage. Optimised heat pumps, electric cars, and batteries are all factors that can help match supply and demand. This provides economic benefits for the customer, and also help prevent peak congestions in the grids.

All fossil-free energy sources are needed

In the short term, supply-side flexibility offers the most potential. But in the long term, the energy transition will not be possible – or at least very costly – without flexible demand. This is because it would require over-dimensioning of generation capacity or large volumes of energy storage.

In order to achieve global, societal, and industry targets, all fossil-free energy sources need to be expanded, employed, and harmonised. Balancing supply and demand will be a challenge and flexibility will be one of the cornerstones of a fossil-free energy system.

	Capacity in GW[1]					
Power source	**2010**	**2020**	**2030 (est.)**	**Flexible**	**Plannable**	**Flexibility ranking**
Pumped hydro	120	127[3]	135	✓	✓	**1**
Storage (no generation)	<1	22[2]	220[2]	✓	✓	**2**
Gas	176	166	154	✓	✓	**3**
Hydro	121	128	131	✓	✓	**4**
Coal	155	131	64	✓	✓	**5**
Biomass	25	58	64	✓	✓	**6**
Nuclear	123	107	94	✗	✓	**7**
Wind & Solar	110	304	657	✗	✗	**8**

[1] Pumped hydro power plants utilise a reservoir located up in a mountain to pump up and store water from a lower-lying river. The stored water can be released into tubes leading to generators placed at river level. Electricity is thus consumed in the pumping process and generated in the release phase.

[1] European Commission, Directorate-General for Climate Action, Directorate-General for Energy, Directorate-General for Mobility and Transport, De Vita, A., Capros, P., Paroussos, L., et al., **EU reference scenario 2020 : energy, transport and GHG emissions : trends to 2050**, Publications Office (2021).

[2] Batteries Europe, **Strategic Research Agenda for batteries 2020** (2020), calculated based on an assumed capacity/volume rate of 1:2.

[3] International Hydropower Association, **2022 Hydropower Status Report** (2022).

Batteries born to be flexible

Batteries are likely to become an integral part of renewable assets to offer flexibility in the energy transition and provide additional revenues to owners.

Interviewed
Sebastian Gerhard
Director of Batteries

Everyone knows what a battery is, but fewer people know their vast potential. Batteries will play a major role in the energy transition, from being a simple power source to helping stabilise electricity grids to balance demand and supply for the purpose of maintaining a constant frequency of 50 Hertz.

With the rapid increase in renewable energy facilities, which are inherently dependent on wind and the sun, renewable electricity generation can no longer be considered independently from the wider energy system. Co-location of storage technologies will, with their broad range of related service offerings, enable owners of renewables to integrate their renewables facilities further into the energy system.

"A more than 80% cost decline over the past decade and outlook of a further reduction by more than 50% by 2030, make batteries a key electricity storage technology", says Sebastian Gerhard, Director of Batteries in Vattenfall. "Batteries offer great flexibility and revenues can be optimised by selling the stored power in the various power markets as well as provide ancillary services to balance the supply and demand of electricity and strengthen grid stability. In other words, they can store electricity when there is a lot of wind and sun and prices are low and so to speak shift the energy delivery to periods when there is no wind or sun and prices are high."

Ray wind farm and battery

The latest, large, co-located battery unit in Vattenfall is the so-called Battery@Ray, which will be connected to the grid in spring 2023. It is a 20 MW battery facility built in the 54-MW Ray onshore wind farm with 16 turbines near Newcastle in the UK. The wind farm shares its grid connection with the battery, which is one of the advantages of co-location, and the battery has the capacity to store 20 MW or around 40% of full production from the wind farm for two hours.

Initially, the battery will deliver ancillary services 99% of the time – very fast, short-term delivery of power to stabilise the grid. In three to four years, it is expected that there will be a shift to so-called energy shifting, where the capacity is traded on different markets based on price signals.

> **"Most new wind and solar farms will have co-developed battery facilities."**

The success of flex business is very much driven by the regulatory framework of the individual countries. In some of our markets this work is lagging behind, but in the UK the investor and trading landscape is good and there is a highly advanced market for flexibility products. It is therefore important for us to have good trading platforms, so that we can bring the flexibility assets to the market and trade on every market that is available.

Vattenfall's battery pipeline

At present Vattenfall operates two wind farms with co-located batteries in the UK, two in the Netherlands, one of them in a wind farm and the other in a combined wind and solar park. Also, two wind farms with co-located batteries are under construction in Sweden.

Gerhard explains: "Most new wind and solar farms will have co-developed battery facilities as part of their development project. This means that the farms will be prepared for a battery, but the decision whether or not to actually include the battery is taken at the final investment decision. Vattenfall's overall pipeline for batteries until 2026 is 800 MW."

Risks versus return on investment

Investors seem quite eager to accept the additional risk involved in batteries in exchange for a potentially higher return on their investment. The risk stems from the fact that the battery business is not as mature as the wind and solar businesses, which means that there is a higher technological risk as well as an additional regulatory risk. In some countries, regulations are already clear for solar and wind, but remain unclear for batteries, just as national targets for storage are missing in most of Europe. Also, once built and in operation, wind and solar farms deliver a more predictable revenue. For batteries, with their multitude of markets, revenues are more difficult to forecast.

"Investors see that batteries are needed to offer flexibility and that they can earn good money going into that technology. While solar and wind are in the lower, one-digit range of returns, batteries can reach low double-digit returns, and some investors say they have enough low risk, low return assets in their portfolio and want high risk, high return assets to diversify," says Gerhard.

An affordable flexibility offer

Batteries are in a good position when it comes to competing with other flexible assets. Compared to for instance new pumped hydro plants that have a 50+ year lifespan and requires a billion-euro investment in land and facilities, batteries are fairly affordable at EUR 20–100 million in investment for a lifetime of 15–20 years. Batteries are also scalable, which is a major advantage compared to other key storage solutions for intermittent renewable electricity production.

"It is Vattenfall's intention to realise selected, co-located, and profitable battery projects in the coming years to build up competence. This is facilitated by highly attractive business cases for co-developed solar and storage projects in Germany, and in Sweden, adding batteries to our partner projects Hjuleberg and Höge Väg will help transfer and scale our operations experience and provide learnings on how to make batteries bankable for institutional investors, which is key to the develop-to-sell track of co-developed projects," Gerhard concludes.

Operating landscape

Vattenfall operates in a complex and interconnected business landscape where regulation and support systems play significant roles. As the energy transition accelerates, cooperation and collaboration is increasingly key to ensure flexibility and adaptability both financially and operationally.

Regulatory developments →
Partnering landscape →
In focus: Hydrogen →

Regulatory developments

Against the backdrop of the Russian war in Ukraine, gas shortage in Europe, and surging energy prices, 2022 saw a shift in focus away from climate-neutrality pledges to striking a balance between secure, clean, and affordable energy.

The Russian war in Ukraine and the related, reduced gas supplies have led to a major refocus of European energy policies. While 2021 was a year of climate policy proposals with the Fit for 55 package[1] and national pledges for climate neutrality, 2022 brought a renewed political emphasis on secure and affordable energy supply. At the same time, the political landscape shifted, with general elections in Sweden, France, and Denmark that resulted in new governments as well as two changes in government in the UK. Energy policy has been high on the agenda in all countries, with the energy trilemma being more relevant than ever: How to strike the right balance between *secure, clean,* and *affordable energy*.

Secure – security of supply back on all agendas

The war in Ukraine exposed the vulnerabilities of European dependency on Russian gas and led to a strong focus on energy security across our markets. Now, politicians regard fossil-free energy not only as critical to mitigate climate change; it has also become one of the cornerstones of European power supply diversification.

In its REPower EU proposals in the spring, the European Union outlined the need to diversify electricity supply and how to frontload the already planned capacity expansions. In parallel, the European Union agreed to mandatory gas storage filling obligations to prepare for the winter. A platform for the common purchase of gas, liquefied natural gas (LNG), and hydrogen was established between the European Commission and Member States. In May, the North Sea countries in the EU – Germany, Belgium, the Netherlands, and Denmark – pledged to develop 65 GW of offshore wind and 20 GW of electrolysis capacity by 2030. Similarly, Denmark, Germany, Estonia, Latvia, Lithuania, Poland, Finland, and Sweden committed to develop 19.6 GW of offshore wind by 2030 in the Baltic Sea.

At the national level, governments also focused on managing the constraints on energy supply security. In Germany, a market that previously imported more than 55% of its natural gas consumption from Russia, legislation was introduced to expropriate and nationalise companies crucial for national security of supply; new long-term gas contracts from other regions such as Qatar were explored; and emergency permits for temporary floating storage and regasification units (FRGU) were granted. The UK re-opened its largest gas storage facility; issued a new licensing round for North Sea oil and gas projects; and announced a new energy partnership with the U.S., including to increase U.S. LNG exports to the UK. Longer-term plans to increase nuclear deployment to up to 24 GW by 2050 were also announced.

In Sweden, the transmission system operator (Svenska kraftnät) reviewed assets that could be reactivated. In addition, the issue of grid constraints and the need of dispatchable electricity production in the south of Sweden came into focus. The market for

ancillary services is developing which will strengthen the system. In the Netherlands, the government announced a preparation process for the potential construction of two new nuclear power plants, and made provisions for funds in the 2023 budget to advance the projects. At the same time, the country is pushing to expand offshore wind in the North Sea. The government intends to drive growth towards 21 GW by 2030, to 50 GW by 2040 and to 70 GW by 2050. In France, where nuclear electricity production was historically low due to technical issues, the government gave the go-ahead to build a new temporary LNG terminal in Le Havre. It will remain in service for two years starting in September 2023.

Clean – no lowering of climate ambitions

The commitment to ambitious climate and environmental targets has remained intact across our markets and the Fit for 55 package is proceeding without much visible delay. If anything, the pace has increased, even though the regulatory framework in some markets needs development in order to facilitate implementation.

The new government in Sweden announced that the reduction quota for biofuel will be lowered to the EU-minimum level, which will make it challenging to reach the 2030 climate targets. The Transmission System Operator (TSO) is on the other hand to receive a clearer long-term responsibility for the system and to enable 300 TWh in production capacity by 2045 in order to enable the long-term climate targets through electrification.

The new government has announced that the proposal for reduction of grid connection fees for offshore wind will be withdrawn. New regulation to enable investments in new nuclear power – such as more reactors and on new sites – was also announced but has not yet been promulgated. The revenue regulation for grids is under development by the regulator and the outcome is uncertain, which presents a risk in terms of investments. Positive regulatory initiatives to shorten permit processes have been proposed during the year, but there is still a great need for guidance on how various interests – such as the Swedish Armed Forces, biodiversity, and indigenous people – should be balanced and can coexist with energy infrastructure.

In **Germany**, the largest energy legislation package in the country's history was implemented in the summer of 2022. It covers comprehensive schemes to expand offshore and onshore wind and solar power with the aim for renewables to reach a share of 80%

[1] Legislative package of proposals that was adopted by the EU commission in July 2021 to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Read more here.

of total electricity consumption by 2030 and 100% by 2035. By 2024, new heating installations must derive 65% of their energy from renewable energy, which is a great push towards district heating and heat pumps and away from residential use of gas.

In **the Netherlands**, the government is designing all regulation around an increased emissions reduction target of 60% compared to 1990. Depending on a timely implementation of the intended climate package (as agreed on the most recent coalition agreement), the Netherlands is currently heading for 39–50% greenhouse gas reduction by 2030. Therefore, additional measures are anticipated: in industry (electrification and CO_2-free gases replacing natural gas), built environment (insulation measures); and in accelerating the build out of renewable electricity production. Financial support schemes from both earmarked climate funds (from the coalition agreement) and the regular state budget are available to subsidise this build-out and end users in their attempt to become more sustainable.

In **France**, new energy targets were announced for 100 GW of solar power, 40 GW of offshore wind, and at least six newly commissioned nuclear power plants by 2050. This plan will be laid out in greater detail by the parliament over the course of 2023. Additionally, the French government has set out an ambitious plan to reduce energy demand by 10% in two years. This implies additional measures to increase energy efficiency and requires a change in behaviour by both the public and private sectors and by its citizens.

In **Denmark**, new offshore wind expansion targets were established in 2022 to add 9 GW by 2030 compared to present capacity of 2.3 GW. A new tender regime is being designed which will be crucial for the design of Denmark's massive planned build-out. In the 2030s, an energy island will be constructed in the North Sea with an initial capacity of 3 GW.

The UK has strong ambitions for offshore wind power (50 GW by 2030, including 5 GW of floating wind). The frameworks for planning and grid capacity to deliver on these ambitious targets quickly are still undergoing reviews and not yet in place. The regulatory frameworks for district heating networks in England, Wales, and Scotland are being developed, and we expect significant momentum in the coming year.

At the same time, security of supply concerns may lead to a short-term increase of greenhouse gas emissions, as the build-out of renewable energy capacities requires certain lead-time. In Germany, for example, hard coal-fired plants were temporarily reactivated from the grid reserve in order to substitute gas-fired power production by the Substitute Power Plants Maintenance Act (EKBG). However, the government has reiterated its commitment to its emissions reductions targets and is moving forward its coal phase-out from 2038 to 2030.

Affordable – ensuring electricity and heat for all

Prices for both fuels and power have increased significantly, which has placed a burden on both households and businesses. Policy makers across our markets have raised concerns about the affordability of energy and sought measures to limit the price impact on end customers, initially by issuing direct financial compensation. With price volatility continuing throughout the year, questions were raised about the proper functioning of energy markets, especially as high gas prices set price levels for all power sources. Similarly, the extent to which energy companies should be profiting from the high prices came under scrutiny.

At the EU level, this led to the introduction of emergency measures in the autumn of 2022 to limit revenues that can be earned by inframarginal units, which means technologies that operate at lower costs, such as renewables or nuclear power, initially from December 2022 to June 2023 with the possibility of a further extension. The UK introduced an Electricity Generator Levy on low-carbon generation that remain in place from January 2023 to March 2028.

In almost all markets, electricity price compensation models are being designed in order to ease the burden

of high gas and electricity prices on private and to some extent commercial customers (mainly small- and medium-sized enterprises). In Sweden, a series of compensation models were introduced. The first compensation was paid out early 2022 and a more extensive round was paid out in February 2023. These initiatives were complemented by other measures to reduce the financial burden on customers, such as reduced transmission tariffs and incentives to promote user flexibility. In Germany, state-subsidised basic electricity, gas, and heating tariffs were introduced with a price cap for households, small commercial customers, and industry.

In the Netherlands, the government announced a price ceiling for average energy consumption (2,900 kWh and 1,200 m^3) starting January 2023 with a transitionary solution for November and December 2022. In France, price caps have been implemented for both natural gas (fixed at the price levels of October 2021) and electricity (capped at a 4% increase compared to the price level of the previous year), and compensation measures have been introduced to support both commercial customers whose energy expenses exceeded a certain level of their revenues as compared to past years and private customers who have received temporary financial support to pay their bills. The government has announced that the electricity price cap will remain in place until end of 2023 but with an increase of 15% compared to 2022.

Long-term market design investigations launched

Both the EU and the UK have launched investigations into the long-term power market design. The UK government's Review of Electricity Market Arrangements (REMA) is seeking to identify and implement necessary reforms to the electricity market in Great Britain to ensure that it is fit for the purpose of maintaining energy security and affordability for consumers as the energy sector decarbonises.

At the EU level, the European Commission, announced "a deep and comprehensive reform of the electricity market" in September 2022. A public consultation will take place in early 2023 followed by legislative proposal expected to be tabled in March 2023.

Partnering landscape

The fossil-free energy system needs to be built out massively and rapidly in order to meet the climate targets – and that creates many opportunites. However, there is still great uncertainty on how the energy transition will be executed; and competition has intensified across the energy value chain.

While the goal to decarbonise society is clear, uncertainty about how different technologies will develop and regulatory frameworks and subsidies are in many cases still not finalised. The market development in 2022 also sharpened the focus on energy policy, which has created even more momentum for the transition but also a greater push for state intervention in the energy markets. To some extent, this has created additional uncertainty. In this environment, financial strength and stability, flexibility, and diversification, have become more important than ever. In light of this, resource sharing and collaboration have come in focus and partnerships have proliferated across the value chain. Some key areas include collaborations and partnerships to:

Expand fossil-free electricty

Partnerships aimed at enabling the expansion of fossil-free electricity while ensuring profitability and consideration for sustainability aspects.

- System integration
- Power purchase agreements
- Expanding the range of technologies
- Entering new geographical markets.

Develop and enable new technology

Parterships aimed at expanding opportunites to electrify industry and other sectors as well as new fossil-free electricity generation and storage.

- Decarbonisation of hard-to-abate sectors
- Research collaborations
- Feasibility studies
- Entering new technological markets.

Support customer decabonisation

Partnerships designed to increase service levels to customers through deeper integration as well as to enable decarbonisation by collaborating on asset ownership.

- Collaboration with service providers to increase service levels
- Collaboration with suppliers in related markets to enhance service integration, for example supply and installation of heat pumps
- Increasing service levels to end customers by collaborating with customers that provide e-mobility charging points at their premises
- Power-as-a-service solutions.

Secure a sustainable supply chain

Supply chain resilience and sustainability have increasingly come in to focus where optimisation has made global supply chains fragile. However, cost is an important factor as competition is fierce.

- Collaboration with suppliers to ensure reliable and sustainable supplies
- Collaboration with other industry actors to increase leverage on supplier sustainability performance
- Research partnerships.

In focus

Hydrogen may have a key role in reducing industrial dependence on fossil fuels, provided the value chain is improved and that all actors cooperate and develop at the same pace.

Hydrogen – key role in industry transition?

To achieve a fossil-free society, all sectors need to decarbonise. But even though electrification is important to this process, direct electrification is not always possible. Some industrial processes for instance require very high temperatures that are not achievable with electricity. This is where hydrogen comes in. It reaches even higher temperatures than fossil fuels and can also be used as or transformed into derivatives that serve as raw materials for many industrial processes that today require fossil fuels. Furthermore, unlike electricity, it is realistically storable and easier to transport.

Skyrocketing interest in hydrogen

The use of hydrogen in industry is nothing new. In fact, it is extremely important for example in the production of ammonia. Most of the 94 million tonnes of hydrogen used globally in 2021[1] was, however, based on fossil energy sources without abatement (so-called grey hydrogen). In order to decarbonise industry, it is estimated that the annual production of hydrogen needs to increase fivefold, which requires 21,000 TWh of electricity annually[2] (correpsonding to 29% of total power demand in 2050).

Interest from the industrial sectors in fossil-free hydrogen has skyrocketed in recent years, driven by their need to decarbonise in the face of increasing customer demand for fossil-free products. The interest is also high among policy makers. EU launched a hydrogen strategy in 2020, and national hydrogen strategies and targets have been introduced on several markets. However, clear long-term plans and support systems are still lacking.

A big challenge for industry is that the entire value chain needs to be developed rapidly but steadily. In order to choose hydrogen as its means of decarbonisation and to make costly adaptations of their processes, industry needs to know that supplies will be sufficient and reasonably priced. On the other hand, without knowing that there will be a demand, hydrogen producers cannot invest in building large-scale production facilities. Add to this that storage solutions and transportation infrastructure need to be developed as do fossil-free electricity generation and grids necessary to produce the hydrogen. To ensure a rapid build-out, risks need to be balanced and responsibility shared.

Pilot projects paving the way

Vattenfall's primary role in the growing production of hydrogen is to provide manufacturers and industries with fossil-free electricity and build infrastructure. Through HYBRIT and the recently opened hydrogen storage facility in Swedish Luleå, Vattenfall has already taken steps towards a future where we are a natural part of the fossil-free production of hydrogen.

This position is consolidated through engagement across several other partnership projects. Together with SAS, Lanza Tech, and Shell, Vattenfall is investigating the possibility of developing sustainable aviation fuel by means of hydrogen, fossil-free electricity, and captured carbon dioxide from our district heating plants. We are also conducting two separate pilot studies with Preem and St1, respectively, on the potential for large-scale production of sustainable electrofuels on the west coast of Sweden, based on hydrogen supplied from offshore wind power.

Although Vattenfall's main contribution to the hydrogen transition lies in fossil-free electricity, pilot projects are undertaken with in-house production, such as hydrogen-producing offshore wind turbines.

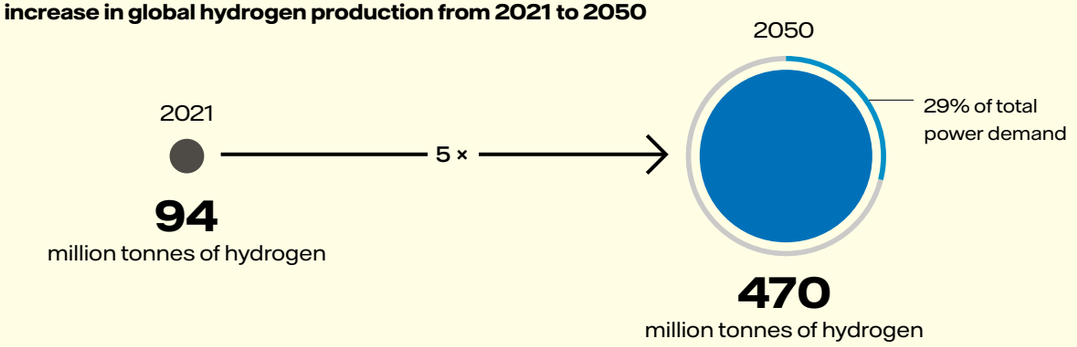
Transnational infrastructure needed

So far, hydrogen has often been used in clusters where production and industry are in proximity to each other. However, for a large-scale transformation of industry to take place, underwater pipelines and an expansion of existing gas networks will be needed. This is especially true on the continent, where dependence on gas, oil, and coal remains high. Hydrogen infrastructure that spans several countries will be central for a full-scale economy to develop and will require substantial changes and investments. In other words, both the EU and national governments, as well as major industries will need to continue to dare invest in hydrogen for it to become a reality.

Collaboration required for aligned development

In order to scale up production so that new technology can be tested and, in the long term, result in more full-scale production, everything needs to grow. Cooperation between electricity generators, hydrogen producers, industry, political stakeholders, and regulators is a prerequisite for both the general availability of hydrogen and for a full value chain to develop in parallel. It is no coincidence that many of Vattenfall's hydrogen projects are carried out together with partners. No one can implement the transition alone, and to achieve it, we need an open dialogue and information sharing among all players.

Estimated increase in global hydrogen production from 2021 to 2050



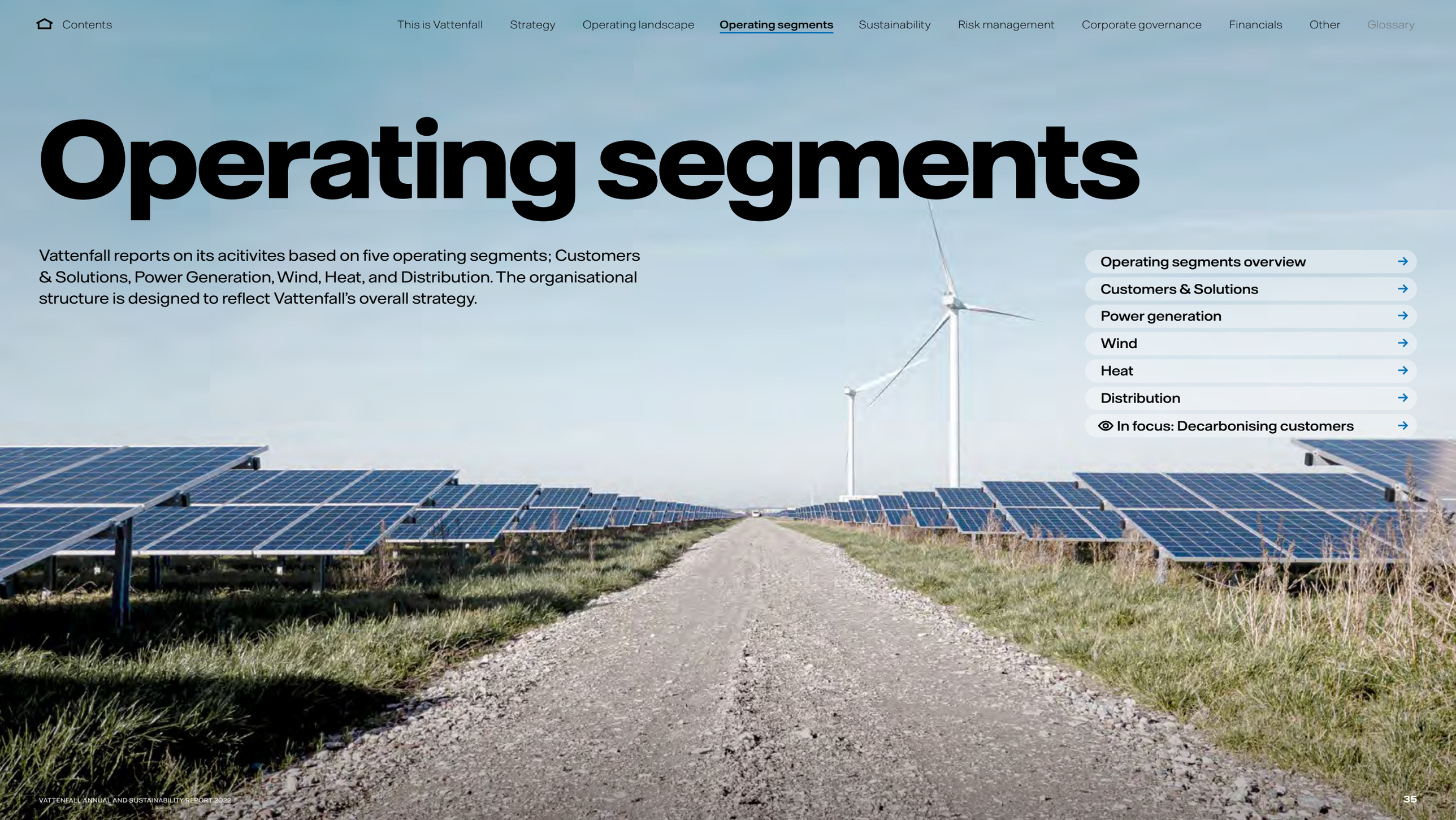
Hydrogen produced globally 2021, primarily based on fossil fuels

In 2050 the demand is estimated to increase five times, requiring 21,000 TWh of electricity[2]

[1] IEA, **Hydrogen** (2022).
[2] BNEF **New Energy Outlook 2022** (2022), number based on Net Zero Scenario.

Operating segments

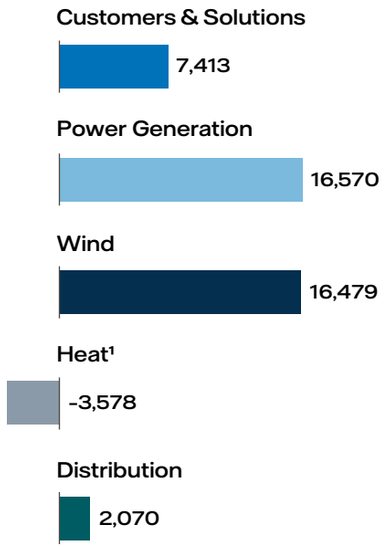
Vattenfall reports on its acitivites based on five operating segments; Customers & Solutions, Power Generation, Wind, Heat, and Distribution. The organisational structure is designed to reflect Vattenfall's overall strategy.



Operating segments overview

Vattenfall reports on its activities based on five operating segments. These reflect the organisational structure – the business areas – except for the segment Power Generation, which is organisationally divided into the business areas Generation and Markets.

Underlying EBIT per segment, SEK million



¹ Hedging of spreads have offsetting effects but are reported in the Power Generation operating segment.

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 900,000 electricity contracts
- A market leader in the Netherlands with 4.7 million electricity and gas contracts
- A total of 4.7 million electricity and gas contracts in Germany with a leading position as electricity supplier in Berlin and Hamburg
- Operates 39,600 e-mobility charging points in Sweden, Germany, the Netherlands, and Norway.

Read more on page 37

Power Generation

Responsible for hydro and nuclear power operations, the 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 39.6 TWh from nuclear power and 40.5 TWh from hydro power in 2022
- Provides professional asset-optimisation services and market access and is a leading player in commodites trading and power purchase agreements in northwestern Europe.

Read more on page 39

Wind

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

- One of the largest producers of offshore wind power in the world
- One of the largest producers of onshore wind power in Denmark and the Netherlands
- 12.2 TWh of electricity generated from 4.5 GW in installed capacity
- Strong wind power pipeline with 2.2 GW in construction and over 5.3 GW in mature-stage development
- Forerunner in innovative solutions in solar and batteries, such as co-location.

Read more on page 41

Heat

Responsible for heat operations (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 2.0 million end customers
- 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.

Read more on page 43

Distribution

Responsible for 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.

Read more on page 45

Operating segment

Customers & Solutions

Operations

Customers & Solutions provides electricity, gas, and energy solutions to retail and business customers, with 10.9 million customer contracts in Europe. We are a market leader in the retail and business segments in Sweden (900,000 electricity contracts), the Netherlands (4.7 million electricity and gas contracts), and in Germany (4.7 million gas and electricity contracts). In Denmark, Finland, and France we are a market challenger for sales of electricity and also for gas in France.

We operate 39,600 charging points throughout Europe and offer e-mobility charging solutions for people's homes, for businesses, and in large cities across our Swedish, Dutch, and German markets. We also offer a broad range of decarbonised, decentralised solutions such as heat pumps and solar panels.

Business environment

Consumer bills increased signifcantly, especially in the Netherlands and Germany as a result of the countries' high gas dependency. Regulations have been put in place to encourage reduced energy usage and to limit the financial impact on customers (see pages 14–15). Energy consumption decreased as a result of the crisis, while demand for decentralised energy solutions such as solar panels and heat pumps increased. Supply chain shortages and limitations to installation capacity are increasingly becoming a bottleneck. Competition in both the customer sales business and e-mobility business is fierce, and new actors are entering the market. Our ambition is to stay ahead of competition and continue meeting our customers' demand by securing supply of fossil-free gas for example through early investments and expanding our business across the value chain in areas such as installation services.

Strategy and targets

We aspire to be the decarbonisation partner of choice and to support our customers in the transition. In addition to providing customers fossil-free electricity options across markets, we are actively investing in our heating decarbonisation offerings, including fossil-free gas and heat pumps for B2C customers, and developing solutions for our B2B customers.

We invest in becoming the leading operator of e-mobility charging points in north-western Europe.

We provide flexibility services that help customers optimise their energy consumption and contribute to balancing the electricity system (see page 28).

We offer a wide range of smart, data-driven, and decentralised sustainable energy solutions and services to private and business customers.

Lastly, we use our experience and expertise to contribute to stabilising the situation for our customers in these turbulent times by closely collaborating with governments and organisations to mitigate the high electricity prices and by providing support to vulnerable customers (see pages 14–15). We are also continuing our efforts within the electrification of transport and industry, decarbonisation in our continental markets, and balancing the electricity system.

We operate 39,600 charging points and continuously partner with parking lots, supermarkets, and restaurants to enable electrification of transport and reducing tailpipe emissions in and around metropolitan areas.

Developments in 2022

Our customer base expanded further, mainly owing to growth in Germany and lower churn across all of Vattenfall's markets. Our absolute Net Promoter Score (NPS)[1] increased to +16 (+10) during the year, as we strive to provide an easy and simple customer experience and continue to seek opportunities to maintain our customer relationships in these challenging times. The electricity supply mix for our consumers in the Netherlands reached 100% renewable sources of Dutch origin, making us one of the suppliers that has the highest share of Dutch renewable sources in the retail market.

We also started the roll-out of a high-temperature heat pump system in the Netherlands as an alternative to gas boilers (see page 48). In Germany, we introduced biogas to our retail customers to help reduce their carbon footprint, an option that already existed in the Netherlands. To track our sustainability impact, we started measuring specific CO_2 emissions per customer across all our regions. In Sweden, our electricity mix in the retail market is entirely fossil free.

As society is being electrified, we are increasingly offering flexibility solutions to empower our customers to use their energy efficiently. In Sweden, we have launched price-optimised charging and we are experimenting with smart-charging services in Amsterdam, where the charging current is lowered during peak-hours. The expansion of the charging infrastructure for electric cars continues. Today we operate 39,600 charging points, an increase of almost 40% from 2021. In 2022, we have signed partnership agreements with new major players in our regions. In Germany, we will install and operate charging points at the parking lots of Futterhaus, Q-Park, the Bünting Group, and Netto supermarkets. In the Netherlands, we are building charging infrastructure in the provinces of Brabant, Limburg, Gelderland, and Overijssel. In Sweden at Axfood locations and the MAX hamburger chain, we will install fast chargers. We are conducting several pilot projects to enhance the customer experience. In Gothenburg we are participating in a project together with Volvo to make payment effortless and charging wireless. In the Netherlands, we have successfully recycled our first end-of-life charging stations.

The pressure on customer service has been high, especially in Sweden and the Netherlands, and we have therefore increased resources in that area over the course of the year (see pages 14–15).

Planned activities

- Expand offering of fossil-free electricity and develop portfolio of energy solutions to enable the energy transition in our continental markets, including biogas, heat pumps, and other energy solutions
- Expand flexibility offering, including storage solutions, to give customers control over how and when to consume energy, reduce costs, and integrate decentralised energy solutions
- Growth in powering electrified transport by expanding our public charging network and providing competitive offerings to our consumers
- Continue our work with governments and organisations to address energy poverty and to improve support systems for customers who have difficulties paying their bills.

[1] The Net Promoter Score (NPS) is a tool to measure customer loyalty and understand how customers perceive Vattenfall's products and services. The score is weighted 80% from Customers & Solutions and 20% from Heat, which reflects the composition of our customers.

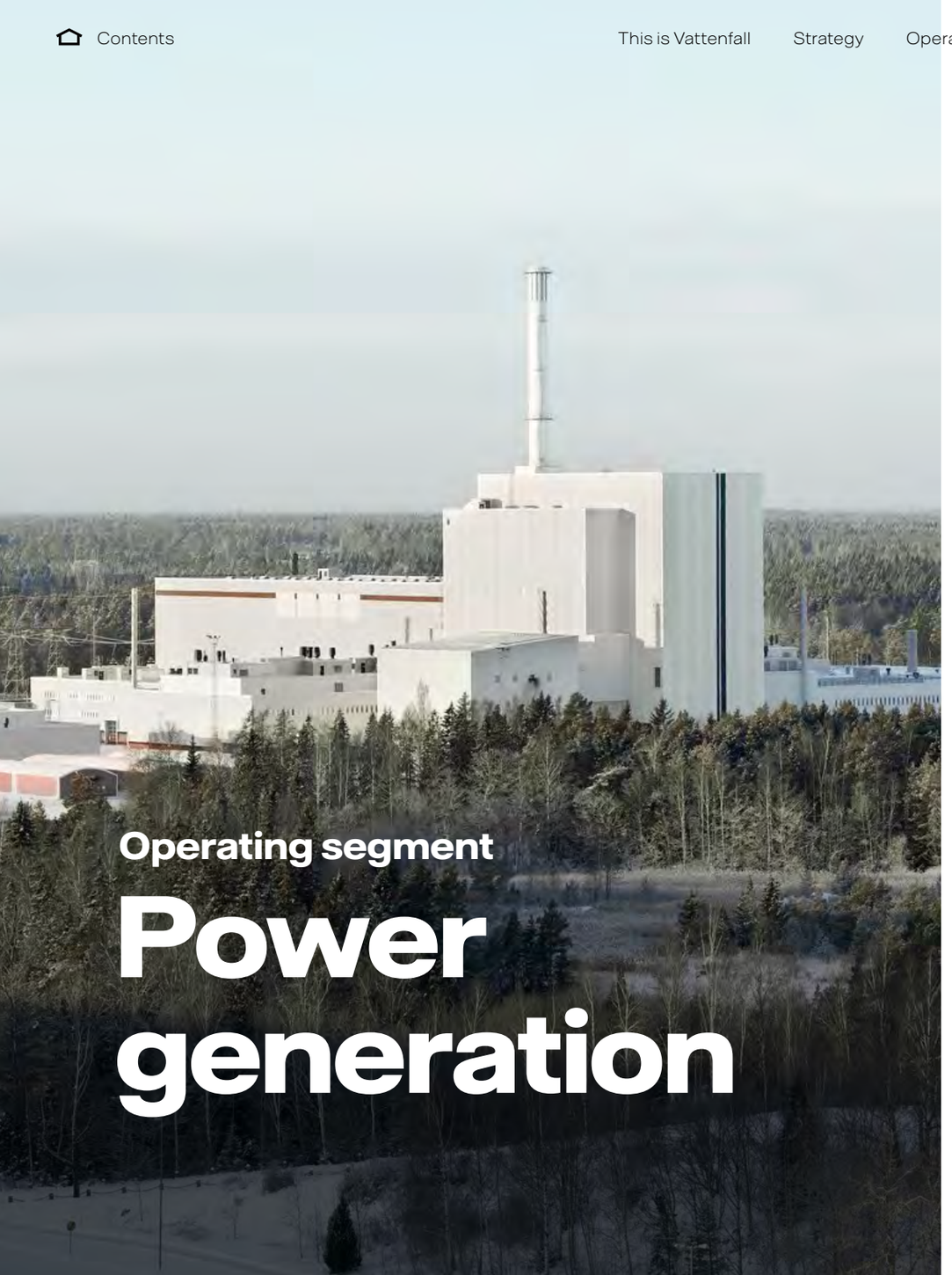
Key data

	2022	2021
Net sales (SEK million)	183,151	106,560
External net sales (SEK million)	174,026	102,300
Underlying operating profit[1] (SEK million)	7,413	2,349
Sales of electricity (TWh)	93.5	96.1
– of which, private customers	27.1	26.8
– of which, resellers	20.7	7.9
– of which, business customers	45.7	61.4
Sales of gas (TWh)	46.4	56.0
Net Promoter Score (NPS) absolute[2]	+16	+10
Number of employees, (FTE[3])	3,289	3,213

[1] Operating profit excluding items affecting comparability.
[2] Weighted 80% from Customers & Solutions and 20% from Heat. For definition, see footnote under Developments in 2022.
[3] Full time equivalents.

Financial results 2022

Net sales increased by 72% compared to 2021. Underlying operating profit increased, mainly due to temporary sourcing effects for electricity and gas as well as a growing customer base. Compared to year-end 2021, the customer base increased by 4% to 10.9 million contracts. Sales of electricity decreased by 3% compared to 2021 mainly due to lower sold volumes to electricity grid operators in France and lower volumes to private customers in the Nordics. Sales of gas decreased by 17%, mainly due to warmer weather and lower consumption in the Netherlands and Germany.



Operating segment

Power generation

Operations

The Power Generation operating segment comprises the Generation and Markets business areas.

Generation operates hydro and nuclear power plants across the Nordic countries and Germany, generating a total of 80.1 TWh (81.2) of electricity in 2022. Vattenfall's total installed hydro power capacity of 11,510 MW generated 40.5 TWh (40.8) of electricity. At year-end, Vattenfall's Nordic reservoir levels were at 60% (65%) , which is three percentage points above normal. The combined installed capacity of nuclear power was 5,511 MW and generation totalled 39.6 TWh (40.4).

The Markets business area plans, optimises, hedges, and dispatches all Vattenfall's production assets to maximise the value of the generation portfolio. Sourcing and trading for Vattenfall's own and third-party assets and sales positions are, to a large extent, also carried out by Markets.

Business environment

Hydro and nuclear power are the two most important large-scale dispatchable fossil-free means of electricity generation. And they are facing increased competition from other energy sources as the share of intermittent large-scale electricity production increases while also becoming more valuable in ensuring security of supply. This creates business opportunities within energy storage and dispatchable fossil-free electricity production. However there are major uncertainties regarding future market design and other political interventions.

The unprecedented gas and power prices and volatility put security of supply, affordability, and demand side flexibility into sharper focus. These are all areas handled by the business area Markets. Risks increased dramatically in the energy markets because of the energy crisis, resulting in a reinforced focus on balancing market, credit and liquidity risks (see page 91).

Strategy and targets

Vattenfall's ambition is to be a world leader in the operation of both nuclear and hydro power with high safety and sustainability standards, and to produce fossil-free electricity cost-efficiently and with high availability. The safe decommissioning of our closed reactors is also a core part of our responsibilities. When we place the radioactive waste and spent fuel in final repositories, we demonstrate the feasibility of completing the entire nuclear power cycle.

Utilising flexibility to adapt to changes in the power and ancillary services markets is vital to maximising the value of our assets, but also to enable maximum renewable power feed-in into the grid. Vattenfall is automating end-to-end and use algorithms to reach the speed necessary to profitably manage the intermittency of renewables and the more granular balancing markets implemented across the EU.

The Markets business area provides support for profitable expansion of Vattenfall's wind business by finding partners for corporate-PPAs which reduces merchant risk and facilitates growth by giving bankability to projects. Our contracted corporate-PPA volume increased by 0.5 TWh to 5.5 TWh. We seek to increase the portfolio optimisation value by assessing and investing in flexible fossil-free assets (batteries, pumped hydro, and electrolysers) and contracting third-party flexibility.

The war in Ukraine affected our sourcing activities with markets becoming more physically constrained and more challenging from a risk perspective.

17 PARTNERSHIPS FOR THE GOALS

Together with the Swedish Agricultural University (SLU) and the power company Jämtkraft, we are developing solutions to mitigate disruptions to downstream fish migration caused by our hydro power activities.

Developments in 2022

Hydro power
We continued to increase hydro power capacity through refurbishments and upgrades combined with outage optimisation measures.

The profitability of Vattenfall's pumped hydro storage operations in Germany has improved yet again owing to the extreme price volatility during the year.

The construction of a new dam in Lilla Edet continued and the first phase of the work, to build a cofferdam around the working site, was completed. A pumped storage hydro power project in southern Germany was acquired with the purpose to investigate the possibility to build a new 400 MW power plant. A possible decision to build a plant would not be made before the end of the decade.

Nuclear power
Average availability for Vattenfall's nuclear power was 83.6% (84.8). In connection with the annual planned outage of Ringhals' Reactor 4, the plant's pressuriser was damaged. While it did not affect the safety of the plant, the complex repair work extended the outage by several months. Overall, nuclear power generation decreased by 0.8 TWh, totalling 39.6 TWh. Forsmark reached a production record for the second year in a row and produced 25.5 TWh, up by 81 GWh from 2021.

In January, the Swedish government gave the Swedish Nuclear Fuel and Waste Management Company (SKB) permission to build a final repository for spent nuclear fuel in Forsmark in Östhammar municipality and an encapsulation facility in Oskarshamn. In October, Vattenfall received permission to increase the output of the nuclear power reactor Forsmark 1 by 50 MW, which was implemented in the autumn with another 50 MW increase planned for the spring of 2023.

A feasibility study on the conditions for building at least two small modular reactors (SMR) in connection with the Ringhals nuclear power plant was initiated. A potential first reactor could be in operation by the beginning of the 2030's given the right conditions.

Decommissioning and dismantling operations in both Sweden and Germany are progressing and at Ringhals Reactors 1 and 2, preparations for dismantling are in progress.

Markets
We continued to expand our activities within PPA's, for example by signing a corporate-PPA with Air Liquide for 500 GWh of the output from Hollande Kust Zuid. The volatile markets introduced additional challenges in balancing market, credit, and liquidity risks (see page 90) and for our hedging activities.

Planned activities

- Dismantling activities at Ringhals Reactors 1 and 2 to commence in 2023
- The first court proceedings related to stricter environmental requirements for hydro power to start with the small-scale plants Bosgården and Apelnäs. Proceedings for other plants have been postponed
- Several biodiversity initiatives in our hydro power plants (see page 60)
- Drive automation and algorithm development to further improve our capacities to manage PPAs, flexible assets, and renewable energy sources
- Capture value from flexibility and support a robust portfolio
- Develop decarbonisation offerings, such as biomethane
- Improve models and weather forecasts for better risk management related to sourcing.

Key data

	2022	2021
Net sales (SEK million)	205,788	126,318
External net sales (SEK million)	28,193	40,312
Underlying operating profit[1] (SEK million)	16,570	19,334
Electricity generation (TWh)	80.1	81.2
Sales of electricity (TWh)	15.6	22.2
– of which, resellers	13.8	17.5
– of which, business customers	1.8	4.7
Gas sales (TWh)	0.9	1.1
Number of employees, (FTE[2])	7,219	7,260

[1] Operating profit excluding items affecting comparability.
[2] Full time equivalents.

Financial results 2022

Net sales increased by 63%. Underlying operating profit decreased by 14%, which is primarily attributable to lower achieved electricity prices in the Nordic countries caused by major price area differences in Sweden, and a lower realised trading result. Our pumped hydro storage operations in Germany had an offsetting effect.

Operating segment

Wind

Operations

Vattenfall's ever-growing renewables operations in north-western Europe form the backbone of a wide-spread electrification of society. Vattenfall is one of the pioneers of wind power in Europe, both on- and offshore. We operate a portfolio of more than 1,200 wind turbines with a total installed capacity of 4.4 GW across five countries. In 2022, we also continued to expand our efforts within large-scale solar PV, mainly in Germany and the Netherlands, as well as battery storage solutions.

Business environment

With the current energy market turmoil and the global drive towards full decarbonisation and energy independence, the demand for new wind and solar power assets – which are the cheapest new-built power sources[1] – has increased even further in 2022. Both wind and solar power is expected to see strong double-digit growth in Vattenfall's markets by 2030 and beyond. Additionally, battery storage solutions, which are often co-located with wind and solar assets, are seeing high interest and growth, driven by the electricity price volatility and grid constraints across Europe. This unprecedented industry growth has led to intensified competition between both new and established renewables players and to supply chain bottlenecks, which are putting project delivery under pressure.

Strategy and targets

It is Vattenfall's ambition to remain a leader in the energy transition by developing, constructing, and operating on- and offshore wind farms, large-scale solar PV, onshore wind farms, and co-located battery storage. At year-end 2022, Vattenfall had 2.2 GW of renewable capacity under construction and 5.3 GW in mature-stage development. We aim to further strengthen our project pipeline by greenfield development and by bidding on, or acquiring attractive projects across all our renewable energy technologies. We continue to focus on forging partnerships with industrial off-takers of renewable electricity to support them in their decarbonisation endeavours as well as to stabilise revenues for our renewables projects and to make them bankable. Being an industry forerunner by delivering environmentally and socially sustainable solutions is paramount for us. We continue to focus on reducing greenhouse gas emissions, increasing circularity, working with suppliers to sustainably source goods and services, protecting biodiversity, and fostering social sustainability. Vattenfall has, among others, joined the SteelZero and NearZero cement initiatives, and has thereby committed itself to a transition to sourcing 100% net-zero steel by 2040 and 10% near-zero cement by 2030. We generally seek to protect the environment in a risk- and cost-conscious manner and collaborate closely with authorities, academia, and NGOs.

[1] Bloomberg New Energy Finance, H1 2022 LCOE Update.

7 AFFORDABLE AND CLEAN ENERGY

Vattenfall has a robust clean and affordable energy pipeline that span various renewable energy sources and technologies such as wind farms, solar parks, and battery storage. Currently, Vattenfall operates 4.5 GW of installed capacity in renewable energy.

Developments in 2022

Offshore wind
At the Hollandse Kust Zuid project (1,500 MW) in the Netherlands, all foundations have been installed, and the first power was delivered in mid-2022. Recyclable blades were sourced for three turbines as a first step towards delivering on our blade waste targets (see page 64). The construction of the Danish Vesterhav projects (344 MW) is equally well underway. In the UK, we were awarded a 15-year Contract for Difference for Norfolk Boreas (1,800 MW), where onshore construction is set to begin in 2023. Planning consent was granted for the sister farm Norfolk Vanguard. Moreover, we received the construction permit for Swedish Kriegers Flak (640 MW) and have exercised our step-in right for Nordlicht I (980 MW) in Germany – both paving the way for final investment decisions in the mid-2020s. We also announced a partnership to build Finland's first offshore wind farm (1,300 MW).

Onshore wind
We inaugurated the Swedish Blakliden/Fäbodberget project (353 MW), one of Scandinavia's largest onshore wind projects, and the construction work for Grönhult (67 MW) is well under way. In the UK, the 240 MW project South Kyle is currently in the turbine installation phase. In the Netherlands, we completed the Jaap Rodenburg (38 MW) and Moerdijk (27 MW) projects. At Nieuwe Hemweg (13 MW), we achieved a 25% environmental impact reduction for the Balance of Plant[1] through award criteria during procurement. Several projects, including Windplan Blauw (130 MW) and A16 (34 MW), are currently under construction. At the decommissioned project Irene Vorrink, we identified a recycling solution for all the wind turbine blades, which means that we are ahead of our blade waste targets.

Large-scale solar PV and batteries
In 2022, the development of the large-scale solar PV and battery storage pipeline continued, and several projects were completed. The Dutch hybrid renewable energy park Haringvliet (22 MW onshore wind, 38 MW solar PV, 12 MW battery) and the Dutch solar PV project Kooypunt (13 MW) as well as the German solar PV projects Kogel-Leizen (28 MW), Markersbach (4 MW) and Geesthacht (2.4 MW) were inaugurated during the year. At the same time, construction started on the Dutch agri-PV project Symbizon (76 MW) – which is the first time Vattenfall has integrated solar power with agricultural activities.

Planned activities

- Forge more industry partnerships to support decarbonisation beyond our own sector
- Collaboration with suppliers to alleviate supply-chain bottlenecks
- Develop minimum sustainability requirements and award criteria for major procurement tenders
- Supply chain sustainability initiatives to establish best practices and develop joint industry standards
- Live up to our Vattenfall Supplier CO_2 Emission Reduction (SCORE) target to reduce emissions from supplier goods and services by 50% between 2020 and 2030 (see page 57)
- Increase knowledge around the environmental impacts of our wind and solar farms and take mitigating actions, and steps to enhance biodiversity and co-use.

[1] Balance of Plant (BoP) refers to all supporting components and auxiliary systems needed to deliver the energy, other than the generating unit itself.

Key data

	2022	2021
Net sales (SEK million)	29,109	20,872
External net sales (SEK million)	4,308	7,791
Underlying operating profit[1] (SEK million)	16,479	7,866
Electricity generation (TWh)	12.2	11.2
Number of employees, (FTE[2])	1,521	1,279

[1] Operating profit excluding items affecting comparability.
[2] Full time equivalents.

Financial results 2022

Net sales increased by 39% compared to 2021. Underlying operating profit increased by 109% as a result of higher electricity prices on the Continent and new capacity.

Electricity generation increased by 9% as a result of new capacity and higher wind speeds in the first half of the year, especially in Germany and Denmark.

Operating segment

Heat

Operations

Operating segment Heat comprises Vattenfall's heating and condensing businesses, including waste-to-energy plants. We are one of Europe's largest producers and distributors of district heating to growing metropolitan areas in north-western Europe including Berlin, Amsterdam, and Uppsala, and we are pioneering district heating activities in the UK. Our district heating supply remains primarily based on the operation of some large, combined heat and power plants (CHPs), but with the sustainability targets of Vattenfall, we are widening the use of decentralised and flexible energy solutions, including mini-CHPs, heat pumps, boilers, storage options, solar panel installations, and third party excess heat infeed (TPI). We are not only supplying heat to households but also to business customers as well as large private and publicly owned property companies. We see significant growth potential in Germany, the Netherlands, and the UK. District heating in Sweden is a mature market with limited potential for organic growth.

Business environment

The CO_2 emissions from the building sector in Europe account for more than a third[1] of the total CO_2 emissions where nearly 50% of the heating is generated by natural gas[2]. District heating systems in urban areas are an important part of the heating sector decarbonisation since they allow for integration of flexible and clean energy sources such as geo- and aqua-thermal, power-to-heat, bio-fuels, and excess heat sources from third-parties like industries and data centres thus reducing dependency on natural gas. Local district heating, when available, tends to be highly competitive compared to individual heating solutions like oil or gas boilers and heat pumps, and is even more so in the current high-price environment.

Strategy and targets

The energy crisis has made it even more evident that dependency on fossil fuels is untenable. For Vattenfall, decarbonising our heat operations will be critical to achieve net zero in 2040. We have accelerated our efforts to replace fossil fuels with fossil-free and sustainable alternatives, and are currently concentrating on our Berlin and Amsterdam heat networks.

Hard coal will be phased out by 2030, and we will reduce our exposure to fossil gas to a minimum by expanding the broad mix of sustainable technologies in our systems, including geo- and aqua-thermal heat sources, power-to-heat solutions, and seasonal storage options. In parallel, we are expanding our partnerships in order to integrate a higher share of TPI heat sources. This includes investigating the feasibility of lowering network temperatures – not only to enable additional heat infeeds but also to minimise heat losses and improve efficiency. Any remaining required gas asset will be fit to be powered by fossil-free hydrogen or biogas.

In Sweden, operations will be 100% fossil-fuel free by 2025. We aim to grow our customer base by connecting additional new and existing buildings to both new and existing heat networks, and, aided by digital solutions, by implementing smart hybrid and decentralised low-carbon heating and cooling solutions, to ensure a reliable heat supply.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Vattenfall works with data centres in Motala and Fagersta in Sweden to use the excess heat produced by the equipment for local district heating networks.

[1] European Commission, **In focus Energy Efficiency in buildings** (2020).
[2] European Commission, **An EU Strategy on Heating and Cooling** (2016).

Developments in 2022

In May Vattenfall intitiated a strategic review regarding the continued ownership of its heat business in Berlin. This was done to establish how we can best contribute to the energy transition; a decision will be made in 2023. At the same time, efforts to decarbonise the district heating supply continued. At the Reuter West CHP plant site, a heat storage equivalent to 350,000 bathtubs was constructed. The facility will increase flexibility to optimise low-carbon heat supply and match demand, and further secure heat supply to our customers. At a cooling centre at Potsdamer Platz, the first industrial-scale high-temperature heat pump was commissioned with partner Siemens Energy AG. It will use excess heat from cooling and is expected to reduce CO_2 emissions by 6,500 tonnes annually.

In the UK, we are working to enable existing housing stock and new housing to connect to heat networks. The construction of a district heating network at Brent Cross Town in north London is moving ahead and in a joint venture with the Midlothian Council, our first project at Shawfair Town in Scotland was signed. This project will supply more than 3,000 homes, schools, and shops with low-carbon heat. In April, Bristol City Council selected Ameresco and Vattenfall as partners to build the city's future smart energy system. Vattenfall will take over the existing heat networks and deliver new low-carbon infrastructure over the next 20 years.

At the heating plant in Diemen, Amsterdam, the final investment decision was taken to start the construction of a 150 MWth power-to-heat boiler in early 2023. Progress has been made on the design to utlise residual heat from a data centre, which will be replacing heat from natural gas. The Eemshaven gas-fired power plant was divested and was handed over to RWE in January 2023. The dismantling of the coal-fired power plant Hemweg 8 has started, with the aim to redevelop the site into a hub for the production, conversion, and storage of fossil-free heat, power, and hydrogen. The Ministry of Economic Affairs and Climate has announced the intention for compulsory public ownership of heat networks. Vattenfall is investigating the impact of this and how sufficient certainty can be achieved in order to understand implications on our planned investments.

In Sweden, Vattenfall inaugurated the new biofuel-fired heat plant, Carpe Futurum, in Uppsala. It will lower CO_2 emissions by some 200,000 tonnes annually compared to the use of peat and other fossil fuels. Additionally, efforts to increase the amount of third party heat sources (SamEnergi) continued. In Gustavsberg outside Stockholm, excess heat from AstaReal's algae cultivation provides 2.7 MW heat into the district heating network, which corresponds to the heating requirements of 2,500 apartments.

Planned activities

- Continue to utilise excess heat from the cooling water of existing and future data centres in Amsterdam and also pursue possibilities in Berlin
- Developing geothermal heat sources in Berlin, Amsterdam, and Lelystad
- Integration of the existing Bristol Heat Networks into Vattenfall's portfolio and further expansion of the low-carbon infrastructure
- Evaluation of the 'Fossil Eye' project together with Tekniska verken and Umeå Energi, with the aim of identifying the amount of fossil plastics in waste and to trace their source in order to minimise that fraction in the waste
- Installing another large heat pump (73 MW) at the Reuter West site in Berlin to deliver heat to our customers from treated waste water from Berlin's largest water treatment plant.

Key data

	2022	2021
Net sales (SEK million)	60,505	34,759
External net sales (SEK million)	20,933	14,655
Underlying operating profit[1] (SEK million)	-3,578	-343
Sales of heat (TWh)	14.1	15.6
Electricity generation (TWh)	16.6	19.0
CO_2 emissions (Mtonnes)	9.4	10.2
Nitrogen oxides, NOx (ktonnes)	4.6	5.0
Sulphur dioxide, SO_2 (ktonnes)	1.2	1.3
Particulate matter, PM (ktonnes)	0.1	0.1
Number of employees, (FTE[2])	3,188	3,126

[1] Operating profit excluding items affecting comparability.
[2] Full time equivalents.

Financial results 2022

Net sales increased by 74% compared with 2021. Underlying operating profit decreased mainly due to higher gas prices which led to lower clean spark spreads which primarily affected heat operations. Higher operating expenses largely driven by projects and planned maintenance also impacted negatively. This was partly offset by higher heat prices following retroactive fuel price adjustments of tariffs. Hedging of spreads had a countering effect, which is reported in the Power Generation operating segment.

Operating segment

Distribution

Operations

Operating segment Distribution consists of Vattenfall's electricity distribution operations in Sweden and the UK and its offerings within Power-as-a-Service (PaaS). It is primarily a regulated business supervised by national regulators.

In Sweden, Vattenfall owns and operates around 139,000 km of electricity grids, primarily located in the north and central parts of Sweden, and it has approximately one million business and private customers. Vattenfall is the largest owner and operator of regional grids and one of the three largest owners of local grids. In the UK, Vattenfall is one of 14 licensed Independent Distribution Network Operators (IDNOs) that develop and own local grids. The PaaS offering, which is a part of the unregulated business, enables electrification of the industry and heavy transport sectors by acquiring, building, owning, and operating electrical infrastructure tailored for each customer.

Business environment

Electricity grids are more important than ever. A recent forecast suggest that Swedish electricity demand will more than double by 2045 – from around 140 TWh in 2020 to about 300 TWh by 2045[1]. It is primarily the demand for electricity from the manufacturing and transportation sectors that is expected to increase the most. At the same time, renewable electricity production, which needs to be connected to the grid, is forecasted to be at least double by 2030[2]. Major parts of the electricity grid were built in the 1960s–70s, and large investments are therefore needed to be able to meet the increased electricity demand with a robust and reliable electricity supply.

Our market context is becoming ever more complex and uncertain with increasing demands and expectations from both customers and society in such areas as quality of delivery, sustainability, data security, and increased expectations on non-visible infrastructure.

Strategy and targets

A robust and cost-efficient grid is a prerequisite for the energy transition. We aim to enable distribution of twice as much electricity in our grid by 2030 with 99.99% continuity of supply. In order to accelerate the expansion and renovation of the power grid, it is important to have long-term and stable market prerequisites in place. To that end, we are working actively to influence key areas, such as regulations, permitting processes, and our access to contractors. We are also focusing on producing and implementing new innovative solutions and services, such as forecasts related to expanding the power grid, flexible grid solutions, and digital customer interfaces.

We constantly strive to better understand and manage our impacts from a sustainability perspective. One focus area aims to lower the amount of the greenhouse gas (GHG) SF6 installed in our substations, and we have strict goals to reduce SF6 leakage as well as to find alternatives to SF6. Another focus area is biodiversity where we are taking a number of measures to enhance biodiversity along our power line corridors and substations. We are also collaborating closely with our suppliers to ensure safe and healthy workplaces, increase circularity, and reduce GHG emissions in the supply chain.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

The FlexConnect project launched in Riksgränsen in Northern Sweden is evaluating flexible charging solutions to alleviate local grid capacity shortages.

[1] Energiföretagen Sverige, **Efterfrågan på fossilfri el** – analys av högnivåscenario (2021).
[2] Energimyndigheten, **Scenarier över Sveriges energisystem 2020** (2021), **Scenario Elektrifiering Färdplan 2040**, Svensk Vindenergi, (2021).

Developments in 2022

Requests to connect to our grid are at an all-time high. Requests to the regional grid (consumption and generation included) have followed an exponential trend between 2020–2022, having doubled each year over this period. For the local grid, there has been a sharp increase in the connection of production above all. In 2022, Vattenfall Eldistribution connected around 8,000 solar PV installations to the grid, which is twice as much compared to 2021. Customer service enquiries were up to 2–3 times higher than normal, and we therefore reinforced the organisation with more resources.

One of the greatest challenges for the energy transition in Sweden is the long lead times for building electricity grids. During 2022 Vattenfall participated in several projects and initiatives aimed at shortening the lead times for example in two pilot projects within the government initiative KOMET.

Flexibility solutions contribute to alleviating bottlenecks in the grid, complement grid investments, and accelerate customer connections. Vattenfall participates in several flexibility projects. Sthlmflex is an R&D-project to test a flexibility market where market actors are given the ability to provide capacity flexibility in the Stockholm area. After four years, the EU-financed project CoordiNet ended in October 2022. During the project, Vattenfall has together with E:ON and the Swedish TSO operated local flexibility markets.

The project FlexConnect was launched in Riksgränsen in Northern Sweden. The project evaluates opportunities to use flexible charging solutions in areas with grid capacity shortages.

The legal proceedings regarding the electricity grid companies' revenue frames for 2020–2023 continued. In June, the Court of Appeal issued a ruling which was appealed by the electricity grid companies to the Supreme Administrative Court. The appeal was not granted. Thus, the Court of Appeal's verdict stands and the Energy Market Inspectorate will take new decisions about revenue frames in 2023.

PaaS is an established business model in Sweden and the UK. In early 2021, we entered the Dutch and Danish markets and the first PaaS deals have now been signed. One example is a partnership with the delivery company Instabox where we operate approximately 400 charging points on Instabox's terminals in Sweden, Denmark, and the Netherlands.

Planned activities

- Major investments (approximately SEK 7 billion per year until 2030) in both regional and local grids to meet high growth in electricity demand, connect new customers, and increase quality of delivery
- Continue to develop solutions for more efficient grid usage, e.g. regional markets for grid flexibility, new types of grid capacity tariffs, and load steering to avoid high peaks in the grid as well as roll-out of new smart meters for customers in Sweden
- Implement sustainability award criteria for suppliers' bidding in a certain share of our larger tenders
- Increase the amount of fossil-free fuel used at our project sites and electrification of our service suppliers' car fleets
- Expand the IDNO business in the UK and the PaaS offerings in all existing markets (Sweden, UK, Netherlands, Denmark).

Key data

	2022	2021
Net sales (SEK million)	12,497	17,262
External net sales (SEK million)	11,733	14,643
Underlying operating profit[1] (SEK million)	2,070	3,152
Investments (SEK million)	5,525	5,758
SAIDI[2]	157	112
SAIFI[3]	2.08	1.75
Number of employees, (FTE[4])	1,340	1,165

[1] Operating profit excluding items affecting comparability.
[2] SAIDI: System Average Interruption Duration Index. Refers to Sweden.
[3] SAIFI: System Average Interruption Frequency Index. Refers to Sweden.
[4] Full time equivalents.

Financial results 2022

Net sales decreased by 28% compared to 2021. Underlying operating profit decreased by 34%, where the sale of Stromnetz Berlin in July 2021 affected the comparison negatively by SEK 0.7 billion. In addition, the Swedish operation was affected by higher operating expenses, mainly owing to growth activities, as well as higher costs for the transmission network. Higher net sales had an offsetting impact. Costs related to the transmission network are recognised as non-controllable costs and are fully reimbursed within the revenue regulation.

In focus

In 2022, 63 per cent of Vattenfall's total CO_2 emissions came from electricity and gas sales to customers. To reach a fossil-free society, we need to support our customers to decarbonise, and thus we aim to offer affordable fossil-free electricity and heat to all of them.

Reducing customers' climate footprint

Three independent solutions for replacing natural gas used for heating

Vattenfall wants to be leader in the energy transition and support decarbonisation of society; and we have a commitment to become net zero across the full value chain by 2040.

In practice, this means that we need to reduce our customers' emissions, since they are part of our downstream value chain. Hence, we strive to significantly expand our service and product offerings both to support our customers in reducing their carbon footprint while also attracting new customers.

A clear path forward for decarbonising consumers

The largest share of Vattenfall's customer emissions comes from our consumers: 9.6 Mt of CO_2e from gas sales and 7.8 Mt of CO_2e indirectly from electricity sales. We have approximately 2.4 million private and small business customers that use gas for heating, and we are currently developing a number of decarbonisation solutions to support these customers.

Replacing gas with sustainable gas

Biogas[1] is a fossil-free alternative to natural gas and is made from cow manure, sludge, garden or kitchen waste, and similar sources. In the Netherlands, Vattenfall currently offers its customers two options: 100% green gas, and a mixture of 90% natural gas and 10% green gas. The reason for this arrangement is that the supply of green gas is still limited and the price is higher than for natural gas. To increase supply and bring down the price, Vattenfall is one of the participants in "Platform Groen Gas", whose goal is to produce 2 billion m^3 of green gas in the Netherlands by 2030.

Replacing gas with heat pumps

Vattenfall has, together with its partners, developed a high-temperature heat pump that is currently being rolled out in the Netherlands (see page 48) and is also in the process of entering into a partnership to obtain heat pump installation capacity in Germany.

In addition to this, we also offer a broad range of energy efficiency measures to facilitate customer decarbonisation (see page 55).

Fossil-free electricity contracts

Fossil-free electricity contracts are one of the easiest ways customers can reduce their carbon footprints. We aim to offer exclusively fossil-free electricity to consumers in Germany by the late 2020s. In the Netherlands, we aim to continue to deliver 100% fossil-free electricity to B2C customers and for our sales to the business segment to be fully fossil-free by the early 2030s. In the Nordic countries, our offerings in Sweden are already fossil-free, while we are working towards this goal in the other countries.

Replacing gas for business customers is a challenge

A significant share of our emissions originates from gas sales to business customers. These customers typically use gas to produce high temperature heat for industrial processes, some of which may utilise the released carbon as a feedstock. Decarbonising these customers is much more challenging, as it typically requires a partial or complete redesign of the core industrial processes. However, we are looking into solutions to solve this challenge, for example by studying our largest customers' processes and needs to understand if we can help solve the challenge together.

Decarbonising customers by lowering our own emissions intensity

Lowering our own emissions intensity is also a way to decarbonise our customers. District heating is an efficient means of heating buildings, mainly in metropolitan areas. Vattenfall develops and owns district heating networks in Sweden, Germany, the Netherlands, and the UK, and we are increasingly using and exploring sustainable heat sources like geo- and aquathermal, power-to-heat, bio-fuels, and excess heat sources from third parties to decarbonise our heat networks (see page 43).

Decarbonisation efforts beyond our emissions accounting

Not all decarbonisation efforts are visible in our emissions trajectory since Vattenfall is in a position to enable electrification in industries that are not part of our value chain, which leads to emissions reductions on a societal level. One example is e-mobility, where we help customers with charging box installations, as well as giving drivers access to one of the fastest growing charging networks in Europe. We have also partnered to reduce emissions in hard-to-abate sectors like steel, with the HYBRIT fossil-free steel collaboration (see page 12), and aviation, within the sustainable aviation fuel initiative HySkies.

Roadmap towards net zero

Vattenfall aims to be the go-to decarbonisation partner for our customers, offering sustainable solutions for electricity, heat, and beyond. Our commitment to contribute to society's fight against climate change and achieve our net-zero target can only be realised in close cooperation with our customers, suppliers, and partners.

[1] In the Netherlands called green gas.

High-temperature heat pump replaces gas heating

Vattenfall has developed a high-temperature heat pump with characteristics similar to a central heating boiler. After a successful two-year pilot project, the heat pump entered into production in 2022.

Interviewed
Wouter Wolfswinkel
Programme manager

According to the Dutch Climate Agreement, seven million homes and one million other buildings must be off natural gas by 2050 through the use of renewable heat and electricity and insulation of buildings. As a first step, by 2030, the first 1.5 million existing homes must become more energy efficient through better insulation, solar boilers, heat pumps, heat recovery ventilation, and solar panels.

In the light of that agreement, a novel high-temperature heat pump has been developed by Vattenfall, and after a pilot phase, all participating residents indicated that they wanted to keep the heat pump instead of returning to their previous, primarily gas-driven heating units. "We couldn't have achieved a better confirmation of the success of our efforts," says Vattenfall programme manager Wouter Wolfswinkel.

Powerful solution

The housing cooperatives that have purchased the heat pump are enthusiastic about the solution because they see it as a simple and relatively inexpensive way to make parts of their homes free of natural gas. The high-temperature heat pump can simply replace old heating units and use the existing radiator system, so that a major refurbishment is avoided. The installation of the heat pump also offers the benefit that it fits well with the standard multi-year maintenance plans of the housing cooperatives, according to which they have to replace the central heating boilers at some point. This scheduled boiler replacement can now be used to make the home free of natural gas in one go with the high-temperature heat pump, and without additional and costly insulation or replacing of the radiators.

> "We don't build the heat pump for the happy few, but rather for the people who are normally at the back of the line with such a product."

"The impact on tenants is also very low, because the system can be installed within two days and the occupants do not need to leave their homes. With conventional electric heat pumps, the house often has to be completely renovated," says Wolfswinkel. And, not insignificantly, tenants have a stable energy bill over the years if the heat demand remains constant.

Climate-friendly refrigerant

Besides the high-temperature heat pump's ability to replace the ordinary central heating boilers, a big difference from existing heat pumps is that Vattenfall's heat pump uses CO_2 as refrigerant for transporting heat. CO_2 has a global warming potential (GWP) of 1, making it one of the most climate-friendly refrigerants. In addition to this, CO_2 is a natural refrigerant that is not affected by EU and UN regulations on phasing out currently dominant synthetic refrigerants. Moreover this means that no additional certifications are required for installation and maintenance personnel.

Wolfswinkel explains the choice of CO_2 as refrigerant: "Given Vattenfall's goal of enabling fossil-free living within one generation, it made sense for us to use a natural refrigerant for our heat pumps. CO_2 is also the only refrigerant with which we can achieve the high temperatures required for existing radiators."

Collaboration

For production of the heat pump, Wolfswinkel and his team collaborated with two companies: Japanese DENSO, which produces the heat pump, and German Solvis, manufacturer of the buffer tank. At DENSO, the production line is already running at full speed and the first containers with heat pumps are already on their way to Rotterdam. At Solvis, the finishing touches are currently being made to the production model of the buffer tank. "That is quite a complicated development process that must be executed to exact specifications," says Wolfswinkel. "For example, very specific insulation jackets are required that need to fit together seamlessly to achieve minimal downtime losses."

The technicians at the Vattenfall subsidiary Feenstra will initially install all the heat pumps. In this way, Vattenfall can guarantee the quality of the installation.

New market areas

If you look purely at heat demand, nearly three million single-family homes in the Netherlands can be made natural gas-free in this way. There are more countries in Europe with the same energy issues, and a pilot project is currently underway in the UK.

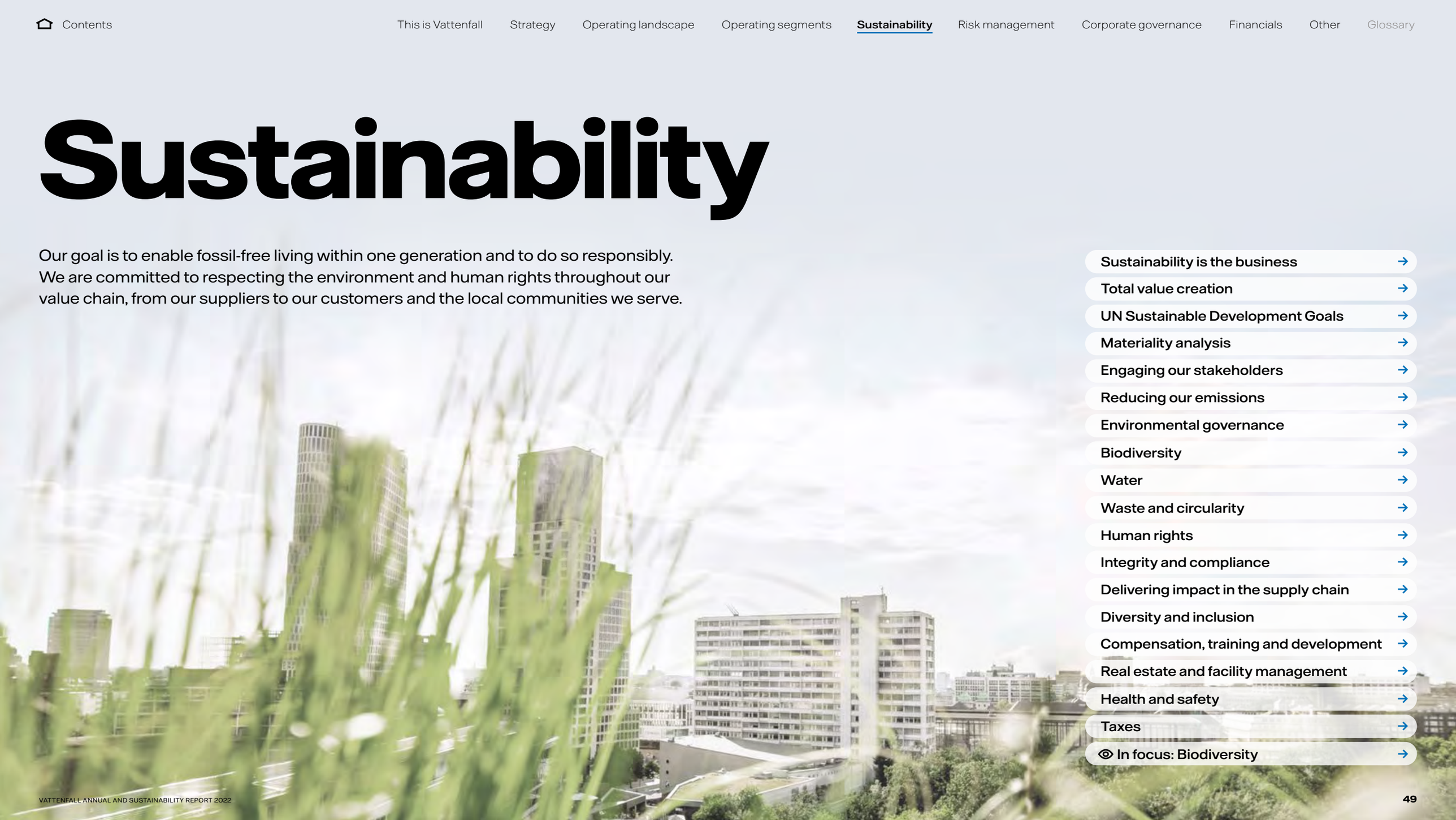
Wolfswinkel also regards the social impact as important: "I hope that this system will open up a new market for housing cooperatives with social housing. The families in these houses are often hardest hit by the energy cost situation and have the least incentive to take action to make their homes more sustainable. We don't build the heat pump for the happy few, but rather for the people who are normally at the back of the line with such a product."

CO_2 – a natural refrigerant

Vattenfall has designed the integration of the heat pump's two components, both physically and software-wise. Vattenfall is likely the first company in the world to use a CO_2 heat pump for high-temperature space heating in a generic solution. The product is patented and Vattenfall holds exclusive rights.

Sustainability

Our goal is to enable fossil-free living within one generation and to do so responsibly. We are committed to respecting the environment and human rights throughout our value chain, from our suppliers to our customers and the local communities we serve.



Sustainability is the business

At Vattenfall, one of our core beliefs is that sustainability is the business. It is a fundamental and fully integrated part of our operations and strategy. Our sustainability efforts can broadly be categorised into five general and, in some measure, overlapping themes as reflected here.

Our sustainability efforts at a glance

"Sustainability is the business" means our business areas are directly responsible for their sustainability performance and are therefore required to consider material social and environmental topics in their respective strategies and business plans (see page 36). These are then compiled at Group level, where our most important social targets (employee engagement and Lost-Time Injury Frequency Rate) and an environmental target (CO_2 emissions) are given equal weight to the financial targets (see page 20).

Vattenfall is fully committed to enabling fossil-free living in one generation and recognises the importance of continuously pushing for positive impact in areas that are most material from a financial and sustainability perspective.

Corporate member of society

Vattenfall's contributions and interactions with society

- SEK 36.6 billion total value created
- Strategic alignement with 6 UN Sustainable Development Goals
- A new materiality analysis with renewable energy, CO_2 emissions, and affordable energy as top-three issues
- Engaged with stakeholders to create local value and jobs.

Read more on page 51

Road to net zero

Vattenfall's decarbonisation journey

- Reduced Scope 1+2 emissions by 7% compared to 2021 and 13.7 Mt of CO_2e since 2017
- Reduced Scope 3 GHG emissions by 25% compared 2021
- Maintained business air travel emissions below 50% of 2019 emissions levels.

Read more on page 56

Our environmental footprint

Vattenfall's Environmental stewardship where it operates

- Topped Ecogain Biodiversity Index out of the 300 largest companies in Europe
- Reduced our water-use intesity by 5% compared to 2021
- Generated 7% less waste compared to 2021, and recycled 21%
- Berlin Office named most Sustainable Office Building in Germany.

Read more on page 59

Responsible and fair transition

Vattenfall's effort to maintain focus on the human perspective during the energy transition

- A new human rights action plan laying the foundation for a just energy transition
- 2,119 managers and other relevant employees attended integrity training
- Identified CO_2 reduction , circularity, human rights, high-risk minerals, and health and safety as supply chain focus areas.

Read more on page 66

Open, active, positive and safe culture

Vattenfall's efforts to operate with integrity and foster a world-class work environment

- 84% of employees believe their managers drive diversity and inclusion topics
- Over 100 mentors and coaches available to support employees
- Reduced Lost Time Injury Frequency reduced to 1.1 from 1.7 in 2021.

Read more on page 73

Total value creation

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. Vattenfall regularly review and update our approach as new and better tools are developed (see page 170 for the methodology). Understanding where and how we create value is instrumental for improving our decision-making and shaping our strategy moving forward. In 2022, Vattenfall's estimated total value creation was SEK 36.6 billion and, if including "experimental" categories, that figure would total SEK 20 billion.

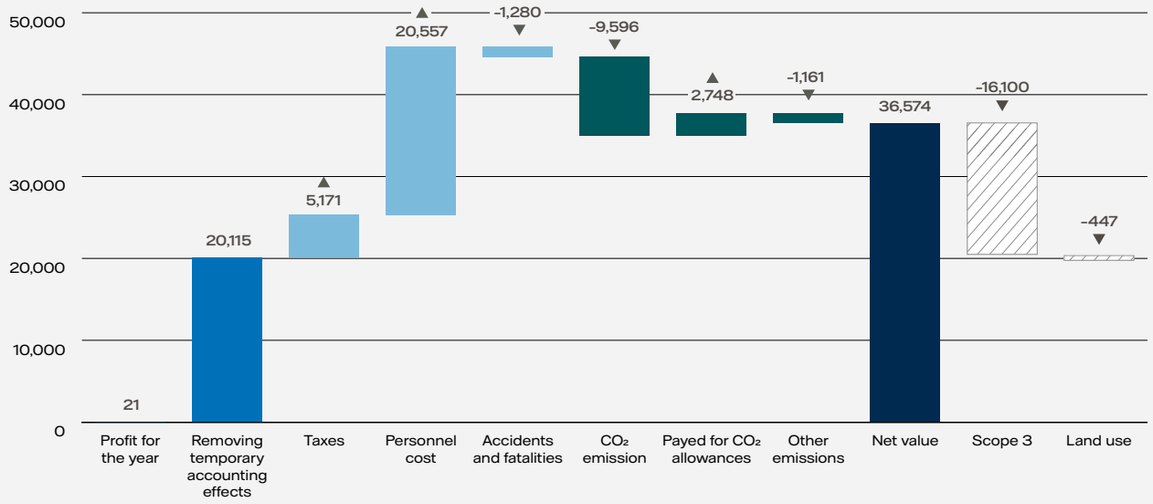
Greater transparency with experimental categories
Scope 3 emissions are well-known but have been excluded from our analysis so far. The reason for this exclusion is that we have no reliable way of calculating emissions-related benefits, which results in a negative bias. Even as there is no established indicator for measuring biodiversity and land use impact, Vattenfall has performed a full-value chain impact assessment applying the Global Diversity Score (see page 73). However, at present, land impact for only 2022 has been included in this quantification.

Areas of improvement
This value creation calculation does not provide the complete picture of our impact. For example, we have studied how to include Scope 4 emissions to quantify what systems-level CO_2-emissions reductions are achieved through our fossil-free electricity production, district heating, and EV charging solutions. There is no common framework for which categories to include or how they should be calculated and the value creation might be misinterpreted as overly positive. Vattenfall does not use Scope 4 emissions to "offset" Scope 1, 2, and 3 emissions and thus left it out of the model for now.

That said, our positive impact extends beyond these variables by, for example, investing in distribution (see pages 45–46); our ambition to have a net-positive impact on biodiversity by 2030 (page 60), and our human rights action plan (page 66). These efforts are not yet included in our social and environmental value creation.

Value creation

SEK million



Economic value
Vattenfall's SEK 21 million profit does not accurately reflect the economic value created as it is includes large temporary accounting effects attributable to the realisation and valuation of electricity and fuel contracts that have been entered into in previous years (see CEO comment on page 10 for more information). Hence these effects have been removed bringing the total economic value to SEK 20.1 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 24.4 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 8 billion.

Experimental values
To expand coverage of our impacts, we have also gathered metrics such as CO_2 emissions from our value chain (Scope 3), and land use and biodiversity restoration costs.
Our estimated value loss from these variables is SEK 16.5 billion.

UN Sustainable Development Goals

Vattenfall's activities contribute to the achievement of the UN's Sustainable Development Goals (SDGs), a collection of 17 global goals adopted in 2015 by more than 150 countries.

Vattenfall's contribution to the UN Sustainable Development Goals
Vattenfall contributes to all 17 goals to varying degrees. Our impacts on and contributions to all the goals are important. Here, however, we have grouped the goals to show where we contribute at a global level thorugh our strategy; where we contribute locally through our ways of working; and where we contribute indirectly through our actions.

THE GLOBAL GOALS
For Sustainable Development

Global

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 with respect to climate change and consequences for the energy system.

Local

Responsible operations SDGs with local impact

Vattenfall contributes to the goals through its ways of working. Our responsible operations contribute locally, in the form of e.g, health and safety or internal diversity standards, or by implementing local biodiversity projects at our sites, where we operate.

Indirect

Responsible supply chain SDGs with indirect impact

Vattenfall contributes to the goals through its engagement and influence in the value chain on 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.

In 2016, we identified the six SDGs that are most relevant for Vattenfall and where we can have the most meaningful global impact. These remain valid internally, as reflected in our strategy, as well as for our stakeholders, as confirmed by our materiality analysis (see page 53 for more information). Examples of our contributions to the most relevant sub-targets of the six goals are described below:

SDG	Sub-target	Examples	Page
	**7.2** Substantially increase the share of renewable energy in the global energy mix by 2030.	Vattenfall has continued to grow and develop its clean and affordable energy pipeline that span various renewable energy sources and technologies, such as wind farms, solar parks, and battery storage. Currently, Vattenfall operates 4.5 GW of installed capacity in renewable energy.	41
	**9.4** Upgrade infrastructure and retrofit industries to make them sustainable by 2030.	The FlexConnect project launched in Riksgränsen in Northern Sweden is evaluating flexible charging solutions to alleviate local grid capacity shortages.	45
	**11.6** Reduce the adverse environmental impact of cities by 2030.	We operate 39,600 charging points and continuously partner with parking lots, supermarkets, and restaurants to enable the electrification of transport and reducing tailpipe emissions in and around cities.	37
	**12.2** Achieve the sustainable management and efficient use of natural resources by 2030. **12.5** Substantially reduce waste generation through prevention, reduction, recycling and reuse by 2030.	One of Vattenfall's focus areas in its heat business is finding opportunities to use excess heat from various third parties, such as the data centres in Motala and Fagersta in Sweden whose excess heat is fed into local district heating networks. More than 90% of residual products from our combustion plants are sold for re-use mainly to the construction industry.	43 64
	**13.1** Strengthen resilience and adaptive capacity in relation to climate-related hazards and natural disasters.	Climate risks are part of our Enterprise Risk Management (ERM). Examples of climate adaptation measures include strengthening our hydro power dams and weatherproofing our grid infrastructure against anticipated future climate risks.	87
	**17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.	Together with the Swedish Agricultural University (SLU) and the power company Jämtkraft, we are developing solutions to mitigate disruptions to downstream fish migration caused by our hydro power activities.	39

Materiality analysis

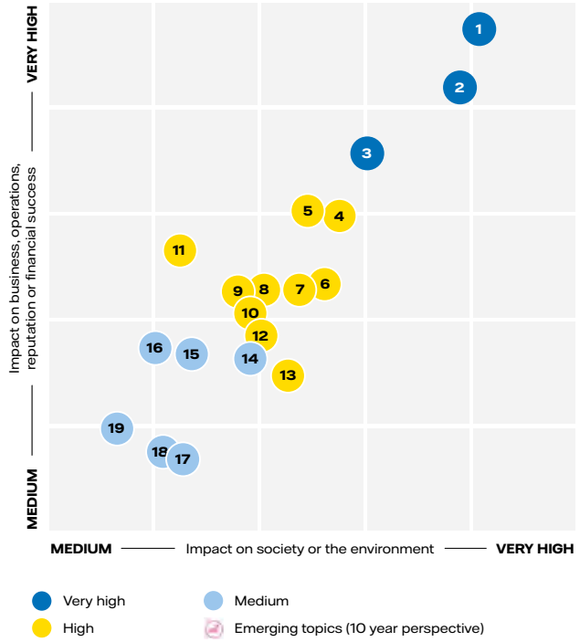
Between June and October 2022, Vattenfall engaged with over 4,100 stakeholders from our main markets as part of Vattenfall's materiality analysis.

Stakeholders were asked to grade which topics were most important to Vattenfall, both in terms of its social and environmental impact and the impact that these two factors have on the company – so-called "double materiality." The results help us shape our strategic focus areas to ensure that we meet the expectations of our stakeholders in the future.

The main takeaway of the analysis was that our strategy to enable fossil-free living within one generation remained in line with stakeholder expectations. The three most material topics of renewable energy, climate change, and affordable energy remained unchanged and were closely related to the business goals. In interviews, stakeholders also clearly expressed that the 19 material topics are increasingly intertwined and that addressing multiple topics simultaneously will yield greater results. As a state-owned company, there is an extra expectation to internalise stakeholder views and attempt to tackle more than just the top three topics

Stakeholders were also asked to identify topics that are currently scoring low in terms of materiality but that will become critical over the next 10 years (so-called "emerging topics"). The inclusion of "Other emissions" and "Biodiversity" in the list was particularly interesting, as the topics were in the top five in 2020. Based on comments from interviews, we interpret this to mean that these topics are and will continue to be important, but that the topics that have increased in materiality in 2022 represent a sense of acute urgency among stakeholders. For more information on our materiality process see page 170. The full materiality analysis report is available here.

Materiality matrix



1 Renewable energy
2 Climate change and GHG emissions
3 Affordable energy
4 Energy storage
5 Grid infrastructure
6 Health and safety
7 Sustainable supply chain
8 Partnerships for decarbonisation
9 Nuclear energy
10 Business ethics
11 Innovation
12 Resource use and circularity
13 Biodiversity
14 Water
15 Employee engagement and empowerment
16 Community engagement
17 Other emissions (non-GHGs)
18 Diversity, inclusion, and equality
19 Data privacy

Material top 3	Commitment	Page reference[1]
Renewable energy	To enable fossil-free living within one generation, Vattenfall will need to continue its investments into renewable energy. We have SEK 38 billion in net investments in renewable energy sources over the coming two years.	4-6, 17, 19-20, 22, 36, 39-42
Climate Change and GHG emissions	Some business activities contribute to climate change and others are part of the solution. In 2021, we increased our ambitions by committing to CO_2 emission-reduction targets in line with limiting global warming to 1.5 degrees after meeting our previous CO_2 emission-reduction targets ten years ahead of schedule. Vattenfall will continue to lead the transition to a fossil-free society across its value chain.	4, 6, 17, 19-20, 22, 36, 43-44, 47-48, 56-58
Affordable energy	Vattenfall aims to be a leader in levelised energy cost of renewable production. To achieve this, we will focus on innovation and integrated solutions that will enable us to reduce cost and deliver subsidy-free wind and solar projects. Simultaneously, we strive to prevent energy poverty by offering tailored solutions to customers who have difficulties paying their bills.	14-15, 17, 19-20, 37-38, 47-48, 54-55

[1] Page references for full description of impact, actions, and progress.

Engaging our stakeholders

Understanding, responding to, and being able to balance the varied views and priorities of stakeholders are important parts of Vattenfall's approach to business. By engaging with our stakeholders through continuous dialogue, we can better understand their priorities and clarify their expectations of us.

Insights from stakeholder dialogues help us find suitable solutions and make the best possible decisions to maximise positive impact. Stakeholder engagement is also crucial to demonstrate that Vattenfall operates in a fair, sustainable and measured way, and thus ensures our ability to continue enabling fossil-free living.

Our approach starts by regularly mapping our stakeholders, from the Group level all the way down to local community level, to gain an understanding of relationships across our value chain and the impacts we may have on these stakeholders. As a vertically integrated utility, we have varying levels of impact on many different stakeholders, which include, but are not limited to, our employees, customers, local communities, NGOs, suppliers, business partners, authorities, our owner, and the general public.

We engage with our stakeholders regularly, for example through our materiality analysis (see page 53), as well as on a project basis as part of the Vattenfall Project Governance Principles. The principles apply throughout the Group and are designed to ensure that the various local interests are considered, represented, and addressed in our projects. We recognise that each location and project is unique, and thus our community engagement approach is designed to be flexible to suit the situation and context, and can for example include round tables, surveys, bilateral dialogues, participation in industry and policy forums, and community meetings and workshops. We pay particular attention to seldom heard or vulnerable groups, and work to adapt our engagement accordingly by using different modes of communication.

Integrating feedback

The purpose of our stakeholder engagement is to ensure that stakeholders' voices inform our decision making and to present dialogue outcomes in a range of ways. For many of our projects, the results of our stakeholder activities and the integration of resulting feedback are presented in, among other places, statutory consultation reports and newsletters. The findings of our materiality analysis are public and confirm that our strategy is in line with our stakeholders' expectations. In certain cases, stakeholders' prioritisations diverge from ours, in which case we endeavour to balance the conflicting priorities.

Challenges and planned activities

Handling our stakeholders' disparate expectations can be challenging and Vattenfall therefore constantly strives to be as transparent as possible in regards to our practices and commitments. Moreover, we plan to place a heightened focus on enhancing our stakeholder engagement practices in 2023, while continuing to align our work with the UN Guiding Principles on business and human rights and OECD guidelines for multinational enterprises.

Stakeholder engagement in practice

Involving community members

With the ambition to build projects and provide solutions that create lasting shared value and respond to community needs, we engage community members such as land owners, neighbours, local organisations, representatives of local communities and their immediate environment, through various consultation processes. In addition to engaging communities regarding the impact of our operations, in some of our locations we also collaborate with communities by offering co-ownership of our assets or providing local community benefit funds.

Norfolk Zone Community Benefit Fund – United Kingdom

The Norfolk Offshore Wind Zone, subject to the final investment decision, has allocated GBP 15 million over 25 years, of community funding. This is one of the largest, long-term funding commitments to Norfolk by an offshore wind company to date.

The fund aims to empower communities to explore their interests and needs, and deliver on their development ambitions in climate-smarter ways. In 2022, we carried out six workshops in Norfolk along our proposed cable corridor to co-create the fund's broad parameters and listen to locally appropriate climate-smart ideas proposed by residents and local groups. We now have some clear themes to explore, including community hubs and facilities, transport and connectivity, supporting green skills and jobs, developing community managed gardens, allotments, and natural spaces, as well as climate adaptation topics. These themes will be considered in more detail supported by expert advisors. Simultaneously, we will establish the governance of the fund and recruit a local decision-making panel to select projects for funding, which will open for applications in 2024.

Norfolk Zone Community Benefit Fund

Boosting employment opportunities and sourcing locally

At Vattenfall, we actively work to engage local workforce and suppliers in our projects. This is done through a number of different activities, such as facilitating workshops, meetings and other networking events where suppliers get the chance to meet Vattenfall, our partners, and each other, to identify opportunities for collaboration. We also engage with suppliers indirectly via trade and industry associations.

Blakliden Fäbodberget Onshore Windfarm – Sweden

In 2022, Vattenfall commissioned its largest onshore wind farm Blakliden Fäbodberget. The wind farm is a collaboration with Vestas and AIP Management, where Vattenfall is a 30% owner. Throughout the project, we have strived to create local and regional benefits to the greatest extent possible.

For example, we used a business platform created by Vindkraftcentrum and Umeå University, where local and regional suppliers and sub-contractors could promote and match their availability with us and our contractors. In collaboration with Garantia, we allocated funding to a micro-fund where small businesses and start-ups in the region could apply for loans ranging from SEK 50,000 to 300,000.

A report by Vindkraftcentrum showed that 300 out of the 390 yearly jobs created during the construction phase were regional, and out of the 300 suppliers contributing to the project, 167 were regional. During the operational phase, Vestas will manage the turbines with the plan to source most of their resources regionally. Also, maintenance and snow removal for the newly constructed roads within the wind farm will be performed by a local contractor.

Blakliden and Fäbodberget

Supporting consumers

In light of the continued urgency for climate action and historic increases in energy prices, our role in providing access to clean and affordable energy is more crucial than ever. We are committed to enabling our customers to decarbonise and to prevent energy poverty. Besides continued investments in renewables, we provide innovative solutions, such as the Vattenfall Naturate App to calculate and lower CO_2 emissions of consumers in our German market. To support vulnerable customers, we provide flexible payment plans and collaborate with municipalities, governments and other stakeholders to prevent negative impacts such as excessive debt burdens and deteriorating quality of life (see page 14).

The FIXbrigade – Netherlands

In the Netherlands, Vattenfall has become a proud contributor to the FIXbrigade initiative. Through funding from its partners, FIXbrigade provides free-of-charge skilled technicians who provide energy savings measures for low-income households in the Amsterdam region. These measures might include minor insulation improvements, adjustments to central heating or infrared scans to identify areas of heat leakages in homes. The purpose of such improvements is to enable consumers to consume less and thus reduce their energy costs. Typical savings range from EUR 300–1,200 annually.

Vattenfall supports FIXbrigade by providing both funding and staffing, where we share our expertise and have brought along additional stakeholders from our network to further enhance the scale of positive impact. By collaborating with additional municipalities and local organisations, FIXBrigade's ambition is to expand its reach and to support even more households across the Netherlands.

FIXbrigade

Reducing our emissions

Vattenfall is committed to reducing our climate impact with a target of reaching net zero across our full value chain by 2040. We have therefore established targets that are linked to our own operations as well as our suppliers and customers. We assess our activities from a life-cycle perspective and are committed to being transparent about our strategy to phase out fossil fuels and capture climate-related business opportunities.

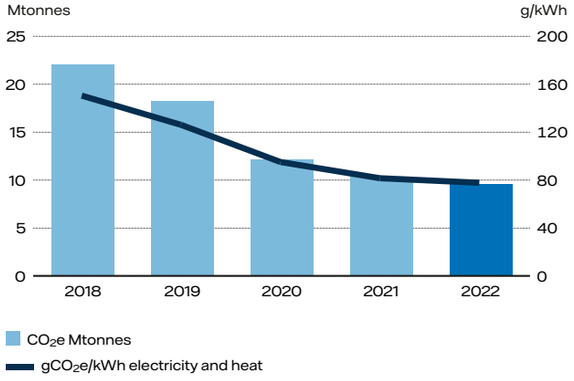
Progress since our start in 2017

A lot of progress has been made in the past five years, as our emissions intensity has declined from 153 to 78 g/kWh. This has been primarily driven by the phase-out of coal. Phasing out fossil fuels is critical but phasing in renewable electricity production from fossil-free sources like wind and solar is equally important to ensure we meet society's growing demand for electricity. To that end, we have expanded wind and solar capacity by 1,335 MW since 2017, which brings our total installed capacity to 3,840 MW and increases our production from these sources by 4.6 TWh. In addition, 580 MW wind and solar has been divested partly or entirely during the period and the production is reported by others.

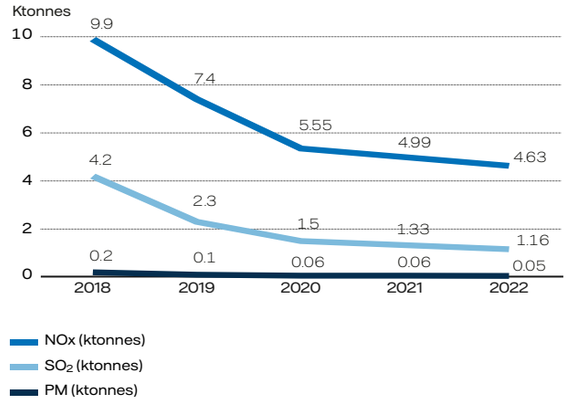
In addition to CO_2 and residual products, we are especially focused on reducing emissions of sulphur dioxide (SO_2), nitrogen oxides (NOX), and particulate matter (PM) resulting from combustion in power plants. As we continue to reduce our fossil-based production, these emissions also continue to decrease, see graph below.

Vattenfall supports the Task Force on Climate-related Financial Disclosures (TCFD) and its recommendations. For more details on how we manage climate change-related risks, see Risk Management on pages 87–88.

Vattenfall Scope 1 + 2 CO_2e absolute emissions and intensity



Nitrogen oxide (NO_X), sulphur dioxide (SO_2) and particulate matter (PM)



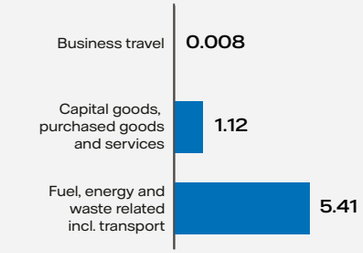
Emissions along the value chain

Suppliers

Mtonnes CO_2e

Other indirect emissons

Scope 3



Targets 2030

Business travel
Remain under 50% of 2019 emissions

Our suppliers' emissions[1]
Scope 3: Capital goods, purchased goods and services : 50% reduction in emission intensity by 2030

Suppliers

Our target is to reduce the impacts associated with our climate footprint beyond our operational boundaries. (45% reduction of upstream emissions in 2022 compared to 2017) The main emission drivers in Vattenfall's supply chain are emissions of traded electricity; extraction and production of fuels that we use in our operations; and raw materials such as concrete, steel and other metals that are used mainly for the construction or maintenance of our assets. Vattenfall works towards its 50% reduction target together with suppliers to make climate-smart decisions in the procurement process. As a member of the First Movers Coalition, we are committed to increasing the share of emerging technologies critical to the net-zero transition in our procurement.

Additionally, we have conducted a number of large projects to investigate the potential for reducing supply chain emissions, e.g., for the construction process of wind farms, or by using concrete with less cement at our hydro power operations. We apply different approaches to reducing emissions, including reusing and recycling materials, exchanging material to more energy efficient alternatives, and applying breakthrough technologies.

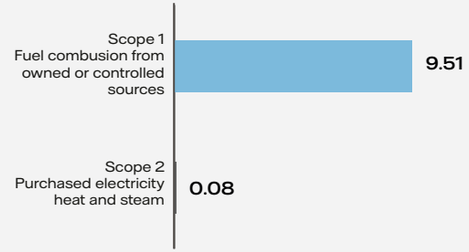
We compensate all our business travel emissions through CO_2 certificates in the UN's Clean Development Mechanism system.

Vattenfall Operations

Mtonnes CO_2e

Direct and indirect emissions

Scope 1 Scope 2



Targets 2030

Own emissions[1]
Scope, 1 and 2: 77% reduction in emissions intensity by 2030 (153 gCO_2e/kWh to 35 gCO_2e/kWh)

SCIENCE BASED TARGETS

Vattenfall operations

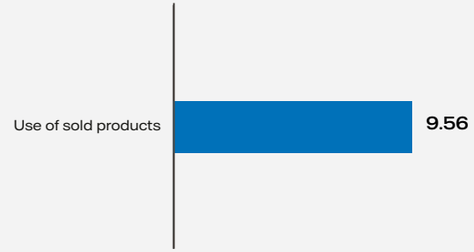
In 2022, our total Scope 1 and Scope 2 emissions' intensity continued to decrease progressively, declining to 77.7 gCO_2e/kWh in 2022 from 81.5 in 2021 and we are currently on track in reaching our 1.5° SBTi target. The reduction in our operational emissions is primarily due to a reduction in fossil-based production following high fuel prices and reduced consumption. Our CO_2 intensity remained below our 2025 target of 86 gCO_2e/kWh, as we continue to grow in renewables and transition away from fossil fuels.

Customers

Mtonnes CO_2e

Other direct emissions

Scope 3



Targets

Our customers emissions[1]
Scope 3: use of sold products 33% reduction in absolute emissions (14 Mt to 9.6 Mt)

SCIENCE BASED TARGETS

Net zero by 2040
~95% reduction in absolute emissions across the full value chain

Customers

Our customer emissions (so called "use of sold products") include only the emissions from the use of fossil fuels. For Vattenfall, this is mostly natural gas sold toprivate or business customers for heating. We offer biogas in the Netherlands and have developed innovative and affordable heating solutions to replace gas boilers. In 2022, we have reduced emissions resulting from use of sold products and have almost reached our SBTi target of 33% absolute reduction already by the end of 2022. This decrease from 2021 was mainly due to the reduction in the amount of gas sold during 2022.

[1] The base year for the science-based targets is 2017. For further details on Scope 1, 2, and 3 emissions data, please see page 183.

The coming decade and beyond

Looking forward, reducing climate impact will continue to be our top priority and we continue to focus on phasing out coal completely from our operations by 2030. We are exploring solutions to reduce emissions by partnering with stakeholders across the value chain, e.g., to reduce the climate impact the production and transportation of key components like steel, and explore new solutions for energy storage to integrate more renewable energy into the system.

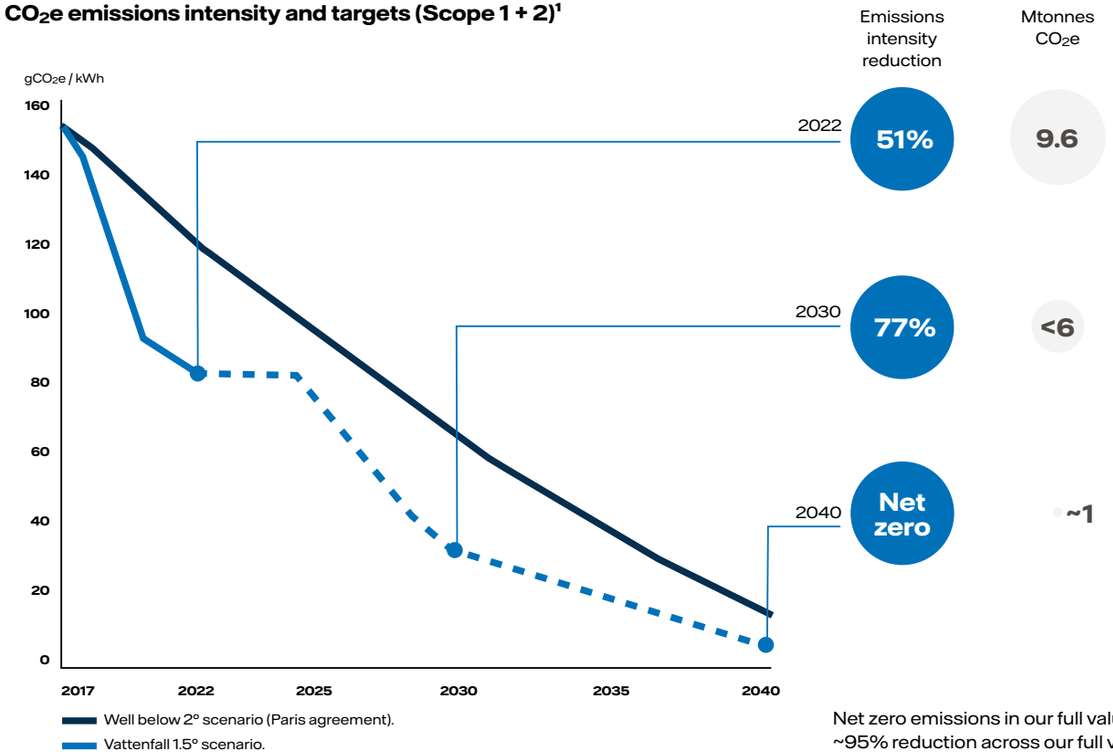
Germany
We have two remaining coal-fired assets in our district heating operations in Berlin: the Moabit and Reuter West plants. Generating heat from hard coal will be phased out at the CHP plant Moabit in the early second half of the 20s and at Reuter West in the late-20s and will be replaced by a likely combination of biomass, waste heat from the Berlin-owned waste incineration operations, hydrogen-ready natural gas, power-to-heat, large heat pumps, and heat storage.

Netherlands
In the Netherlands, we continue to work with local stakeholders on mutually agreeable solutions to accelerate our phase-out of natural gas. As in Berlin, all options are being investigated, including biomass, geothermal, power-to-heat, integration of waste heat, and heat pumps.

Sweden
In Sweden, we are developing a carbon capture, storage, and utilisation solution for our biomass and waste incineration plant in Uppsala.

Cross-market opportunities
In all our markets we are exploring opportunities to integrate excess industrial heat into our district heating networks, for example through collaboration with new data centres to utilise the excess heat produced. Cumulatively, these initiatives should reduce Vattenfalls CO_2e emissions from 9.5 million tonnes in 2022 to under 6 million tonnes in 2030. See page 43, Heat Operating segment section for more details on specific projects in the reporting year.

CO_2e emissions intensity and targets (Scope 1 + 2)[1]



[1] Trajectory as of 31-12-2022, incl. Eemshaven power plant which was divested in Q1 2023. To be updated with SBTi in 2023.

Net zero emissions in our full value chain ~95% reduction across our full value chain. All remaining emissions will be neutralised through negative emissions.

Environmental Governance

To deliver on our ambitions and face the most critical environmental challenges, we must have a solid foundation for environmental management in daily operations. This also ensures that we are compliant to regulations and can avoid any foreseeable environemental impacts.

The environmental management system is part of Vattenfall's corporate management system (see page 99 for more). Our environmental activities are governed by our environmental policy and operational instructions, which describe environmental governance and management principles. Certification is important in ensuring credible environmental performance and practice, gaining authorities' trust, and meeting customer requirements. Vattenfall's transparency with respect to environmental governance and activities is also assessed by independent research and ratings companies (see page 184).

To protect the environment and reduce our environmental impact, we place special emphasis on assessing the environmental risks associated with our operations, including climate change. Another critical component in our environmental management efforts involves monitoring relevant changes to environmental legislation to act quickly to ensure compliance with new legislation.

Our Environmental Action Plan (EAP) towards 2030 charts our course across three focus areas: reduce climate impact, protect nature and biodiversity, and sustainable use of resources. In the EAP, we define our future ambition and targets, follow up annually in the Environmental Management Review and with Vattenfall's CEO. More information and follow-up actions on specific targets can be found in the respective sections below.

Lifecycle assessments and Environmental Product Declarations

In 2022, Vattenfall has published updated versions of our Environmental Product Declaration (EPD) for electricity from both wind and nuclear power. Notably, we can see that our newer wind farms have a lower carbon footprint per kWh owing to more efficient turbines and longer life expectancy. For nuclear power, we see stable low emissions.

The life cycle data used for the EPDs have proven beneficial to form a relevant foundation for our work with sustainable supply chains and the First Movers Coalition. We are exploring the data further to support our decision-making (read more on page 60).

In addition to wind and nuclear power, Vattenfall publishes an EPD for electricity from Nordic hydro power, last updated in 2021. Declarations are based on lifecycle assessments, follow set rules for electricity as a product, are reviewed by independent verifiers, and are approved by a third party. EPD calculations correspond to 80% of our total electricity generation.

Electricity and heat production from certified facilities (according to ISO 14001 or EMAS)

	2022	2021	2020
Heat	99.1	99.1	99.2
Electricity	99.9	99.9	99.9

Biodiversity

We are experiencing a rapid decline in species diversity largely caused by human activities. The main driver of biodiversity loss is the change in land use – how land and sea are exploited. Climate change and pollution also impact biodiversity. Vattenfall is working to reduce the footprint linked to our operations and remains committed to protecting nature and biodiversity and the sustainable use of resources.

We acknowledge that everything is interlinked. Protecting and restoring biodiversity and ecosystems strengthen our resilience and society's ability to mitigate and adapt to climate change. Moreover, by using resources in more sustainable and circular ways, we reduce the stress on nature and limit the overexploitation of resources.

We have undertaken to have a strategy in place that has a net positive impact on nature by 2023. We are committed to reducing impacts and contributing positively by implementing biodiversity-enhancing measures. This means we will be exceeding the "no-net-loss" principle and implement measures to strengthen it (see pages 61 and 80 for examples). We assess our biodiversity impacts across our entire value chain and have integrated these assessments into our business processes. Biodiversity issues are also evaluated when conducting due diligence for acquisition processes (including for divestments). When assessing biodiversity impacts from new projects, we always strive to follow the mitigation hierarchy, which means that our first step is to avoid and minimise impacts. Then, sometimes restauration of ecological functions is included and finally, compensatory measures are often considered in discussions with authorities and other stakeholders for impacts that cannot be entirely avoided or mitigated.

Our overarching ambition of being a Net Positive Impact company sets the direction for our biodiversity work. Some underlying targets have been defined that contribute to biodiversity enhancement within the areas of renewable energy generation, heat production, office premises and R&D.

Activities in 2022

- We have finalised a pilot project to assess and quantify the biodiversity impacts of our economic activities across our value chain. Our work has been aligned with the Science-Based Target for Nature (SBTN) framework, and the results have enabled us to prioritise relevant sites and value chains for future target setting.
- We continue to show progress on our biodiversity targets that are steered and monitored through our group Environmental Action Plan:
  - We have proposed biodiversity measures for the power line corridors in our electricity distribution network and discussed further on page 61.
  - Our office premises have continued the implementation of biodiversity-enhancing measures for five pilot sites chosen in 2021. For example, in Trollhättan, we tested the veteranisation of trees, a nature conservation method to create old tree structures in younger trees to mimic woodpecker holes and deadwood habitats that favour red-listed species. Read more on page 75.
  - In Berlin, we have initiated the creation of so-called "tiny forests." These small condensed urban forest areas are created to provide habitat for plants and animals as well as to contribute to carbon sequestration. Furthermore, old trees from other sites are trimmed to create stacks of dead wood that will provide shelter and habitats for animals and other organisms. The Environmental Foundation in Germany, see page 61, has also promoted the tiny forest concept, where trees have been planted in a designated urban area in Berlin.
  - We are constructing a pilot project called Symbizon in the Netherlands. This multi-use project combines PV electricity generation with agricultural activities. Since land use is one of the strongest drivers for biodiversity loss, all activities that can combine fossil-free electricity generation with other activities are optimal.
  - In the Pen Y Cymoedd wind farm, we are three years into the Habitat Management Plan – a project funded by Vattenfall and delivered by Natural Resources Wales – to restore 1,500 hectares of bog across the wind farm's area. The project is one of the largest peat land restorations in the UK, and the work will continue for many years.
  - In Hydro, we are looking into nature-enhancing activities at sites. For example, in 2022, a spruce forest near our fish farm outside Boden was restored to fields and meadows. In addition, we collaborated with a local beekeeper and engaged with a sheep farmer to let his sheep maintain the area around the dam.
- During the year, we have also engaged in multi-stakeholder initiatives like the Taskforce on Nature-related Financial Disclosures (TNFD), where we have been a part of the Observer Group, and Business@Biodiversity Sweden, where Vattenfall is one of the founding members.

Challenges and planned activities

The three pillars in our biodiversity strategy – implement, measure and build knowledge through biodiversity R&D – continue to be central to our future activities. Implementing biodiversity measures is a stepwise process achieved through consistent long-term work.

- Environmental adaptation of hydro power will remain in high on Vattenfall's agenda and serve as a potential area for innovation.
- For our wind power operations, avoiding and mitigating impacts are fundamental to building new assets. Therefore, we will continue to increase evidence-based knowledge and develop new solutions that work locally at our sites.
- In Berlin, our focus for the next year will be on the greenery of roofs, walls or other infrastructure, which has been conceptualised during this year.
- In our offices, the implementation of biodiversity measures at the pilot sites will continue. In addition, our Nordic real estate portfolio will start developing an implementation plan for more locations (see page 75 for more information).

In 2023, we will continue our efforts to develop methodologies to measure losses and gains at both the project and group levels. We aim to improve and expand our target setting to effectively measure our impact on biodiversity. In addition, our goal is to improve how we work with our suppliers to address biodiversity impacts in the supply chain. We intend to do this based on the assessment conducted according to the Global Biodiversity Score (see page 79).

Partnering to shape the path forward

Vattenfall is participating in several partnerships and coalitions to develop new methods to measure biodiversity. To complement tools like the Global Biodiversity Score that are good for group-level screening, we are also engaged in the development of metrics that are designed to be applied at the local level to evaluate specific projects. In Sweden, Vattenfall is working with a business consortium[1] to develop the first Swedish Biodiversity KPI model for sustainable land use. This model which goes by the name CLImB (Changing Land-use Impact on Biodiversity), is a practical, transparent, and comparable tool used to value nature in the Nordic countries and has been developed together with an expert group of researchers and a reference group of about 30 organisations. The model will be launched in July 2023[2].

Environmental foundation in Germany

The environmental foundation is an independent non-profit association under German civil law established in 1994 by the Hamburgische Electricitäts-Werke. Vattenfall provides administrative support to the foundation, and all proceeds from the foundation's capital are used to fund environmental projects.

In 2022, the water laboratory at the Jugendschule Strausberg was realised as one of six projects. The water laboratory aims to determine the water quality in the Strausberg water protection area located on the grounds of the youth school. During the school year, water quality is monitored and documented, and measures are taken to recreate nature near the water course as needed.

Power line corridors and stations (Distribution, Sweden)

We have identified biodiversity hot spots along our power line corridors and have developed, and in some cases implemented, special management plans for those areas. The next step is to undertake similar activities for transformer stations in the power grid. The objective of these interventions is to implement biodiversity-enhancing measures focusing on pollinators while reducing maintenance costs.

In 2022, a geographic analysis of 50 stations was conducted. Six were selected as having high potential for site inventories based on existing or nature conservation potentialthe station area's character, and the neighbouring area's natural attributes. Proposals for biodiversity-enhancing measures have been drawn up for the sites, such as favouring meadow plants or leaving certain areas untouched to maximise their contribution as food for pollinators. The target is to implement measures on six sites in 2023.

[1] The consortium is consisting of Boliden, Cementa, LKAB, Skellefteå kraft, Specialfastigheter, Svemin, Svenska kraftnät, Swedish Mining Innovation, Skanska, Talga and Ecogain (responsible executor and project coordinator). The project has been funded by Vinnova and Swedish Mining Innovation.

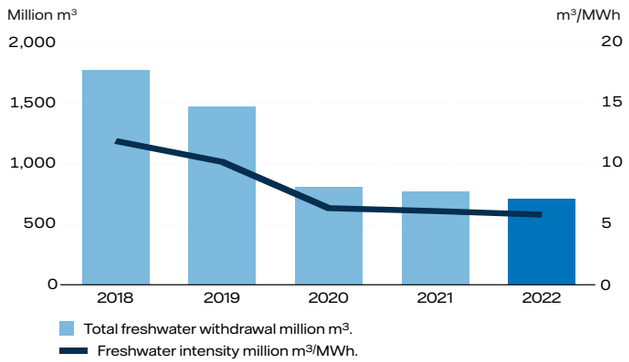
[2] The model has been inspired by the UK "Biodiversity metric" developed by Department for Environment, Food & Rural Affairs (DEFRA) and Natural England.

Water

Water is a key resource for Vattenfall and it is an integral part of the environment surrounding us. It drives our hydro power operations and acts as cooling water in our nuclear and thermal power plants. One of our targets is to establish and follow through on sustainable management of water resources. This means, among other things, working to improve the efficiency of water use, minimising impacts on aquatic ecosystems, improving water quality, and regulating hydro power dams to balance low flows and reduce flooding risks.

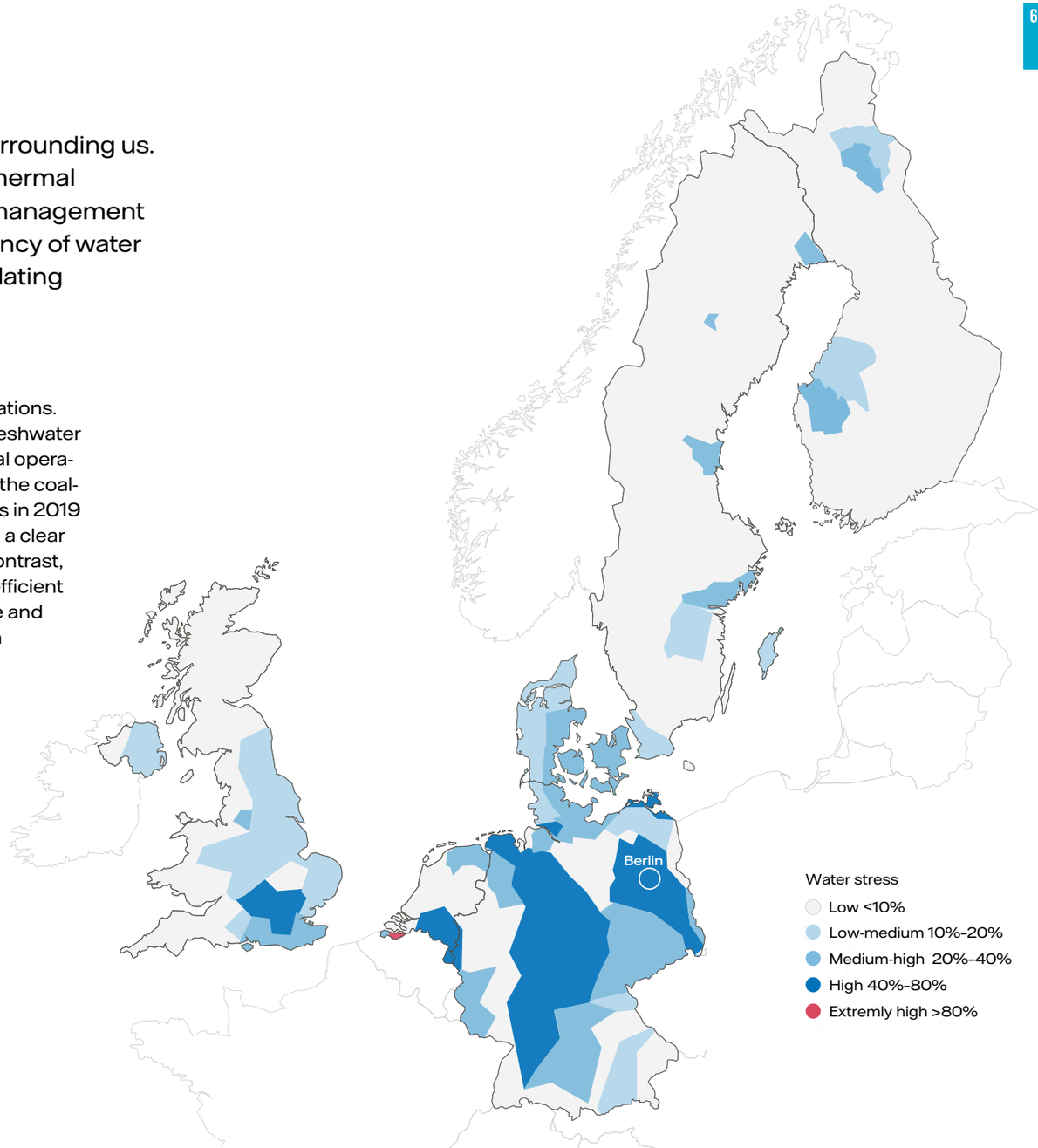
Activities in 2022
Vattenfall used 711 million m³ of freshwater in 2022, most of which was used for cooling. Total freshwater withdrawal and the water intensity (defined as freshwater withdrawal divided by total electricity and heat production) have continuously decreased over the past five years. From 11.9 in 2018 to 5.8 m³/MWh in 2022, or a decrease of 51%. The transition of Vattenfall's portfolio to align with the 1.5-degree climate target, related involves a switch in fuels and upgrades to power plants, which contribute to reduced water requirements for thermal operations. The graph "Total freshwater withdrawal and freshwater intensity," illustrates how a reduction in thermal operations affects water intensity. The shutdown of the coal-fired power plants Hemweg in the Netherlands in 2019 and Moorburg in Germany in 2020 resulted in a clear reduction compared with previous years. In contrast, the commissioning of the more modern and efficient combined heat and power plants, Lichterfelde and Marzahn in 2019 and 2020 did not result in an increase in water intensity.

Total freshwater withdrawal and freshwater intensity



60%

Decrease since 2018
in absolute use of freshwater

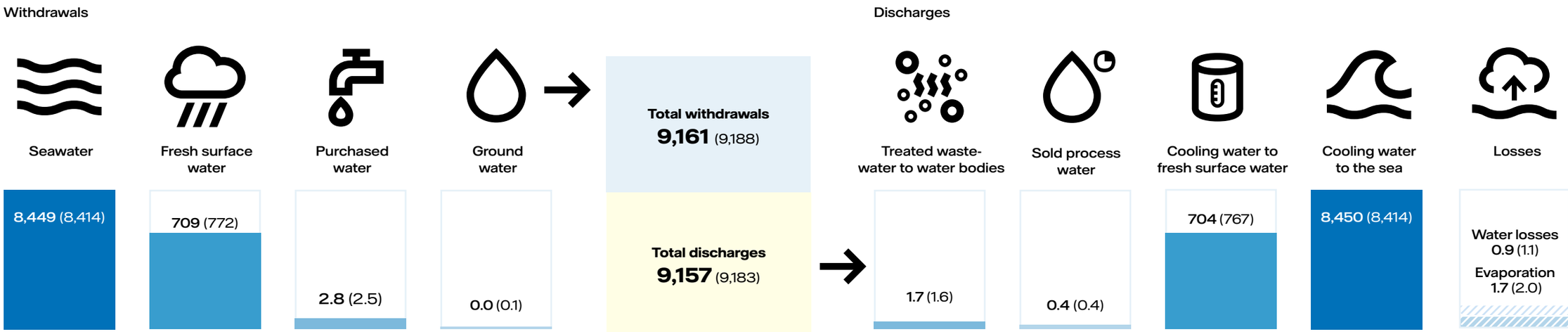


Challenges and planned activities
More than a third Vattenfall's total electricity generation comes from hydro power. Hydro power operations affect the landscape, water flows, and natural habitats in the area surrounding dams. Vattenfall works to reduce impacts and strengthen local biodiversity through measures such as habitat enhancement, research to enable fish migration with limited production losses, and initiatives to lower the risks of erosion and sedimentation. Thermal power plants rely on water for cooling, and Vattenfall's nuclear and heat plants mainly use "once-through" cooling systems at locations where large volumes of water, like river or seawater, are available. After use, cooling water is returned to the water bodies in a chemically unaltered state but warmer. If the cooling water source is too warm, the water cannot be used for cooling, and the plant's output must be reduced or temporarily shut down. The threshold temperature depends on the technical characteristics of the plant and permit-imposed conditions to protect downstream aquatic ecosystems. Alternative solutions, such as cooling towers with closed cooling cycles, are used for some plants to reduce water use.

Northeastern Germany, where Vattenfall owns and operates several heat and CHP plants, is classified as an area under high water stress. Vattenfall's plants in this region use and discharge approximately 210 million m^3 of freshwater, equivalent to 30% of Vattenfall's total freshwater use. Vattenfall works to reduce water use and limit impacts on aquatic ecosystems. For example, conducting aerial thermographic surveys to detect water leaks and measures to reduce pressure on the stormwater system in situations with heavy rain. An in-depth analysis of the water balance of the Berlin plants and the city's district heating network has been conducted to update water measurement methodologies and identify areas for improvement. We are also developing a KPI to track our progress in reducing freshwater use.

In the near future, we aim to further investigate and understand water issues from a value chain perspective by focusing on risks and opportunities related to water use amongst our suppliers.

Total withdrawals and discharges of water[1], million m^3

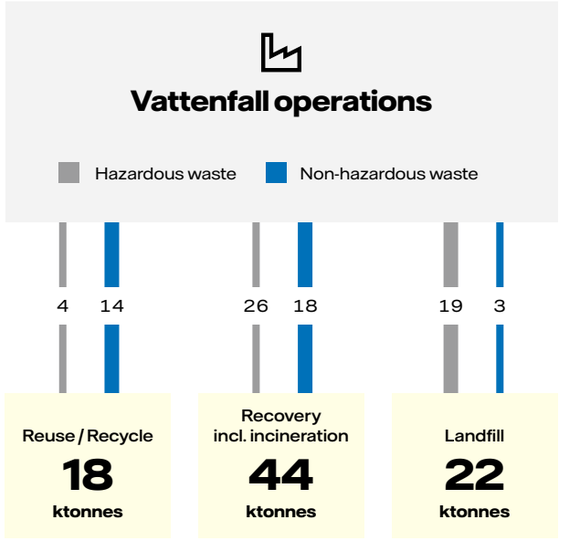


[1] Water consumption (Total withdrawals - Total discharges) equals to 4 million m^3.

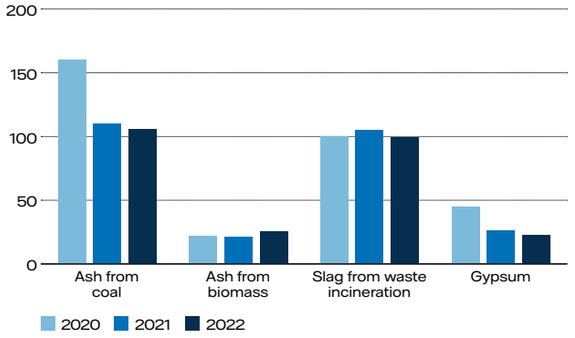
Waste and circularity

Waste is generated during the operation and maintenance of power plants, power grids and district heating networks, and when constructing and dismantling this energy and heat infrastructure. Vattenfall is continuously working to make resources use more efficient, preserve resources, and avoid waste.

Waste generated in operations[1]



Residues and by-products (ktonnes)



Ktonnes	Ash from coal sold/landfill	Ash from biomass sold/landfill	Slag from waste inciner. sold/landfill	Gypsum sold/landfill
2022	94/13	18/7	99/0	20/3
2021	110/0	20/0	105/0	26/0
2020	160/0	19/2	100/0	44/2

[1] Residues and by-products generated at combustion plants, see seperate graph. Construction and demolition waste are not included in this data.

We set targets to promote waste reduction and to increase reuse and recycling. Where waste is unavoidable, we work in accordance with the waste hierarchy: promoting reuse is the first priority, followed by recycling, and then energy recovery. Disposal is considered a last-resort option. Waste is identified, classified, and managed within the framework of applicable national laws. Where waste is managed by third party, they must follow our Code of Conduct for Suppliers and Partners. Sample checks on transport documents are conducted in audits.

Vattenfall has a number of commitments in relation to waste, such as the imposing an immediate landfill ban on decommissioned blades from Vattenfall's wind farms and setting a target to achieve a recycling rate of wind turbine blades of 50% by 2025, and 100% by 2030. For more details and milestones, see page 42. Our Real Estate & Facility Management strategy includes activities to minimize waste and focus on reusing materials in the offices. Read more on page 75.

Activities in 2022

At the local level, various activities are conducted to prevent and reduce waste and to optimise reuse and recycling rates as much as possible. In combustion plants, residual products such as ash, slag, and gypsum result from the production process. More than 90% of residual products are sold, primarily to the construction industry for reuse as secondary raw materials in cement, concrete, or asphalt production. In our waste-to-energy operations, we work to ensure that valuable resources remain in use. Ashes, for example, are processed by our partners to separate out metals for recycling.

Vattenfall operates nuclear power plants in Sweden and as operators we are responsible for ensuring the safe management and disposal of nuclear waste. All of Vattenfall's facilities that handle radioactive waste have strict operating guidelines and procedures for management and disposal. High-level, long-life radioactive waste, consisting primarily of spent nuclear fuel and core components, must be carefully shielded during handling and transportation. When stored, the waste is encapsulated to prevent radioactive contamination. The storage type and location depend on the radioactivity level of the waste. The entire waste-handling process is strictly regulated and monitored. At Vattenfall's nuclear power plants, all employees with access to radiologically controlled areas complete training in radiation protection.

In Sweden and Germany, nuclear power plants are being decommissioned. In 2022, the Swedish government issued a permit for a final repository for spent nuclear fuel at Forsmark nuclear power plant on the Swedish east coast. A facility near Oskarshamn nuclear power plant in southern Sweden will also be built, where the spent fuel will be encapsulated in copper and modular cast iron. Construction will start in the mid-2020s and take approximately ten years, and financing is already available through the Swedish Nuclear Waste Fund.

Vattenfall is investing heavily in renewable energy, and in the coming years a growing number of assets will reach their end-of-life. Ensuring a sustainable life cycle and practices are a key focus for Vattenfall and the industry as a whole. For wind turbines, 85–90% of the total mass of a turbine, including the foundation, tower, and nacelle components, have established recycling practices. However, recycling the composite material of the blades is more challenging.

Challenges and planned activities
To achieve these targets, Vattenfall is supporting research into material recycling of composite waste and collaborating with partners and industry actors to find new solutions for recycling and reuse.

Sustainable sourcing of resources is an important factor in reducing CO_2 emissions in the value chain and meeting future resource challenges. Hence, we work to ensure a balance between quality and the required quantity of resources. Finally, Vattenfall continues to recycle decommissioned assets to the greatest extent possible and investigate life cycle extension measures.

Stricter regulations have prompted us to sharpen our focus on chemicals and hazardous substance and the challenge of locating better alternatives. For that, we will need to collaborate with our suppliers and investigate potential procurement requirements against hazardous substances in products.

From ashes to metals

The combustion of waste to produce district heating generates residual gases and ash. The ash that remains after waste incineration contains a higher proportion of valuable metals than any rock in Sweden. Ash transported on flue gases is called fly ash, and what remains on the bottom is called slag. In the Uppsala waste incineration plant, about 60,000 tonnes of slag are handled from the combustion process annually. The current technology recovers eight to ten per cent of the metals from the slag, which in Uppsala means over 5,000 tonnes per year. Rising metal prices have made sorting increasingly profitable. Metals just under a millimetre and larger can be captured. In addition to aluminium, iron, gold, silver, zinc, and copper, rare metals important to electronics and batteries can be reclaimed. Vattenfall collaborates with other companies to evaluate which methods work best in practice and to drive development among our suppliers. The ambition is to minimise final waste to the greatest extent possible.

Hazardous substances

Chemicals are used in many of our daily operations. To reduce the risk of harmful effects on individual's health and the environment, Vattenfall is constantly working to eliminate or replace hazardous substances and urges suppliers to do the same. By 2025, where technologically feasible we will phase out all hazardous substances on the REACH Candidate list.

To better understand how our business areas work to substitute hazardous substances, we have collected and documented findings and strategies in phase-out plans. With these plans, we can effectively tackle common challenges across business areas and countries. As the environment is put higher on both the world's and the EU's agenda the legislation around hazardous substances is getting more attention both from an environmental and health perspective.

Human rights

Enabling fossil-free living within one generation requires a transition where the human perspective is incooperated. We are committed to respecting internationally recognised human rights and basing our work on the UN Global Compact, ILO Declaration on Fundamental Principles and Rights at Work, the OECD's guidelines for Multinational Enterprises, and the UN's Guiding Principles for Business and Human Rights.

Our approach

Based on this commitment, Vattenfall has multiple policies and measures to identify, prevent and mitigate human rights risk throughout our full value chain:

- Our Human Rights Policy outlines the values, standards and practices that Vattenfall promotes and it clearly defines our stance on the importance of human rights, as well as how our commitments are embedded into our activities and business relationships.
- Our Human Rights Action Plan outlines our future work to enhance our ability to mitigate and address our most salient human rights risks.
- Vattenfall's Code of Conduct and Integrity defines how we are to act with integrity within the company when doing business.
- Our Code of Conduct for Suppliers and Partners defines the company's basic requirements for and expectations of our suppliers concerning sustainability, including human rights.
- Vattenfall's statement on slavery and human trafficking describes the measures we take to identify and combat slavery and human trafficking throughout our value chain.
- Our statement on responsibility towards indigenous peoples defines Vattenfall's best practice in areas where indigenous peoples live and work in Sweden.
- A whistleblowing function is in place to anonymously report any human rights violations (or other irregularities). It is open to employees, consultants, contractors, suppliers and other stakeholders and available in 11 languages, 24/7, 365 days a year. The website is run by an external third party.
- Vattenfall's due diligence processes are designed to identify and assess human rights, environmental and business ethics related risks and impacts across our value chain.

Managing our human rights risk and impacts

Our human rights due diligence processes typically include: risk assessments to identify and assess potential or actual adverse impacts in our value chain; identification and implementation of actions to cease, prevent, or mitigate these; monitoring and tracking implementation and results; and communication on how impacts have been, or will be, addressed. These processes occur regularly as we engage in new projects, investments, and business relationships, and also on an annual basis where we identify and assess risks stemming from material changes to our product and service portfolio, geographies, and supply chain (see also page 69).

In addition to our internal processes, we also engage third-party experts every three-to-five years to conduct assessments of human rights risks throughout our value chain. Vattenfall's most recent major assessment (2021) identified several salient risks, including community engagement, livelihoods, and cultural heritage; environmental impacts; grievance mechanisms and access to remedy; indigenous people; just transition and responsible decommissioning; occupational health, safety and security; sourcing from conflict-afflicted or high-risk areas; and supplier and contractor labour conditions. Although we believe that all human rights risks must be addressed, we place a heightened focus on our most salient risks, and they set the foundation of our work moving forward.

Human rights activities in 2022

Improving due diligence	• Introduced a new due diligence process for suppliers and partners that added additional parameters to our screening process, see page 69. • For key counterparties and relationships, we supplemented the new due diligence tool with additional environmental, social, and governance criteria, with the aim of starting dialogues to drive collective improvements. • Initiated an internal just transition working group to strengthen our approach to managing impacts from our transition to becoming a fossil-free company. • Formed a special task force with the objective of following the developments in Ukraine, which included assessing risks related to securing our energy production, distribution, and IT security, and assessing our supply chain to ensure that we follow the sanctions imposed on Russia.
Reviewing governance processes and policies	• Updated our Human Rights Policy to further align with UNGP and OECD standards by including additional commitments that focus on our most salient risks as well as details related to our due diligence processes, and the policy updating process. • In accordance with Vattenfall's support for existing and upcoming human rights due diligence legislation, we have formed multiple cross-functional working groups to ensure that Vattenfall fulfils the spirit of the laws and goes beyond minimum requirements by contributing to positive impacts. • Reviewed and updated our previous action plan (11 Steps to 2022) to define our future ambitions until 2025.
Building capacity and competence	• Added a human rights training to the onboarding webpage available to all new hires. • Updated our website to include a description of our most salient risks. • Conducted a live webinar available to all employees regarding our latest human rights assessment and findings. • Conducted multiple meetings and workshops with stakeholders from Vattenfall's different business areas to share and validate the findings of our most recent human rights assessment, and to decide on appropriate actions to enhance our ability to identify and manage our salient risks.
Collaborating with relevant stakeholders	• Continued participation in several forums for best practice regarding corporate responsibility for human rights, such as: the BSR Just Transition Network; the Swedish Network on Business & Human Rights; CSR Sweden; WindEurope; Solar Power Europe; Holland Solar; Better Coal; and the Netherlands Energy Poverty Network.

Challenges and planned activities for human rights

As Vattenfall operates in many different markets and business areas, we acknowledge that our risks may vary depending on the context of our activities. Therefore, it is crucial for us to ensure that appropriate measures are in place throughout the whole organisation and that all employees are well-informed about how to identify and manage our risks. To achieve this, we have created an internal human rights action plan targeting our various business areas, which we will continue to implement in 2023. Moreover, our future focus areas are outlined in our Human Rights Action Plan, available on our website. We also plan to adjust our human rights reporting to capture our progress on each salient risk, and we will continue to align our practices in accordance with the UNGPs, OECD guidelines for multinational enterprises, and any relevant upcoming legislation.

Setting our 2025 ambitions

At Vattenfall, we are committed to continuously improving our ability to manage our human rights risks. We also aim to track and transparently report on our performance and progress on this commitment. As part of this ambition, we have published Vattenfall's Human Rights Action Plan, which serves as a guide to our achievements and challenges over the past four years, as well as our ambitions up to 2025. Our forward-looking ambitions are based on the findings of our 2021 human rights assessment and they target both our salient risks and improvement areas identified in our governance systems.

Integrity and compliance

Stakeholders expect Vattenfall and its counterparties to operate with integrity and comply with its core values. They depend on us to conduct our business in a fair and responsible manner.

We have a zero-tolerance policy for bribery and corruption, and we are a member of the Partnering Against Corruption Initiative (PACI), a cross-industry collaboration launched by the World Economic Forum and the Business Integrity Forum of Transparency International Sweden. We require that all employees take personal responsibility for acting in accordance with the company's ethics guidelines, which are laid out in the Vattenfall Code of Conduct and Integrity. Tailor-made face-to-face training programmes, e-learning tools, instructions, flowcharts, and Q&A documents support these ambitions. Equally, we expect our suppliers and business partners to act ethically and in full compliance with the applicable rules in every country they do business, as outlined in the Vattenfall Code of Conduct for Suppliers and Partners. Furthermore, supplier compliance is foundational to our Sustainable Supply Chain Roadmap (see page 69), ensuring suppliers meet our minimum standards. Read more about Vattenfall's integrity organisation in the Corporate Governance Report on page 93.

Our approach

Vattenfall has established numerous processes to ensure integrity and compliance from employees, suppliers, and partners. Any individual can submit grievances and other misconduct to the Whistleblowing function triggering the process outlined below.

Moreover, we screen our goods, services, and fuel suppliers for sanctions and adverse media coverage. And for goods and services based on a sustainability risk assessment, we conduct on-site audits of suppliers to verify first-hand if our minimum sustainability requirements are being met. Both of these processes are outlined below and are underpinned by the Code of Conduct for Suppliers and Partners.

A company culture characterised by integrity

The Vattenfall Code of Conduct and Integrity applies to all employees worldwide as well as temporary staff – such as consultants and contractors – who act on behalf of Vattenfall. It describes the behaviour we expect of all Vattenfall representatives. All employees are required to complete an e-learning on the Code. Additionally, participation in the Vattenfall Integrity Programme (VIP) is mandatory for all members of Executive Group Management and all managers three levels below as well as all other relevant employees, such as those engaging regularly with external contacts. The VIP includes both e-learnings and instructor-led training on the Code of Conduct and Integrity, the whistleblowing function, antitrust/competition issues, anti-corruption, and conflicts of interest. The purpose of the VIP is to raise the level of awareness, to ensure that all employees understand our integrity standards, and that a common compliance culture permeates all levels of the Group.

Awareness and monitoring are key and it is the responsibility of every manager to lead by example to ensure their team members understand our way of working. About 350 managers complete the Vattenfall Integrity Survey every year. Activities are initiated, based on survey responses and follow-up interviews, such as monitoring compliance with our governing rules or providing tailormade trainings.

Whistleblowing process at Vattenfall

An individual submits a report to the Whistleblowing function, e.g., through the online Whistleblowing Channel.

→

The national Whistleblowing coordinator of Vattenfall confirms receipt of the report. If the reported concern requires investigation, an investigation team is appointed. Investigations are typically carried out by auditors from Vattenfall's Group Internal Audit, HR, Legal or Corporate Security & Resilience departments.

→

The auditors gather and analyse relevant information, e.g., by seizing documents and conducting interviews.

→

If misconduct or deficiencies are confirmed, relevant follow-up measures are taken, such as improvements to internal working procedures, steps governed by labour laws for individuals or termination of contracts.

Right to remain anonymous

Reports to the Whistleblowing function can be submitted anonymously. It is strictly prohibited for all employees and other Vattenfall representatives to attempt to identify an anonymous informant, or to engage in any sort of retaliation against the informant in a Whistleblowing matter.

Due diligence process for suppliers and partners

	Initial risk assesment	Investigation	Corrective Actions	Monitoring
Screening	Potential suppliers are screened against sanction lists and adverse media coverage.	If records are found during screening, sustainability experts evaluate the finding.	Findings may trigger follow-up measures and an investigation.	Active suppliers are screened biannually against sanction lists.
Audit	Suppliers are assessed by country risk. For high-risk suppliers, a sustainability audit is required.	For an on-site audit, the supplier's compliance with our sustainability requirements is evaluated.	The supplier addresses the findings by providing and implementing a corrective action plan.	A surveillance audit is conducted on active suppliers based in high-risk countries at least every three years.

Compliance with Vattenfall's Code of Conduct for Suppliers and Partners

Our approach is grounded in Vattenfall's Code of Conduct for Suppliers and Partners, which defines our reqirements and expectations to safeguard that our suppliers and partners share our values. The code is based on, amongst others, the UN Global Compact Guiding Principles and the OECD Guidelines, and is guided by the UN Sustainability Development Goal

Activities in 2022

Maintaining integrity
In 2022, 2,119 managers and other relevant staff (2021: 1,494; 2020: 1,143) completed the instructor-led VIP training.

Suspected misconduct within Vattenfall must be reported to the employee's immediate manager or to the Whistleblowing function, for example via the online Whistleblowing Channel. A total of 55 integrity-related incidents were reported in 2022 (2021: 67; 2020: 66), of which 6 (2021: 12; 2020: 14) led to employment law measures, 12 (2021: 8; 2020: 15) to recommended corrections or improvements (such as updates of steering documentation or additional training). No action was taken in 16 reported cases (2021: 18; 2020: 19) as no confirmed misconduct was identified after an initial review. Of the 55 incidents, 13 concerned suspected non-compliance with our anti-corruption and competition law instructions. Currently there are no pending integrity-related court cases against Vattenfall. Reported incidents and improprieties are subject to a lessons-learned process to ensure continuous improvement within the company.

Ensuring supplier and partner compliance
We have updated the Code of Conduct for Suppliers and Partners (CoCfSP) and extended the scope from the supply chain – which focused only on suppliers – to also include the value chain, such as which now also includes sub-contractors, sub-suppliers, consortium partners, and joint ventures. We have also introduced more stringent requirements for export controls and sanctions, climate impact, community engagement, gender equality, high-risk minerals, and the remediation process for human right violations.

The Supplier Risk Assessment Tool (SRAT) Light was launched for new goods and services suppliers with a contracted value of over EUR 100,000. The new tool applies risk parameters beyond headquarter country, and now includes the country of manufacture or service provision and product or service category. This provides a more granular risk picture and consequently enables a more adequate risk response. All suppliers deemed to be in high-risk locations and/or industries are subject to different mitigation measures, which can be a full-scope sustainability audit or a tailored-scope audit with a focus on the environmental, social or governance dimensions.

We have produced our second supplier risk heatmap for 2022, which covers 3,509 suppliers representing 17% of active suppliers and 72% of addressable spend. From the 62 active high-risk suppliers that were identified, 35 are known from previous assessments and 27 are new. For known high-risk suppliers, previous actions were followed up to ensure that progress has been made. Meanwhile for the new high-risk suppliers, internal dialogues were initiated. These dialogues will result in e.g., supplier dialogue, sustainability audits, and sustainability requirements for upcoming tenders.

We have continued the Manage Counterparty Screening (MCS) initiative to ensure that Vattenfall adheres to legal and regulatory due diligence requirements and that it meets the expectations of stakeholders. As part of this initiative, we have standardized internal screening instructions and developed a new screening tool that widens the scope of the supplier and partner screening. Previously, we considered sanction/watch lists, adverse media coverage, state-owned companies, and high-risk locations, but have now added another layer to this standard procedure by including the evaluation of Politically Exposed People (PEP) and company ownership structure analysis as part of our standard procedure. This helps us to identify key compliance issues and mitigate related risks before starting a business relationship.

We are enhancing our supplier and partner monitoring, a process to screen active suppliers, by increasing the frequency and the risk parameters. Previously, our monitoring process was conducted bi annually against sanction lists. The new monitoring will be conducted continuosly against watchlists, adverse media, ownership and PEP. Before setting up the new process, we conducted a one-off backlog screening of our entire active supplier base against the new risk parameters to identify possible compliance deviations. Around 27,000 entities were subject to backlog screening, and hits were detected in 4,000 entities, of which 1,200 have been reviewed in depth, and 65 of these have led to an escalation.

Challenges and planned activities
We have conducted and will continue to conduct risk assessments related to integrity. The two greatest integrity risks that we have identified, based on the potential damage to Vattenfall and our stakeholders, are non-compliance with relevant anti-trust laws and corruption incidents, including breaches of our procurement and conflict of interest policies. Accordingly, Vattenfall will continue to raise awareness within the company through training and communication to ensure compliance with the rules in these areas.

The regulatory landscape is changing, calling for more supply chain human rights due diligence. We have set up a working group to monitor upcoming legislation in our key market and will continue to map due diligence requirements against our own compliance processes to both prepare for upcoming legislation and ensure that we strive to go beyond compliance.

Alongside monitoring the legislative landscape, we will continue to improve our due diligence processes. With the improvements, we focus on the expansion of the suppliers covered by the annual supplier risk assessment continuing to align supplier onboarding processes across Vattenfall, a system-wide integration of the risk assessment for new suppliers, and developing processes to ensure continuous supplier monitoring.

	Goods and services	Waste & biomass	Coal	Nuclear fuel
Number of suppliers	19,716	150	1	<10
Number of site audits conducted	20	38	N/A	1
Share of new suppliers that have undergone social/environmental assessments	100%	100%	N/A	No new suppliers
Share of new suppliers from high-risk countries that have undergone social/ environmental assessments	No new suppliers from high-risk countries	No new suppliers from high-risk countries	N/A	No new suppliers from high-risk countries

Not pictured: Natural Gas. Vattenfall does not hold any direct contracts with gas producers as the gas is sourced through European gas hubs.
More information can be found on page 75.

Delivering impact in the supply chain

At Vattenfall, sustainability is the business. Therefore, we are committed to responsible practices in and beyond our corporate boundaries, such as our supply chains, and contribute to a positive impact in society and the environment that surrounds us. Vattenfall has developed a sustainable supply chain roadmap which describes our approach towards a responsible supply chain that supports our ambitions.

The sustainable supply chain roadmap consists of two simultaneous steps. The first step – to secure the foundation – ensures compliance with our minimum standards in our supply chain (further described on page 68). With the second step – to deliver impact – we want to drive positive change and add value across our supply chain by identifying and integrating opportunities to improve sustainability performance and go beyond compliance. The main areas where we will deliver impact are CO_2 reduction, circularity, human rights, high-risk minerals, and health and safety.

Activities in 2022

We encourage our suppliers to adopt sustainable practices and to deliver impact. In 2022, we have expanded our work on integrating sustainability requirements into our large procurement tenders. In doing so, Vattenfall encourages and rewards suppliers that consider sustainability in their bids and ways of working. We have set the target to include sustainability requirements, centered around CO_2 reduction, circularity, human rights, community engagement, and biodiversity, in 50% of our tenders and contracts with volumes over EUR 10 million by 2030.

More specifically we have outlined activities related to our five sustainable supply chain focus areas:

Focus 1: CO_2 reduction

Vattenfall has increased its focus on reducing supply chain emissions. As an important step towards a fossil-free future and our intensity target of a 50% reduction in supply chain emissions from goods and services by 2030, we have started to collect supplier emission data through the CDP supply chain programme to monitor and track our suppliers' emissions and to assess opportunities for reducing the emissions at all supplier tiers. Read more about our path to net zero in "Emissions along the value chain" on page 57.

Focus 2: Human rights

Vattenfall's most recent human rights risk assessment identified our eight most salient risks as described in the human rights section on page 66, two of which relate directly to the supply chain: sourcing from high-risk areas and supplier and contractor labour conditions. We have integrated the supply chain human rights risks in our upcoming sustainable supply chain strategy and formulated action points to address the identified risks. Our commitment to respect human rights extends beyond our operations, and we aim to respect the rights of workers and human rights defenders in our supply chain.

Focus 3: High-risk minerals

Minerals and their potential impacts on human rights and the environment are key concerns for several decentralised energy solutions and demand is expected to grow based on the urgency to achieve net zero. During 2022, we saw heightened interest from both the media and our customers in the origin of high-risk minerals and proof of custody. We have started to conduct a high-risk mineral mapping across our business portfolio to identify the quantities of high-risk minerals, understand the risk, and identify technology-specific mitigation measures.

Focus 4: Health and safety

Health and safety (H&S) continue to be central for our employees, for our contractors working with us on our sites, and for the employees of our suppliers. We have built an internal tool kit with sets of requirements to integrate into contracts and tenders that place H&S-related concerns further in focus with suppliers (see page 76).

Swati Sharma
Research Fellow

Focus 5: Circularity
Swati Sharma, Research Fellow supported by the Alexander von Humboldt Foundation under the German Chancellor Fellowship, was hosted by Vattenfall in Berlin from October 2021 until January 2023. Swati explored the potential for a transition to circular economy (CE) in the energy value chain with a proof of concept for a cables and overhead lines in the Wind and Distribution segments, respectively. "I aim not to reinvent the wheel but focus on practical application of tools and indicators developed by CE specialists – capturing the process, pain points, opportunities, what works, and what doesn't," explains Swati.

Besides identifying opportunities to raise the circular baseline and key stakeholders who can take action, some aspects stood out.

1. Procurement plays a unique role in the value chain. It can influence product design, can convey supplier knowledge, and build greater transparency and trust for cross-business, and cross-regional supplier and contractor partnerships.
2. Resource Passports are critical for understanding material breakdowns, mass of materials, and share of secondary materials in the value chain. Greater visibility will lead to greater scope for targeted action.
3. Reverse supply chains, ensuring continuous availability of secondary materials by taking products out of the market, need to be just as robust as supply chains bringing new products into the market.

Ultimately, the energy sector – besides increasing the share of secondary materials in manufacturing and greater recycling at end of life – can make a significant difference by targeting other aspects of circularity such as reuse of materials in a different industry application for extending the life of materials in the value chain.

"I aim not to reinvent the wheel but focus on practical application of tools and indicators developed by CE specialists – capturing the process, pain points, opportunities, what works, and what doesn't"

Challenges and planned activities
Most of the planned activities for 2023 will consist of further developing and implementing the sustainable supply chain roadmap and the five focus areas that deliver impact. Furthermore, collaboration, innovation, and transparency will be required to succeed in integrating sustainable procurement practices throughout the supply chain, and finding suppliers that share these values can be challenging. Nevertheless, Vattenfall is committed to building a network of suppliers that support its strategy and collaborate to make a positive impact together.

The situation of the Uyghurs and the strong indications of potential links to forced labour in the Xinjiang region continues to be a major concern to Vattenfall. Forced labour in any form is unacceptable. We continue to monitor the Uyghur situation, engage in capacity building, hold internal and external dialogues, and collaborate through industry initiatives. As a sponsor of the Solar Stewardship Initiative, Vattenfall aims to collaboratively increase supply chain transparency with respect to how, where, and by whom solar components are manufactured.

Category-specific procurement practices

Nuclear fuel

- Current uranium suppliers are situated in Canada and Australia. Depending on the current contractual situation, we may receive deliveries from both countries in a single year
- All uranium suppliers are regularly audited (every three to six years) and are continuously assessed for reports or discoveries of deviations or other events
- All deliveries from nuclear fuel suppliers in 2022 were performed by audited and approved suppliers
- All findings and observations from audits are followed up at the next regular audit. When deemed necessary, findings are followed up at a re-visit between the regular audits
- Management systems were generally at a high standard at nuclear fuel production facilities
- No sanctions are currently affecting the nuclear fuel supply chain
- All nuclear fuel-related deliveries from Russia have been canceled in response to the start of the Ukrainian war
- The results from the Human Rights Impact Assessment were presented in the spring of 2022 and further workshops to detail the actions are planned for 2023
- A sustainability evaluation (of suppliers) was conducted as part of a major tender for the procurement of fuel manufacturing services.

Coal

- Since October 2021, Vattenfall has been using an external service provider for coal sourcing. Due to the shrinking coal volumes used, it was not justifiable to keep an in-house sourcing organisation
- A major change in 2022 was the complete phase-out of Russia as a country of origin for coal even before formal sanctions were in place. For the year as a whole, the share of coal from Russia went from 85% in 2021 to 28% in 2022. The main new source was South Africa, which now represents 54% of the sourced coal (2021: 0%). Apart from that the United States provided 17% (2021: 15%) and Kazakhstan 1% of the coal (2021: 0%)
- Vattenfall remains a Bettercoal member to continue to drive improvements in the coal supply chain. South African coal mines are not yet Bettercoal suppliers but Vattenfall is pushing for that through the South African Working Group formed in 2022.

Goods and services

- Main sourcing countries are Sweden, Germany, and the Netherlands, and a small number of suppliers in other European and Asian countries
- All suppliers with contracts over SEK 3,000 are subject to a screening against sanction lists, adverse media, ownership structure, and politically exposed persons (PEPs)
- Sustainability audits are required for suppliers from high-risk countries with contracts over SEK 100 million
- Comprehensive review and update of the Code of Conduct for Suppliers and Partners was conducted to ensure it accurately reflects Vattenfall's values and legislative landscape with major updates on climate impact, gender equality, and broadening the scope to also include partners
- The Supplier Risk Assessment Tool (SRAT) created a risk heat map in 2022 with 62 high-risk suppliers that were validated through ten internal dialogues, resulting in several follow-up measures, including sustainability audits, additional sustainability requirements for tenders and supplier awareness sessions
- Two sustainable supply chain training sessions for new hires in procurement were conducted together with integrity and compliance training and were attended by around 50 participants.

Gas

- In 2022, Vattenfall sourced around 82 TWh of natural gas, both for our needs and for our customers
- As Vattenfall does not hold any direct contracts with natural gas producers, the gas is sourced through European gas hubs. We do business with about 150 counterparties in gas. These counterparties are mainly trading companies, gas transmission and distribution system operators, and other energy utilities
- We conduct standard checks of all our counterparties including counterparties in natural gas, and continue to look into suitable initiatives to address sustainability risks associated with the gas supply chain. In 2022, we joined the Gas Taskforce initiated by Bettercoal, to investigate whether the model used to address sustainability risks of coal producers can be implemented in natural gas supply chain.

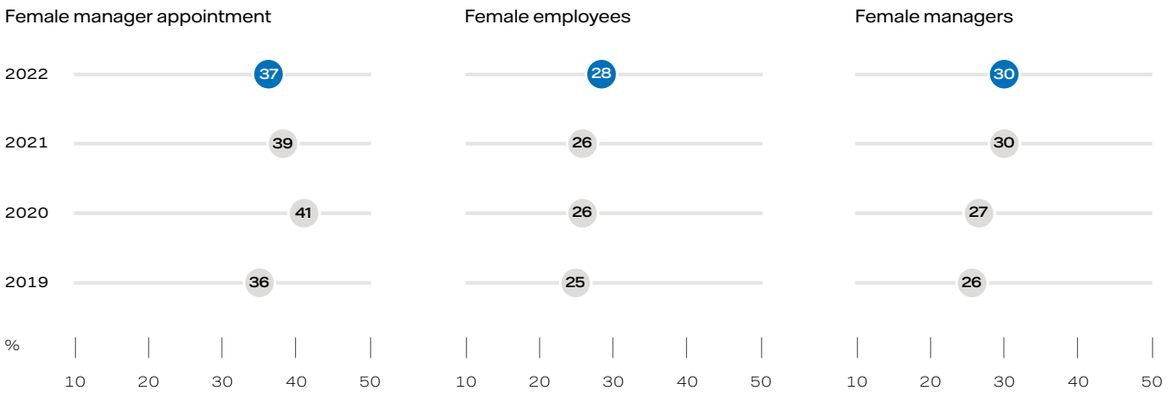
Waste and biomass

- More than half of the total amount (measured in TWh) of waste and biomass fired in Vattenfall's CHPs and heat-only boilers is waste, including recycled wood waste. For waste, most comes from Sweden and Germany, and a small share from the UK. Recycled wood waste is sourced either from Sweden or other northern European countries
- The woody biomass used for our CHPs and heat-only boilers in Germany, the Netherlands, and Sweden was a low value by-product, and domestically sourced. The sourcing countries for the woody biomass for internal use in 2022 were: Sweden (50%), Germany (24%), Norway (19%); the rest of Europe accounted for 6%. Vattenfall's heat business adheres fully to the relevant EU regulations, established certification schemes and/or local requirements for woody biomass
- The woody biomass that we purchased for third parties on the international market in 2022 was sourced only from within the EU, mainly originating from the Baltic states, and was sourced only from certified suppliers. The certifications we use are the Sustainable Biomass Program, where Vattenfall is one of the founding members, and/or the Forestry Stewardship Council (FSC)
- A small share of biomass used in our Swedish operations constitutes bio-oils (low-value residual or waste products that are collected and mixed in the Netherlands) and biogas (landfill gas produced close to our plants and transported short distances through pipelines).

Diversity and inclusion

Vattenfall firmly believes a diverse, equitable, and inclusive work environment is a cornerstone in enabling fossil-free living and one that creates value for Vattenfall, its employees, and society in general. The work is led by a dedicated Diversity and Inclusion (D&I) Officer, on a two-year rotation among members of the Executive Group Management.

Gender diversity at Vattenfall



Activities in 2022

Embedding D&I by living our principles

- An employee e-learning covering why D&I matters, what stands in our way and how we can make a difference. The e-learning is available to business units as part of their annual D&I activity plan.
- The "Vattenfall Fair" for new hires includes an introduction to how Vattenfall drives D&I and what each employee can do to support the efforts. Held four times a year, this session is popular with new employees.
- Vattenfall celebrated European Diversity Month in May to show solidarity and raise awareness for D&I topics.

Thinking broadly and driving all dimensions of diversity

- A series of videos promoting diversity and inclusion were produced for social media, the Vattenfall website, and internal communication. The videos, which reached 5 million users on social media and drove internal engagement, showed a diverse range of employees and were intended to challenge both ourselves and others with the message: Diversity and Inclusion – how hard can it be?
- Our "Diverse Energy" employee networks continue to grow in size, engagement, and importance. They serve as a first point of contact for employees and an influential body that captures local issues and lobbies for change within Vattenfall and beyond.
- Pride activities aim to show solidarity and raise awareness and include "Walk with Pride" and participation in Pride parades.

Including everyone; our managers lead the way.

- D&I continues to be part of the business planning process, which requires an understanding of the specific D&I needs of a business unit resulting in targets and an annual activity plan.
- A "Leadership Toolbox" offers managers self-led workshops for creating more inclusive teams.
- A Leadership Self-Assessment has been developed to provide managers with the ability to assess their D&I measures critically and to strengthen positive behaviours accompanied by expert coaching.
- The D&I Index in Vattenfall's My Opinion survey monitors how employees rate their manager's efforts in driving D&I. In 2022, this index was sharpened to provide a better indication of employee sentiment with 84% of employees responding positively.

Measuring our progress

With a commitment to gender diversity as the first step in the D&I efforts, Vattenfall has a set an active target for 35% of all managers hired to be female. The target was achieved with 37% for 2022, with the total number of female managers remaining stable at 30%, while the female employee ratio increased from 27% to 28% company-wide in 2022. Even though some parts of the business set higher targets for female manager appointments, it continues to be a challenge in other parts of the organisation and will thus remain a group-wide target until it is more readily achieved throughout Vattenfall.

To provide a fully comprehensive metric of maturity in driving D&I, Vattenfall applies the Global Diversity, Equity, and Inclusion Benchmarks (GDEIB), created by the Center for Global Inclusion. An assessment of Vattenfall's ambition to reach the Progressive Level of the GDEIB was conducted by external consultants in 2022, which resulted in a series of findings and recommendations that will guide our D&I strategy and efforts moving forward. Additionally, Vattenfall's employee survey includes targeted questions to measure employees' beliefs about how diverse, equitable, and inclusive Vattenfall is. There, 86% of employees responded positively.

Challenges and planned activities

We are constantly expanding our D&I activities like asking more – voluntary and anonymous – demographic questions in our annual employee engagement survey, which allows employees to self-describe. This way we develop a deeper understanding of minorities, marginalised, and underrepresented groups and grow trust and awareness across the organisation, which is essential for Vattenfall to reshape its culture and succeed with our D&I strategy.

Planned activities include transitioning from D&I to diversity, equity, and inclusion and, where establishing equity is a key component in our work; implementing the learnings from the year-long Collaboration for Inclusive Recruitment Project – mitigating bias in the recruitment process; as well as piloting our Leadership Self-Assessment to drive inclusive leadership.

Compensation, training and development

Vattenfall encourages employees to develop their skills as part of our work to build a high-performance culture, and our remuneration policy supports these objectives. We strive to create an open, active, positive and safe learning culture where our people continuously grow and develop their competencies – with a special focus on the critical capabilities and strategic skills needed to drive the innovations that accelerate the energy transition.

We place emphasis on developing people's strengths and potential to be ready for the future. Therefore, we intend to create a breeding ground for learning as an integrated and natural part of everyday work and life, which we term limitless learning.

Activities in 2022

Every year we conduct initiatives to retain people with key competencies and to provide support for employees to continuously develop their strengths and feel empowered. We are currently supporting employees with technical mandatory trainings to ensure they have the right competencies and certifications to safely execute their daily tasks. This vital training also give employees opportunities to embark on cross-organisational careers, which increases engagement, motivation, and retention. We also offer mentoring and coaching tools to strengthen professional and personal skills. Employees have the ability to choose from over 100 mentors and coaches to support their development. A large number of upskilling initiatives and opportunities ensure the availability of vital competencies within Vattenfall. In an effort to improve our salary structure, we conducted an internal investigation into pay equality. Although the results are not yet conclusive, they point towards an overall healthy salary structure. We will continue to govern the budget spend to maintain gender equity and to monitor the pay gap.

Challenges and planned activities

There is an ongoing investigation to identify and map out the opportunities and needs of Vattenfall's workforce regarding development and learning. We are firmly committed to continuing and strengthening the current activities.

Vattenfall's remuneration policy

It aims to foster equal pay and to drive an engaging and high-performing culture while securing critical competencies and talent. The policy outlines the general guidelines for compensation programmes and benefits at Vattenfall. It has been developed in line with the guidelines for Swedish state-owned companies. Beginning with the 2020 financial year, Vattenfall produces an externally published remuneration report on paid and pending remuneration for senior executives.

Remuneration at Vattenfall should be fair and sustainable and reflect local labour laws, in line with the market and collective labour agreements. It recognises individual performance that meets Group objectives and rewards professional competence. Variable pay programmes strengthen the connection between performance and reward and help attract, retain and motivate employees below the senior executive level.[1] Remuneration at Vattenfall consists of a base salary, short-term and long-term variable incentives based on the individual's and the company's performance, pension and other statutory or voluntary benefits per local law and market conditions.[2] Therefore, it may differ from country to country.

[1] The levels that are eligible for variable pay are outlined by the Swedish State Ownership Policy and Principles for State-Owned Enterprises. Read more here.

[2] This includes 98% of employees covered by collective bargaining agreements.

Real estate and facility management

Supported by effective international coordination, knowledge sharing with our suppliers, and new technologies, Vattenfall's Real Estate and Facility Management (RE&FM) department is developing solutions related to our environmental focus areas of climate, biodiversity, and sustainable resources use. Vattenfall's efforts to provide climate-smarter offices for all employees reflect its purpose and targets. The RE&FM activities are part of the group-wide Environmental Action Plan 2030.

Achievements in 2022

In 2022, we started collecting data on our environmental focus areas: energy, waste, and water use for selected offices. The data will be instrumental in monitoring and tracking our efforts to continuously reduce consumption and switch to fossil-free energy alternatives for our offices. In all countries, we have investigated energy-saving measures. In August, the official opening of the new Berlin office took place. The wood-hybrid building is considered to be the most sustainable building in Germany, achieving a Platinum certification from the German Sustainable Building Council (DGNB). Using certified wood, the CO_2 emissions of the manufactured components were drastically reduced. In addition, the building was awarded a DGNB Diamond award for its architecture, which offers a flexible, smart working environment that encourages employees to collaborate in this new hybrid working reality.

At our owned Swedish locations in Trollhättan and Nordmaling, solar panels and heat pumps were installed. Furthermore, to contribute to a circular economy, we started a waste reduction programme in Amsterdam to engage our employees and suppliers in waste avoidance, reduction, and separation topics with the aim of certifying the Dutch headquarters as a zero-waste location in 2025. Also, in Västerås, Trollhättan, and Nyköping, we have waste management pilots in progress to ensure sustainable resource use.

To enhance biodiversity, Vattenfall continues to set up biodiversity action plans for our offices in all regions. To that end, we conducted an inventory of possible biodiversity measures at the Dutch locations Leeuwarden, Weesp, Delft, Zoeterwoude, and Sloot-dorp. As a result, some activities have already been implemented, like sowing native plants or placing insect houses. In addition, we protect species like birds and bats by installing nests at Ringhals, Trollhättan, and Älvkarleby.

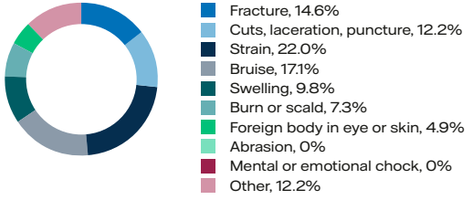
Challenges and planned activities

Besides reaping the benefits of our newly implemented data collection processes and energy measures, we plan to conduct a pre-study for some 20 of our properties in the Nordics to identify more potential energy-saving measures. For the office in Edinburgh, we aim to achieve a high SKA rating, an environmental assessment and a benchmark for non-domestic outfits used in the UK to set the proper sustainability criteria. Furthermore, the construction of the new sustainable office in Hamburg is progressing. In the Netherlands, we plan to install more charging stations at office locations and started a water monitoring initiative. Besides this, we recognise that Vattenfall cannot implement sustainability measures in leased offices unilaterally as we do in our owned offices. Hence, we continue to engage with our landlords to fulfil our commitment to providing climate-smarter offices for our employees.

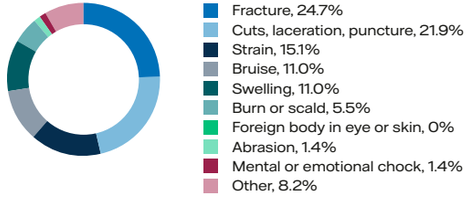
Health and safety

Vattenfall's ambition to enable fossil-free living in one generation can only be realised by operating in a safe, inspiring, and caring work environment for everyone working at and for Vattenfall. Therefore, Health and safety (H&S) is at the heart of Vattenfall's strategy and a key component in running a sustainable business. Vattenfall aims to achieve world-class H&S.

Types of injuries (LTI) – Employee



Types of injuries (LTI) – Contractors



World-class H&S means being in the top three, compared to our competitors, in H&S performance and reporting, using indicators to promote and monitor H&S improvements and benchmarks. The long-term goal is zero accidents, injuries, or work-related illnesses. H&S is managed systematically and proactively according to the principles of ISO 45001.

Vattenfall has a company-wide three-year H&S strategy with four focus areas. The strategy is based on extensive dialogues all the way up to executive management.

Activities in 2022

1. Management accountability – Management have continued to make site visits, audited safety standards, recognised good practice, and focused on taking better care of our sites and operations. Vattenfall has also set targets on top management level to drive leadership development and employee engagement for World Class H&S and to make personal safety leadership commitments as well as perform safety reviews. We also made an H&S Policy film, to clearly visualise management's commitment to a healthy and safe work environment in all aspects.

2. Contractor H&S management – Vattenfall has a long-term ambition to strengthen the H&S performance of contractors, extending our H&S approach beyond our corporate borders. 11 workshops have been conducted to share knowledge and identify best practices for current processes. In addition, interdisciplinary dialogues were held to develop a holistic understanding of our current performance, strengths, and weaknesses. The outcome of these workshops will form Vattenfall's next steps as we strive to develop a world-class contractor H&S management programme.

1 Management accountability

To increase active and visible H&S leadership to lead employees and contractors towards healthy and safe performance.

2 Contractor H&S management

To create an integrated contractor management framework with H&S metrics to drive accountability for preventing work-related injuries, illnesses, and other harmful effects to our contractors' health and safety.

3 Healthy work environment

To continuously develop a healthy work environment and improve all aspects of health for Vattenfall employees.

4 H&S culture

To strengthen culture from an H&S perspective to further reduce the frequency and severity of work-related injuries and illnesses and eliminate fatalities at Vattenfall locations.

3. Healthy work environment – All employees at Vattenfall are covered by occupational health care. Training in occupational health and safety is provided based on local work requirements. Non-occupational medical and healthcare services varies in different countries due to differences in legislation and social security systems. Overall, a wide range of health-related services are available at the Vattenfall sites, partly through partnerships and external support.

In 2022, there were several initiatives to develop a healthy work environment. For example, employees across Vattenfall participated in the World Day for Safety and Health at Work in April. Teams assembled either physically or online to discuss building a more robust safety culture together and engaged in an H&S hazard and opportunity hunt at the various Vattenfall locations. Other examples include Mental Health Month in September, centred around mental health best practices. And psychological safety was measured for the first time in the employee survey, MyOpinion (see page 26).

4. H&S culture – Vattenfall's operations are potentially dangerous, and accidents, incidents, injuries, and work-related illnesses are preventable. We therefore encourage an H&S culture where best practices are shared and active hazard reporting is used to detect and mitigate serious hazards and risks before they result in incidents. One initiative to improve H&S culture in 2022 was implementing a Critical Control Management (CCM) pilot. It employs a practical method to identify the most important safeguards to keep employees and contractors out of harm's way by identifying controls that must be in place when performing high-consequence activities. The pilot provided clear insight into how to perform the company-wide roll-out in 2023.

Vattenfall is committed to zero incidents, and we have a robust process to learn from incidents when they occur. Generally, incidents are followed up with a Root Cause Analysis. Then, the insights are used to update H&S procedures, such as continuous assessment and risk identification processes, as well as to adapt training and implement new preventive and corrective actions. In 2022, employees and contractors submitted a total of 23,769 hazard reports of which the most common types were "Exposure to high current," "Electric arc," and "Fall at the same level."

Hazards are defined and documented in instructions. Risks are identified locally via different risk assessment processes after investigations into incidents and hazard reporting. Our H&S policy states that work must stop if an employee or contractor is in danger.

All business units are certified according to ISO 45001 requirements, and the management systems are implemented and run by internal Vattenfall resources. The hierarchy of controls is stated in the Code of Conduct and in Intelex for managing risks. Intelex's IT system reports safety, health, security, environmental and quality incidents and hazards. All reporting in Intelex is reviewed by H&S experts. The system can be accessed via the intranet homepage or an app to facilitate reporting from anywhere. The HSSEQ reporting system generates reports, analyses, and statistics, and data is aggregated monthly and reported to Executive Group Management for review. The frequency of accidents leading to absences from work (LTIF) decreased by 33% in 2022 from 1.7 to 1.1 for employees. The number of workdays of absence due to accidents among employees was 668. In 2022, a total of 99 accidents that resulted in absence from work were reported to Vattenfall. The most common types of accidents included fractures, cuts, lacerations, punctures, and strains.

Challenges and planned activities

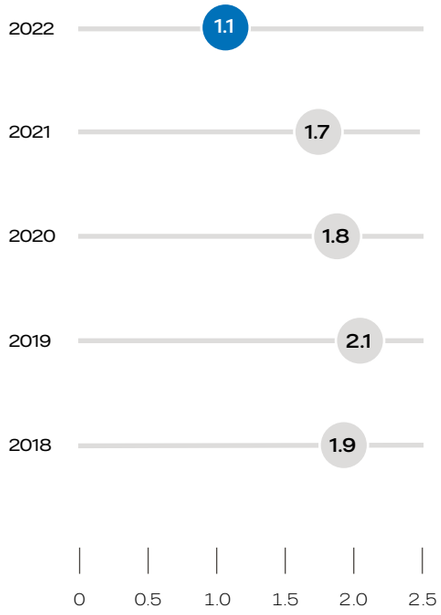
At Vattenfall, we want to facilitate cross-business area learning. Therefore, we implemented a new H&S Notification and Alert standard intending to make the whole organisation aware of incidents and providing opportunities to learn from incidents and hazards to prevent reoccurrence. This will also keep H&S awareness high within the organisation and contribute to Vattenfall becoming more proactive regarding H&S. The new notification and alert process will be evaluated in early 2023.

One of the challenges of being a large company with numerous business units is to maintain standard procedures and instructions that fit the various needs, conditions, and situations within the organisation. Hence, Vattenfall sets standards for minimum accepted levels of H&S performance to reach our overarching goals and targets whilst leaving room for business units to decide how these levels should be achieved. Initiatives to develop self-assessments and integrate audit checks will support these efforts.

Furthermore, Vattenfall previously focused on lagging H&S indicators, which can only be used reactively. Moving forward, we aim to also set leading H&S indicators to enhance our ability to steer and improve H&S. Additionally, we see digitalisation as a key enabler for increased knowledge sharing and transparency on H&S throughout Vattenfall.

Finally, Vattenfall acknowledges that more initiatives are needed for mental health. Therefore, in 2023, we will include a mental health module in the leadership development training as well as conduct an insight project to learn more about how we work with, and can improve, mental health at Vattenfall.

LTIF internal employees 2018–2022



LTIF[1] – Lost Time Injury Frequency for employees

	Sweden	Germany	Netherlands	Total[2]
LTIF internal employees	1.1	2.0	0.5	1.1
Fatal accidents	0	0	0	0
High consequence LTI[3]	0	1	0	1
Total LTI	18	16	3	37
TRIF[4]	3.4	2.6	3.5	3.1
Severity rate[5]	0,019	0,041	0,004	0,020
Worked hours (million)	16.5	8.0	6.3	33.1
External (contractors)[6]				
Fatal accidents	0	0	0	0
High consequence LTI	0	0	1	1
Total LTI	42	11	8	62
TRI	86	18	21	131
Sick leave per country				
Men	1.9%	3.9%	3.4%	2.8%
Women	3.1%	4.0%	5.7%	3.7%
Total	**2.3%**	**3.9%**	**4.0%**	**3.0%**

[1] LTIF is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absences longer than one day, and accidents resulting in fatality. Pertains only to Vattenfall's employees.
[2] Includes Denmark and the UK.
[3] A high consequence LTI is an LTI with an actual or expected absence of more than six months.
[4] TRI(F): Total Recordable Incident (Frequency).
[5] (Number of days lost due to injuries employees, LTI) x 1,000 / total hours worked. Fatality = 200 days.
[6] Since the contractor LTIF cannot be calculated with sufficient reliability, only LTI is reported.

Taxes

We regard taxes as an important component in our commitment to grow sustainably, responsibly, and in a socially inclusive way. We are taxed in countries where we operate. We strive to pay the proper amount of tax on our profits in the countries where we create the value that generates those profits.

Vattenfall has established a process for tax management and monitoring to ensure that its taxation is in accordance with the law and to manage our tax risk. The Group and Country Tax functions ensure that the Group's business activities are conducted proactively and in accordance with laws and regulations, i.e., in a responsible manner. The Group Tax function reports to the Board of Directors and Audit Committee regarding tax policy matters and provides updates on tax regulations and the main challenges we face. The Audit Committee receive quarterly updates on the tax position of the Group.

Vattenfall's tax policy is approved by the Board of Directors on a yearly basis. The tax policy focuses on compliance and efficiency. Vattenfall conducts tax planning to the extent required to secure efficient handling of taxes within the constraints of the tax laws. Vattenfall does not conduct any aggressive tax planning activities and does not have any business activities in countries listed as tax havens. Vattenfall aims for an open and transparent relationship with the tax authorities and to be transparent towards other external stakeholders. When possible, Vattenfall enters into country-specific tax-enhanced relationship systems, with the benefits conferred of having a direct contact in the local tax authority, higher tax certainty, and no tax audit risks or exposures.

Vattenfall as a taxpayer

Vattenfall's business generates considerable tax revenue for the national, regional, and local authorities in the countries we work in. In addition to corporate income tax, Vattenfall pays taxes on production, employment, and property. In many of the countries in which we operate, these non-income based taxes account for a majority of the tax revenues. In the income statement, they are reported as operating expenses, which entails that corporate income taxes are only part of the total taxes paid by Vattenfall. Total taxes reported in Vattenfall's income statement for 2022 amounted to SEK 8.8 billion. Corporate income taxes totaled SEK 6.2 billion.

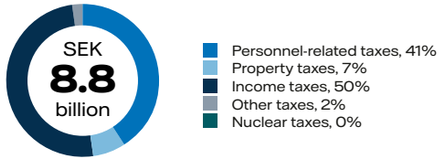
Effective tax rate

Vattenfall's effective tax rate in 2022 was 124% , expressed as a percentage of consolidated profit before tax. This corresponds to SEK 0.1 billion. See Note 13 to the consolidated accounts, Income taxes, for more information.

Challenges and planned activities

In recent years, we have seen and support the positive trend toward a more tax-transparent landscape. Vattenfall participates in various corporare social responsibility and tax-transparency projects and networks. Vattenfall has submitted its country-by-country reporting required by law in all of the countries where Vattenfall operates. Since 2021, Vattenfall reports according to the GRI207 tax standards which places Vattenfall on par with best practice. Nevertheless, we strive to be a forerunner in a more tax-transparent landscape and encourage initiatives such as the Fair Tax Foundation under which Vattenfall was reaccredited in 2022. We intend to maintain the certification moving forward.

Total taxes 2022
shown per tax type



Total taxes paid by region[1]

Tax history, by country

SEK million	Sweden	Germany	Netherlands	Other	Total
2022	2,155	1,290	2,069	3,294	8,808
2021	6,002	2,511	1,221	748	10,482
2020	4,203	1,814	453	229	6,699
2019	4,638	357	720	215	5,930

[1] The historical data has been adjusted to clarify actual taxes paid strictly in a given year compared to previously published.

Total taxes paid, by type

SEK million	Sweden	Germany	Nether-lands	UK	Denmark	Finland	France	Norway	Poland	Total
Personnel-related taxes[1]	2,490	688	356	48	-2	2	34	1	25	3,642
Property taxes	443	31	36	71	0	9	0	0	0	590
Income taxes[2]	-903	504	1,653	2,004	1,056	38	0	0	8	4,360
Other taxes	125	67	24	0	0	0	0	0	0	216
Nuclear taxes	0	0	0	0	0	0	0	0	0	0
Total taxes paid	**2,155**	**1,290**	**2,069**	**2,123**	**1,054**	**49**	**34**	**1**	**33**	**8,808**

[1] Including social security costs.
[2] Does not include deferred taxes. The income taxes accrued in P/L amounts to SEK 6,188 million, see Note 13 to the consolidated accounts. The paid tax amounts are equal to the paid tax in the cash flow statement and consist mainly of preliminary tax payments both also refunds and additional tax payments for previous years. The difference between income taxes according to P/L are paid tax according to cash flow statement of 1,829 million SEK are mainly due the preliminary tax payments in Germany compared to the taxable result.

In focus

Healthy ecosystems are the basis for many of the things we depend on, such as food production and disease control, and for reaching climate goals. Vattenfall's operations have an impact on nature, and we aim for it to be net positive by 2030.

Biodiversity – a matter of survival

Biodiversity is declining at an alarming speed. WWF recently reported that populations of mammals, birds, amphibians, reptiles, and fish have seen a 69% decrease on average between 1970 and 2018[1]. The direct connection between extinction of a specific species and our everyday lives is not always clear, but species abundance and healthy ecosystems are the foundations for many of the things we depend on. For example, our ability to grow food depends on pollination by insects. Disease control depends on keeping wildlife and dense urban areas separated. And protection against hazardous events like flooding depends on maintaining vegetation, wetlands, and coastal habitats.

Climate change and biodiversity are closely interlinked. A changing climate is a significant and a growing driver of biodiversity loss. At the same time we need well-functioning ecosystems for society to be resilient towards a changing climate. Biodiversity management is closely linked to our licence to operate and for garnering support for the energy transition. Biodiversity is thus not only a matter of survival in the larger planetary perspective, but also for us as a business.

Vattenfall's terrestrial static biodiversity footprint[3], in MSA.km²

Scope 1: Land use impacts from own operations

Power line corridors	328
Properties surrounding hydropower stations	27
Industrial sites	19
Onshore wind farms	6

Scope 3: Upstream land use impacts in all geographies

Fossil fuel extraction	310
Purchased goods and services	235
Biomass fuels	234
Nuclear fuels	1

[1] WWF, Living Planet Report 2022 (2022).

[2] Mean Species Abundance (MSA) is a metric developed by the Netherlands Environmental Assessment Agency and used by the IPBES and the Convention on Biological Diversity. The metric reflects an ecosystem's ability to maintain ecosystem functions, structures and processes, in relation to its pristine state. The larger MSA.km² the larger impact. Read more here.

[3] Screening based on the GBS methodology. For an accurate assessment more through analysis is needed.

Measures to enhance biodiversity

Vattenfall's activities have an impact on the surrounding nature. And the amount of land that we use for our own operations will grow as we build out the electricity grids and fossil-free generation necessary for the energy transition. However, we are convinced that it is possible to do this in a responsible way. We have adopted a Net Positive Impact (NPI) approach to guide our work, meaning that we go beyond no-net loss and aim to enhance biodiversity, for example by optimising clearance of power line corridors to favour rare plants and insects (see page 61). Other examples of biodiversity measures include restoring spawning areas for various fish species, large-scale peatland restoration, and the creation of habitats for sand-living endangered solitary bees (see page 60).

Mapping our value chain-wide impact on biodiversity

The attention to biodiversity is steadily growing and many new initiatives and frameworks are under development. One of the key challenges is that biodiversity is complex and that there is no single indicator to measure impacts, like there is for climate with CO_2 equivalents. And without adequate measurement, it is difficult to set meaningful targets. There are, however, emerging tools that can be used to measure a company's biodiversity footprint, and we are actively participating in their development.

In 2021, Vattenfall finalised a value chain-wide biodiversity footprint assessment to obtain a quantitative measurement of how our economic activities impact nature and species. This 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 throughout the value chain. 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)[2].

The results are split into so-called static and dynamic impacts (see box). For the terrestrial part, the static impact comes from historical and persistent land transformation. Nearly two-thirds stem from upstream land use in our value chain (see figure to the left). This primarily relates to the extraction of fossil fuels as well as the land use footprint of biomass. The remainder of the impact comes from our own operations, mainly the 8,600 km of power line corridors around our electricity grid. As for dynamic impact, the result shows that 95% of the growing footprint in 2020 stemmed from climate change impacts caused by GHG emissions in all scopes (see page 57). This corresponds to 136 MSA km². Hence, one of our most significant contributions to halt biodiversity loss is to continue delivering our CO_2 roadmap.

Win-win Solutions for climate and biodiversity

'Net positive impact' or 'nature positive' are relatively new concepts. Presently, they lack a standardised definition and are difficult to measure. Despite these challenges, the energy transition and electrification of society – arguably the greatest societal transformation since the industrial revolution – have to take into consideration environmental impacts. The results from the assessment increased our understanding of how we can contribute to a net positive impact, prioritise actions, and improve our targets.

As a company, we need to maintain our license to operate and ensure co-existence between fossil-free electricity and nature. The climate and biodiversity crises are interconnected – their solutions need to be as well.

Static and dynamic biodiversity impacts

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 grid.

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.

Supporting biodiversity from many different angles

Enabling co-existence between nature and renewable energy

Renewable energy production from wind needs to be scaled up rapidly. Enabling co-existence between nature and electricity production is therefore a top priority in our projects to enable a sustainable energy transition.

An important element of securing co-existence between offshore wind farms and seabirds is being able to make accurate predictions of collision risks. As opposed to onshore wind farms, documenting collisions is difficult in the marine environment, where any casualties may simply float away. There, documentation relies heavily on a good understanding of how seabirds adapt their flight paths in response to wind turbines. To that end, robust and species-specific three-dimensional data are needed. 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. We were especially interested in understanding the potential of documenting flight behavior in different types of birds in the immediate vicinity of wind turbines, which established technologies are struggling to do. The results of the pilot project were promising, and we are currently looking into further validation and methodology development with Spoor and independent experts.

Adaptating hydro power to nature

Over the next 20 years, all Swedish hydro power production will be equipped to meet modern environmental conditions. This includes many ecological aspects and Vattenfall is working on planning, researching, and implementing various measures. In 2022, Vattenfall submitted its permit documentation to the authorities for the first two power plants, Appelnäs och Bosgården in the river Rolfsån. One of the proposed measures is to increase the size of the trash racks upstream in the water intake that guide fish downstream and towards the entrances of the bypasses.

In parallel, we are undertaking a great number of initiatives to reduce the negative effects of hydro power on ecosystems and biodiversity. In 2022, downstream fish migration solutions have been in focus for our R&D work. One example is trials using water jets, which is another technique to lead fish away from turbine inlets and safely guide them downstream. The trials have been conducted in our own ethohydraulics[1] laboratory in Älvkarleby but also in Dammån, a river in northern Sweden, together with the Swedish Agricultural University (SLU) and the power company Jämtkraft.

Biodiversity R&D projects like and other types of experiments where we test how different technical solutions impact different fish species, all provide important contributions to the environmental adaptation of hydro power as they enable us to take evidence-based decisions that both optimise renewable energy and provide the most ecological benefits locally.

[1] Ethohydraulics is the transdiscipline linking animal behaviour (ethology) and flow behaviour (hydraulics).

Risk Management

We apply conscious and balanced risk-taking and review business transactions both from profitability and risk perspectives. Our risks are managed based on a sound risk culture throughout the entire company, with the aim of supporting our short-term objectives and achieving our long-term strategic goals. In accordance with the Swedish Corporate Governance Code and the Risk Policy, adopted by the Board of Directors, Vattenfall's risk management framework ensures thorough identification and management of risks and acceptable risk exposure.

- Enterprise Risk Management →
- Overview of key risks →
- Strategic and operational risks →
- Climate risks →
- Financial risks →

Enterprise Risk Management

The purpose of Enterprise Risk Management (ERM) is to manage risks to which Vattenfall is exposed in order to support value creation, ensure risk awareness, and balance risk against reward. ERM at Vattenfall involves analysing and monitoring all types of risks. It is based on the risk management standards of the Committee of Sponsoring, Organisations of the Treadway Commission (COSO) and the “three lines” model (see page 99).

The objectives for each business are based on Vattenfall’s strategy and are established during the business planning process. When setting these objectives, risks that might hinder their achievement are identified. In our risk management process, risks are quantified and analysed with respect to both financial and non-financial consequences (such as the environment, including climate change, and other sustainability aspects). These risks are then assessed against our risk tolerance, and decisions are made regarding suitable risk measures. Furthermore, each business area’s most important risks and risk management measures are followed up as part of the financial monitoring. After aggregating the risks, a composite overview of our risk situation is produced. The potential financial impacts are linked to financial key data that are used for the steering of the company. Information is provided on a regular basis to the Executive Group Management and the Board of Directors.

ERM process

Strategy & Objective Setting
What are we trying to achieve?

Event Identification
What might affect the achievement of Vattenfall’s strategy and objectives?

Risk Assessment
Which of these events are the most important?

Risk Tolerance Setting
What level of risk is acceptable?

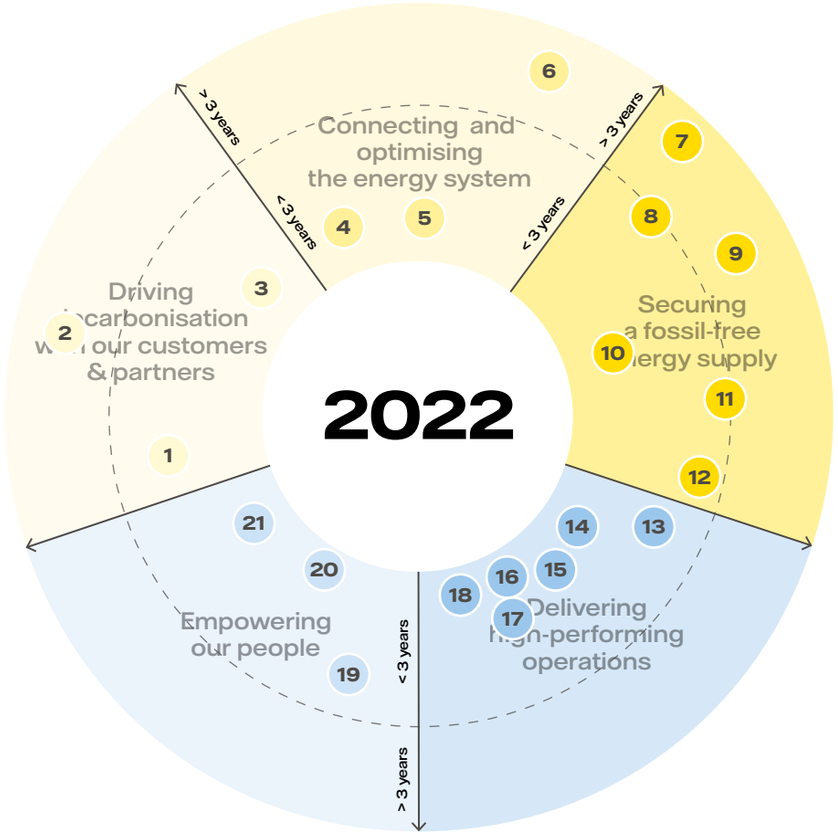
Risk Response
What should we do about it?

Control Activities
Did it work?

Reporting & Communication
What is the status?
Who needs to know about it?

Overview of strategic and operational risks

The graph outlines key risks split by strategic focus area and the time horizon for when each risk might start to have an impact on Vattenfall.



[1] Arrows indicate how the probability and/or impact for Vattenfall developed during the year.

Risks related to	Trend[1]
Driving decarbonisation with our customers & partners	
1 Loss of market share and customers	→
2 Insufficient regulatory framework to stimulate our (industrial) customers to decarbonise fast enough	↗
3 Customers not being able to pay their invoices/going bankrupt	↗
Connecting and optimising the energy system	
4 Failure to ensure satisfactory security of supply because of grid capacity constraints, extreme weather conditions, or delays in permitting processes for building new grids	↗
5 Risk of continued regulatory instability (electricity distribution revenue frames in Sweden)	↗
6 Risk of inability to automate our processes for the increasing intermittent generation and flexible demand	→
Securing a fossil-free energy supply	
7 Loss of market shares and reduced competitiveness (phasing out fossil fuels)	→
8 Investments in renewables without subsidies add long-term market risk	→
9 Risk of not being able to expand the wind business because of slow permit processes	→
10 Feasibility of projects due to surging prices for input material and procurement risk.	↗
11 Not being able to capture the value of green and fossil-free electrons in the market	→
12 Re-municipalisation of heat networks in the Netherlands	↗
Delivering high-performing operations	
13 Political risks (energy market design, sustainability, and climate-related regulations)	↗
14 Operational asset risks (power availability, dam failure, hazardous emissions)	→
15 Gas shortage risk for combined heat and power production	↗
16 Cyber risks (phishing, espionage, data and privacy breaches)	↗
17 Higher project execution risk because of increasing number of large projects	↗
18 Fraud and unethical conduct	→
Empowering our people	
19 Not being able to secure the competencies needed	↗
20 Work environment (accidents, incidents, mental health)	↗
21 Pandemic risks	↘

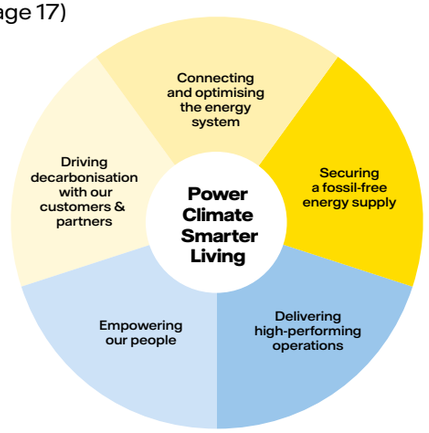
Strategic and operational risks

With the current energy market situation in Europe and the upcoming market design reform of the European energy market, our risk/return profile is changing. This is amplified by the ongoing growth in intermittent renewable generation and continuous changes in the energy market structure (e.g. decentralisation, electrification, and sector coupling), as well as changes in energy policies in general. However, these developments present not only risks but also opportunities, which influence both our operational and strategic activities. In this chapter we focus on the risk dimension. Long-term market price risk remains one of our largest risks (our risk management regarding short- and mid-term market price risks is described on page 89). The relative importance of market price risks is increasing for Vattenfall because of the significant changes in subsidy schemes – especially within offshore wind. To mitigate this risk, we are seeking to strike an optimal long-term balance between the various portfolio components. We believe that our integrated business model offers a diversified risk profile, as value can shift from a business in one part of the value chain to another over time. In addition, the combination of power generation and customer sales offers a natural hedge. Furthermore, some of our revenues come from stable, regulated activities, such as electricity distribution, which improves the overall risk picture even further.

In 2022, the Group's overall risk portfolio posed no threat to the company's continued existence based on a single risk or aggregated risk position. And no such risks are discernible for 2023 with high probability.

In the below sections, we have categorised our risks based on our strategic focus areas. The main risks are presented as well as how they are managed. Arrows indicate how the risk for Vattenfall developed during the year. Many of the risks are directly interrelated with corresponding opportunities. For example, a failure to decarbonise our asset portfolio at the pace required by our stakeholders is a risk that might result in loss of customers. But a successful asset transformation, on the other hand, could be a competitive advantage as it will strengthen our reputation as a decarbonisation partner.

Strategy wheel (see more on page 17)



Risks related to driving decarbonisation with our customers and partners

We promote electrification and climate-smart energy solutions in areas where we have a competitive advantage. We do this together with our customers and partners.

Risks

- → Loss of market share and customers because of inability to meet expectations of customers and partners (for example inability to develop and provide sufficient solutions to support decarbonisation efforts)
- ↗ Insufficient regulatory framework to stimulate our (industrial) customers to decarbonise fast enough
- ↗ Customers unable to pay their invoices or even going bankrupt because of significantly higher prices in the energy market.

Risk management activities during the year

- Reducing our cost-to-serve and maintaining economies of scale through digitalisation and by growing our customer sales business
- Supply large customers with renewable energy and support them in achieving their sustainability goals. For example part of Hollandse Kust Zuid wind farm has been sold to BASF and Allianz. Vattenfall is also offering corporate Power Purchase Agreements (PPAs) (see page 39)
- Partnering with industries to electrify and decarbonise industrial processes, for example HYBRIT (see page 12), production of sustainable biofuel in collaboration with Preem and sustainable aviation fuel together with Shell, LanzaTech, and SAS (see page 34)
- Developing energy solutions, such as charging solutions (see page 37) and other digital offerings
- Expansion in e-mobility charging solutions in Germany and the Netherlands (see page 38). For example we are partnering with Honda to introduce home-charging solutions and flexible-energy contracts specifically tailored for electric vehicle (EV) owners in Europe
- Piloting alternative heating solutions, such as high-temperature heat pumps. For example, a new heat pump was launched in the Netherlands in November (see page 48)
- See also the section Credit risk below (page 91).

Risks related to connecting and optimising the energy system

We are focusing on maximising the value of flexibility and promoting a stable and cost-efficient grid infrastructure.

Risks

- ↗ Inability to ensure satisfactory security of supply because of grid capacity constraints, extreme weather conditions, or delays in permitting processes for building new grids
- ↗ Risk of continued regulatory instability regarding the revenue frames for electricity distribution in Sweden (see pages 31 and 46)
- → Risk of inability to automate our processes to adapt to the increasing share of intermittent electricity generation and flexible demand.

Risk management activities during the year

- Development of smart solutions that can reduce the frequency and duration of outages and enable customers to monitor and control their energy consumption
- Implementation of load steering and new tariffs that support flexibility
- Complementary solutions such as Power-as-a-Service help bridging the gap until new infrastructure is in place (see page 46)
- In Amsterdam, we have a major project, Flexpower, where we are among the first in Europe that can offer a service where the charging power varies depending on the grid situation and – in the future – also current price levels
- Influencing work related to changing regulation to speed up permitting processes (see pages 31 and 46)
- Further development and implementation of algorithms to support physical planning, optimisation, and dispatch areas to support management of flexibility (see page 46).

Risks related to securing a fossil-free energy supply

Our focus is on growing in renewables, maximising the value of our existing fossil-free assets and implementing our CO_2 roadmap.

Risks

- → Loss of market shares and reduced competitiveness as a result of insufficient speed in expanding the renewable portfolio and/or phasing out fossil fuels
- → Investments in renewables without subsidies add long-term market risk
- → Risk of not being able to expand the wind business as planned because of slow permit processes
- ↗ Economic feasibility of projects under pressure because of surging prices for input material and higher procurement risk
- → Not being able to capture the value of green and fossil-free electrons in the market
- ↗ Remunicipalisation of heat networks in the Netherlands (see page 44).

Risk management activities during the year

- CO_2 emissions from our suppliers to be cut by half from 2020 to 2030 in the capital goods category (see page 57) and sustainability criteria to be used for tenders (see page 70)
- Vattenfall was awarded a Contracts for Difference (CfD) for Norfolk Boreas Offshore Wind Farm (see page 42)
- Vattenfall inaugurated its largest onshore wind farm – Blakliden Fäbodberget (see page 42)
- Vattenfall obtained the right to develop the Nordlicht I offshore wind power project off the German North Sea coast after exercising its right of entry (see page 42)
- Investment in technologies such as solar power and battery storage as well as new business models
- Investigating possibilities of deploying Small Modular Reactor (SMR) technology, (see page 40)
- Influencing work addressing the need for shorter permitting processes (see page 31).

Risks related to delivering high-performing operations

We are focusing on being both competitive and cost effective, and leveraging opportunities in digitalisation. We are also taking social and environmental responsibility throughout our value chain.

Risks

- ↗ Political risks, such as changes in energy market design, and sustainability and climate-related regulations
- → Operational asset risks – such as power availability, dam failure or environmentally hazardous emissions – might have material negative financial and non-financial consequences. This also includes risks attributable to climate change (see pages 87–88)
- ↗ Gas shortage risk for combined heat and power production
- ↗ Cyber risks, including phishing and espionage, as well as data and privacy breaches
- ↗ Higher project execution risk because of increasing number of large projects
- → Fraud and unethical conduct can disrupt operations, have negative impact on people and environment. This could also harm our brand, damage trust or lead to the loss of our licence to operate.

Risk management activities during the year

- Monitoring of regulatory changes and market development trends as well as analysis of short- and long-term impact
- Monitoring and analysis of stakeholder expectations and proactive engagement and activities
- Management of operational asset risks involves a systematic inspection programme, continuous control of plant conditions and effective maintenance. New methods for monitoring and predictive maintenance are being deployed, which further improves our resilience to disruptions
- Applying and improving Business Continuity Management processes
- New cyber security awareness training offered to all employees. We constantly monitor cyber-attacks, and work to counter attacks and implement safeguards
- Robust timetable and cost control on major construction projects. Keeping Levelised Energy Cost (LEC) competitive is a key focus
- Pathway to improved sustainability performance, including human rights action plan, environmental action plan, and sustainable supply chain roadmap (see pages 59, 67 and 70)
- Internal instructions have been formulated and roles and responsibilities defined in Vattenfall's Environmental Management System and the Code of Conduct for Suppliers to effectively manage such issues
- Work to increase awareness and ensure compliance with the Code of Conduct and Integrity, for example through training (see page 68)
- We have formulated internal instructions and defined roles and responsibilities to effectively manage security risks and to ensure compliance with the various internal and external security regulations.

Risks related to empowering our people

We are focusing on securing necessary competence while improving the employee journey and providing a safe work environment.

Risks

- ↗ Inability to secure the competencies needed to succeed in transforming and building our business
- ↗ Work environment risks relating to accidents and incidents as well as risks regarding the mental health of employees
- ↘ Pandemic risk.

Risk management activities during the year

- Attract new talent and competencies, retain people with critical capabilities and develop the skills of our employees (see pages 26–27, 74)
- Diversity & Inclusion (D&I) activities (see page 73)
- Annual employee survey conducted to monitor key aspects from the employees' perspective and contribute to guide the development of Vattenfall as a workplace
- Offer a more flexible work situation and adapt to changing work habits as well as our employees' needs (such as remote working and smarter-working concepts). In Berlin for instance, we moved into new offices with a focus on sustainability and future ways of working
- Monitoring and controlling Health and Safety risks are covered in the various risk management systems of the respective units. We perform thorough analyses of past accidents and work to prevent future issues (see pages 76–77)
- Group-wide mental health programme with seminars to increase awareness
- Digital events for employees, covering many areas of Vattenfall's operations, climate ambitions, and business opportunities.

Climate-related risk management

With accelerating climate change, understanding and mitigating climate risks are increasingly important – and climate aspects need to be factored in already in the systems design to ensure security of supply.

Climate change affects our operations and activities
The changing climate affects Vattenfall both through physical changes to the environment we operate in and through the social changes associated with the fossil-free transition. We are committed to our goal of enabling fossil-free living within one generation while maintaining a strong focus on adapting to change. This is enabling us to ensure that we have a resilient business and that we can act on future opportunities. Vattenfall has assessed how the shift to a fossil-free world will impact our operations and assets and aligned our strategy to support a science-based target that limits global warming to no more than 1.5 degrees. We support the disclosure of climate-related risks and opportunities in accordance with recommendations of the Task Force on Climate related Financial Disclosures (TCFD), see page 169.

Climate scenarios to understand and manage risks and opportunities
Vattenfall has a clear focus on understanding risks and opportunities relating to our projects, assets, and working methods. Climate-related risks are risks that are linked to the impacts of climate change on an organisation, which can be categorised into two groups:

Transitional climate risks: Risks related to the transition to a lower-carbon economy; examples of risk drivers are changes in policy, regulation, technology, and customer preferences.

Physical climate risks: Risks related to the physical impacts of climate change. Physical climate risks can be chronic – slow, longer-term shifts in climate patterns, such as changes in temperature, annual precipitation, or mean sea level, or acute – sudden onsets of risk events, such as storms, floods, and wildfires.

Climate risks are explicitly included in our Enterprise Risk Management process as well as taken into consideration in investment decisions for all large long-term projects and commitments. Climate scenarios are potential representations of the Earth's future climate and developed based on its current observed state and on predictions of how greenhouse gases concentrations in the atmosphere will change as a result of future human activities.

Vattenfall has assessed physical climate risks considering climate scenarios – the so-called Representative Concentration Pathways (RCP) – developed by the Intergovernmental Panel on Climate Change (IPCC). They portray potential future emissions scenarios and the resulting solar radiative forcing by 2100. The RCP 4.5 and RCP 8.5 scenarios were chosen as they represent two different possible future outcomes, which provide a relevant range for which different risks can be assessed. See the table to the right for differences between the scenarios.

During 2020–2021, an analysis was commissioned of how key climate parameters such as temperatures, wind speed, and precipitation are projected to change according to different climate scenarios. These findings further strengthen our work on climate scenario analyses for our activities and markets. The projections were developed by the Swedish Meteorological and Hydrological institute (SMHI).

The analysis spans the time period 2041–2070, compared to the reference period 1971–2000, and is focussed on Northern Europe (the Nordic region, Germany, The Netherlands, and the United Kingdom). The variation in outcomes is wide and variable across the different markets, but generally the change is greater in the Nordic region, and in inland regions compared to coastal regions where the sea acts as a buffer.

	RCP 4.5 Scenario (+2°C)	RCP 8.5 Scenario (+4°C)
Description	Intermediate climate scenario based on limited emissions and with international climate policies, where the global temperature increase stabilises at just below 2.0°C by 2100. Emissions peak around 2040 and then decline.	High-end scenario, where emissions continue to accelerate and the temperature increase stabilises at just below 4°C by 2100. Climate change projections based on RCP 8.5 are typically more severe than under RCP 4.5 and can be used as a worst-case scenario.
Assumptions	• Population slightly below 9 billion by 2100 • Low agricultural land use due to increased yields and lower meat production • Extensive focus on reforestation • Low energy intensity and powerful climate policies.	• Population increase to 12 billion by 2100 • High methane emission and high agricultural land use due to land needs for grazing and crops • High dependence on fossil fuels • High energy intensity, limited climate policies.
Outcomes[1]	The average temperature and precipitation is projected to increase, especially in the Nordic and in winter. For Sweden and Finland, the average winter temperature could increase by 2–5°C and the maximum daily rainfall by up to +20%. The snow season will be shorter, and the spring flood more distributed.	The average temperature and precipitation is projected to increase and effects are more pronounced for the RCP 8.5 scenario. For Sweden and Finland, the average winter temperature could increase by approximately 3–7°C, and the maximum daily rainfall by up to +24%. Impacts on the snow cover and spring flood are larger than for RCP 4.5.

[1] Refers to outcomes in Northern Europe.

Climate-related risks and opportunities

In 2022, a detailed analysis of climate risks was conducted to identify and assess material risks and measures, covering all Vattenfall's business areas and both physical and transition risks.

Physical risks – examples	Drivers: Temperature • Precipitation • Extreme weather • Wind • Fires	
Description	**Potential consequences**	**Mitigation measures**
Extreme rain fall resulting in high river flows	Increased need for spilling water in hydro power plants, risk of debris and landslides along rivers	Adjusted regulation of flow, investments to increase dam and spillway capacity
Infrastructure damage from extreme weather events	Wind-felling of trees from reduced ground frost, increased wildfire risk due to droughts	Continuous work to strengthen the electricity grid and infrastructure, increased preparedness
Warmer temperatures affecting heating and cooling demand	Reduced heating demand in winter, increased cooling demand in summer	Financial projections are managed as part of the long-term market outlook and business planning
Snow and ice formation problems affecting infrastructure	Increased snow/ice formation in the northern Nordic region, reduced problems in the south	Continuous work to strengthen the electricity grid and infrastructure, increased preparedness
Supply chain disruptions attributable to climate change.	Increasing risk of supply chain disruptions from e.g. water scarcity, storms, and flooding.	Diversification of the supply chain; risk mapping; and supplier dialogues on vulnerabilities

Transition risks – examples	Drivers: Legal • Market • Technology • Reputation • Policy	
Description	**Potential consequences**	**Mitigation measures**
Loss of revenue when transitioning from fossil to renewable asset portfolio	Reduced profit	Strategic road map for energy transition, including new opportunities
Inability to meet customer expectations	Loss of market share and/or customers	Focus on strategy delivery; providing sustainable energy solutions; customer dialogues
Stranded assets due to new demands and requirements	Financial consequences, and brand damage	Strategic road map for energy transition with 1.5°C-science based target approach
Policy/regulatory developments misalign with Vattenfall's strategy	Financial consequences and brand damage	Pro-active monitoring of policy and regulatory developments; stakeholder dialogues
Increased use of intermittent energy sources e.g. wind and solar.	Impacts on operational planning, increased need for balancing with other energy sources	Investments in storage/batteries, flexible assets and related commodities

Challenges

Climate change is already affecting Vattenfall's assets and operations, and its impacts are expected to increase. The overall conclusion of studies we have conducted to date is that we are well equipped to adapt to a changing climate. For physical risks impacting energy infrastructure or critical functions, adaptation measures for managing risks are in place and work is continuously ongoing to mitigate risks and reduce vulnerability to external disruptions.

To a large extent this work is also driven by today's weather-related risks and the natural variability of physical parameters, such as wind, flooding, droughts, or wildfires. The changing climate means that, where relevant, the margins and efforts are adjusted to account for larger changes and variability. This involves both adapting hydro power dams to be able to manage larger future flows; ensuring cooling solutions for exposed infrastructure; and weather-proofing the grid. It also means a sharper focus on improving our understanding and resilience through better forecasts for production planning and by strengthening our preparedness for extreme weather events.

Planned activities and opportunities

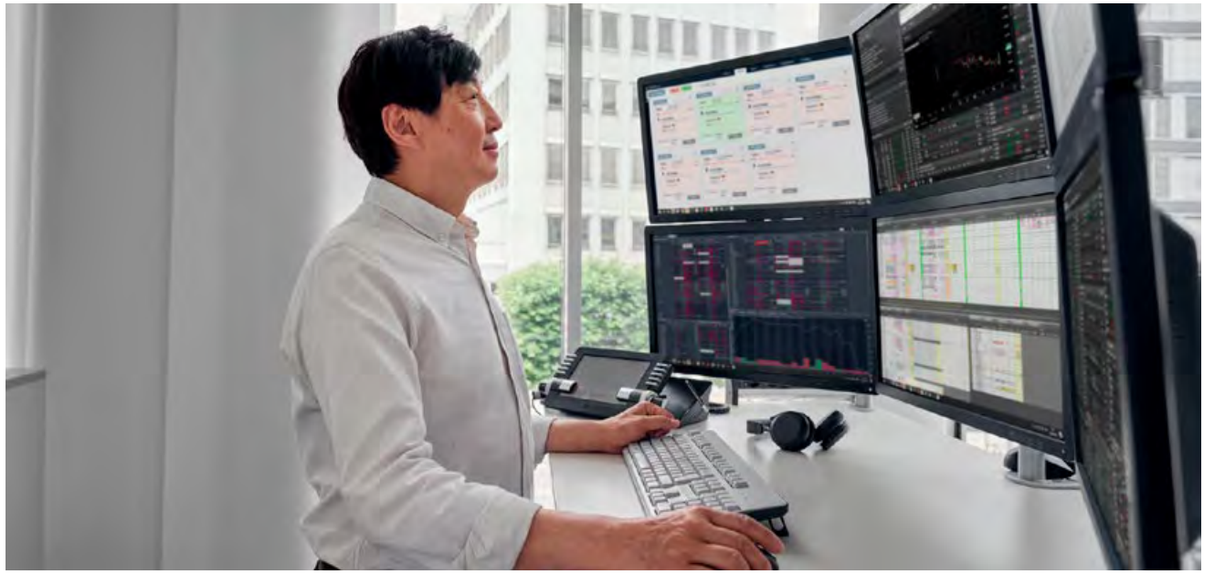
There are also many opportunities linked to the transition to a fossil-free society, such as increased demand for renewable energy – which is the main growth area for Vattenfall – and opportunities for partnering with industry to reduce climate impacts of materials and processes. Vattenfall also has a large share of hydro power, which is a valuable asset for balancing the energy system (see page 40) and we are investing in new storage solutions such as batteries.

Vattenfall is monitoring climate change-related research closely, and is actively participating in initiatives to further our understanding of consequences and adaptation needs. We believe that understanding and adapting corporate strategies to the changing business environment will be a prerequisite for remaining successful and resilient as a company. It will also provide a competitive edge to those who manage to capture the opportunities linked to the transition.

Financial risks

Market risk - commodities including electricity

Market risk for electricity and commodities refers to the risk of adverse changes in electricity or commodity prices and is monitored daily. Market risk includes the risk of a change in volumes, especially in the Nordic market where hydro power production is highly dependent on precipitation.



Risk management activities
Through our asset ownership and sales activities, we are exposed to electricity, fuel and, CO_2-emissions allowance prices, which in turn are affected by numerous factors, such as the global macroeconomic situation, local supply and demand as well as political decisions. We are active in the wholesale trading market and hedge our electricity position and fuel requirements through physical and financial forward contracts and long-term customer contracts. The latter pertain to longer time horizons where there is no liquidity in the futures market and stretch as far as 2030.

Most volumes are hedged for the beginning of the time horizon, with declining volumes towards the end.

The Vattenfall Risk Committee (VRC) decides how much of the generation should be hedged within the mandate issued by the Board of Directors. Sales volumes are to a large extent hedged back-to-back.

To measure electricity price risk, we use methods such as Value at Risk (VaR) and Gross Margin at Risk along with various stress tests.

Portfolio structure
With the current portfolio structure, the dominant market risk exposure is coupled to Nordic nuclear and hydro power generation. We generate a substantial share of regulated revenue from electricity distribution, and heat as well as (partially) subsidised wind power, which diversifies the risk exposure in our portfolio. However, Vattenfall has price exposure between electricity and used fuel/emissions allowances on the continent. This has a lower risk profile than the outright power exposure in the Nordic countries. Price risk for uranium is limited, as uranium accounts for a relatively small share of the total cost of nuclear power generation.

Nordic market
Vattenfall uses hedging instruments to steer the market price risk of the Nordic production portfolio, which mainly consists of outright power positions from nuclear, hydro, and wind generation. The table below shows the average indicative Nordic hedge prices and the estimated Nordic hedge ratio as per 30 December 2022. The hedge ratio does not represent the share of hedged production volume but describes the share of risk-reduction by hedging relative to an unhedged portfolio. The hedge ratio is estimated based on an internal risk management model that uses simulations to reflect – in a realistic, interlinked way – both future price risk and the volume risk associated with hydro power generation. The volume risk is managed through analyses and forecasts based on historical weather data, including factors such as precipitation and snowmelt.

Continental markets
Similar to the Nordic market, Vattenfall uses hedging instruments to manage the market price risk of the continental electricity production. This portfolio mainly consists of spread production (including power, gas, coal and emissions positions), price-indexed district heating contracts as well as outright wind power production and pumped storage hydro.

Ancillary trading
In addition to the market risk mentioned above, the CEO has a risk mandate from the Board of Directors to allow some discretionary risk taking and trading. Most of our risk exposure in the ancillary trading portfolio is based on market valuation (mark-to-market). In cases where no market prices can be observed, modelled prices are used (mark-to-model). Mark-to-model positions arise mainly in asset and sales-related portfolios (see Note 36 to the Consolidated accounts, Financial instruments). Management of such valuation models is strictly regulated, and approval is required from the risk organisation before they may be used.

Average indicative Nordic hedge prices and hedge ratio as per 30 December 2022

	2023	2024	2025
Hedge prices, EUR/MWh	30	45	47
Hedge ratio, %	56	43	19

Liquidity risk

Liquidity risk is the risk of Vattenfall not being able to finance short-term payment commitments or its longer-term capital needs and arise if asset values at maturity do not match liabilities and other derivatives.

Risk management activities
Access to capital and flexible financing solutions is ensured through several types of debt issuance programmes and credit facilities.

Short-term financing
The Group target for short-term accessibility to capital is for funds corresponding to at least 10% of consolidated net sales – or the equivalent of 90 days stressed liquidity needs of the business – which-ever is higher, to be available. At 31 December 2022, available liquid assets and/or committed credit facilities stood at 102% (2021: 104%) of consolidated net sales.

Long-term financing
The maturity profile of our debt portfolio is shown in the chart below.

Vattenfall is committed to maintaining financial stability, which is reflected in the long-term targets for our capital structure. On 6 July 2021, Moody's affirmed Vattenfall's long-term A3 and short-term P-2 ratings, and its Baa2 rating for hybrid bonds. At the same time, the rating outlook was revised from negative to stable. On 26 November 2021, Standard & Poor's affirmed Vattenfall's long-term BBB+ rating and short-term A-2 ratings as well as its BB+ rating for hybrid bonds. The rating outlook was changed from stable to positive.

Three senior bonds were issued in 2022: two with a tenor of 18 months of which EUR 650 million was floating rate and EUR 500 million fixed rate, as well as a EUR 500 million fixed note with a 4-year tenor. These bonds were issued to safeguard future liquidity for when margin call flows will reverse (see page 137).

Interplay between Market / Credit / Liquidity Risk
Prices for electricity, fuels and emissions fluctuate and have always been variable over time. Due to the nature of our core business activities, we are naturally exposed to the resulting market risk. As described above, we hedge via wholesale term-market contracts and long-term customer contracts to reduce this market risk. These contracts in turn increase credit risk as there is a risk that these counterparties may not meet their obligations to us. One common method to manage credit risk is the use of collaterals (margin call agreements for wholesale markets). While these are useful tools for the mitigation of credit risk and required by exchanges, it increases liquidity risk. With changing prices the amount of collateral that needs to be provided between counterparties changes as well. In extreme market price movements this can lead to instant large cash outflows that need to be short term financed. On the other hand, changing prices can also lead to extreme cash inflows. These can put strain on counterparties and even drive them into an own liquidity shortage which subsequently translates back into a credit risk for Vattenfall. Reducing credit and liquidity risks by lower hedge activity, leads again to an increase in market price risk. Thus, all three risks (market, credit and liquidity risk) are interlinked and mutually dependent. The management of this triangle of market, credit and liquidity risk requires an especially well-balanced approach and clear steering principles.

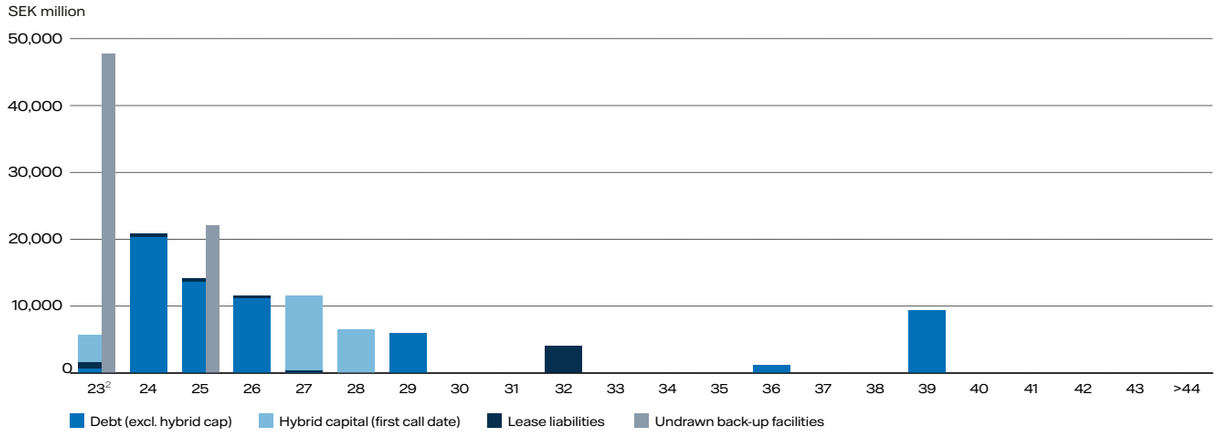
Borrowing programmes and committed credit facilities

		Maximum aggregated amount, in millions		Maturity		Used portion, %		Reported external liabilities, SEK million	
	Currency	2022	2021	2022	2021	2022	2021	2022	2021
Borrowing programmes									
Commercial paper	SEK	–	–	–	–	2	–	0	–
Euro Commercial paper	EUR	6,000	4,000	–	–	74	67	50,354	26,541
Euro Medium Term Note	EUR	10,000	10,000	–	–	56	30	62,269	37,732
Committed credit facilities									
Revolving Credit Facility[1]	EUR	2,000	2,000	2025	2023	–	–	–	–
	EUR	4,300	–	2023	–				

[1] Back-up facility for short-term borrowing.

Committed credit facilities comprise a EUR 2.0 billion Revolving Credit Facility that expires on 5 November 2025 and of EUR 4.3 billion of other committed credit lines that expire during 2023. The maturity structure pertains to the debt portfolio, excluding loans from minority owners and associated companies, which amounted to SEK 10,597 million for 2022 (12,163). Further information about the maturity structure of loans is provided in Note 29 to the Consolidated accounts, Interest-bearing liabilities and related financial derivatives.

Maturity profile for Vattenfall's loans as per 31 December 2022[1]



[1] Excluding loans from minority owners and associated companies.
[2] Excluding short term debt (SEK 72,252 million).

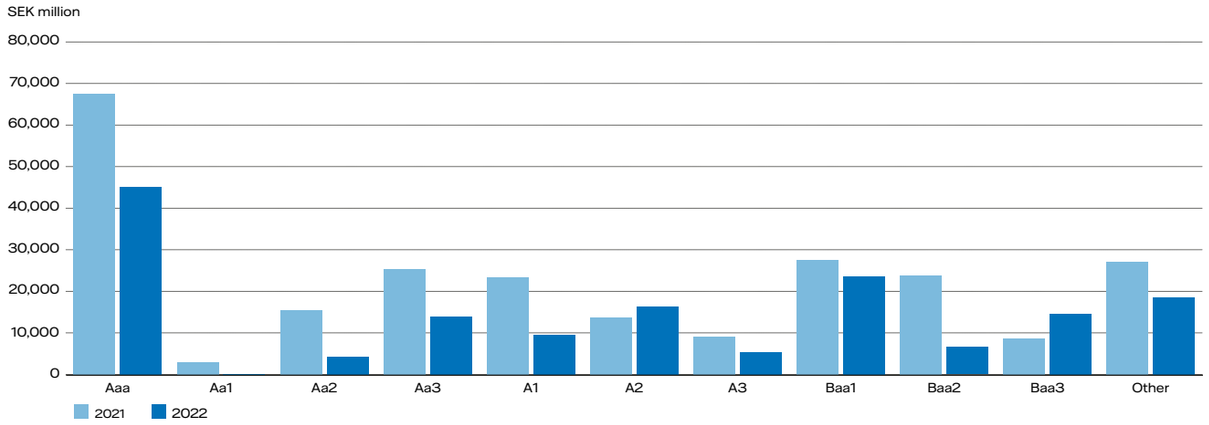
Credit risk

Credit risk is the risk that a counterparty cannot or will not meet its obligations to Vattenfall and the risk exists across all activities.

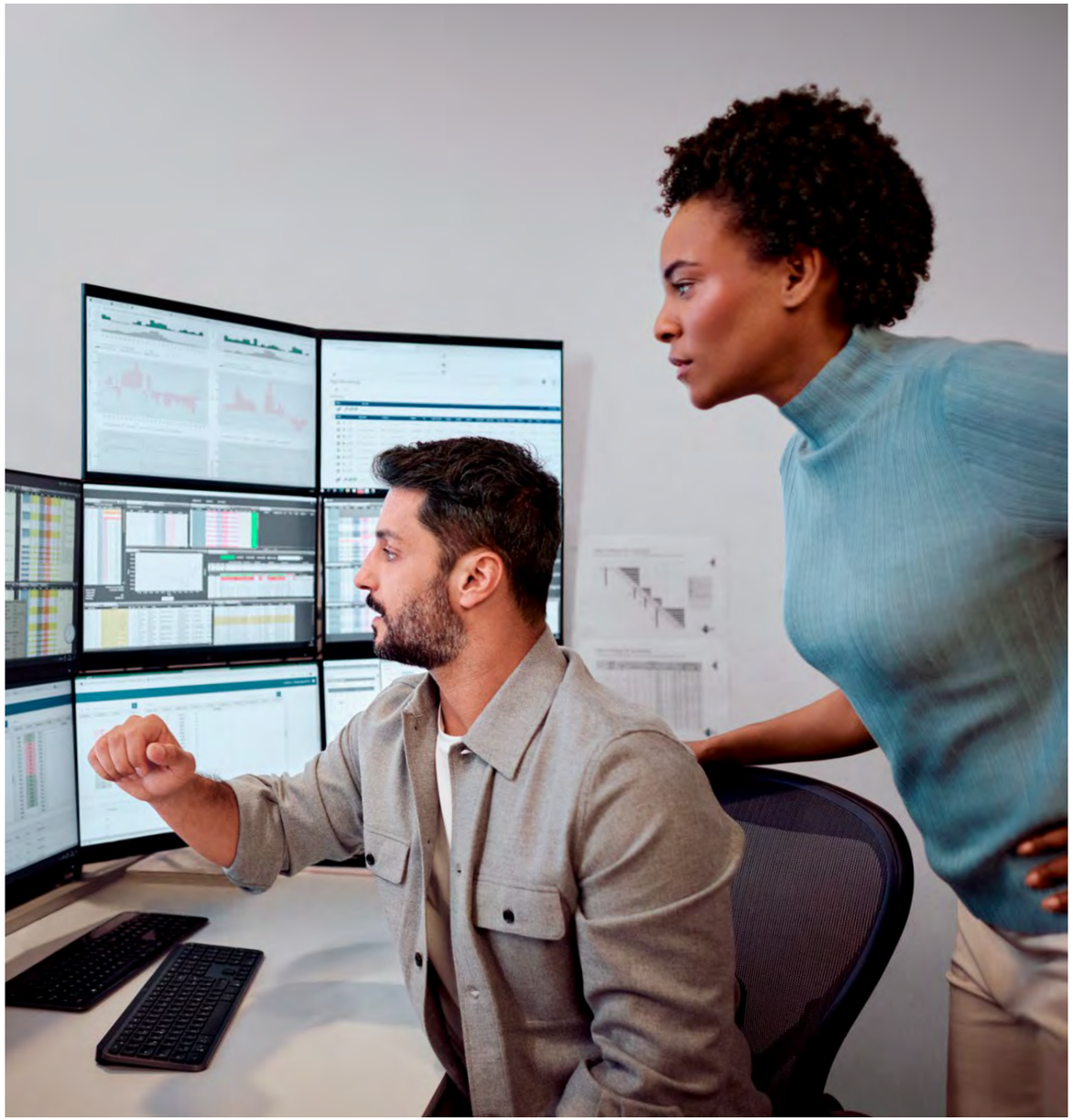
Risk management activities

We have a strict framework for governing and reporting credit risks to ensure that risks are monitored, measured and minimised so that the total credit exposure is kept at an acceptable level. The company's credit risk management involves counterparty analysis, reporting of credit risk exposures, contract negotiations and proposals for risk mitigation measures (such as requiring collateral). Credit risk exposures per rating class is shown in the chart below in SEK million.

Counterparty exposure by rating class



The chart shows exposures to Vattenfall's counterparties where the exposure is greater than SEK 50 million per counterparty, by rating classification according to Standard & Poor's rating scale. Counterparties are reviewed and approved in line with Vattenfall's credit mandates and policies. Smaller exposures are considered to have such a large diversification effect that the net risk for Vattenfall is judged to be low. Procurement and heat sales exposures are not included. Other financial assets (that are neither past-due nor impaired) are considered to have good creditworthiness.



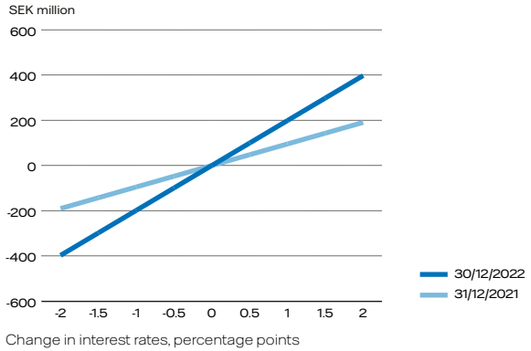
Interest rate risk

Interest rate risk refers to the risk of negative impact from changed interest rates on the consolidated income statement and cash flow.

Risk management activities

We quantify interest rate risk in our debt portfolio in terms of duration, which describes the average term of fixed interest. The target duration of 2–to–6 years is based on the company's current financing need and desired interest rate sensitivity in net interest income/expense. The duration of Vattenfall's debt portfolio at year-end was 3.20 years (4.76) including hybrid capital. See the table for the remaining fixed rate term in our debt portfolio.

Interest rate sensitivity, excluding loans from minority owners and associated companies



The interest rate sensitivity analysis shows how changes in interest rates affect the Vattenfall Group's interest income and expenses (before tax and including capital gains/losses on interest rate derivatives) within a 12-month period given the Group's current structure of borrowing at fixed interest rates. With the same method and an assumption that interest rates would rise by 100 basis points, the impact on the Vattenfall Group's equity after tax would be SEK -158 million (-76), including derivatives and hybrid capital, but excluding loans from minority owners and associated companies. All figures are in nominal amounts.

Remaining fixed rate term in debt portfolio

	Debt		Derivatives		Total	
SEK million	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
< 3 months	56,081	49,214	9,187	9,133	65,267	58,347
3 months–1 year	23,126	1,109	-5,178	-1,669	17,948	-560
1–5 years	57,043	19,440	3,002	-889	60,045	18,551
> 5 years	27,352	38,147	-7,238	-6,604	20,114	31,543
Total	**163,602**	**107,910**	**-227**	**-28**	**163,375**	**107,882**

The portfolio includes loans and interest rate derivatives in order to steer the duration of borrowing. Negative amounts are explained by the use of derivatives, such as interest rate swaps and interest rate forwards. The sum of derivatives is not equal to zero because of currency effects. Figures exclude loans from minority owners and associated companies, totalling SEK 10,597 million for 2022 (12,163). The average financing rate as per 31 December 2022 was 3.52% (2.95%). All figures in nominal amounts.

Currency risk

Currency risk refers to the risk of negative impact from changed exchange rates in the consolidated income statement and balance sheet.

Risk management activities

We are exposed to currency risk through exchange rate movements attributable to future cash flows (transaction exposure) and through the revaluation of net assets in foreign subsidiaries (translation or balance sheet exposure). Currency exposure in borrowing is limited owing to the utilisation of currency interest rate swaps. We strive for an even maturity structure for these derivatives. Derivative assets and derivative liabilities are reported in Note 36 to the Consolidated accounts, Financial instruments.

We have limited transaction exposure, since most generation, distribution, and sales of electricity take place in the respective local markets. Sensitivity to currency movements is therefore relatively low. All transaction exposure that exceeds a nominal value equivalent to SEK 10 million is hedged immediately as it arises. The target for hedging translation exposure is, over time, to match the currency composition in the debt portfolio with the currency composition of the Group's funds from operations (FFO).

Vattenfall's largest exposure is in EUR, totalling SEK 97,209 million (142,006). Of this amount, 27% (17%) was hedged at year-end. For further information, see Note 38 to the Consolidated accounts, Specifications of equity. A 5% change in exchange rates, for example, would affect the Group's equity by approximately SEK 5.0 billion (6.9), meaning that an appreciation of the EUR, DKK and GBP would result in a positive change in equity.

Consolidated operating income and expenses by currency

	Income		Expenses	
Currency	**2022**	**2021**	**2022**	**2021**
EUR	68%	84%	63%	89%
SEK	24%	12%	25%	6%
GBP	3%	2%	8%	2%
DKK	4%	2%	2%	1%
Other	1%	0%	2%	1%
Total	**100%**	**100%**	**100%**	**100%**

The values are calculated based on external operating income and expenses. Changes in inventories and investments are excluded.

Debt portfolio, by currency, in millions

	Debt		Derivatives		Total	
Original currency	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
DKK	6,109	0	–	–	0	0
EUR	113,007	79,944	5,688	5,243	118,695	85,187
GBP	15,151	14,694	-3,135	-3,050	12,016	11,644
JPY	9,488	1,572	-1,581	-1,572	0	–
NOK	0	0	0	0	0	–
PLN	0	0	–	–	0	–
SEK	15,676	8,079	2,971	2,971	18,647	11,050
USD	4,171	3,620	-4,171	-3,620	0	–
Total	**163,602**	**107,910**	**-227**	**-28**	**163,374**	**107,882**

The table shows currency risk in the debt portfolio and the currencies to which Vattenfall is exposed. Figures above exclude loans from minority owners and associated companies, totalling SEK 10,597 million (12,163). All figures in nominal amounts.

Corporate Governance Report

Corporate governance report →
Board of Directors →
Executive Group Management →
AGM proposal →

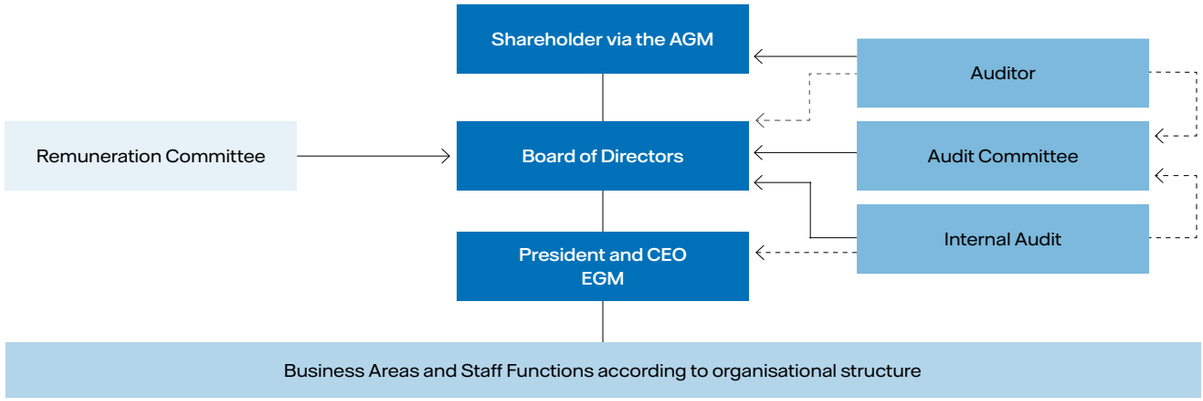
This report includes information on corporate governance during the 2022 financial year, as prescribed by law and the Swedish Corporate Governance Code. Overall issues on corporate governance are handled in this report, while specific risk issues are handled in the Risks and Risk Management section in the Annual and Sustainability Report. The Corporate Governance Report has been reviewed according to RevU 16 by the company's external auditor.

Corporate Governance Report

During 2022, work at Board and CEO level was largely characterised by the turbulent situation in the electricity market, while the working methods have been able to return to more normal conditions after two years of Covid-19 restrictions. At the same time, a number of major decisions have been made in line with Vattenfall's strategy, including investments in new wind farms. A well-functioning corporate governance – with effective organisational structure, internal control and risk management –helps Vattenfall to manage its business towards the set targets and in accordance with Vattenfall's principles.

Vattenfall's corporate governance model
The Parent Company of the Vattenfall Group, Vattenfall AB, is a Swedish public limited liability company with registered office in Solna. Vattenfall AB is thereby subject to the provisions of the Swedish Companies Act. The main decision-making bodies are the Annual General Meeting (AGM), the Board of Directors and the President. The AGM elects the Board of Directors, which in turn appoints the President, who is responsible for the day-to-day administration of the company in accordance with the Board's guidelines and instructions.

Governance and reporting structure



Application of the Code
Vattenfall adheres to the Swedish Corporate Governance Code ("the Code", available in Swedish and English at www.bolagsstyrning.se). Since Vattenfall is wholly owned by the Swedish state, the reporting on, among other things, board members' independence, regulated in points 4.4 and 4.5, is not applied.

Being a wholly state-owned company, Vattenfall has no nomination committee (the Code, chapter 2). The nomination process for the Board and auditors is conducted in accordance with the Swedish state's ownership policy and is described below. Thus, the references to the nomination committee in points 1.2, 1.3, 4.6, 8.1 and 10.2 are not applicable either. However, information on the nomination of board members for new election or re-election is posted on the company's website in accordance with point 2.6. Election of an AGM chairman is done at the AGM in accordance with the stipulations of the Swedish Companies Act and the Swedish state's ownership policy.

Important external and internal rules and regulations for Vattenfall

External rules and regulations
- Swedish and foreign legal rules, particularly the Swedish Companies Act and the Swedish Annual Accounts Act
- The Swedish state's ownership policy and principles for state-owned enterprises 2020
- The Swedish Corporate Governance Code ("the Code")
- Stock exchange rules for fixed-income instruments registered on Nasdaq Stockholm
- International Financial Reporting Standards (IFRS) and other accounting rules
- The Global Reporting Initiative (GRI) Standards and the UN Global Compact as well as reporting according to Green Bond Principles, Science Based Targets and the Task Force on Climate-related Financial Disclosures (TCFD).

Internal rules
- The Articles of Association
- The Board's and committees' Rules of Procedure, including the CEO instruction and the instruction for reporting to the Board
- The Vattenfall Management System (VMS), including the Code of Conduct and Integrity, and other internal governance documents.

Vattenfall AB's Articles of Association and continuously updated information about corporate governance at Vattenfall are available on Vattenfall's website, www.vattenfall.com (original Swedish documents are available on www.vattenfall.se). The website is also a source for previous corporate governance reports and documentation from the most recent general meetings, and links to the Swedish state's ownership policy.

Shareholder and general meetings

Vattenfall AB is wholly owned by the Swedish state. The right of the state, as a shareholder, to make decisions about Vattenfall's affairs is exercised at the Annual General Meeting (AGM) and other general meetings. By law, the AGM of Vattenfall AB is to be held yearly within six months after the end of the financial year and not later than 30 April, in accordance with the Swedish state's ownership policy.

Through a general meeting resolution on the content of the Articles of Association, the shareholder makes decisions on the company's operations. The application of the Swedish state's ownership policy and principles for state-owned companies is decided at the general meeting.

Steering and targets from the Shareholder
Based on a decision by Swedish Parliament in 2010, Vattenfall AB's Articles of Association stipulate that the objective for the company's activities is to generate a market rate of return by, directly or indirectly through subsidiaries and associated companies, operating a commercial energy business that enables the company to be among the leaders in developing environmentally sustainable energy production.

The Swedish state's ownership policy stipulates that to promote long-term sustainable value creation in state-owned enterprises, sustainable business is integrated in corporate governance. Companies with state ownership shall work for a healthy and safe work environment, respect for human rights, good and decent working conditions, equality and diversity, reduced climate and environmental impact, handling of climate-related financial risks and opportunities, good business ethics and active work on anti-corruption, ensure that no abuses occur due to their special status of being state-owned and exhibit responsible conduct in the tax area.

In accordance with the Swedish state's ownership policy, the company's financial targets are decided on by a general meeting. The current financial targets were decided at an extraordinary general meeting on 12 December 2017:
- Capital structure: Funds from operations/adjusted net debt of 22–27 per cent
- Profitability target: Return on capital employed above 8 per cent
- Dividend policy: The dividend should amount to 40–70 per cent of profit after tax.

The achievement of these targets is described in the Annual and Sustainability Report on page 21.

Annual General Meeting 2022
Vattenfall held its 2022 AGM on 28 April. The company's owner, the Swedish state, participated at the AGM through its owner representative. For the first time since 2019, the AGM could be held without Covid-19 restrictions and the general public had the opportunity to participate on-site as well as via webcast. Members of Parliament were given the opportunity to ask questions during the AGM, and an open Q&A session was arranged after the meeting, in accordance with the Swedish state's ownership policy. At the AGM, Mats Granryd, since previously a Board member, was elected new Chairman of the Board after Lars G Nordström, who had been Chairman of the Board for eleven years. Daniel Kristiansson was elected as a new Board member. Jenny Lahrin and Åsa Söderström Winberg left the Board.

The 2023 AGM will be held on 26 April in Solna, Sweden.

Extraordinary General Meeting 2022
Vattenfall held an extraordinary general meeting on 22 December 2022. At the meeting, a bonus issue ("fondemission") and reduction of share capital for the provision of non-restricted equity was resolved upon, as well as amendments to the Articles of Association related hereto. Similar to the AGM, the Extraordinary General Meeting was open to the public. Members of the Swedish Parliament were entitled to put forward questions at the Meeting and an open Q&A session was arranged.

Duties of the Annual General Meeting
- Elect the Board of Directors, the Chairman of the Board and the auditors, and decide on their fees
- Adopt the income statement and balance sheet for Vattenfall AB and the Vattenfall Group
- Decide on distribution of the company's profit
- Grant discharge from liability for the board members and the President
- Approve the remuneration report
- Decide on guidelines for remuneration of senior executives
- Decide on other matters of business prescribed by law or the company's Articles of Association.

Board of Directors

The Board's duties

The Board is the company's highest administrative body. Its fundamental duties are laid out in the Swedish Companies Act and the Code. Further duties are laid out in its Rules of Procedure and the instructions adopted each year by the Board. The Rules of Procedure and instructions regulate such matters as reporting to the Board, allocation of duties between the Board, the President and the Board's committees, the Chairman's duties, the form and content of board meetings, and the evaluation of the work of the Board and the President.

The Board shall, according to its Rules of Procedure, set the overarching targets for Vattenfall's operations, decide on Vattenfall's strategy for achieving those targets, and ensure that suitable systems are in place for monitoring and controlling Vattenfall's operations, risks and financial position in respect of the set targets. The Board is responsible for approving major investments, acquisitions and divestments and for, annually or following significant change, adopting central policies and instructions. Part of this is to define appropriate guidelines to govern the company's conduct in society, with the aim of ensuring its long-term value creation capability. The Board shall identify how sustainability issues impact the company's risks and business opportunities and allocates stakeholder engagement issues to the CEO. Also, the Board shall approve certain important contracts, including contracts between Vattenfall and the President and other senior executives.

Vattenfall wants to make fossil-free living possible within one generation. Decisions and investments made are steered by this. The annual planning for the Board and its committees includes recurring items in several of the areas for sustainable business which are identified in the Swedish state ownership policy. These areas are furthermore included as an integral part of the handling of concrete board matters and are also handled by the Executive Group Management. Vattenfall's strategic focus areas in themselves constitute sustainability objectives. Among others, sustainability aspects such as climate impact and human rights are included in the Board's handling of the strategy and in the business planning process.

The Board's duties pertain to Vattenfall AB as well as the Vattenfall Group. Vattenfall's General Counsel serves as secretary to the Board of Directors.

The Chairman is responsible for – among other things – ensuring that the board members receive relevant information, contacts with the owner on ownership matters, and serving as a liaison between the owner and the Board. According to the Rules of Procedure, the Board – through the Chairman – shall coordinate its views with representatives of the owner when the company is facing particularly important decisions.

Board meetings

The Board shall hold eight to twelve regular board meetings every year. In addition to the regular meetings, the Board is convened when necessary. The agenda of every regular meeting shall include the following items of business:

- The Group's business situation
- Financial report for the Group
- Reports from board committees, when committee meetings have been held
- Matters that are not handled by the President in the day-to-day administration
- Other matters of material importance for the Group.

In addition, certain items of business are included on the agenda every year, in accordance with the yearly planning in the Board's Rules of Procedure. Investments approved by the Board are followed up by the Board one year after their commercial operation date. Strategy issues are discussed in depth at an annual board seminar where the Executive Group Management participates. The Board shall on an ongoing basis be informed on circumstances of importance for the best possible insight in the business and which facilitate an overall assessment of Vattenfall's situation.

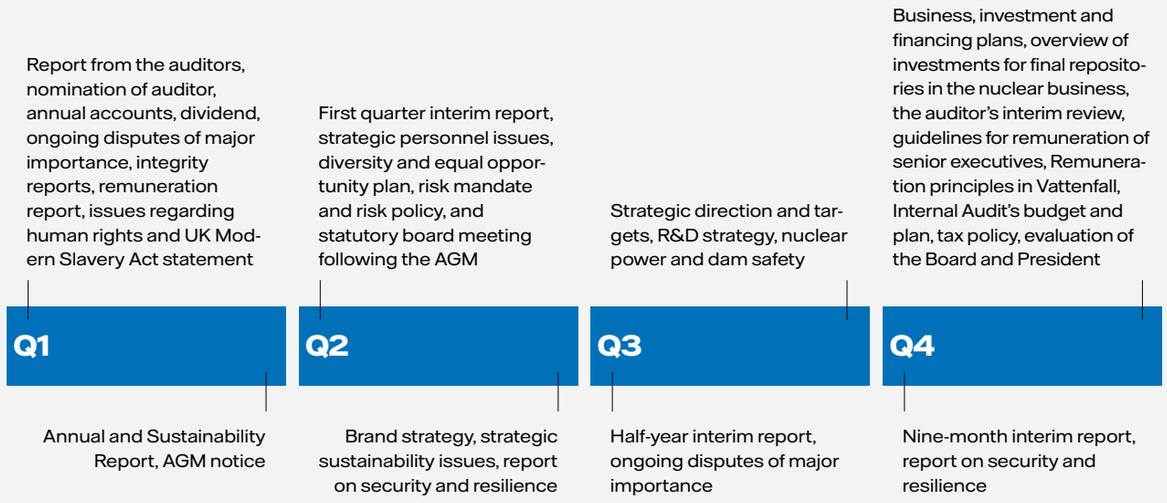
The Board met eleven times in 2022, including the statutory meeting. The board members' attendance is found on pages 103–104. After two years of Covid-19 restrictions, the Board was again able to hold a Board meeting at one of the Group's operational units. This meeting was held at the Ringhals nuclear power plant and was combined with a study visit.

Appointment of the Board

For companies that are wholly owned by the Swedish state, uniform and common principles for a structured nomination process apply. These principles are set forth in the Swedish state's ownership policy and supersede the Code's rules on drafting work for decisions on the nomination of board members and auditors.

The board nomination process takes place in the Swedish Government Offices and is coordinated by the Ministry of Finance (until 2022 the Ministry of Enterprise and Innovation). The expertise required is analysed on the basis of the enterprise's operations, situation and future challenges, board composition and board evaluations performed. As part of its work inthe board nomination process, the Government Offices also conduct their own ongoing evaluation of

The Board's yearly planning



The Board's main items of business in 2022

- Items according to the Rules of Procedure
- The market situation and the market, liquidity and credit risks at the energy markets
- Security issues, including cyber security, among others following the Russian attack on Ukraine
- Items on Swedish nuclear business
- Acquisitions and divestments
- Strategy, bidding, partnership and investments with regard to new on- and offshore wind farms
- Strategy for the heat business in Berlin
- District heating investments
- Partnerships within e-mobility
- Divestment of the power plant Eemshaven/Magnum
- Financing.

the board of each state-owned company. Any recruitment need is then determined, and recruitment work is begun. Once this process has been completed, the nominations are publicly announced in accordance with the Code; however, no account is made regarding directors' independence vis-à-vis the company, the company's management and the owner. Vattenfall provides orientation training for new directors who are elected by the AGM.

The Swedish state's ownership policy, which is the diversity policy applied with regard to the Board, stipulates that the selection of board members shall be made from a broad recruitment base in order to make use of the expertise of both women and men as well as individuals with various backgrounds and experience. Discrimination associated with gender, transgender identity or expression, ethnic affiliation, religion or other belief, disability, sexual orientation or age is prohibited.

At the 2022 AGM, the owner's representative presented a reasoned statement on the Board's composition. In summary, the board members were judged to have relevant skills, experience and background for the company's operations, development phase and conditions in general. The Board as a whole was considered to have a versatility and breadth that reflected the requirements of the state's ownership policy. The gender balance on the Board, however, did not achieve the Government's goal, meaning a minimum of 40% board representation for both women and men with regard to AGM-elected directors.

More detailed information on the board nomination process is provided in the Swedish state's ownership policy, at www.regeringen.se.

The Board's composition

Vattenfall's Articles of Association stipulate that the Board of Directors shall have, in addition to the employee representatives, a minimum of five and a maximum of ten members without deputies. The directors are elected annually by the Annual General Meeting, which also elects the Chairman of the Board.

In 2022, no member of the Executive Group Management (EGM) was a director on the Board. This is in line with the Swedish state's ownership policy. Similarly, none of the Board members elected by the AGM was employed within the company. By law, the unions are entitled to appoint three board members plus three deputies, and they exercised this right.

Biographical information about the board members is provided on pages 103–104.

Guidelines for directors' fees

Directors' fees for Board and committee work are set by the owner at the AGM, in accordance with the Swedish state's ownership policy. Information on directors' fees in 2022 is provided in the Annual and Sustainability Report, Note 42 to the consolidated accounts, Number of employees and personnel costs.

Evaluation of the Board's and the President's work

The Board annually evaluates the President and its own work as part of efforts to develop work forms and effectiveness. This evaluation is conducted under the direction of the Chairman and is reported to the Board and the owner.

In 2022, a comprehensive evaluation was carried out with follow-up and with the help of an external consultant. The evaluation used a questionnaire for the Board as a whole, which each of the members and deputies answered, and in-depth interviews with the Board members were made. The questions addressed Vattenfall's current challenges, management and organisation, the board's efficiency, composition and expertise, and its relationship with the owner, chairman and CEO. The President, the CFO and the Secretary to the Board also answered the questionnaire and were interviewed. The evaluation was reported and discussed at the Board meeting in February 2023. As a follow-up to the written evaluation, the Chairman held individual discussions on a voluntary basis with each of the members elected by the AGM and collectively with the employee representatives.

Board committees

The Board has established two committees and Rules of Procedure for these. At the statutory board meeting, the Board appointed a number of directors elected by a general meeting for each committee, of whom one serves as committee chair. Information on the committees' composition and attendance is provided on pages 103–104.

The committees report their work to the Board at the next regular board meeting, whereby the committee chair presents a report accompanied by minutes from the committee meetings. Except for a few matters handled by the Audit Committee, the committees are only drafting bodies and make recommendations to the Board. The Board's legal responsibility under company law for the company's organisation and administration of the company's affairs is not constrained by the committees' work.

Audit Committee

The Audit Committee oversees Vattenfall's financial reporting and is responsible for meeting with Vattenfall AB's external and internal auditors on a regular basis in order to stay informed about the planning, focus and scope of the company's audit. The Audit Committee is also responsible for discussing coordination of the external and internal audit work and views of the company's financial risks. The committee prepares Internal Audit's budget, the Internal Audit Charter and the internal audit plan for resolution by the Board. It has the right, on behalf of the Board, to decide on other services than auditing that Vattenfall may procure from the Group's auditors.

The Audit Committee meets prior to Vattenfall's publication of interim reports and when warranted by the prevailing conditions. The CFO and head of Internal Audit serve in a reporting role. The external auditors attend all regular meetings and report on their observations of the audit.

The Audit Committee's most important duties are:

- To oversee Vattenfall's financial reporting, including sustainability reporting
- With respect to financial reporting, to monitor the effectiveness of Vattenfall's internal control, internal audit and risk management
- To stay informed about the audit of the annual report and consolidated accounts
- To review and monitor the auditor's impartiality and independence
- To assist in the drafting of recommendations for decisions on the election of auditor by the Annual General Meeting
- To review and oversee the management of market and credit risks
- To conduct an annual evaluation of the external auditors' work.

Remuneration Committee
The Remuneration Committee's duties include serving as a drafting body to ensure implementation and compliance with the guidelines, approved by the Annual General Meeting, for remuneration of senior executives. Where applicable, it conducts drafting work for any special reasons that may exist in an individual case to deviate from the guidelines. It also conducts work for the Board's remuneration report and, ahead of the AGM, monitoring and following up the auditors' review. The President serves in a reporting role on the Remuneration Committee.

The Remuneration Committee's most important duties are:
- To conduct drafting work for board decisions on matters regarding remuneration principles, and on remuneration and other terms of employment for members of the Executive Group Management and other senior executives
- To monitor and evaluate application of the guidelines for remuneration of senior executives, which the Annual General Meeting is required to make a decision on by law, as well as remuneration structures and levels of remuneration in the company
- To conduct drafting work for the Board's decisions regarding overarching remuneration principles, such as the general existence of, amount and structure of variable remuneration (for employees who are not senior executives).

Auditor

The Swedish state's ownership policy stipulates that the owner is responsible for election of auditors and that the auditors are to be appointed by the Annual General Meeting. Proposals for election of auditors and for auditors' fees are submitted by the Board and drafted by the company. The auditors are elected for a mandate period of one year, in accordance with the main rule in the Swedish Companies Act. Vattenfall's Articles of Association stipulate that the company shall have one or two auditors with or without one or two deputy auditors, or a chartered accounting firm as auditor.

The AGM 2022 re-elected PricewaterhouseCoopers AB as auditor. The accounting firm appointed Authorised Public Accountant Eva Carlsvi as auditor-in-charge.

The auditor's audit assignment includes a review of the annual report, the consolidated accounts, the corporate governance report, the sustainability reporting and compliance with the guidelines for remuneration of senior executives. The auditor has access to minutes of board meetings and board committee meetings. The Audit Committee has approved guidelines for how procurement of other services than auditing shall take place from the auditor.

At the 2022 AGM, the auditor reported on the audit work in 2021 and on its review of compliance with the guidelines for remuneration of senior executives. The auditor reported on its review of the year-end accounts for 2022 to the entire Board at the board meeting in February 2023 (without the presence of any person from the Executive Group Management), and also reported on its observations at the board meeting in December 2022. In addition, the auditor performed a The auditor's fees are payable according to an approved invoice. The Group's auditing costs are described in more detail in the Annual and Sustainability Report, in Note 15 to the consolidated accounts, Auditor's fees, and in Note 15 to the Parent Company accounts, Auditor's fees.

CEO and Group Management

The President of Vattenfall AB, who is also Chief Executive Officer (CEO) of the Vattenfall Group, is responsible for the day-to-day administration in accordance with the Swedish Companies Act. Anna Borg was the CEO in 2022. An account of the President's remuneration is provided in the Remuneration Report and in the Annual and Sustainability Report, Note 42 to the consolidated accounts, Number of employees and personnel costs.

The CEO has set up internal bodies for governance of the Group and makes decisions independently or with the support of these bodies. The most important of these are the Executive Group Management (EGM) and the Vattenfall Risk Committee (VRC). The EGM focuses on the Group's overall direction and addresses – within the framework of the CEO's mandate from the Board of Directors – matters of importance for the Group. In the EGM, the Head of Strategic Development covers overall sustainability issues. The VRC focuses on decisions pertaining to risk mandates and credit limits, among other things, and exercises oversight of the risk management framework.

Both bodies convene monthly and also conduct preparatory drafting work on matters that are to be decided by the Board of Directors. Ahead of decisions made by the President in the EGM or VRC on certain major investments and transactions, the risk unit performs an independent risk analysis, which makes up part of the decision-making documentation.

The President follows up operations via quarterly Business Performance Meetings. At these meetings, outcomes, forecasts, important events and challenges – including the status of Vattenfall's strategic targets – are analysed with the management of each business unit. Yearly deep-dives into sustainability topics – challenges, progress and actions for coming year – are performed with the top management of each business area.

Biographical information about the members of the EGM is provided on pages 105–106.

Internal Audit

Internal Audit is an independent and objective function that evaluates, recommends and monitors improvements to the effectiveness of Vattenfall's risk management, internal controls and governance processes throughout the Group. This also applies to compliance with Vattenfall's governance documents, including the Code of Conduct and Integrity. The function is directly subordinate to the Board of Directors and Audit Committee. It performs its work risk-based and in accordance with an established internal audit plan.

Internal Audit's budget, the Internal Audit Charter and the internal audit plan are drafted by the Audit Committee and decided on by the Board of Directors. The Head of Internal Audit reports administratively to the President and informs the management teams of the business units and other units about audit activities that have been performed. The Head of Internal Audit also submits a report to the Audit Committee at each regular Committee meeting.

Internal governance

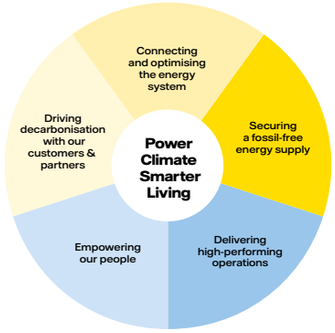
Principles and strategy

Vattenfall formulated a strategy in 2016 with the purpose to Power Climate Smarter Living and the goal to enable fossil-free living within one generation.

Vattenfall has five strategic focus areas, according to a strategy wheel, which visualizes Vattenfall's way forward to ensure profitability and be a leader in the energy transition. In addition to this are the financial targets, decided on by the general meeting and further described under "Shareholder and general meetings" above. Group scorecards support by linking to financial, non-financial and operational requirements, for instance with regard to CO_2 emissions and fossil-free generation capacity. Reporting back to the Board is performed as part of the quarterly reporting.

Vattenfall creates value for owner and stakeholders by doing sustainable business in attractive markets with good conditions for returns, and where we can use our competitive advantages. Vattenfall's strategy is well aligned with the UN's Agenda 2030 Sustainable Development Goals and will drive Vattenfall to make an important contribution to the global sustainable development agenda.

The strategy wheel



Governing business ethics

Vattenfall's Code of Conduct and Integrity builds upon the four Vattenfall principles – open, active, positive and safety – and contains a number of rules built on the "think first" approach. It includes references to the Vattenfall Management System (VMS), which elaborates on these rules. The Code has been communicated throughout the Group and is available on the intranet in several language versions, corresponding to the countries where Vattenfall has business operations. Information about the Code is provided in connection with new hiring and training. An e-learning programme on application of the Code is mandatory for all Vattenfall employees.

To ensure ethical and non-corrupt conduct throughout the organisation, Vattenfall requires all employees to act in accordance with the company's ethical guidelines, which are set forth in the Code of Conduct and Integrity as well as in internal instructions. Vattenfall believes that free competition plays a decisive role for a market to function effectively and has zero tolerance for bribery and corruption. An important step in ensuring this is the recurrent training that is conducted within the Vattenfall Integrity Programme, which is described on page 68.

Vattenfall's employees and other stakeholders have the opportunity to report serious improprieties anonymously through a whistleblowing function, either internally through a web-based whistleblowing channel or externally to one of the locally appointed external ombudsmen (attorneys). Internal reports can also be made directly to any member of Internal Audit or to the local Whistleblowing Coordinator.

Read more about reported incidents in the Annual and Sustainability Report on page 69. Ongoing legal processes are described in Note 40 to the consolidated accounts, Contingent liabilities. Examples of sustainability initiatives and principles that Vattenfall has aligned itself with or supports are listed on page 166.

The three lines model

Vattenfall applies the "three lines model", for management and control of risks in general, based on the framework of the Institute of Internal Auditors.

1. The first line is primarily represented by units associated with the provision of products or services to the organisation's customers, such as Business Units and certain Staff Functions. It is responsible for executing the strategy and managing risks.
2. The second line provides control, expertise, support, monitoring and challenge on risk-related matters. It consists of Staff Functions governing the organisation, among them Health & Safety, Environment, Integrity, Security, Group Internal Financial Control and Risk Management.
3. The third line is made up of internal audit, which oversees and evaluates the first and second lines (as described above).

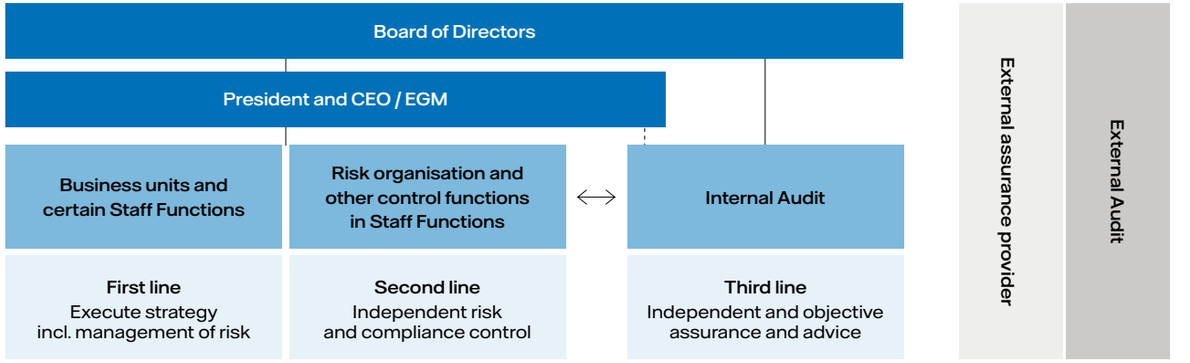
Vattenfall Management System

The most important internal rules for governing Vattenfall are found in the Vattenfall Management System (VMS). The VMS is the group system to develop, align and implement the rules and requirements decided by the Board, the President and the Group Staff Functions. It covers the necessary group steering, while local management systems cover specific business and functional steering. The VMS consists of binding policies and instructions. It is an integrated management system that applies for the entire Vattenfall Group, with the limitations that may arise from legal requirements.

Vattenfall's policies lay out the company's direction in the areas of

- Code of Conduct and Integrity, as described above,
- Remuneration, outlining general principles of remuneration and benefits in Vattenfall, in line with the guidelines decided by the Annual General Meeting,
- Dam safety,
- Nuclear safety,
- Risk, see further pages 81–92 in the Annual and Sustainability Report, and

Three lines model



- Sustainability, where governance is based on an overall policy. In addition, specific policies exist for various sustainability areas:
- Environment
- Health and safety
- Human rights
- Code of Conduct for Suppliers and Partners
- Taxes.

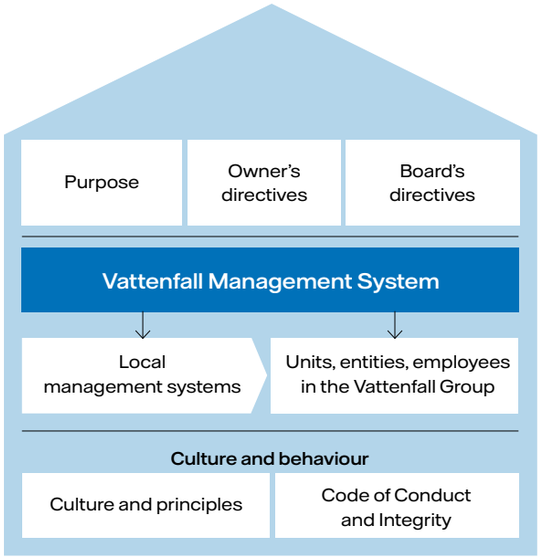
The valid codes of conduct and sustainability policies are published on www.vattenfall.com. The Board of Vattenfall AB approves all policies except the policies on dam safety and nuclear safety; however, within these areas, regular reporting is conducted to the Board.

The content of the policies is concretised in instructions within the VMS, such as in special instructions for matters concerning competition law and for countering bribery and corruption. Instructions in the VMS also include concretisations of the content of the Board's Rules of Procedure, such as allocation of responsibilities and risk mandates.

Instructions shall be implemented in the relevant parts of the organisation and be acknowledged and adhered to by the defined target groups and units. Special routines are in place to ensure adherence to the management system also by subsidiaries. All policies and instructions are accessible for employees on the intranet. E-learning exists in several areas connected to VMS documents. Vattenfall does not require any acknowledgement by employees or management that they have read the content. Implementation and adherence are regularly followed up, and identified issues are addressed. All policies and instructions are regularly reviewed and updated.

Vattenfall's environmental management system is integrated in the VMS. At year-end 2022 nearly 100% of Vattenfall's production and distribution portfolios had certified environmental management systems in accordance with ISO 14001. In addition, all of the Group's business units are certified for occupational health and safety according to ISO 45001. A number of business units have certificates on energy management in accordance with ISO 50001.

Structure of the VMS and other governing rules



Vattenfall's Organisation

The organisational structure comprises six Business Areas: Heat, Wind, Customers & Solutions, Generation, Markets and Distribution. The Business Areas are organised in five operating segments, where Generation and Markets make up a single operating segment (Power Generation). Central Staff Functions support and direct the business activities. For further information see pages 35–46.

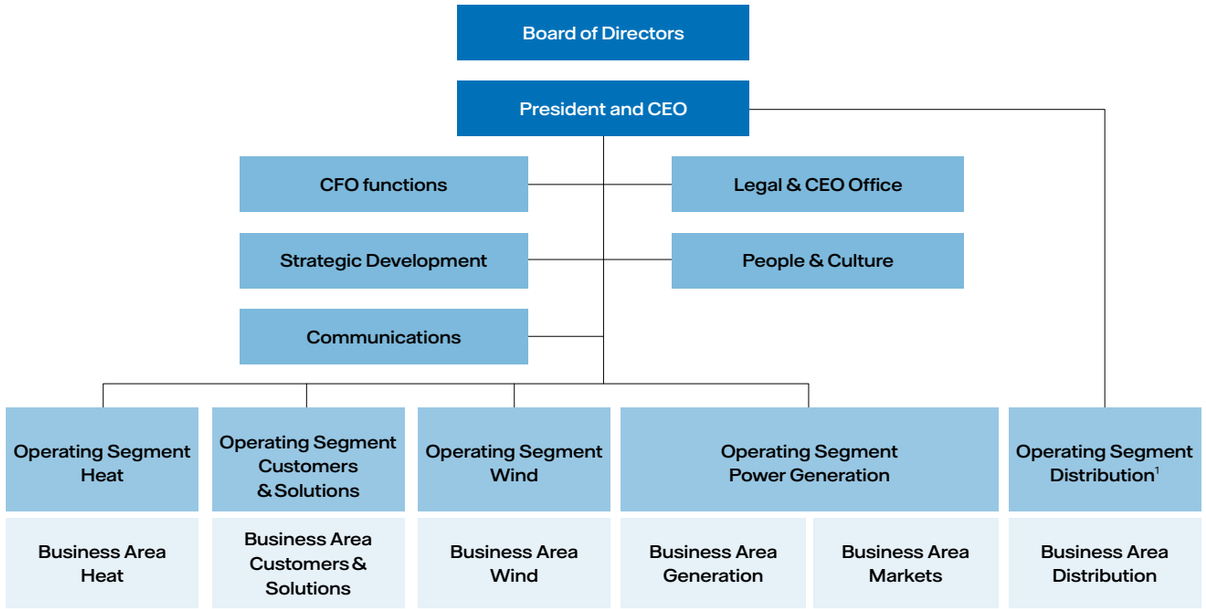
The company structure differs from the business structure. Decisions are made primarily in the business organisation and, to the extent necessary or suitable, by subsidiaries' boards. Governance is conducted financially, non-financially (such as through Staff Functions), and operationally. Unit scorecards and the VMS are the most important governance tools. The business performance steering model consists of an annual business planning process and monthly reporting and follow-up of forecasts and actual results.

In accordance with legislation both within the EU and in the UK, operations of the electricity distribution network shall be separated from sales and generation of electricity (unbundling). For Vattenfall, this entails, among other things, that electricity distribution operations are conducted in separate subsidiaries that have the actual decision-making rights in respect of the company's day-to-day operations, as well as for decisions needed to ensure operation, maintenance and development of the network. The Head of the Distribution Business Area is not member of any decision-making forums outside of the Business Area.

Risk management organisation

The Risk Management organisation is headed by the Chief Risk Officer (CRO) and is responsible for monitoring and control of risks in general. The CRO is accountable for the risk management framework (as described on page 82) and is responsible for ensuring risk governance and risk control. Included in this responsibility are processes related to, among other things, new products and certain contracts with long durations. The CRO provides information on a regular basis to the Vattenfall Risk Committee and to the Executive Group Management as well as to the Board and the Board's audit committee.s

Organisation



[1] Vattenfall's electricity distribution operations are unbundled from other operations, in accordance with Swedish and UK legislation.

Integrity organisation
The aim of integrity work at Vattenfall is to preserve the integrity and to protect the reputation of Vattenfall. Integrity work at Vattenfall is organised according to the three lines model:

1. Ownership: The line organisation, which is responsible for compliance with laws and regulations within the unit
2. Control and advice: The integrity organisation, with reporting to the Group's General Counsel
3. Quality assurance: The Internal Audit unit.

The Integrity organisation's area of responsibility covers antitrust matters, antibribery and anti-corruption, conflicts of interest, inside information, awareness of Vattenfall's Code of Conduct and Integrity, and coordination of Vattenfall's whistleblowing function. Within its scope, the Integrity organization supports Vattenfall in identifying, mitigating, managing and monitoring the risk of non-compliance with laws, regulations, rules, standards and codes of conduct, relevant to its activities. Work is carried out in accordance with an annual plan and regular follow-ups are performed. The annual integrity work is summarized in an integrity report to the Board.

Current integrity issues in 2022 are described in more detail in the Annual and Sustainability Report on page 69.

Guidelines for remuneration of senior executives

The 2022 Annual General Meeting adopted guidelines for remuneration of senior executives. These guidelines are based on the Swedish Government Offices' principles, which form part of the Swedish State's ownership policy, with one deviation. This deviation means that instead of the definition of senior executive in the Swedish Government Offices' principles, senior executives shall be defined on the basis of whether they have a significant impact on the Group's earnings, through use of the International Position Evaluation (IPE) model. Managers with positions of IPE 68 and higher are to be considered as senior executives. The Board's explanation for this deviation is stated in the guidelines, which are found on Vattenfall's website, www.vattenfall.com and in the 2021 Annual and-Sustainability Report, page 105. The Swedish Government Offices' principles are available on the Government Offices' website, www.regeringen.se.

Actions with respect to agreements with senior executives were continuously reported to the Remuneration Committee and the Board, which also decided on the entering into such agreements. Independent external remuneration consultants provided benchmark data prior to decisions on remuneration. Remuneration and compliance with the adopted guidelines are described in the Remuneration Report and in the Annual and Sustainability Report, Note 42 to the consolidated accounts, Number of employees and personnel costs. The proposed guidelines ahead of the 2023 AGM are shown on pages 107–108.

Internal control over financial reporting

This section describes the most important elements in Vattenfall's system of internal control and risk management in connection with financial reporting, as prescribed by the Swedish Annual Accounts Act and the Code. Vattenfall's framework for this control is based on the updated framework "Internal Control – Integrated Framework" from 2013, which has been developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this framework, internal control is defined as "a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance". Vattenfall's overall risks and risk management are further described in the Annual and Sustainability Report, pages 81–92.

Control environment
The control environment is based on the delegation of authority between the Board and the President, which is set forth in the Board's Rules of Procedure, along with the reporting requirements made by the Board. The Board has also adopted Vattenfall's Code of Conduct and Integrity, which lays out the overarching rules governing conduct for all employees.

The Board of Directors has overarching responsibility for internal control over financial reporting, according to the Swedish Companies Act and the Code. In this context the Board shall ensure that the company's organisation is structured in such a way that the bookkeeping, treasury management and the company's financial conditions in general are controlled in a satisfactory manner.

The Board's audit committee conducts drafting work for the Board on matters related to internal control over financial reporting and makes recommendations and proposals to ensure the reliability of reporting. The committee also informs the Board about the results of the audit and about the ways in which the audit contributed to the reliability of the financial reporting and about which function the committee has had.

The VMS (described on page 99) contains steering rules for all identified material areas, including roles and responsibilities, authority and risk mandates, decision-making processes, risk management, internal control, and ethics and integrity issues. The VMS lays out the so-called grandparent principle and four eyes principle for decision-making. An instruction and IT solution is in place for assignment of Group internal authority concerning invoicing, among other things. The VMS also stipulates which decision-making, oversight and advisory bodies exist within the Group, on top of those required by law.

Vattenfall has an internal financial control (IFC) process, organised in Group Finance and whose overall purpose is to ensure that controls are in place in the financial reporting but also in certain nonfinancial reporting.

Risk assessment
The Board addresses the Group's risk assessment and risk management process for the financial reporting at an overarching level. The Board's audit committee conducts drafting work for evaluation and monitoring of risks and quality in financial reporting. The Audit Committee maintains continuous and regular contact with the Group's internal and external audit functions.

A continuous Enterprise Risk Management (ERM) process makes it possible to quantify and compare financial risks. The risk department reports the findings in the ERM process to the Executive Group Management, to the Vattenfall Risk Committee and ultimately to the Audit Committee and the Board.

For the financial reporting, the IFC process serves as the framework for internal control that identifies and defines risks for material errors in the reporting. These are overseen by the CFO function through an annual self-assessment of the effectiveness of process and IT general controls for units in scope of IFC. The scope is based on a materiality and risk analysis. The CFO function is also responsible for performing regular analyses of risks related to financial reporting and for updating this framework.

The external and internal auditors discuss Vattenfall's risk situation in connection with the planning work ahead of the annual audit.

Control activities and monitoring
The Board monitors and addresses the Group's financial situation at every regular board meeting, with a starting point from the financial report submitted by the President and the Chief Financial Officer (CFO).

The Audit Committee conducts the Board's monitoring of the effectiveness of internal control and regularly receives status reports on the Group's internal control over financial reporting, in accordance with the IFC process. A financial report, including a report on accounting and sustainability issues, is presented at every regular Audit Committee meeting, and tax issues are reported on and followed up on a regular basis. The Audit Committee, in turn, reports to the Board on its most important observations and recommendations. The timing and forms of this reporting are set in the Board's and Audit Committee's respective Rules of Procedure.

The Executive Group Management holds regular follow-up meetings with the heads of the Business Areas and Staff Functions regarding the financial outcome. Operations are followed up on a quarterly basis via Business Performance Meetings.

Internally, Vattenfall applies the "three lines model" (described on page 99) for internal control over financial reporting. In this context, the second line includes the Group Internal Financial Control Officer (IFCO), who is responsible for monitoring and control of risks in the financial reporting. The Group IFCO is responsible for the IFC process, which aims to strengthen the governance structure and effectiveness of controls. Continuous improvements to the IFC process are ensured through an annual evaluation and updating process. Information about ineffective controls is provided to internal and external audit. Each incidence of ineffectiveness is risk-assessed in consultation with the first line. Information about these risks is provided to the risk organisation. An IFC status update is provided semi-annually to the Audit Committee.

The internal framework for internal control includes processes for self-assessments, monitoring, reporting and improvement of control activities in order to prevent, discover and correct errors in the financial reporting. Written confirmation of adherence to internal and external stipulations, via signing of internal representation letter, is part of these processes.

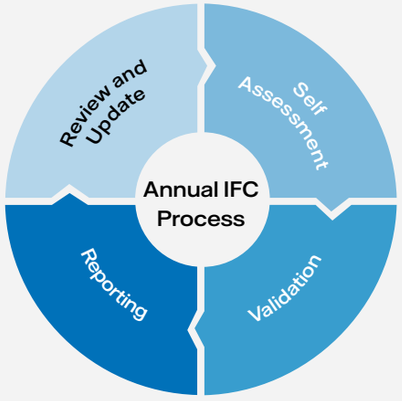
Information and communication
The Group's steering documents are accessible via Vattenfall's intranet. The forms for handling internal and external communication are documented in a VMS instruction which aims to ensure that Vattenfall is in compliance with legal as well as stock exchange rules, the Swedish state's ownership policy (including principles for external reporting), and other obligations. Accounting and reporting principles are laid out in a joint manual for the entire Group. Updates and changes in these policies and principles are communicated on a continuous basis via the intranet as well as at meetings with representatives of the Group's Business Areas and Staff Functions.

Reporting and follow-up reporting to the Board and EGM are part of monitoring activities. Internal and external audit and the Chief Risk Officer (CRO) also report on their observations to the Board's audit committee. Furthermore, the semi-annual status report from IFC is a basis for the assessment.

Financial reporting includes interim reports, the year-end report and the annual report. In addition to these reports, financial information is provided to the Group's external stakeholders via press releases and Vattenfall's websites, in accordance with the Swedish Securities Market Act, among other things. Presentations and conference calls for financial analysts, investors and the media are held as a rule on the same day that reports are published.

The Internal Financial Control (IFC) process

Review and Update
Implement improvements and correct errors in the IFC process and the IFC framework (list of IFC controls). Define the IFC scope for the forthcoming year.



Self Assessment
A yearly questionnaire used to evaluate the status of the IFC control points and identify the need for corrective action.

Reporting
Quarterly IFC status reporting and half-year/year-end report to the Audit Committee.

Validation
Complementary evaluations of IFC control points, e.g. via on-site validations.

Board of Directors

MATS GRANRYD (1962)
Chairman of the Board
Education: Mechanical M.Sc
Other assignments: Board member of SVT (Sverige Television) 2021. Chairman of the board COOR (2017–). Director General GSMA (2016 –). Member of the UN Broadband Commission (2017–).
Previous positions:Member of the board Swedbank (2017–2020). Member of the board ENVAC (2013–2017). Group CEO Tele2 (2010–2015). Positions within Ericsson (1995–2010).
Elected: 2020
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 11/11
Committee attendance[1]: 2/2 and 3/3

VIKTORIA BERGMAN (1965)
Board member
Education: Communication Executive Programme
Other assignments: Chairman of the Board of Galber AB. Acting Chairman of the Board of Trianon AB, deputy chairman of WaterAid Sweden. Board member of Cinis Fertilizer AB.
Previous positions: Member of Group Management and Senior Vice President Stakeholder Management & Corporate Sustainability E.ON Nordic, Board member E.ON Försäljning, E.ON Kundsupport and E.ON Smart Living (2012–2014). Positions within Trelleborg Group (2002–2011), including member of Group Management and Senior Vice President Corporate Communications. Positions in Falcon Breweries/ Unilever (1989–1996), Cerealia Group (1987–1989).
Elected: 2015
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 11/11
Committee attendance: 4/4

ANN CARLSSON (1966)
Board member
Education: Bachelor's degree in Personnel, Work and Organization
Current position: CEO Systembolaget AB.
Other assignments: Board member in The Confederation of Swedish Enterprise, The Swedish Trade Federation, SNS.
Previous positions: CEO at Apoteket AB, positions within ICA, Board of member in Martin & Servera, Axfood AB, Ramirent OY.
Elected: 2019
Committee assignment: Renumeration Committee chair
Board meeting attendance: 9/11
Committee attendance: 4/4

HÅKAN ERIXON (1961)
Board member
Education: B.Sc. International Business Administration and Economics
Other assignments: Board member of Tijtall AB and Onto Holdings Limited.
Previous positions: Chairman of the Board of Hemnet Group AB (2017–2022), Chairman of the Board of TransferGalaxy AB (2019–2020), Board member of Opus Group AB (2018–2020). Chairman of the Board of Capacent Holding AB (2015–2019). Chairman of the Board of Orio AB (publ) (2012–2017). Member of the Nasdaq OMX Stockholm AB Listing Committee (2010– 2016). Senior Advisor, Corporate Finance, Swedish Government Offices, which included work for the Swedish National Debt Office (2007–2010). Board member of Carnegie Investment Bank AB (2008– 2009). Board member of Vasakronan AB (2007–2008). Positions within UBS Investment Bank Ltd, London (1997–2007), including Vice Chairman of the Investment Banking Division. Positions within Merrill Lynch International Ltd, London (1992–1997).
Elected: 2011
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee attendance: 4/5

DANIEL KRISTIANSSON (1974)
Board member
Education: MSc in Business Administration
Current position: Investment Director / Senior Advisor, Ministry of Enterprise and Innovation.
Other assignments: Board member of Swedfund International AB and Stiftelsen Industrifonden.
Previous positions: Vice president, Citigroup. Board Member SBAB Bank AB (publ), Green Cargo AB, Metria AB, Vasallen AB, Bostadsgaranti AB.
Elected: 2022
Committee assignment: Member of the Audit Committee
Board meeting attendance: 7/7
Committee attendance: 2/3

[1] Shifted from Audit Committee to Remuneration Committee as of 28 April, 2022

Board of Directors, cont.

TOMAS KÅBERGER (1961)
Board member
Education: M.Sc. Engineering Physics. Ph.D. Physical Resource Theory. Associate Professor (Docent), Environmental Science.
Other assignments: Professor & Director of Energy research, Chalmers University of Technology Executive Board Chairman of Renewable Energy Institute, Tokyo. Advisor GEIDO, Beijing. Board member in Persson Invest AB and Tanke och Möda AB. Member of the Royal Swedish Academy of Engineering Sciences (IVA).
Previous positions: Director General, Swedish Energy Agency (2008–2011). Professor Lund University, International Sustainable Energy Systems (2006–2008).
Elected: 2015
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee attendance: 5/5

FREDRIK RYSTEDT (1963)
Board member
Education: M.Sc. Business and Economics
Current position: Executive Vice President and CFO of Essity Aktiebolag (publ).
Other assignments: Board member of Vinda International Holdings Limited.
Previous positions: Chief Financial Officer, Country Senior Executive, Nordea Sweden (2008–2012). Chief Financial Officer, Electrolux Group (2001–2008). Chief Financial Officer (2000–2001) and Head of Business Development (1998–1999), Sapa Group. Positions within the Electrolux Group (1989–1998), including as Vice President and Head/Director of Mergers & Acquisitions (1995–1998).
Elected: April 2017
Committee assignment: Audit Committee chair
Board meeting attendance: 9/11
Committee attendance: 5/5

ROBERT LÖNNQVIST (1979)
Employee representative
Education: 3-year upper secondary degree in electrical installation. Further education in project management, labour law and health & safety.
Current position: Employee representative for Seko Facket för Service och Kommunikation. Vattenfall employee since 2007, currently as Project Manager at Vattenfall Services Nordic AB.
Other assignments: Member of the European Works Council. Assignments for Seko.
Elected: 2017
Board meeting attendance: 10/11

ROLF OHLSSON (1961)
Employee representative
Education: Mechanical M.Sc.
Current position: Employee representative for Akademikerrådet at Vattenfall. Vattenfall employee since 1998, currently as full time representative for Akademikerna at Forsmarks Kraftgrupp AB.
Other assignments: Employee representative on Forsmarks Kraftgrupp AB's board. Chairman of Akademikerrådet i Vattenfall.
Elected: 2017
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee attendance: 5/5

JEANETTE REGIN (1965)
Employee representative
Education: Secondary school diploma and two-year education in healthcare.
Current position: Employee representative for Unionen. Head of customer service/office services for Gotlands Energi AB.
Elected: 2011
Board meeting attendance: 8/11

Deputy employee representatives

LENNART BENGTSSON (1958)
Employee representative (deputy)
Education: Two-year secondary school degree in mechanics and network technology training in IT.
Current position: Employee representative for Seko Vattenfall employee since 1979, currently as IT technician.
Elected: April 2018
Board meeting attendance: 11/11

ANDERS BOHLIN (1965)
Employee representative (deputy)
Education: Energy Engineer
Current position: Research Engineer at Strategic Development, Vattenfall AB.
Other assigments: Member of the European Works Council. Vice Chairman, Unionen Vattenfall.
Elected: 2019
Board meeting attendance: 10/11

CHRISTER GUSTAFSSON (1959)
Employee representative (deputy)
Education: Four-year education in technology.
Current position: Employee representative for Ledarna. Vattenfall employee since 1986, currently in the the engineering department, Forsmarks Kraftgrupp AB.
Other assigments: Representative for Energy & Technology, Confédération Européenne des Cadres (for energy issues). Chairman of Ledarna at Vattenfall and European Works Council at Vattenfall.
Elected: 2013
Board meeting attendance: 8/11

Executive Group Management

ANNA BORG (1971)
President and CEO
Vattenfall employee since: 2017 and 1999–2015
Education: Master in Economics and Political Science
Previous positions: CFO 2017–October 2020, Senior Vice President, Business Area Markets, Vattenfall (2017), Senior Vice President, Nordic Klarna (2015–2017), Vice President, Marketing and Sales Nordic, Vattenfall (2013–2015), Vice President B2C Sales Europe, Vattenfall (2011–2013), Vice President, Sales Nordic, Vattenfall (2009–2011), Management positions in Strategy, Business Development, Project Management and Trading, Vattenfall (1999–2009).
Other assignments: Board member FAM and Ruter Dam.

In 2022 Anna Borg did not have any significant shareholdings in companies with which Vattenfall has business relations.

KERSTIN AHLFONT (1971)
Senior Vice President, Chief Financial Officer
Vattenfall employee since: 1995
Education: M.Sc. Eng.
Previous positions: Vice President Human Resources (2015–2020) Head of Finance Region Nordic (2014–2015), Vice President Controlling and Continuous Improvement Business Division Production (2012–2014), Head of Project Management Office (2010–2012). Long-standing experience from various management positions within Vattenfall such as Business Group Pan Europe (2009–2010), Business Unit Heat Nordic (2000–2009), Product Manager Specialist (1998–2000), Consultant Vattenfall Energisystem AB (1996–1998) and trainee 1995–1996).
Other assignments: No other assignments.

CHRISTIAN BARTHÉLÉMY (1971)
Senior Vice President, Head of People & Culture
Vattenfall employee since: 2009
Education: Master's in Business Administration
Previous positions: Vice President Special Projects (2020), Program Director groupwide Outsourcing (2015–2020), Vice President/Head of Real Estate and Facility Services, Head of Facility Services Continental/UK (2011–2015), Program Manager Optimization Program Vattenfall Service Unit Germany (2009–2011); Manager, KPMG Advisory (2001–2009).
Other assignments: Chairman of the Board Vattenfall GmbH.

HELENE BISTRÖM (1962)
Senior Vice President, Head of Business Area Wind
Vattenfall employee since: 2021 as well as 1983–2010
Education: MSc in Mechanical Engineering
Previous positions: Executive Vice President Commercial BillerudKorsnäs AB (2019–2021), CEO Infranord (2017–2019), CEO Norrenergi (2011–2014), Member of Group Management Vattenfall AB (2007–2010). Chairman of the Board Sveaskog and Cramo, Board member of Statkraft AS, KTH and Pöyry (2014–2017).
Other assignments: Board member of Boliden AB.

ANNE GYNNERSTEDT (1957)
Senior Vice President, General Counsel and Secretary to the Board of Directors and responsible for Corporate Security & Resilience
Vattenfall employee since: 2012
Education: LL.B.
Previous positions: General Counsel, Secretary to the Board and member of executive management of SAAB AB (2004–2012). General Counsel and member of executive management of the Swedish National Debt Office (2002–2004). Corporate Legal Counsel, SAS (1987–2002).
Other assignments: Board member of Swedish Space Corporation. Member of Sw "Aktiemarknadens Självregleringskommitté."

Executive Group Management, cont.

MARTIJN HAGENS (1971)
Senior Vice President, Head of Business Area Customers & Solutions
Vattenfall employee since: 2003
Education: M. Sc. Industrial Engineering and Management
Previous positions: Head of Heat Continental/UK, Vattenfall (2014–2015). Head of Customer Service, Vattenfall (2011–2013). Head of Customer Care Centre, Nuon (2008–2010). Program Director Unbundling, Nuon (2006–2007). Nuon Consultancy Group & Lean Competence Center, Nuon (2005–2006). Head of Customer Care B2B, Nuon (2003–2004). Management Consultant, Accenture (1996–2002).
Other assignments: Managing Director of Vattenfall N.V. Netherlands.

ÅSA JAMAL (1972)
Senior Vice President, Head of Group Communications
Vattenfall employee since: 2022
Education: BA Political Science and Economics
Previous positions: SVP Head of Communications, Telia Company (2019–2020), VP Head of Communications Sweden, Telia (2017–2020), SVP Communications, HR and Public Affairs, Bonnier Broadcasting/TV4 (2012–2017), Managing Director and Partner, JKL (2006–2012), Consultant, JKL (2000–2006).
Other assignments: Chairman of the Board of Kasthall, Board Member of Stiftelsen Affärsvärlden.

ANDREAS REGNELL (1966)
Senior Vice President, Head of Strategic Development
Vattenfall employee since: 2010
Education: B.Sc. Econ.
Previous positions: Head of Nordic Business Strategy (2014–2015). Head of Strategy and Sustainability (2010–2013). Senior Partner and Managing Director, Managing Partner of Nordic Region, The Boston Consulting Group (1992–2010). Analyst and Account Manager, Citibank (1989–1992).
Other assignments: Chairman of the Board of Green Cargo AB. Board member of HYBRIT Development AB. Board member of Energiföretagen Sverige – Swedenergy AB.

ANNA-KARIN STENBERG (1956)
Senior Vice President, Head of Business Area Markets
Vattenfall employee since: 2018 and 2008–2011
Education: Bachelor of Science in Business Administration and Economics.
Previous positions: Vice President Controlling BA Markets, Head of Corporate Control, TeliaCompany (2015–2018), CFO Praktikertjänst (2011–2015), CFO Business Group Nordic Vattenfall (2008–2011), Global Manager Atlas Copco ASAP (1999–2008), BA Controller Atlas Copco (1997–1999), CFO ABB Signal (1995–1996), Business Controller Corporate Research ABB Ltd (1991–1995); Head of Treasury Consulting, ABB World Treasury Center (1985–1991), Group Finance ASEA/ABB (1982–1984).
Other assignments: Board member RISE AB.

TORBJÖRN WAHLBORG (1962)
Senior Vice President, chef Business Area Generation
Vattenfall employee since: 1990
Education: M.Sc. Eng.
Previous positions: Head of Business Region Nordic (2014–2015). Head of Business Division Nuclear (2012–2013). Head of Business Division Distribution and Sales (2010–2012). Head of Business Group Nordic (2010). Positions in Vattenfall's Polish operations (1997–2010), including as country manager (2008–2009).
Other assignments: Board member of the Confederation of Swedish Enterprise. Chairman of the Board of EnergiFöretagens Arbetsgivareförening (EFA) AB.

ANNIKA VIKLUND (1967)
Senior Vice President, Head of Distribution Business Area
Vattenfall employee since: 2006
Education: Computer Science, MBA
Previous positions: Managing Director Vattenfall Eldistribution (2010–2015,2017–), Vice President Distribution Nordic (2011–2015), Head of Local Networks, Vattenfall Distribution (2008–2010), Head of Marketing, Vattenfall Distribution (2006–2008), Nordic Resource Manager IBM Global Service (2005–2006), Client Unit Executive Manager Public Sector IBM Sweden (2004–2005), Consultant Manager IBM Global Services (1998–2003).
Other assignments: Board member Teracom Samhällsnät and Wise Group AB, Member of the Swedish Electrification Commission.

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

AGM proposal

The Board's proposed guidelines for remuneration of senior executives
These guidelines cover the President and other members of the Group management. They also cover board members, to the extent their remuneration is not decided by the Annual General Meeting. The guidelines are designed in accordance with the Swedish Government's principles for remuneration and other terms of employment for senior executives of state-owned companies, decided on 27 February 2020 (www.regeringen.se), with a deviation as to how the principles are applied in Vattenfall's subsidiaries (see additional information under Explanation for deviations from the government's principles). The guidelines shall apply to remuneration agreed upon, and changes made to already agreed remuneration, after the-guidelines have been adopted by the 2023 Annual General Meeting.

The guidelines' promotion of the company's business strategy, long-term interests and sustainability

Vattenfall has defined a strategy with the purpose to Power Climate Smarter Living and enable fossil free living within one generation. The business strategy is further described on the web page https://group.vattenfall.com/who-we-are/about-us/our-goals-and-strategy.

A prerequisite for the successful implementation of Vattenfall's business strategy and safeguarding of its long-term interests, including its sustainability, is that Vattenfall is able to recruit and retain qualified personnel. To this end, it is necessary that Vattenfall offers competitive remuneration. These guidelines enable Vattenfall to offer the senior executives a competitive total remuneration.

Types of remuneration, etc
The remuneration has to be competitive, capped, appropriate and not market-leading in relation to comparable companies, and may consist of the following components: Fixed cash salary, severance pay, pension benefits and other benefits. Variable remuneration must not be paid to senior executives.

Premiums for retirement and survivors' pension benefits shall be defined contribution solutions that do not exceed 30 per cent of fixed annual cash salary, unless benefits are provided through a group pension plan applied to an enterprise. In that case, the contributions are determined by the terms and conditions of the pension plan. Any expansion of a group pension plan above the pay level covered by the plan has to be on a defined contribution basis where the maximum contribution is 30 per cent of the part of salary above the cap. The minimum retirement age must not be under 65 years.

If a salary swap scheme is offered, the solution has to be cost-neutral.
Other benefits may include, among others, company cars. Compensation in connection with work incapacity due to illness shall follow the terms and conditions for sick pay and disability pension set out in applicable collective agreements. Any expansion of group disability insurance above the pay level covered by collective agreement has to correspond to market practice.

As regards employment relationships governed by non-Swedish legislation, the appropriate adjustments may be made concerning pension benefits and other benefits so as to follow mandatory rules or established local practice; in doing so, the overall purpose of these guidelines has to be satisfied as far as possible.

It shall be avoided that a board member or deputy board member is engaged as a consultant in the company and thus receives consultancy fees in addition to the director's fee. If this is the case, the assignment shall be examined by the Board of Directors on a case-by-case basis, be clearly separate from the ordinary board assignment, limited in time and regulated by written agreement between the company and the member. The remuneration for such assignments shall be consistent with these guidelines.

Termination of employment
If the company gives notice of termination, the period of notice must not exceed six months and severance pay must be limited to at most twelve months' salary. Severance pay is to be paid monthly and consist only of the fixed monthly salary with no pension benefits or other benefits added. In case of new employment or some other additional paid assignment or income from business activity, remuneration from the terminating company shall be reduced by an amount equivalent to the new income during the period covered by salary for notice of termination and severance pay. No severance pay is paid if the employee gives notice of termination. Severance pay is paid until the agreed age of retirement at the latest and is never paid after the age of 65 years.

Additionally, remuneration may be paid for non-compete undertakings. Such remuneration shall compensate for loss of income and shall only be paid in so far as the previously employed executive is not entitled to severance pay. The remuneration shall amount to not more than 60 per cent of the monthly income at the time of termination of employment and be paid during the time the non-compete undertaking applies, however not for more than 12 months following termination of employment.

Salary and employment conditions for employees
Remuneration to senior executives shall not be market-leading in relation to comparable companies but should be moderate in character. In the preparation of the Board's proposal for these remuneration guidelines, salary and employment conditions for employees of the company have been taken into account by including information on the employees' total income, the components of the remuneration and increase and growth rate over time, in the Remuneration Committee's and the Board's basis of decision when evaluating whether the guidelines and the limitations set out herein are reasonable.

The decision-making process to determine, eview and implement the guidelines
The Board has established a Remuneration Committee. The members of the Remuneration Committee are independent of the company and its executive management. The Committee's tasks include preparing the Board's decision to propose guidelines for remuneration to senior executives. The Board shall annually prepare a proposal for guidelines and annually submit it to the general meeting for decision. The Remuneration Committee shall also follow and assess the application of the guidelines for remuneration to senior executives as well as the current remuneration structures and levels of remuneration in Vattenfall. The President and other members of the executive management do not participate in the Board's processing of and resolutions regarding remuneration-related matters, in so far as they are affected by such matters.

The Board certifies that the remuneration in question is in compliance with the guidelines set by the general meeting in such way that before a decision is made on remuneration and other terms of employment for a senior executive, written documentation shall be available that shows the company's total cost. The proposal for decision shall be drafted by the Board's Remuneration Committee and thereafter be decided by the Board. The company's auditors shall perform a review to ensure that the set remuneration levels and other terms of employment have not been exceeded and, in accordance with the Swedish Companies Act, shall once a year – not later than three weeks before the Annual General Meeting – issue a written statement as to whether the adopted guidelines have been adhered to.

Deviations from the guidelines
The Board of directors may temporarily resolve to deviate from the guidelines, in whole or in part, if in a specific case there is special cause for the deviate and a deviation is necessary to serve the company's long-term interests, including its sustainability, or to ensure the company's financial viability. The Board makes the decision on deviation from the guidelines. As set out above, the Remuneration Committee's tasks include preparing the Board of Directors' resolutions in remuneration-related matters, which includes any resolutions to deviate from the guidelines. In such a case, the Board of Directors shall disclose the deviation and the reasons therefor.

Explanation for deviations from the government's principles
The deviation from the Government's principles for terms of employment for senior executives of state-owned companies was decided on by the owner at the 2022 Annual General Meeting. The deviation entails use of a generally accepted ranking model instead of the definition of senior executive of a subsidiary in the principles for remuneration. The Board is of the opinion that the following, special reasons exist for deviating from the principles.

Like other international groups, Vattenfall governs its operations from a commercial perspective and not according to the legal company structure. For commercial and legal reasons, the Vattenfall Group has approximately 300 subsidiaries. Through application of the Government's principles for subsidiaries, a very large number of executives would be considered to be senior, without them having any significant influence on the Group's earnings.

The proposed deviation reflects these circumstances. The criteria used to define what constitutes a senior executive are the individual subsidiary's size based on sales, the number of employees and number of steps in the value chain, as well as the requirements on the individual executive for innovation, knowledge, strategic/visionary role and international responsibility. The International Position Evaluation (IPE) model is used as support for determining in a systematic manner which positions can be considered to be senior. The Board's conclusion is that, in addition to the members of the Executive Group Management, executives in positions of IPE 68 or higher should be considered to be senior.

Proposed distribution of profit
The Annual General Meeting has at its disposal retained profits, including the profit for the year, totalling SEK 31,772,251,562. The Board of Directors proposes that the profits be distributed as follows:
To be distributed to the shareholder:
SEK 4,000,000,000
To be carried forward: SEK 27,772,251,562

The proposed distribution corresponds to a dividend of SEK 30.37 per share. The dividend is proposed for payment on 5 May 2023.

Statement by the Board of Directors pursuant to the Swedish Companies Act, Chapter 18, Section 4
Based on the Parent Company's and Group's financial position, earnings and cash position, the Board of Directors is of the opinion that the proposed distribution of profits will not lead to any material limitation of the Parent Company's or Group's ability to make any necessary investments or to meet their obligations in the short and long term. In view of the above, the Board of Directors finds the proposed dividend, totalling SEK 4,000,000,000 to be carefully considered and justified.

The Board of Directors' and the President's assurance upon signing the Annual and Sustainability Report for 2022
The undersigned certify that the consolidated accounts and the Annual Report have been prepared in accordance with International Financial Reporting Standards (IFRS), as endorsed by the European Commission, for application within the EU, and generally accepted accounting principles, respectively, and give a true and fair view of the Parent Company's and the Group's financial position and earnings, and that the Administration Report for the Parent Company and the Group presents a fair overview of the development of the Parent Company's and the Group's operations, financial position and earnings and describes significant risks and uncertainties that the companies in the Group face. In addition, the undersigned certify that the sustainability data and the statutory sustainability report according to the Swedish Annual Accounts Act Chapter 6 11§, as defined in the GRI Index on pages 167–168, have been prepared in accordance with the GRI Standards, and have been adopted by the Board of Directors.

Solna, 22 March 2023

Mats Granryd, Chairman of the Board

Viktoria Bergman Ann Carlsson Håkan Erixon Daniel Kristiansson

Tomas Kåberger Robert Lönnqvist

Rolf Ohlsson Jeanette Regin Fredrik Rystedt

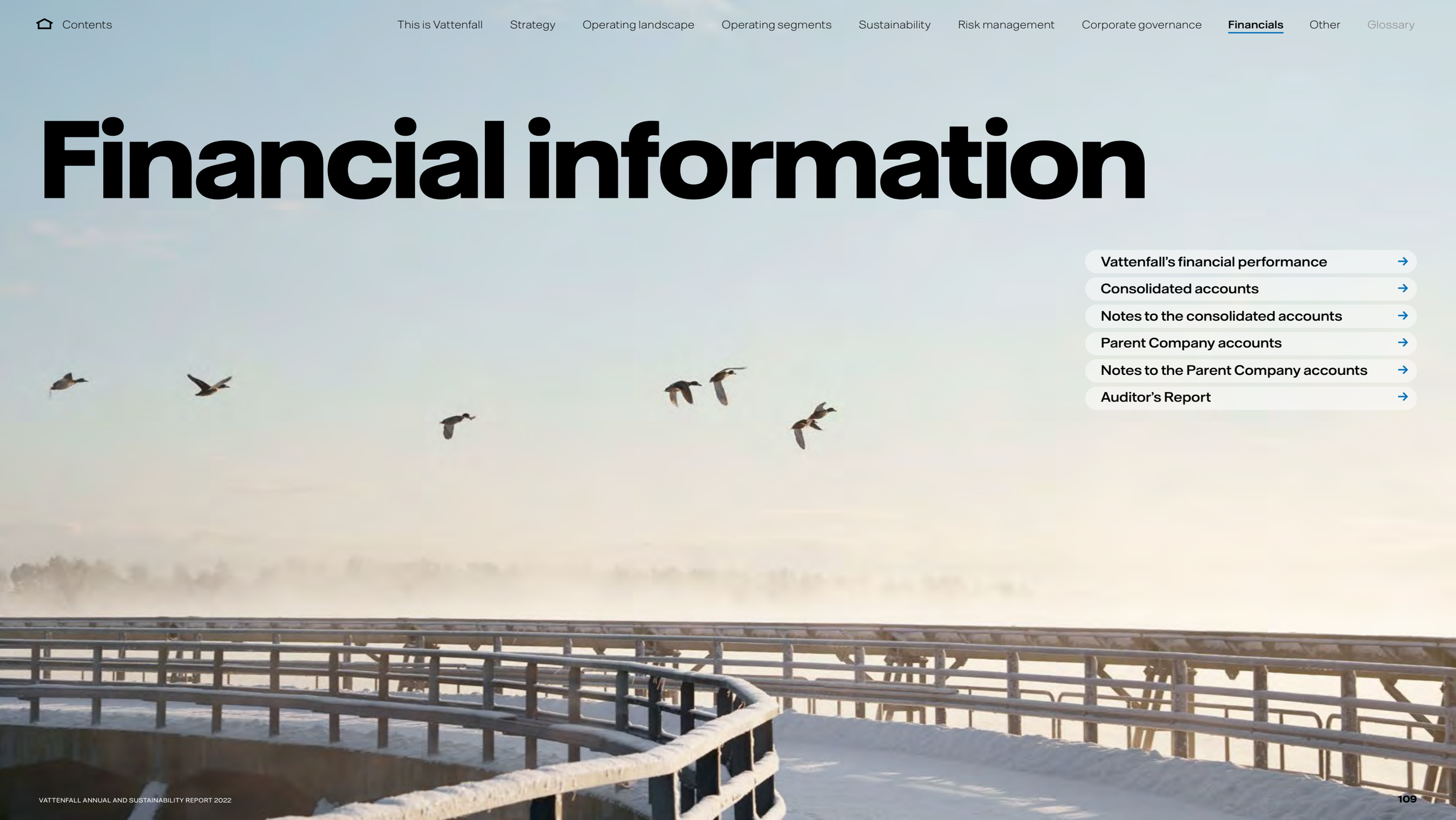
Anna Borg, President and CEO

Our auditor's report was submitted on 27 March 2023
PricewaterhouseCoopers AB

Eva Carlsvi
Auditor-In-Charge, Authorised Public Accountant

Aleksander Lyckow
Authorised Public Accountant

Financial information



Vattenfall's financial performance

Underlying operating profit amounted to SEK 37.3 billion in 2022, an increase of SEK 6.1 billion compared with 2021. Higher contributions from operating segments Wind and Customers & Solutions was partially offset by lower contribution from the Power Generation and Heat operating segments, as well as from the Distribution operating segment (primarily as a result of the sale of the electricity distribution business in Berlin in 2021).

Amounts in SEK million	2022	2021
Net sales	239,644	180,119
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[1]	30,513	75,790
Underlying operating profit before depreciation, amortisation and impairment losses[1]	55,759	48,584
Operating profit (EBIT)[1]	12,645	60,271
Underlying operating profit[1]	37,313	31,181
Profit for the year	21	48,013
Funds from operations (FFO)[1]	42,194	46,096
Net debt[1]	3,858	-44,703
Adjusted net debt[1]	76,765	26,922
Electricity generation, TWh	108.9	111.4
– of which, hydro power	40.5	40.9
– of which, nuclear power	39.6	40.4
– of which, fossil-based power	16.3	18.4
– of which, wind power	12.2	11.2
– of which, biomass, waste	0.3	0.5
Sales of electricity, TWh[2]	165.3	168.9
Sales of heat, TWh	14.1	15.6
Sales of gas, TWh	47.3	57.1
CO_2 equivalents, Mtonnes[3]	9.5	10.3
Work-related accidents, number (LTIF)[4]	1.1	1.7
Number of employees, full-time equivalents	19,638	18,835
Key ratios		
Return on capital employed, %	4.2[5]	22.2[5]
Net debt/equity, %	3.0	-22.7
FFO/adjusted net debt, %	54.9	171.2
Adjusted net debt/EBITDA, times	2.5	0.4

[1] See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.
[2] Sales of electricity also include bilateral trading on the Nordic electricity exchange.
[3] Scope 1.
[4] Lost time Injury Frequency (LTIF) is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality. The measure pertains only to Vattenfall empolyees.
[5] The key ratio is based on average capital employed.
[6] The value has been adjusted compared with information previously published in Vattenfall's financial reports.

Sustainability reporting
In addition to reporting on financial performance, Vattenfall also reports on its sustainability performance. In accordance with Ch. 6 §11 of the Swedish Annual Accounts Act, Vattenfall has chosen to prepare the statutory sustainability report as a separate report from the Annual Report. The Sustainability Report was delivered to the auditor at the same time as the Annual Report. The Sustainability Report, which can be found on pages 6, 20, 26–27, 53–77, 82–88, 99–100, and 171–182 of this printed document, pertains to Vattenfall and its subsidiaries.

Wholesale price trend
Average Nordic electricity spot prices were 118% higher in 2022 than in 2021, mainly owing to higher prices on the Continent. Average spot prices in Germany and the Netherlands were 143% and 135% higher, respectively, than in 2021, mainly owing to higher prices for fuels and CO_2 emission allowances.

Electricity generation
Total electricity generation in 2022 was 108.9 TWh (111.4).

Hydro power generation amounted to 40.5 TWh (40.9). Nordic reservoir levels were at 60% (65) of capacity at year-end, which is 3 percentage points above the normal level.

Nuclear power generation decreased by 0.8 TWh to 39.6 TWh (40.4), due to the delayed restart of Ringhals 4. Combined availability for Vattenfall's nuclear power plants for 2022 was 83.6% (84.8%). Forsmark had an availability of 90.1% (89.7%) and generation of 25.5 TWh (25.5) which was a new production record. Ringhals had an availability of 73.5% (77.7) and generation of 13.9 TWh (14.8).

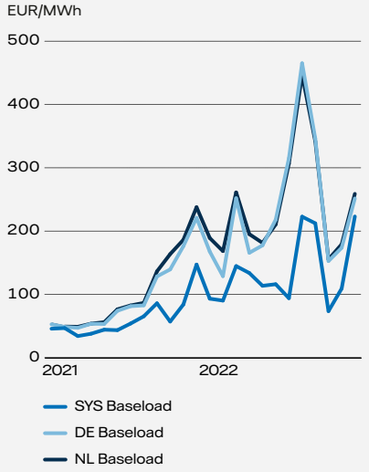
Electricity generation from wind power amounted to 12.2 TWh (11.2) in 2022, corresponding to an increase of 9% mainly owing to new capacity (Kriegers Flak in Denmark) and higher wind speeds during the first half of the year, especially in Germany and Denmark.

Fossil-based power generation totalled 16.3 TWh (18.4).

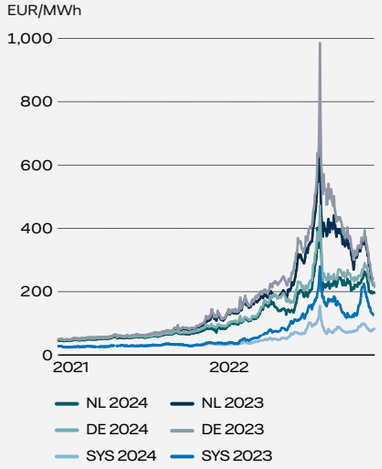
Sales of electricity, heat and gas
Sales of electricity, excluding sales to Nord Pool Spot and deliveries to minority shareholders, decreased by 9.1 TWh to 111.4 TWh (120.5) mainly due to lower sales volumes to the B2B customers in France. Sales of gas decreased by 9.8 TWh to 47.3 TWh (57.1) as a result of warmer weather and lower demand in Germany and the Netherlands. Sales of heat decreased by 1.5 TWh to 14.1 TWh (15.6) as a result of warmer weather.

Vattenfall's price hedging
Vattenfall continuously hedges its future electricity generation through sales in the forward and futures markets. Spot prices therefore have only a limited impact on Vattenfall's earnings in the near term. With the current portfolio structure, the dominant market risk exposure is coupled to Nordic nuclear and hydro power generation. We generate a substantial share of regulated revenue from electricity distribution, and heat as well as (partially) subsidised wind power, which diversifies the risk exposure in our portfolio. However, Vattenfall has price exposure between electricity and used fuel/emissions allowances on the continent. This has a lower risk profile than the outright power exposure in the Nordic countries. Price risk for uranium is limited, as uranium accounts for a relatively small share of the total cost of nuclear power generation.

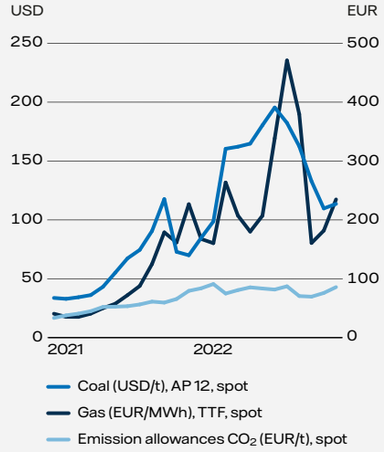
Electricity spot prices in the Nordic countries, Germany and the Netherlands, monthly averages



Electricity futures prices in the Nordic countries, Germany and the Netherlands



Price trend for coal, gas and CO_2 emission allowances



Electricity generation from wind power increased by 9% mainly due to to new capacity from Kriegers Flak, Denmark.

Comments on the consolidated income statement

Sales

	External net sales		Internal net sales		Total net sales	
	2022	2021	2022	2021	2022	2021
Customers & Solutions	**174,026**	**102,300**	**9,125**	**4,260**	**183,151**	**106,560**
Power Generation	**28,193**	**40,312**	**177,595**[2]	**86,006**[2]	**205,788**	**126,318**
Wind	**4,308**	**7,791**	**24,801**	**13,081**	**29,109**	**20,872**
Heat	**20,933**	**14,655**	**39,572**	**20,104**	**60,505**	**34,759**
Distribution	**11,733**	**14,643**	**764**	**2,619**	**12,497**	**17,262**
– of which, Distribution Germany	–	3,203	–	2,061	–	5,264
– of which, Distribution Sweden	11,585	11,310	766	586	12,351	11,896
Other[1]	**451**	**418**	**8,079**	**5,751**	**8,530**	**6,169**
Eliminations	**–**	**–**	**-259,936**	**-131,821**	**-259,936**	**-131,821**
Total	**239,644**	**180,119**	**–**	**–**	**239,644**	**180,119**

[1] "Other" pertains mainly to all staff functions including treasury activities and Shared Service Centres.

[2] Pertains mainly to Tradings' sales of electricity, fuel and CO_2 emission allowances to other segments within Vattenfall.

Consolidated net sales increased by SEK 59.5 billion (of which positive currency effects of SEK 8.5 billion) compared with 2021. The increase is mainly explained by higher electricity prices in the Netherlands, the Nordic countries and Germany.

Underlying operating profit

Amounts in SEK million	**2022**	**2021**
Operating profit (EBIT)	12,645	60,271
Depreciation, amortisation and impairment losses	17,868	15,519
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	**30,513**	**75,790**
Items affecting comparability excl. impairment losses and reversed impairment losses	25,246	-27,206
Underlying operating profit before depreciation, amortisation and impairment losses	**55,759**	**48,584**
Operating profit (EBIT)	12,645	60,271
Items affecting comparability[1]	24,668	-29,090
Underlying operating profit	**37,313**	**31,181**

[1] See Definitions and calculations of key ratios for definition of this Alternative Performance Measure.

The underlying operating profit increased by SEK 6.1 billion, which is explained by:

- Higher earnings contribution from the Wind operating segment (+SEK 8.6 billion) as a result of higher electricity prices on the continent and new capacity
- Higher earnings contribution from the Customers & Solutions operating segment (+5.1 billion SEK) mainly as a result of temporary effects from the purchase of electricity and gas and an increase in the number of electricity customers in Germany and the Nordics
- Lower earnings contribution from the Distribution operating segment (SEK -1.1 billion) mainly as a result of the sale of Stromnetz Berlin on July 1, 2021 and higher operating costs as well as higher costs for the transmission network
- Lower earnings contribution from the Power Generation operating segment (SEK -2.8 billion) as a result of lower achieved prices in the Nordics as well as a lower realised trading result
- Lower earnings contribution from the Heat operating segment (SEK -3.2 billion) mainly as a result of higher gas prices, which contributed to lower price margins for gas-fired production
- Other items, net (-0.5 billion SEK).

Operating segments

	Operating profit (EBIT)		Underlying operating profit	
	2022	2021	2022	2021
Customers & Solutions	**7,416**	**2,446**	**7,413**	**2,349**
Power Generation	**-7,949**	**39,502**	**16,570**	**19,334**
Wind	**16,436**	**7,919**	**16,479**	**7,866**
Heat	**-3,790**	**-91**	**-3,578**	**-343**
Distribution	**2,086**	**3,150**	**2,070**	**3,152**
– of which, Distribution Germany	–	665	–	666
– of which, Distribution Sweden	2,107	2,515	2,089	2,516
Other[1]	**-1,503**	**7,333**	**-1,590**	**-1,189**
Eliminations	**-51**	**12**	**-51**	**12**
Total	**12,645**	**60,271**	**37,313**	**31,181**

	2022	2021
Underlying operating profit	37,313	31,181
Items affecting comparability (for specification, see Income statement)	-24,668	29,090
Financial net	-12,732	-898
Profit before income taxes	**-87**	**59,373**

[1] "Other" pertains mainly to all staff functions including treasury activities, Shared Service Centres and material capital gains and -losses.

The underlying operating profit for the Customer & Solutions operating segment increased by SEK 5.1 billion compared to 2021 mainly as a result of temporary effects from the purchase of electricity and gas and an increase in the number of electricity customers in Germany and the Nordics. The underlying operating profit for the Power Generation operating segment decreased by SEK 2.8 billion as a result of lower achieved prices in the Nordics following large price are differences in Sweden as well as a lower realised trading result. Higher contribution from pumped power in Germany had a countering effect. The underlying operating profit for the Wind operating segment increased by SEK 8.6 billion as a result of higher electricity prices on the continent and new capacity. The underlying operating profit for the Heat operating segment decreased by SEK 3.2 billion mainly as a result of higher gas prices, which resulted in lower clean spark spreads which mainly affected the heating business. The underlying operating profit for the Distribution operating segment decreased by SEK 1.1 billion, where the sale of Stromnetz Berlin in 2021 had a negative impact of SEK 0.7 billion. In addition, the result was affected by higher operating costs, mainly as a result of growth, as well as higher costs for the transmission network. Read more about the Group's operating segments in Note 7 to the consolidated accounts, Operating segments.

Items affecting comparability that affected operating profit

Amounts in SEK million	2022	2021
Capital gains	312	8,960
Capital losses	-122	-199
Impairment losses	-90	-38
Reversed impairment losses	668	1,922
Provisions	-5,206	-3,785
Unrealised changes in the fair value of energy derivatives	-17,709	8,715
Unrealised changes in the fair value of inventories	-2,406	1,313
Other infrequent items affecting comparability	-115	12,202
Total	**-24,668**	**29,090**

Items affecting comparability amounted to SEK -24.7 billion in 2022, of which most refer to changes in the market value of energy derivatives and inventories (SEK -20.1 billion) as well as increased provisions (SEK -5.2 billion) mainly related to nuclear power operations. Unrealised changes in the fair value of energy derivatives, for which hedge accounting is not applied, are included in cost of purchases.

For 2021, items affecting comparability amounted to SEK 29.1 billion, mainly pertaining to compensation for the closure of nuclear power in Germany (SEK 12.5 billion), market value changes for energy derivatives and inventories (SEK 10.0 billion) and capital gains from the sale of Stromnetz Berlin (SEK 8 .4 billion).

Read more about impairment losses in Note 9 to the consolidated accounts, Impairment losses and reversed impairment losses

Costs for CO_2 emission allowances

Costs for CO_2 emission allowances for own use amounted to SEK 4.2 billion in 2022, compared with SEK 2.8 billion in 2021. The increase is mainly attributable to higher prices for CO_2 emission allowances.

Research and development

Vattenfall conducts research and development (R&D) to contribute to and support the execution of its strategy in both the short and long term. In 2022 Vattenfall invested SEK 479 million (488) in R&D. For further information on Vattenfall's R&D activities, see page 25.

Financial items

Financial items amounted to SEK -12.7 billion, which is SEK 11.8 billion lower than in 2021.

Taxes

For 2022, the group reports a positive tax income of SEK 108 million calculated on a reported loss before tax of SEK 87 million. The effective tax rate amounts to 124.1%, which is primarily explained by the low negative result where a theoretical tax revenue is SEK 18 million. The positive difference is primarily explained by higher positive other tax deductions in Sweden and Germany. For 2021, the group reported a tax expense of SEK 11.4 billion and an effective tax rate of 19.1%. For further information, see Note 13 to the consolidated accounts, Income taxes.

Comments on the consolidated balance sheet

Capital employed

Amounts in SEK million	31 December 2022	31 December 2021
Intangible assets: current and non-current	21,390	21,931
Property, plant and equipment	276,901	252,828
Participations in associated companies and joint arrangements	7,094	6,110
Deferred and current tax assets	16,293	11,622
Non-current noninterest-bearing receivables	811	339
Contract assets	226	375
Inventories	20,969	41,539
Trade receivables and other receivables	54,016	44,443
Prepaid expenses and accrued income	20,775	12,402
Unavailable liquidity	2,996	3,446
Other	805	643
Total assets excl. financial assets	**422,276**	**395,678**
Deferred and current tax liabilities	-14,849	-36,331
Other noninterest-bearing liabilities	-2,108	-2,018
Contract liabilities	-9,809	-8,635
Trade payables and other liabilities	-48,797	-39,241
Accrued expenses and deferred income	-23,105	-18,460
Other	-1,562	-899
Total noninterest-bearing liabilities	**-100,230**	**-105,584**
Other interest-bearing provisions not related to adjusted net debt[1]	-10,114	-9,213
Adjustment related to asset/liabilities held for sale	6,109	–
Capital employed[2]	**318,041**	**280,881**
Capital employed, average	**299,461**	**271,674**

[1] Includes personnel-related provisions for non-pension purposes, provisions for tax and legal disputes and certain other provisions.
[2] See Definitions and calculations of key ratios for definitions of this Alternative Performance Measure.

Financial position

Amounts in SEK million	2022	2021
Cash and cash equivalents, and short-term investments	172,386	170,882
Committed credit facilities (unutilised)	70,067	20,501

Cash and cash equivalents, and short-term investments increased by SEK 1.5 billion compared with the level at 31 December 2021.

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires in November 2022. Other committed credit facilities amounted to EUR 4.3 billion that expires during 2023. As per 31 December 2022, available liquid assets and/or committed credit facilities amounted to 101.8% of net sales. Vattenfall's target is to maintain a level of no less than 10% of the Group's net sales, but at least the equivalent of the next 90 days' maturities.

Interest-bearing liabilities and net debt as per 31 December

Amounts in SEK million	2022	2021
Hybrid Capital[1]	-21,931	-20,421
Bond issues and liabilities to credit institutions	-63,937	-37,732
Short-term debt, commercial papers and repo	-71,017	-46,189
Liabilities to associated companies	-930	-1,452
Liabilities to owners of non-controlling interests	-9,667	-10,747
Other liabilities	-9,283	-9,867
Total interest-bearing liabilities[1]	**-176,765**	**-126,408**
Cash and cash equivalents	106,540	68,176
Short-term investments	65,846	102,706
Loans to owners of non-controlling interests in foreign Group companies	521	229
Net debt[1]	**-3,858**	**44,703**

[1] See Definitions and calculations of key ratios for the definitions of the Alternative Performance Measures.

Net debt increased by SEK 48.6 billion compared with the level at 31 December 2021, mainly owing to negative cash flow after investments (SEK -23.2 billion). Paid divided increased net debt by SEK 25.4 billion.

Adjusted gross and net debt as per 31 December

Amounts in SEK million	2022	2021
Total interest-bearing liabilities	-176,765	-126,408
50% of Hybrid Capital[1]	10,966	10,211
Present value of pension obligations	-27,812	-40,328
Provisions for gas and wind operations and other environment related provisions	-11,454	-11,687
Provisions for nuclear power (net)[2]	-53,930	-40,233
Margin calls received	2,142	3,340
Liabilities to owners of non-controlling interests due to consortium agreements	9,667	10,747
Adjustment related to assets/liabilities held for sale	1,031	–
Adjusted gross debt	**-246,156**	**-194,359**
Reported cash and cash equivalents and short-term investments	172,386	170,882
Unavailable liquidity	-2,996	-3,446
Adjusted cash and cash equivalents and short-term investments	**169,390**	**167,436**
Adjusted net debt[3]	**-76,766**	**-26,923**

[1] 50% of Hybrid Capital is treated as equity by the rating agencies, which thereby reduces adjusted net debt.

[2] The calculation is based on Vattenfall's share of ownership in the respective nuclear power plants, less Vattenfall's share in the Swedish Nuclear Waste Fund and liabilities to associated companies. Vattenfall has the following ownership interests in the respective plants: Forsmark 66%, Ringhals 70.4%, Brokdorf 20%, Brunsbüttel 66.7%, Krümmel 50% and Stade 33.3%. (According to a special agreement, Vattenfall is responsible for 100% of the provisions for Ringhals.)

[3] See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.

In their assessments of a company's credit strength, the rating agencies and analysts regularly make a number of adjustments of various items on the balance sheet in order to arrive at a figure for adjusted gross and net debt. Vattenfall's calculations of its adjusted gross and net debt are shown in the table above.

Adjusted net debt increased by SEK 49.8 billion. The increase is primarily related to the higher net debt and was also affected by higher provisions for nuclear power (SEK 13.7 billion, net), which was offset by lower pension provisions (SEK 12.5 billion).

Equity

The Group's equity decreased by SEK 68.2 billion. The decrease is mainly attributable to dividends paid to owners and decrease in other comprehensive income.

Comments on the consolidated statement of cash flows

Cash flow from operating activities

Amounts in SEK million	2022	2021
Funds from operations (FFO)	42,194	46,096
Cash flow from changes in operating assets and operating liabilities (working capital)	-41,040	55,736
Cash flow from operating activities	1,154	101,832

Funds from operations (FFO) decreased by SEK 3.9 billion in 2022 to SEK 42.2 billion (46.1), mainly due to lower underlying operating profit before depreciation, amortisation and impairment losses (EBITDA) which was partly countered by lower paid tax.

The cash flow from changes in working capital amounted to SEK -41.0 billion (55.7) for 2022. The biggest contributing factor was the net of received and paid margin calls (SEK -63.1 billion), which largely offsets the positive net of received and paid margin calls in 2021 (SEK +88.0 billion SEK). In addition, working capital was affected by the increase in operating receivables within the Customers & Solutions segment (SEK -8.5 billion) and changes in inventories (+SEK 20.1 billion), mainly related to emission rights.

Cash flow from investing activities

Amounts in SEK million	2022	2021
Replacement investments	12,280	11,012
Growth investments	12,344	14,537
Total investments	**24,624**	**25,549**
Total divestments	**751**	**19,579**
– of which, shares	11	21,378

Investments are specified in the to the right.

Specification of investments

Amounts in SEK million	2022	2021
Hydro power	785	795
Nuclear power	1,687	1,263
Gas	255	64
Wind power	16,341	11,157
Biomass, waste	38	73
Total electricity generation	**19,106**	**13,352**
Fossil-based power	1,013	1,053
Heat networks	1,471	1,511
Other	183	483
Total CHP/heat	**2,667**	**3,047**
Electricity networks	5,525	5,758
Total electricity networks	**5,525**	**5,758**
Purchases of shares, shareholder contributions	652	400
Other	1,831	1,557
Total investments	**29,781**	**24,114**
Changes in accrued, non-paid liabilities	-4,214	1,443
Cash and cash equivalents in acquired companies	-943	-8
Total investments with cash flow effect	**24,624**	**25,549**

Cash flow from financing activities

Cash flow from financing activities amounted to SEK 19.7 billion (19.0) in 2022.

Consolidated income statement

Amounts in SEK million, 1 January–31 December	Note	2022	2021
Net sales	6, 7, 8	239,644	180,119
Cost of purchases		-167,013	-87,474
Other external expenses	10	-20,908	-18,450
Personnel expenses	42	-20,557	-19,801
Other operating income and expenses, net	47	-790	21,454
Participations in the results of associated companies	19	137	-58
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	7	**30,513**	**75,790**
Depreciation, amortisation and impairments		-17,868	-15,519
Operating profit (EBIT)[1]	7, 8, 9, 14, 15	**12,645**	**60,271**
Financial income[4]	11	854	783
Financial expenses[2, 3, 4]	12	-7,978	-5,906
Return from the Swedish Nuclear Waste Fund	20	-5,608	4,225
Profit before income taxes		**-87**	**59,373**
Income taxes expense	13	108	-11,360
Profit for the year		**21**	**48,013**
Attributable to owner of the Parent Company		-1,102	46,828
Attributable to non-controlling interests		1,123	1,185
Supplementary information			
Underlying operating profit before depreciation, amortisation and impairment losses[5]	7, 8	55,759	48,584
Underlying operating profit[5]	7, 8	37,313	31,181
Financial items, net excl. discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund		-5,115	-3,090
[1] Including items affecting comparability.[5]		-24,668	29,090
[2] Including interest components related to pension costs.		-578	-439
[3] Including discounting effects attributable to provisions.		-2,009	-2,033
[4] Items affecting comparability recognised as financial income and expenses, net.		6	-6

[5] See Definitions and calculations of key ratios for the definitions of the Alternative Performance Measures.

Consolidated statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2022	2021
Profit for the year	**21**	**48,013**
Other comprehensive income		
Items that will be reclassified to profit or loss when specific conditions are met		
Cash flow hedges – changes in fair value	14,478	82,259
Cash flow hedges – dissolved against income statement	-106,390	-31,553
Cash flow hedges – transferred to cost of hedged item	-16	16
Hedging of net investments in foreign operations	-2,777	-1,414
Translation differences, divested companies	–	697
Translation differences	14,684	3,218
Income taxes related to items that will be reclassified	25,498	-15,420
Total Items that will be reclassified to profit or loss when specific conditions are met	**-54,523**	**37,803**
Items that will not be reclassified to profit or loss		
Remeasurement pertaining to defined benefit obligations	13,178	-670
Income taxes related to items that will not be reclassified	-3,582	226
Total Items that will not be reclassified to profit or loss	**9,596**	**-444**
Total other comprehensive income, net after income taxes	**-44,927**	**37,359**
Total comprehensive income for the year	**-44,906**	**85,372**
Attributable to owner of the Parent Company	-47,227	83,915
Attributable to non-controlling interests	2,321	1,457

Consolidated balance sheet

Amounts in SEK million	Note	31 December 2022	31 December 2021
Assets			
Non-current assets			
Intangible assets: non-current	16	18,347	17,070
Property, plant and equipment	17	276,901	252,828
Participations in associated companies and joint arrangements	19	7,094	6,110
Other shares and participations		324	313
Share in the Swedish Nuclear Waste Fund	20	47,517	52,772
Derivative assets	36	31,187	35,240
Deferred tax assets	13	16,133	8,905
Contract assets[1]	6	51	85
Other non-current receivables[1]		3,411	2,894
Total non-current assets		**400,965**	**376,217**
Current assets			
Inventories	21	20,969	41,539
Intangible assets: current	22	3,043	4,861
Trade receivables and other receivables[1]	23	54,016	44,443
Contract assets[1]	6	175	290
Advance payments paid	24	20,199	8,362
Derivative assets	36	89,692	120,645
Prepaid expenses and accrued income	25	20,775	12,402
Current tax assets	13	160	2,717
Short-term investments	26	65,846	102,706
Cash and cash equivalents	27	106,540	68,176
Assets held for sale	28	9,947	–
Total current assets		**391,362**	**406,141**
Total assets	7	**792,327**	**782,358**

Amounts in SEK million	Note	31 December 2022	31 December 2021
Equity and liabilities			
Equity attributable to owners of the Parent Company			
Share capital		6,585	6,585
Reserve for cash flow hedges		-30,034	36,968
Translation reserve		15,699	4,163
Retained earnings incl. profit for the year		118,223	132,994
Total equity attributable to owners of the Parent Company	38	**110,473**	**180,710**
Equity attributable to non-controlling interests		**18,464**	**16,472**
Total equity		**128,937**	**197,182**
Non-current liabilities			
Hybrid Capital	29	17,760	20,421
Other interest-bearing liabilities	29	78,848	50,839
Pension provisions	30	27,812	40,328
Other interest-bearing provisions	31	128,239	116,637
Derivative liabilities	36	45,337	30,307
Deferred tax liabilities	13	13,648	33,913
Contract liabilities[1]	6	8,936	7,422
Other noninterest-bearing liabilities	32	2,108	2,018
Total non-current liabilities		**322,688**	**301,885**
Current liabilities			
Trade payables and other liabilities	33	48,797	39,241
Contract liabilities[1]	6	873	1,213
Advance payments received	34	26,692	62,790
Derivative liabilities	36	151,657	99,511
Accrued expenses and deferred income	35	23,105	18,460
Current tax liabilities	13	1,201	2,418
Hybrid Capital	29	4,171	–
Other interest-bearing liabilities	29	75,986	55,148
Interest-bearing provisions	31	4,382	4,510
Liabilities associated with assets held for sale	28	3,838	–
Total current liabilities		**340,702**	**283,291**
Total equity and liabilities		**792,327**	**782,358**

[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports.

See also information on Collateral (Note 39), Contingent liabilities (Note 40) and Commitments under consortium agreements (Note 41), in the notes to the consolidated accounts.

Consolidated statement of cash flows

Amounts in SEK million, 1 January–31 December	Note	2022	2021
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		30,513	75,790
Tax paid		-4,360	-6,725
Capital gains/losses, net		-189	-8,760
Interest received		897	523
Interest paid		-3,811	-3,226
Other, incl. non-cash items	37	19,144	-11,506
Funds from operations (FFO)[1]		**42,194**	**46,096**
Changes in inventories		20,146	-23,067
Changes in operating receivables		-11,196	-31,816
Changes in operating liabilities[2]		12,004	26,232
Margin calls[2]		-63,128	88,995
Other changes		1,134	-4,608
Cash flow from changes in operating assets and operating liabilities		**-41,040**	**55,736**
Cash flow from operating activities		**1,154**	**101,832**
Investing activities			
Acquisitions in Group companies[2]	4	528	-114
Investments in associated companies and other shares and participations		-238	-278
Other investments in non-current assets	37	-24,914	-25,157
Total investments		**-24,624**	**-25,549**
Divestments[2]	37	751	19,579
Changes in short-term investments[3]		42,877	-73,051
Cash flow from investing activities		**19,004**	**-79,021**
Cash flow before financing activities		**20,158**	**22,811**

Amounts in SEK million, 1 January–31 December	Note	2022	2021
Financing activities			
Changes in loans to owners of non-controlling interests in foreign Group companies		-260	153
Loans raised[4]		97,400	51,150
Repayment of other debt[4]		-53,997	-35,870
Divestment of shares in Group companies to owners of non-controlling interests		–	4,025
Redemption of Hybrid Capital		–	-2,941
Issue of Hybrid Capital		–	6,481
Dividends paid to owners		-25,360	-5,190
Contribution to non-controlling interest		-1,791	-601
Contribution from non-controlling interest		3,697	1,786
Cash flow from financing activities		**19,689**	**18,993**
Cash flow for the year		**39,847**	**41,804**
Cash and cash equivalents			
Cash and cash equivalents at start of year		68,176	26,074
Cash and cash equivalents included in assets held for sale		-4,307	–
Cash flow for the year		39,847	41,804
Translation differences		2,824	298
Cash and cash equivalents at end of year		**106,540**	**68,176**

[1] See Definitions and calculations of key ratios for the definition of this Alternative Performance Measure.
[2] The value has been adjusted compared with information previously published in Vattenfall's financial reports. See footnote 2.
[3] Change from Financing activities to Investing activities.
[4] Short-term borrowings in which the duration is three months or shorter are reported net.

Supplementary information

Amounts in SEK million, 1 January–31 December	2022	2021
Cash flow before financing activities	**20,158**	**22,811**
Change in margin calls from Treasury operations	-521	-1,700
Changes in short-term investments	-42,877	73,051
Financing activities		
Dividends paid to owners	-25,360	-5,190
Contribution from owners of non-controlling interests	1,906	1,185
Cash flow after dividend	**-46,694**	**94,182**
Cash flow from operating activities	1,154	101,832
Maintenance investments	-12,280	-11,012
Free cash flow[1]	**-11,126**	**90,820**
Analysis of change in net debt		
Net debt at start of year	44,703	-48,178
Cash flow after dividend	-46,694	94,182
Changes as a result of valuation at fair value	2,225	660
Change in interest-bearing liabilities for leasing	-1,318	-1,442
Interest-bearing liabilities/short-term investments acquired/divested	–	-13
Cash and cash equivalents included in assets held for sale	-4,307	–
Translation differences on net debt	1,533	-506
Net debt at end of year	**-3,858**	**44,703**

[1] See Definitions and calculations of key ratios for the definition of this Alternative Performance Measure.

	Liquid funds bank overdraft	Short-term investments	Financial leasing agreements	Current liabilities	Non-current liabilities	Total
Net debt as per 1 January 2021	**26,074**	**30,523**	**-6,003**	**-35,647**	**-63,125**	**-48,178**
Cashflow	41,805	71,198	1,090	-18,258	-1,653	**94,182**
Change in interest-bearing leasing liabilities	–	–	-1,442	–	–	**-1,442**
Translation differences on net debt	297	1,214	114	-406	-1,725	**-506**
Acquired/divested interest-bearing liabilities/ short-term investments	–	–	91	-28	-76	**-13**
Other non-cash items	–	–	–	–	660	**660**
Net debt as at 31 December 2021	**68,176**	**102,935**	**-6,150**	**-54,339**	**-65,919**	**44,703**
Cashflow	39,847	-43,137	1,034	-22,745	-21,693	**-46,694**
Change in interest-bearing leasing liabilities	–	–	-1,318	–	–	**-1,318**
Translation differences on net debt	2,824	6,569	-295	-4,382	-3,183	**1,533**
Assets held for sale	-4,307	–	–	–	–	**-4,307**
Other non-cash items	–	–	–	2,225	–	**2,225**
Net debt as at 31 December 2022	**106,540**	**66,367**	**-6,729**	**-79,241**	**-90,795**	**-3,858**

Consolidated statement of changes in equity

	Attributable to the owner of the Parent Company					Attributable to non-controlling interests	Total equity
Amounts in SEK million	**Share capital**	**Reserve for hedges**	**Translation reserve**	**Retained earnings**	**Total**		
Balance brought forward 2022	**6,585**	**36,968**	**4,163**	**132,994**	**180,710**	**16,472**	**197,182**
Profit for the year	**–**	**–**	**–**	**-1,102**	**-1,102**	**1,123**	**21**
Cash flow hedges – changes in fair value	–	14,478	–	–	**14,478**	–	**14,478**
Cash flow hedges – dissolved against income statement	–	-106,390	–	–	**-106,390**	–	**-106,390**
Cash flow hedges – transferred to cost of hedged item	–	-16	–	–	**-16**	–	**-16**
Hedging of net investments in foreign operations	–	–	-2,777	–	**-2,777**	–	**-2,777**
Translation differences	–	–	13,741	–	**13,741**	943	**14,684**
Remeasurement pertaining to defined benefit obligations	–	–	–	12,857	**12,857**	321	**13,178**
Income taxes related to other comprehensive income	–	24,926	572	-3,516	**21,982**	-66	**21,916**
Total other comprehensive income for the year	**–**	**-67,002**	**11,536**	**9,341**	**-46,125**	**1,198**	**-44,927**
Total comprehensive income for the year	**–**	**-67,002**	**11,536**	**8,239**	**-47,227**	**2,321**	**-44,906**
Dividends paid to owners	–	–	–	-23,414	**-23,414**	-1,946	**-25,360**
Group contributions from (+)/to (–) owners of non-controlling interests	–	–	–	–	**–**	-131	**-131**
Changes in ownership in Group companies on divestments of shares to owners of non-controlling interests	–	–	–	118	**118**	–	**118**
Contribution to/from non-controlling interest	–	–	–	–	**–**	1,906	**1,906**
Changes as a result of changed ownership	–	–	–	–	**–**	2	**2**
Other changes	–	–	–	286	286	-160	126
Total transactions with equity holders	**–**	**–**	**–**	**-23,010**	**-23,010**	**-329**	**-23,339**
Balance carried forward 2022	**6,585**	**-30,034**	**15,699**	**118,223**	**110,473**	**18,464**	**128,937**

	Attributable to the owner of the Parent Company					Attributable to non-controlling interests	Total equity
Amounts in SEK million	**Share capital**	**Reserve for hedges**	**Translation reserve**	**Retained earnings**	**Total**		
Balance brought forward 2021	**6,585**	**1,970**	**1,606**	**87,563**	**97,724**	**13,468**	**111,192**
Profit for the year	**–**	**–**	**–**	**46,828**	**46,828**	**1,185**	**48,013**
Cash flow hedges – changes in fair value	–	82,259	–	–	**82,259**	–	**82,259**
Cash flow hedges – dissolved against income statement	–	-31,569	–	–	**-31,569**	16	**-31,553**
Cash flow hedges – transferred to cost of hedged item	–	16	–	–	**16**	–	**16**
Hedging of net investments in foreign operations	–	–	-1,414	–	**-1,414**	–	**-1,414**
Translation differences, divested companies	–	–	697	–	**697**	–	**697**
Translation differences	–	–	2,983	–	**2,983**	235	**3,218**
Remeasurement pertaining to defined benefit obligations	–	–	–	-700	**-700**	30	**-670**
Income taxes related to other comprehensive income	–	-15,708	291	232	**-15,185**	-9	**-15,194**
Total other comprehensive income for the year	**–**	**34,998**	**2,557**	**-468**	**37,087**	**272**	**37,359**
Total comprehensive income for the year	**–**	**34,998**	**2,557**	**46,360**	**83,915**	**1,457**	**85,372**
Dividends paid to owners	–	–	–	-4,000	**-4,000**	-1,190	**-5,190**
Group contributions from(+)/to(-) owners of non-controlling interests	–	–	–	–	**–**	51	**51**
Changes in ownership in Group companies on divestments of shares to owners of non-controlling interests	–	–	–	2,538	**2,538**	1,508	**4,046**
Contribution to/from non-controlling interest	–	–	–	–	**–**	1,185	**1,185**
Other changes	–	–	–	533	**533**	-7	**526**
Total transactions with equity holders	**–**	**–**	**–**	**-929**	**-929**	**1,547**	**618**
Balance carried forward 2021	**6,585**	**36,968**	**4,163**	**132,994**	**180,710**	**16,472**	**197,182**

See also Note 38 to the consolidated accounts, Specifications of equity.

Notes to the consolidated accounts

Amounts in SEK million unless indicated otherwise

Note 1 Company information

The Annual and Sustainability Report was approved in accordance with a decision by the Board of directors on 22 March 2023. The Parent Company, Vattenfall AB (publ) with corporate identity number 556036-2138, is a limited liability company with its registered office in Solna, Sweden and with the mailing address SE-169 92 Stockholm, Sweden. The consolidated balance sheet and income statement included in Vattenfall's Annual and Sustainability Report will be submitted at the Annual General Meeting (AGM) on 28 April 2023. The main activities of the Group are described in Note 7 to the consolidated accounts, Operating segments.

Note 2 Important changes in the financial statements compared with the preceding year

Recalculation of financial statements for 2021
No recalculations were made.

Presentation of financial statements
In the Annual and Sustainability Report for 2022 the following amendments in the presentations were made compared to Vattenfall's 2021 Annual and Sustainability Report:

- In the balance sheet contractual assets and liabilities are divided into short- and long-term contractual assets and liabilities respectively.
- In the balance sheet receivables on minority shareholders related to group contribution has been moved from other non-current receivables to trade receivables and other receivables.
- In the cash flow statement acquisitions in group companies as well as divestments are shown as the net of acquisition price and cash in acquired companies and the net of sales price and cash in divested companies respectively.
- Changes in margin calls from the treasury operations which were previously included in short term investments in cash flow from investments as well as changes in operating liabilities. In the Annual and Sustainability Report for 2022 these are included in Margin calls related to derivatives and consequently the changes are reported as cash flows from operating activities.

Note 3 Accounting policies

The consolidated accounts have been prepared in accordance with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) as well as the interpretations issued by the IFRS Interpretations Committee (IFRSIC) as endorsed by the European Commission for application within the EU. In addition, recommendation RFR 1 – "Supplementary Accounting Policies for Groups", issued by the Swedish Financial Reporting Board (RFR), has been applied. RFR 1 specifies the additions to the IFRS disclosure requirements that are required by the Swedish Annual Accounts Act.

New IFRSs and interpretations effective as from 2022
None of the amendments to the existing accounting standards effective from 2022 have had a material impact on the Vattenfall Group's financial statements.

New IFRSs and interpretations effective as from 2023 and later
A number of amendments in accounting standards and interpretations have been published, but have not become effective. These are not considered to have a material impact on the Vattenfall Group's financial statements.

Basis of measurement
Assets and liabilities are reported at cost or amortised cost, with the exception of certain financial assets and liabilities and inventories held for trading, which are measured at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Vattenfall uses valuation methods that reflect the fair value of an asset or liability appropriately. Financial assets and liabilities that are measured at fair value are described below according to the fair value hierarchy (levels), which in IFRS 13 is defined as follows:

- **Level 1:** Quoted prices (unadjusted) in active markets for identical assets or liabilities.
- **Level 2:** Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (that is, as prices) or indirectly (that is, derived from prices).
- **Level 3:** Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs).

Classification into a level is determined by the lowest level input that is significant for the measurement of the fair value at the end of a reporting period. Vattenfall assesses whether reclassifications between the levels are necessary. Observable input data are used whenever possible and relevant. For assets and liabilities included in Level 3, fair value is modelled either on the basis of market prices with adjustments that consider specific terms of a contract, or on the basis of unobservable inputs such as future cash flows. The assumptions for the estimated cash flows are monitored on a regular basis and adjusted if necessary.

Functional and presentation currencies
The functional currency is the currency of the primary economic environment in which each Group entity operates. The Parent Company's functional currency is Swedish kronor (SEK), which is also the presentation currency of both the Parent Company and the Group. This means that the financial statements are presented in Swedish kronor. Unless otherwise stated, all figures are rounded off to the nearest million Swedish kronor (SEK million).

Significant accounting policies
The accounting policies of the Group described below and in each respective note to the consolidated accounts have been applied consistently for all periods presented in the consolidated financial statements.

Principles of consolidation
The consolidated financial statements cover the Parent Company, subsidiaries, associated companies, joint ventures and joint arrangements that are reported as a joint operation according to IFRS 11.

Subsidiaries
Subsidiaries are all entities over which the Parent Company has control. Control is considered to exist when the following three criteria are met: (1) the investor is exposed to or is entitled to a variable return from the investment, (2) the investor has the opportunity to influence the return through its opportunity to govern the company, and (3) there is a link between the return that is received and the opportunity to govern the company. By influence is meant the rights that allow the investor to govern the relevant business, that is, the business which significantly influences the company's return. Business combinations are accounted for using the purchase method. Subsidiaries' financial statements, which are prepared in accordance with the Group's accounting policies, are included in the consolidated accounts from the point of acquisition to the date when control ceases.

Joint arrangements
A joint arrangement is an arrangement over which two or more parties have joint control. Joint arrangements are classified as a joint operation or joint venture. A joint operation entails that the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. A joint venture entails that the parties that have joint control of the arrangement have rights to the net assets of the arrangement. In a joint operation, the respective owners recognise in relation to their interest in the joint organisation: their assets and liabilities as well as their respective share of assets and liabilities held or incurred jointly. Joint ventures are reported in accordance with the equity method.

Associated companies
Associated companies are companies in which the Group has a significant – but not controlling – influence or joint control with other owners over their operational and financial management, usually through shareholdings corresponding to between 20% and 50% of the votes. From the point at which the significant influence is acquired, participations in associated companies are reported in the consolidated accounts in accordance with the equity method.

Transactions that are eliminated upon consolidation
Intra-Group receivables and liabilities, income and expenses, as well as gains or losses arising from intra-Group transactions between Group companies, are eliminated in their entirety when preparing the consolidated accounts. Gains arising from transactions with associated companies and joint ventures are eliminated to an extent that corresponds to the Group's holding in the company. Losses are eliminated in the same manner as gains, but are treated as an indicator of impairment.

Foreign currencies
Transactions in foreign currencies
Transactions in foreign currencies are translated to the functional currency at the exchange rate on the day of the transaction. On the balance sheet date, monetary assets and liabilities in foreign currencies are translated to the functional currency at the exchange rate applicable on that day. Exchange rate differences arising from translation of currencies are reported in the income statement. Operationally derived exchange gains and losses are shown under Other operating income and Other operating expenses, respectively. Financially derived exchange gains and losses are shown as Financial income and Financial expenses, respectively.

Financial reporting of foreign activities
Assets and liabilities of foreign activities, including goodwill and other consolidated surplus and deficit values, are translated to SEK at the exchange rate in effect on the balance sheet date. Income and expenses of foreign activities are translated to SEK using an average exchange rate. Translation differences arising from foreign currency translation of foreign activities are reported in Other comprehensive income.

For the Vattenfall Group, key exchange rates applied in the accounts are provided in Note 5 to the consolidated accounts, Exchange rates.

Important estimations and assessments in the preparation of the financial statements
Preparation of the financial statements in accordance with IFRS requires the company's executive management and Board of directors to make estimations and assessments as well as to make assumptions that affect application of the accounting policies and the reported amounts of assets, liabilities, income and expenses. These estimations and assessments are based on historic experience and other factors that seem reasonable under current conditions. The results of these estimations and assessments are then used to establish the reported values of assets and liabilities that are not otherwise clearly documented from other sources. The final outcome may deviate from the results of these estimations and assessments. The estimations and assessments are revised on a regular basis. The effects of changes in estimations are reported in the period in which the changes were made if the changes affected this period only or in the period the changes were made and future periods if the changes affect both the current period and future periods.

Important estimations and assessments are described further in the following notes to the consolidated accounts:

- Note 13 Income taxes
- Note 16 Intangible assets: non-current
- Note 17 Property, plant and equipment
- Note 30 Pension provisions
- Note 31 Other interest-bearing provisions

In certain instances the group enters into contracts with government (related) bodies with the intention of the government providing financial support through the use of so called Contracts for Differences (CfDs). Significant judgement is required as the accounting treatment is dependent on the future cash flows from the contract which in turn depend on future production and future market price.

Influences of market volatilities
The developments in the energy markets effects Vattenfall's entire operation. During 2022, the high volatility and price levels observed last year in the European energy commodity markets continued. The situation was amplified by the Ukraine war exacerbating Europe's security of supply for natural gas. On top, current dry weather conditions and lower power plant availability strained electricity supply in most of Europe. As a result of the high energy prices the risk of a wider economic recession increased. The sharply rising commodity prices also caused a significant increase in the cash liquidity risk across the industry.

One of the main risks for Vattenfall are defaults by customers and counterparties caused by the continued high electricity and commodity prices. To reflect the increased risk of customer defaults due to high electricity prices, general high inflation and the expected decline in the economy the Expected Credit Losses accounted for in Vattenfall were increased. The rise in inflation also lead to increased costs, e.g. for raw materials and services which affected Vattenfall's operating activities and investments. For a description of risks, uncertainties and risk management, please refer to pages 81–92.

Note 4 Acquired and divested operations

Acquired operations
Acquisitions 2022
On 17 June 2022 Vattenfall acquired 85% of the shares in Zephyr Vind AB. The total purchase price for the shares was SEK 175 million, and the fair value of total net assets acquired is SEK 175 million.

On 1 November 2022 Vattenfall acquired 100% of the shares in Warmtebedrijf Holding B.V. which includes two subsidiaries owning and operating a district heating grid in the Rotterdam and Leiden area in the Netherlands. Vattenfall acquired Warmtebedrijf Holding B.V. in order to secure continuation of providing heat delivery services to the Rotterdam and Leiden areas. The purchase price was SEK 239 million, and the fair value of total net assets acquired is SEK 239 million.

Acquisitions 2021
On 1 July 2021 Vattenfall acquired the remaining shares in Enwell AB, and as a result, as from that date the company was changed over from being reported as an associated company to being reported as a subsidiary. The total purchase price for 100% of the shares was SEK 130 million, and the value of total assets acquired was SEK 328 million, of which SEK 179 million consisted of intangible non-current assets.

Divested operations
Divestments in 2022
No major divestments during 2022.

Divestments 2021
On 1 July 2021 the sale of the electricity distribution company Stromnetz Berlin GmbH to the City of Berlin was completed. The consideration received amounts to SEK 21,248 million and the capital gain to SEK 8,414 million.

In addition, a number of small companies within business area Wind have been sold during the period, total consideration received amounts to SEK 130 million and net of the capital gain and losses amounts to SEK 34 million.

Note 5 Exchange rates

Key exchange rates applied in the accounts of the Vattenfall Group:

		Average rate		Balance sheet date rate	
	Currency	2022	2021	31 December 2022	31 December 2021
Euro countries	EUR	10.6258	10.1469	11.1218	10.2503
Denmark	DKK	1.4283	1.3644	1.4956	1.3784
UK	GBP	12.4463	11.7820	12.5397	12.1987
USA	USD	10.0881	8.5687	10.4273	9.0502

Note 6 Net sales

Accounting policy
Net sales include revenue from sales and distribution of electricity and heat, sales of gas, energy trading and other revenues such as service and consulting assignments and connection fees.

Vattenfall offers customers discounts and bonuses on sales of electricity, gas and heat through various campaigns. Various types of discounts and bonuses are offered from country to country. Vattenfall recognises discounts and bonuses when the performance obligation to the customer is satisfied, which in general is when the electricity, gas or heat has been delivered to the customer.

Various sales channels are used to sell Vattenfall's products, which gives rise to different types of costs associated with sales activities. These costs to obtain a contract related to revenues from contracts with customers are shown in Note 16 to the consolidated accounts, Intangible assets: non-current. The amortisation schedule depends on the contract duration.

Sales and distribution of electricity, heat and gas
Sales of electricity, heat and gas and related distribution are recognised as revenue at the time of delivery, excluding value-added tax and excise taxes. Depending on the system for metering of consumption, Vattenfall invoices either based on expected consumption, with a reconciliation when the readout takes place, or based on actual consumption.

Vattenfall's electricity transactions between Nordic electricity generation and sales activities in the Nordic countries are transactions vis-à-vis the Nordic electricity exchange. The purchases that the sales activities make from the Nordic electricity exchange are, at the Group level, offset against sales of generation to the Nordic electricity exchange.

Vattenfall has entered into long-term power purchase agreements which are supplied to the customers through physical delivery of electricity. The performance obligation is fulfilled over time and the income is reported within sales from electricity at delivery. These agreements do not contain derivatives nor are they to be treated as lease agreements.

Develop to sell projects
Vattenfall constructs Wind and Solar projects for the purpose of selling them. The assets under construction are accounted for as inventory and the sales proceeds are recognized as revenue in accordance with IFRS 15. Depending on the contract details, revenue is being recognised as the performance obligation is satisfied at a point of time or over time.

	2022	2021
Sales of electricity	159,132	117,451
Sales of gas	35,817	17,935
Sale of heat and steam	15,600	11,702
Distribution	13,412	14,908
Sale of service and consulting services	4,977	4,316
Revenue from Develop to sell projects	893	3,548
Total revenues from contracts with customers	**229,831**	**169,860**
Other revenues	9,813	10,259
Total	**239,644**	**180,119**

Revenue from contracts with customers is recognised when the performance obligation is satisfied. Contract assets mainly consist of bonus payments made to a customer for entering into a new contract or prolonging an existing contract. These are amortized over the minimum contractual period. Connection fees paid by customers to connect to a network form the main part of contract liabilities. These are released over the expected life of the underlying network asset and recognised as revenue.

Contract balances	2022	2021
Contract assets	226	375
– amortization of contact assets as cost during the year	486	839
Contract liabilities	9,809	8,635
– release of contract liabilities as revenue during the year	561	888

Note 7 Operating segments

Accounting policy
An operating segment is a component of the Group that engages in business activities from which it may earn revenues and incur expenses and for which discrete financial information is available. An operating segment's result is reviewed regularly by "the chief operating decision maker", who in Vattenfall is the Chief Executive Officer, to assess its performance and to make decisions about resources to be allocated to the operating segment.

Financial information
Vattenfall is organised in six Business Areas: Customers & Solutions, Generation, Markets, Wind, Heat, and Distribution. The aim with the organisational structure is to increase the Group's business and performance focus, and to capitalise on cross-border synergies. The segment reporting corresponds with Vattenfall's organisational structure.

Areas of responsibility for the operating segments
The Customers & Solutions operating segment is responsible for sales of electricity, gas and energy services in all of Vattenfall's markets.

The Power Generation operating segment comprises the Business Areas Generation and Markets. The segment includes Vattenfall's hydro and nuclear power operations, maintenance services business, and optimisation and trading operations, including certain large business customers.

The Wind operating segment is responsible for development, construction and operation of Vattenfall's wind farms as well as large-scale and decentralised solar power and batteries.

The Heat operating segment comprises Vattenfall's heat business (district heating and decentralised solutions) and gas- and coal-fired condensing plants.

The Distribution operating segment comprises Vattenfall's electricity distribution operations in Sweden, Germany (until 30 june 2021) and the UK.

Staff Functions and Shared Service Centres
A number of Group-wide Staff Functions direct, administrate and support the business activities. The Staff Functions are centrally placed within the organisation as a whole and in the Business Areas. Shared Service Centres (Shared Services) focus on transaction-related processes and are an integral part of Vattenfall's business activities. Shared Services are led with a focus on efficiency and utilisation of scale economies. Staff Functions and Shared Services are reported under the heading Other.

	External net sales		Internal net sales		Total net sales	
	2022	2021	2022	2021	2022	2021
Customers & Solutions	**174,026**	**102,300**	**9,125**	**4,260**	**183,151**	**106,560**
Power Generation	**28,193**	**40,312**	**177,595**[2]	**86,006**[2]	**205,788**	**126,318**
Wind	**4,308**	**7,791**	**24,801**	**13,081**	**29,109**	**20,872**
Heat	**20,933**	**14,655**	**39,572**	**20,104**	**60,505**	**34,759**
Distribution	**11,733**	**14,643**	**764**	**2,619**	**12,497**	**17,262**
– of which, Distribution Germany	–	3,203	–	2,061	–	5,264
– of which, Distribution Sweden	11,585	11,310	766	586	12,351	11,896
Other[1]	**451**	**418**	**8,079**	**5,751**	**8,530**	**6,169**
Eliminations	**–**	**–**	**-259,936**	**-131,821**	**-259,936**	**-131,821**
Total	**239,644**	**180,119**	**–**	**–**	**239,644**	**180,119**

	Operating profit before depreciation, amortisation and impairment losses (EBITDA)		Underlying operating profit before depreciation, amortisation and impairment losses	
	2022	2021	2022	2021
Customers & Solutions	**8,396**	**3,241**	**8,393**	**3,230**
Power Generation	**-2,903**	**42,053**	**21,621**	**23,714**
Wind	**22,554**	**13,534**	**22,508**	**13,451**
Heat	**-1,515**	**2,842**	**-641**	**2,590**
Distribution	**4,637**	**5,911**	**4,622**	**5,913**
– of which, Distribution Germany	–	1,008	–	1,009
– of which, Distribution Sweden	4,590	4,873	4,573	4,874
Other[1]	**-605**	**8,197**	**-693**	**-326**
Eliminations	**-51**	**12**	**-51**	**12**
Total	**30,513**	**75,790**	**55,759**	**48,584**

	Operating profit (EBIT)		Underlying operating profit	
	2022	2021	2022	2021
Customers & Solutions	**7,416**	**2,446**	**7,413**	**2,349**
Power Generation	**-7,949**	**39,502**	**16,570**	**19,334**
Wind	**16,436**	**7,919**	**16,479**	**7,866**
Heat	**-3,790**	**-91**	**-3,578**	**-343**
Distribution	**2,086**	**3,150**	**2,070**	**3,152**
– of which, Distribution Germany	–	665	–	666
– of which, Distribution Sweden	2,107	2,515	2,089	2,516
Other[1]	**-1,503**	**7,333**	**-1,590**	**-1,189**
Eliminations	**-51**	**12**	**-51**	**12**
Total	**12,645**	**60,271**	**37,313**	**31,181**

	2022	2021
Underlying operating profit	37,313	31,181
Items affecting comparability	-24,668	29,090
Financial net	-12,732	-898
Profit before income taxes	**-87**	**59,373**

[1] "Other" pertains mainly to all Staff functions including treasury activities and Shared Service Centres.
[2] Pertains mainly to Trading's sales of electricity, fuel and CO_2 emission allowances to other segments within Vattenfall.

	Investments		Assets	
	2022	2021	2022	2021
Customers & Solutions	**1,340**	**698**	**97,165**	**66,941**
Power Generation	**2,686**	**2,262**	**588,851**	**598,798**
Wind	**12,496**	**12,654**	**127,757**	**103,901**
Heat	**3,228**	**1,548**	**93,331**	**96,381**
Distribution	**5,607**	**5,992**	**57,480**	**54,005**
– of which, Distribution Germany	–	822	–	-688
– of which, Distribution Sweden	5,467	5,073	56,257	53,763
Other[1]	**1,606**	**7,528**	**366,208**	**341,132**
Eliminations	**-2,339**	**-5,133**	**-538,465**[2]	**-478,800**[2]
Total	**24,624**	**25,549**	**792,327**	**782,358**

[1] "Other" pertains mainly to all Staff functions including treasury activities and Shared Service Centres.
[2] Pertains mainly to Tradings' sales of electricity, fuel and CO_2 emission allowances to other segments within Vattenfall.

Note 8 Information about geographical areas

	External net sales		Internal net sales		Total net sales	
	2022	2021	2022	2021	2022	2021
Sweden	51,553	50,613	3,847	7,600	55,400	58,213
Germany	98,039	84,613	211,678	58,771	309,717	143,384
Netherlands	68,928	33,185	151,249	36,378	220,177	69,563
Other countries	21,124	11,708	11,393	8,271	32,517	19,979
Eliminations	–	–	-378,167	-111,020	-378,167	-111,020
Total	**239,644**	**180,119**	**–**	**–**	**239,644**	**180,119**

	Operating profit (EBIT)		Underlying operating profit		Intangible assets: non-current; property, plant and equipment; and investment property	
	2022	2021	2022	2021	2022	2021
Sweden	-5,476	10,715	1,894	11,632	150,050	141,882
Germany	4,215	35,195	17,751	7,234	43,142	40,954
Netherlands	675	9,008	4,496	7,183	55,428	44,413
Other countries	13,231	5,353	13,172	5,133	46,628	42,649
Total	**12,645**	**60,271**	**37,313**	**31,182**	**295,248**	**269,898**

Note 9 Impairment losses and reversed impairment losses

Accounting policy
General principles
Assessments are made throughout the year for any indication that an asset may have decreased in value. If there is an indication of this kind, the asset's recoverable amount is estimated. For goodwill and other intangible assets with an indefinite useful life and for intangible assets that are still not ready for use, the recoverable amount is calculated at least annually or as soon as there is an indication that an asset has decreased in value.

If the essentially independent cash flow for an individual asset cannot be established for the assessment of any need for impairment, the assets must be grouped at the lowest level where it is possible to identify the essentially independent cash flow (a so-called cash-generating unit). An impairment loss is reported when an asset or cash-generating unit's reported value exceeds the recoverable amount. Any impairment loss is recognised in profit or loss. Impairment of assets attributable to a cash-generating unit is allocated primarily to goodwill. Thereafter, a proportional impairment loss is conducted of other assets that are part of the unit.

Calculation of the recoverable amount
The recoverable amount is the higher of fair value less costs to sell and value in use. When calculating value in use, the future cash flow is discounted by a discounting rate that takes into consideration risk-free interest and the risk associated with the specific asset.

Reversal of impairment losses
Impairment of goodwill is never reversed. Impairment of other assets is reversed if a significant and lasting change has occurred in the assumptions that formed the basis for the calculation of the recoverable amount. An impairment loss is reversed only if the asset's carrying amount after reversal does not exceed the carrying amount that the asset would have had if the impairment loss had not been recognised.

Financial information
Process for impairment testing
The main assumptions that executive management has used in calculating projections of future cash flows in cash-generating units with finite useful lives are based on forecasts of the useful life of the respective assets. The projected cash flows are based on market prices and on Vattenfall's long-term market outlook. The long-term market outlook is based on internal and external input parameters and is benchmarked against external price projections. Based on the price assumptions, the dispatch of the power plants is calculated, taking technical, economic and legal constraints into consideration. Technical flexibility of the assets, that is the ability to adapt generation to changes in spot market prices, has been taken into account. Cash flow projections of other cash-generating units are based on the business plan for the coming five years, after which their residual value is taken into account, based on a growth factor of 0%–0.5% (0%–0.5%). If the final year of the business plan horizon does not represent reasonable basis for assessing long-term value, an extended forecast may be required to arrive at a steady-state earnings situation on which to calculate the terminal value.

Future cash flows have been discounted to value in use using the following discount rates per reporting segment:

	2022		2021	
	Before tax	After tax	Before tax	After tax
Discount rate Distribution SE, %	5.5	4.4	5.0	4.0
Discount Rate Wind, %	5.8–7.5	4.4–5.7	6.0–6.7	4.3–5.3
Discount Rate Heat, %	6.1–8.9	4.5–6.6	5.8–8.6	4.2–6.5
Discount Rate C&S, %	6.6–6.8	4.7–5.4	6.6–6.8	4.7–5.3
Discount Rate Power Generation, %	6.8–8.9	5.4–7.1	6.7–8.6	5.3–6.8

The discount rate varies for the various asset classes, depending on their risk. When setting the discount rate for non-regulated business, consideration has been given to the extent of exposure this has for changes in wholesale prices of electricity, fuel, CO_2 emission allowances, and regulatory risks. An increase in the discount rate by 0.5 percentage points would not give rise to any impairment need.

Electricity prices and margins for generation assets represent another major value driver. Electricity prices are relevant for hydro, non-subsidized wind and nuclear power plants, while the most important production margins are the "clean spark spread" for gas-fired power plants and the "clean dark spread" for hard coal-fired power plants. Those spreads include electricity prices as well as the respective cost for fuel and CO_2 emission allowances to produce the electricity, considering fuel type and efficiency factors. Based on the assumptions used in the impairment testing, a decrease in future electricity prices by 5%, with unchanged costs for fuel and CO_2 emission allowances, would lead to a decrease in the value of our power production units in the range of 2% to 27%, but would not result in an impairment need.

Vattenfall has performed impairment testing by calculating the recoverable amount of the cash-generating units. The structure of the cash-generating units, which represent the smallest group of identifiable assets that generate continuous cash inflows that are largely independent of other assets or groups of assets, is based on the Group's Business Area structure and further split into Group's Business Unit structure and regions where relevant. In 2022, Vattenfall changed the cash-generating units within Business Area Wind. Previously, the structuring of cash-generating units within BA Wind was based on the criteria offshore or onshore as well as country. As a result, there were nine cash-generating units within BA Wind. The continuously growing activities of Vattenfall's Wind operations and an increasing number of partnerships and power purchase agreements for windfarms has led management to rethink the previous grouping of cash-generating units. Where appropriate, grouping

will be based on internal synergies between individual windfarms. Otherwise, windfarms will be considered as stand-alone cash generating units. After this change BA Wind contains 22 cash-generating units. However, the regrouping did not result in a need for impairment.

Goodwill is not amortized but is instead tested annually for impairment. Impairment testing of goodwill is included in the impairment testing process described above. 98.7% of the goodwill for the group is related to the cash generating unit Customers & Solutions in the Netherlands. For the annual testing of this goodwill three different scenarios are used. In the most conservative scenario the expected gross margin, which is the key parameter, is reduced by 50% and also this scenario would not result in an impairment need.

In addition to the regular impairment test for the cash-generating units, Vattenfall reports separate assets held for sale if the expected sales price is below the reported book value of the assets. Furthermore, shareholdings in associated companies for which the equity method is applied are outside a Cash Generating Unit and thus tested for an impairment need on an individual basis.

Impairment losses 2022
The impairment test process in 2022 resulted in an impairment of SEK 0.09 billion impairment in the onshore asset Stor-Rotliden, no impairment need in all other assets in the Cash Generating Units.

Impairment losses 2021
The impairment test process in 2021 resulted in no impairment needs on assets in the Cash Generating Units.

Reversal of previously recognized impairment losses 2022
In connection with the classification to assets held for sale of the powerplant in Eemshaven, the Netherlands, SEK 0.3 billion of previous impairments was reversed as the agreed sales price is higher than the carrying amount of the assets. In addition SEK 0.4 billion of previous impairments in the German power plant Moorburg, which is currently being dismantled, was reversed as the scrap value of the assets has increased due to higher market prices on scrap metals.

Note 10 Other external expenses

	2022	2021
Purchased services	7,677	7,674
IT expenses	2,091	1,960
Consulting expenses	3,396	2,748
Non-capitalised lease expenses	687	494
Marketing and selling expenses	1,189	1,412
Expenses related to provisions	4,409	4,073
Other	1,459	89
Total	**20,908**	**18,450**

Note 11 Financial income

Accounting policy
Interest income is reported as it is earned. The calculation is made on the basis of the return on underlying assets in accordance with the effective interest method. Dividend income is reported when the right to receive payment is established. Interest income is adjusted for transaction costs and any rebates, premiums and other differences between the original value of the receivable and the amount received when due.

Financial information

	2022	2021
Interest income attributable to investments	780	492
Net change in value from remeasurement of derivatives	–	218
Dividends	66	66
Capital gains from divestments of shares and participations	8	7
Total	**854**	**783**

Note 12 Financial expenses

Accounting policy
For calculation of interest effects attributable to provisions, various discount rates have been used, see Note 30 to the consolidated accounts, Pension provisions, and Note 31 to the consolidated accounts, Other interest-bearing provisions, for the discount rates used. Issue costs and similar direct transaction costs for raising loans are distributed over the term of the loan in accordance with the effective interest method. Borrowing costs directly attributable to investment projects in non-current assets which take a substantial period of time to complete are not reported as a financial expense but are included in the cost of the non-current asset during the construction period. Leasing fees are distributed between interest expense and amortisation of the outstanding debt. Interest expenses are distributed over the leasing period so that each accounting period is charged in the amount corresponding to a fixed interest rate for the reported debt in each period. Variable fees are carried as an expense in the period in which they arise.

Financial information

	2022	2021
Interest expenses attributable to loans	4,818	3,356
Interest effects attributable to provisions	2,009	2,033
Interest expenses for the net of pension provisions and plan assets	578	438
Exchange rate differences, net	314	73
Net change in value from remeasurement of derivatives	258	–
Capital losses from divestments of shares and participations	1	6
Total	**7,978**	**5,906**

Note 13 Income taxes

Accounting policy
Income taxes comprises current tax and deferred tax. Income tax is reported in the income statement except when the underlying transaction is reported in Other comprehensive income or in Equity, whereby also the associated tax effect is reported in Other comprehensive income and Equity, respectively.

Current tax is tax to be paid or received for the current year, with the application of the tax rates that are established or, established in practice as of the balance sheet date. Adjustments of tax paid attributable to previous periods are also included in this.

Deferred tax is calculated in accordance with the balance sheet method on the basis of temporary differences between the reported and taxable values of assets and liabilities. The valuation of deferred tax is based on how the reported value of assets or liabilities is expected to be realised or settled. Deferred tax is calculated in accordance with the tax rates and tax rules that have been established or have been established in practice by the balance sheet date.

Deferred tax assets concerning non-deductible temporary differences and tax-loss carryforwards are only reported to the extent that it will be possible for these to be used. The value of deferred tax assets is reduced when it is no longer considered likely that they can be used.

Important estimations and assessments
On its balance sheet, Vattenfall reports deferred tax assets and liabilities that are expected to be realised in future periods. In calculating these deferred taxes, certain assumptions and estimations must be made. The estimations include assumptions about future taxable earnings, that applicable tax laws and tax rates will be unchanged in the countries in which the Group is active, and that applicable rules for utilising tax-loss carryforwards will not be changed.

Vattenfall apply the methods prescribed in IFRIC 23 'Uncertainty over Income Tax Treatments' when making provisions for uncertain tax positions, and the provisions made are based on different scenarios of possible outcomes. The Group also reports future expenses arising out of ongoing tax audits or tax disputes under Current tax liabilities. The outcome of these may deviate from the estimations made by Vattenfall.

Financial information
Break down of reported income tax

	2022	2021
Current tax expense (–)/ tax income (+)		
Current taxes pertaining to the period:		
Sweden	-1,266	-2,225
Germany	-3,228	-1,671
Netherlands	750	-1,688
Other countries	-2,430	-610
Adjustment of current tax for prior periods:		
Sweden	-25	-78
Germany	26	-157
Netherlands	-43	51
Other countries	28	-6
Total current tax	**-6,188**	**-6,384**
Deferred tax expense (–)/ tax income (+)		
Sweden	4,479	-74
Germany	2,808	-3,774
Netherlands	-829	-418
Other countries	-162	-710
Total deferred tax	**6,296**	**-4,976**
Total income tax expense	**108**	**-11,360**

The difference between the nominal Swedish tax rate and the effective tax rate

	2022		2021	
	%	MSEK	%	MSEK
Profit before tax		-87		59,373
Swedish income tax rate at 31 December	20.6	18	20.6	-12,231
Difference in tax rate in foreign operations	-385.1	-335	6.1	-3,632
Tax adjustments for previous periods	50.6	44	0.3	-178
Utlization of previously not recognized losses	98.9	86	-3.0	1,763
Revaluation of previously non-valued losses and other temporary differences	28.7	25	-0.8	460
Tax-loss carryforwards from current year that are not valued	-6.9	-6	0.1	-52
Capital gains	57.5	50	-4.4	2,613
Participations in the results of associated companies	82.8	72	-0.1	74
Non-deductible impairment losses	-23.0	-20	0.0	-21
Changed tax rates	-12.6	-11	0.5	-284
Non-deductible interest	-750.6	-653	0.0	–
Other non-deductible expenses	-157.5	-137	0.2	-133
Other non-taxable income	1,120.7	975	-0.4	261
Effective tax rate	**124.1**	**108**	**19.1**	**-11,360**

For 2022 the group reports a minor loss before tax of -87 MSEK. Based on the Swedish income tax rate of 20.6% we would expect a minor positive income tax expense of +18 MSEK. The reported income tax expense amount to +108 MSEK. The effective tax rate are 123.6%. The high effective tax rate are due to the minor amount reported as profit before tax. When comparing effective tax rate an high effective tax rate are positive when the profit before tax are negative.

The main differences between the Swedish income tax rate and the effective tax rate, in total 90 MSEK, are the difference in tax rate in foreign operations, the non-deductible interest and other non-taxable income.

The non-deductible interest refers to the interest limitation rules in Sweden and has a negative effect in 2022 both in the parent company and in other subsidiaries. The total non-deductible interest amounts to 653 MSEK.

The other non-taxable income refers to high profit in Germany for the Hydro power plants that have only 50% of the German corporate income tax rate. The positive tax effect of this lower tax rate amounts to 213 MSEK. In addition the 3.8% tax reduction on investments in plants and equipment in Sweden had a positive tax effect of 356 MSEK.

The low effective tax rate 2021 was mainly due to the material tax exempt capital gains in the divestment of Stromnetz Berlin.

Balance sheet reconciliation of current tax

	2022	2021
Balance brought forward net asset (+)/ net liability (-)	299	-558
Translation differences, acquisitions, disposals and assets held for sale	16	287
Interest and discounting effects on non-current tax items	-134	1
Change via income statement	-6,188	-6,384
Tax effect through equity[1]	606	228
Taxes paid, net	4,360	6,725
Balance carried forward net asset (+)/ net liability (-)	**-1,041**	**299**

[1] Of which, equity hedge amounts to SEK 572 million (242).

The net taxes paid decreased compared to 2021 mainly because of lower tax payments in Germany and a large refund relating to overpaid corporate income tax related to 2021 in Sweden.

Breakdown of deferred tax

	2022	2021
Non-current assets	-32,602	-31,862
Current assets	-42,625	-39,228
Provisions	21,737	23,266
Other non-current liabilities	2,497	1,743
Current liabilities	46,548	37,607
Cash flow hedges	6,921	-17,331
Tax losses carried forward	9	797
Total	**2,485**	**-25,008**

The deferred taxes illustrate timing differences between the treatment of costs under accounting and tax rules. The net deferred tax position changed with MSEK 27,493 during 2022, mainly caused by the change in cash flow hedges and other unrealized derivatives.

Accumulated tax-loss carryforwards

	2022	2021
Sweden	76	146
Germany	7,786	10,022
Netherlands	2,201	14
Other countries	1,163	1,051
Total	**11,226**	**11,233**

The tax-loss carryforwards fall due as follows:

	2022
2023	1
2024-2027	2,754
2028 and beyond	114
No time limit	8,357
Total	**11,226**

The tax-loss carryforwards correspond to a potential deferred tax asset of SEK 2,030 million, of which SEK 9 million is booked on the balance sheet as of 31 December 2022. Tax-loss carryforwards not included in the computation of deferred tax represent a tax value of SEK 2,021 million and pertain mainly to loss carryforwards in German operations. These have not been assigned any value, since it is unclear at present whether it will be possible to use them.

Note 14 Leasing

Accounting policy

A right-of-use asset along with a lease liability is recognised on the balance sheet for all lease contracts except for leases for which the underlying asset is of low value or if the contract duration is 12 months or less.

The right-of-us-asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct cost incurred and an estimate of costs to dismantle and remove the underlying asset.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term.

The lease liability is initially measured at the present value of the lease payments outstanding at the commencement date, discounted using Vattenfall's incremental borrowing rate, which is updated by the Treasury department twice a year.

Lease payments included in the measurement of the lease liability comprise:

- Fixed payments
- Variable lease payments that depend on an index or rate
- Amounts expected to be payable under a residual value guarantee; and
- The exercise price under a purchase option that the Group is reasonably certain to exercise, lease payments in an optional renewal period, if the Group is reasonably certain to exercise an extension option, and penalties for early termination of a lease unless the Group is reasonably certain not to terminate early.

Vattenfall is applying the practical expedient related to low value leases and short term leases. These contracts will be expensed directly.

Assets leased out under finance leases are not reported as property, plant and equipment, since the risks associated with ownership are transferred to the lessee. Instead, a financial receivable is entered for the future minimum lease payments.

Assets leased out under operating leases are reported as property, plant and equipment and are subject to depreciation.

Leased property plant and equipment

As a lessee

Vattenfall leases different assets, including but not limited to land within BA Wind, office buildings, vehicles and other. More detailed information on leases for which Vattenfall is a lessee is presented below.

Right-of-use assets	Land	Buildings	Vehicles	Other	Total
Balance as of 1 January	3,640	1,363	369	611	5,983
Additions to the right-of-use-asset during the year	322	684	151	–	1,157
Depreciation for the year	-182	-430	-178	-228	-1,018
Other changes to the right-of-use-asset during the year	120	43	3	-163	3
Translation differences	184	80	13	33	310
Balance carried forward	**4,084**	**1,740**	**358**	**253**	**6,435**

Lease liability

Lease liability development	
Balance as of 1 January	5,341
Additions to the liability	1,157
Repayment of the liability	-1,035
Other changes	30
Translation differences	320
Long-term lease liability balance carried forward	**5,813**
Short-term lease liability	916
Total lease liability balance carried forward	**6,729**

Total leasing related cash-outflows 2022 amounted to 1,150 MSEK of which 115 MSEK is related to interest expenses.

Maturity analysis - contractual undiscounted cash flows	
<1 year	1,036
1-5 years	2,143
>5 years	4,901
Total as of 31 December 2022	**8,080**

Lease payments amounting to 687 MSEK have not been accounted for as right-of-use-assets as a result of the practical expedients relating to short-term contracts and low value items or because they related to variable components of contracts. As of 31 December 2022, Vattenfall has signed contracts, which have yet not commenced with a corresponding lease liability amounting to 568 MSEK in the year of commencement.

Leasing revenues

As a lessor

Certain Group companies own and operate power facilities on behalf of customers. Revenues from customers are broken down into two components – a fixed component to cover capital expenses and a variable component based on the quantity delivered. On 31 December 2022, cost of assets leased out amounted to SEK 5,996 million (5,411). Accumulated depreciation amounted to SEK 4,399 million (4,039) and accumulated impairment losses amounted to SEK 95 million (88). As a lessor Vattenfall has only operating leases.

Future payments for this type of facility are broken down as follows:

	Operating leasing
2023	1,083
2024	1,040
2025	1,058
2026	90
2027	61
2028 and beyond	122
Total	**3,454**

Note 15 Auditors' fees

	2022	2021
Annual audit assignment	45	38
Audit-related activities besides the annual audit assignment	5	2
Tax consulting	–	1
Other assignments	3	5

Audit services refer to examination of the consolidated financial statements, the accounts and the administration of the Board of Directors and the President & CEO of the company; other tasks incumbent on the company's auditor; and advice or other assistance prompted by observations from such audits or the performance of other such tasks. Non-audit services refer to services related to compliance and IT-security related matters as well as other services. Of the total fee for audit services, SEK 15 million (15) is invoiced by PricewaterhouseCoopers Sweden for the statutory audit. Of total other fees, SEK 2 million (3) is invoiced by PricewaterhouseCoopers Sweden (the statutory auditors of Vattenfall AB (publ.)) and are mainly related to matters of a one-off nature.

Note 16 Intangible assets: non-current

Accounting policy

Goodwill

Goodwill is measured at cost less any accumulated impairment losses. Goodwill is not subject to amortisation but is tested at least annually for impairment. Goodwill that arises on acquisition of associated companies or joint ventures is included in the carrying amount of Participations in associated companies and joint ventures.

Other Intangible non-current assets

Other Intangible non-current assets such as concessions, patents, licences, trademarks and similar rights as well as renting rights, and similar rights are reported at cost less accumulated amortisation and impairment losses. Development costs relates to various projects within the utilities sector.

Principles for amortisation

Amortisation of Intangible non-current assets other than goodwill is reported on a straight-line basis in the income statement over the estimated useful life of the asset, provided the useful life is not indefinite.

Important estimations and assessments

Intangible assets are tested for impairment in accordance with the accounting policies described in Note 9 to the consolidated accounts, Impairment losses and reversed impairment losses. The recoverable amount for cash-generating units is determined by calculating the value in use or fair value less costs to sell. For these calculations, certain estimations must be made regarding future cash flows along with other adequate assumptions regarding the required rate of return, for example.

Financial information

	2022					
	Development costs	Goodwill	Concessions and similar rights with finite useful lives	Costs to obtain a contract	Renting rights and similar rights with finite useful lives	Total
Cost						
Cost brought forward	2,299	44,012	17,916	1,957	170	**66,354**
Acquired companies	–	–	5	–	–	**5**
Investments	149	–	157	701	–	**1,007**
Transfer from development projects in progress	-36	–	54	–	–	**18**
Divestments/disposals	–	-90	-1,752	-740	-55	**-2,637**
Reclassifications	–	-6,181	–	-97	–	**-6,278**
Translation differences	53	3,394	1,300	146	4	**4,897**
Accumulated cost carried forward	**2,465**	**41,135**	**17,680**	**1,967**	**119**	**63,366**
Amortisation according to plan						
Amortisation brought forward	-1,360	–	-13,995	-1,396	-44	**-16,795**
Amortisation for the year	-128	–	-367	-573	-1	**-1,069**
Divestments/disposals	–	–	980	740	16	**1,736**
Reclassifications	–	–	1	97	–	**98**
Translation differences	-54	–	-1,083	-94	-3	**-1,234**
Accumulated amortisation according to plan carried forward	**-1,542**	**–**	**-14,464**	**-1,226**	**-32**	**-17,264**
Impairment losses						
Impairment losses brought forward	-212	-30,091	-2,073	–	-113	**-32,489**
Impairment losses for the year	–	–	-27	–	–	**-27**
Divestments/disposals	–	90	770	–	39	**899**
Reclassifications	–	6,181	–	–	–	**6,181**
Translation differences	–	-2,227	-90	–	-2	**-2,319**
Accumulated impairment losses carried forward	**-212**	**-26,047**	**-1,420**	**–**	**-76**	**-27,755**
Residual value according to plan carried forward	**711**	**15,088**	**1,796**	**741**	**11**	**18,347**

	2021					
	Development costs	Goodwill	Concessions and similar rights with finite useful lives	Costs to obtain a contract	Renting rights and similar rights with finite useful lives	Total
Cost						
Cost brought forward	2,554	43,614	17,563	1,826	166	**65,723**
Acquired companies	1	179	87	–	–	**267**
Investments	248	–	110	462	2	**822**
Transfer from development projects in progress	–	–	146	–	–	**146**
Divestments/disposals	-360	-660	-233	-375	–	**-1,628**
Reclassifications	–	–	8	–	–	**8**
Divested companies	-163	-103	-214	–	–	**-480**
Translation differences	19	982	449	44	2	**1,496**
Accumulated cost carried forward	**2,299**	**44,012**	**17,916**	**1,957**	**170**	**66,354**
Amortisation according to plan						
Amortisation brought forward	-1,745	–	-13,640	-1,149	-40	**-16,574**
Acquired companies	–	–	-4	–	–	**-4**
Amortisation for the year	-119	–	-340	-548	-3	**-1,010**
Divestments/disposals	360	–	122	333	–	**815**
Divested companies	163	–	168	–	–	**331**
Translation differences	-19	–	-301	-32	-1	**-353**
Accumulated amortisation according to plan carried forward	**-1,360**	**–**	**-13,995**	**-1,396**	**-44**	**-16,795**
Impairment losses						
Impairment losses brought forward	-212	-30,161	-2,097	-42	-113	**-32,625**
Divestments/disposals	–	660	117	42	–	**819**
Divested companies	–	103	–	–	–	**103**
Translation differences	–	-693	-93	–	–	**-786**
Accumulated impairment losses carried forward	**-212**	**-30,091**	**-2,073**	**–**	**-113**	**-32,489**
Residual value according to plan carried forward	**727**	**13,921**	**1,848**	**561**	**13**	**17,070**

Contractual commitments for acquisitions of non-current intangible assets amounted to SEK 1 million (0) as per 31 December 2022.

Estimated useful life	
Development costs	3–4 years
Concessions and similar rights	3–30 years
Costs to obtain a contract	1–6 years
Renting rights and similar rights	3–50 years

Estimated useful lives are unchanged compared with the preceding year.

Note 17 Property, plant and equipment

Accounting policy

Property, plant and equipment are reported as assets on the balance sheet if it is likely that there will be future financial benefit for the company and the cost of the asset can be calculated in a reliable manner. Cost includes the purchase price and costs directly attributable to putting the asset in place and in a suitable condition for use in accordance with the management's intention of the acquisition. Examples of directly attributable expenses included in cost are delivery and handling, installation, land registration and consulting services. Borrowing costs directly attributable to investment projects in property, plant and equipment, which take a substantial period of time to complete, are included in the cost of the asset during the construction period.

In the nuclear power operations cost at the time of acquisition includes a calculated present value for estimated costs for dismantling and removing the plant and restoring the site where the plant is located. The equivalent estimated cost calculated on the basis of the present value is reported initially as a provision. The same principle applies for dismantling obligations in Vattenfall's Wind operations. See also Note 31 to the consolidated accounts, Other interest-bearing provisions.

Subsequent costs

Subsequent costs for property, plant and equipment are only added to the acquisition cost if it is likely that there will be future financial benefits associated with the asset for the company and the cost can be calculated in a reliable manner. All other subsequent costs are reported as expenses in the period when they arise. What is decisive for the assessment when a subsequent cost is added to the acquisition cost is whether the cost concerns the replacement of identified components, or parts of them, whereby such costs are capitalised. Also in cases where new components are created, the cost is added to the cost of the asset. Any undepreciated reported values of replaced components, or parts of components, are retired and carried as an expense in connection with the replacement. Repairs and maintenance are expensed as incurred.

Depreciation principles

Depreciation is reported on a straight-line basis in the income statement over the estimated useful life of the asset. The Group applies component depreciation, which means that the components' estimated useful life provides the basis for the straight-line depreciation. Estimated useful life is described below in this note. Assessments of the residual value and useful life of an asset are conducted annually. Land and water rights are not subject to depreciation.

Important estimations and assessments

Property, plant and equipment are tested for impairment in accordance with the accounting policies described in Note 9 to the consolidated accounts, Impairment losses and reversed impairment losses. The recoverable amount for cash-generating units is determined by calculating the value in use or fair value less costs to sell. For these calculations, certain estimations must be made regarding future cash flows along with other adequate assumptions regarding the required rate of return, for example.

Financial information

	2022				
	Land and buildings[1]	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress[2]	Total
Cost					
Cost brought forward[3]	63,338	505,635	10,662	21,696	**601,331**
Acquired companies	–	509	4	171	**684**
Investments[4]	1,042	539	671	26,969	**29,221**
Advance payments capitalised	–	–	–	13	**13**
Capitalised/reversed future expenses for decommissioning, restoration	75	7,914	–	81	**8,070**
Transfer from construction in progress	528	8,593	146	-9,267	**–**
Divestments/disposals	-1,319	-12,515	-707	-431	**-14,972**
Other reclassifications	212	-298	-166	110	**-142**
Assets held for sale	-61	-50,217	-220	–	**-50,498**
Translation differences	2,259	18,242	582	1,721	**22,804**
Accumulated cost carried forward	**66,074**	**478,402**	**10,972**	**41,063**	**596,511**
Depreciation according to plan					
Depreciation brought forward	-27,252	-231,344	-7,069	–	**-265,665**
Acquired companies	–	-271	-2	–	**-273**
Depreciation for the year	-1,481	-14,936	-1,003	–	**-17,420**
Divestments/disposals	137	6,095	669	–	**6,901**
Assets held for sale	–	5,562	–	–	**5,562**
Translation differences	-1,227	-9,110	-389	–	**-10,726**
Accumulated depreciation according to plan carried forward	**-29,823**	**-244,004**	**-7,794**	**–**	**-281,621**
Impairment losses					
Impairment losses brought forward	-4,725	-77,162	-391	-671	**-82,949**
Impairment losses for the year	–	-63	–	–	**-63**
Reversed impairment losses for the year	2	666	–	–	**668**
Divestments/disposals	1,106	6,280	11	105	**7,502**
Other reclassifications	–	–	–	165	**165**
Assets held for sale	–	39,859	–	–	**39,859**
Translation differences	-290	-2,988	-30	-38	**-3,346**
Accumulated impairment losses carried forward	**-3,907**	**-33,408**	**-410**	**-439**	**-38,164**
Residual value according to plan carried forward	**32,344**	**200,990**	**2,768**	**40,624**	**276,726**
Advance payments to suppliers					**175**
Total					**276,901**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 11,763 million (11,890), which are not subject to depreciation.
[2] Borrowing costs during the construction period have been reported as an asset in the amount of SEK 0 million (0) for the year. The average interest rate for 2022 was 2.21% for borrowings in SEK, 2.47% for borrowings in EUR and 5.50% for borrowings in GBP.
[3] Government grants received, balance brought forward, amount to SEK 8,072 million (7,904).
[4] Government grants received during the year amounted to SEK 112 million (195).

Financial information

	2021				
	Land and buildings[1]	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress[2]	Total
Cost					
Cost brought forward[3]	64,894	507,733	11,179	26,348	**610,154**
Acquired companies	15	–	50	–	**65**
Investments[4]	572	1,720	1,081	20,710	**24,083**
Advance payments capitalised	–	–	–	43	**43**
Capitalised/reversed future expenses for decommissioning, restoration	67	7,006	–	260	**7,333**
Transfer from construction in progress	961	23,202	57	-24,366	**-146**
Divestments/disposals	-713	-1,425	-1,250	2	**-3,386**
Other reclassifications	208	-45	-65	-75	**23**
Divested companies	-3,474	-40,681	-555	-1,608	**-46,318**
Translation differences	808	8,125	165	382	**9,480**
Accumulated cost carried forward	**63,338**	**505,635**	**10,662**	**21,696**	**601,331**
Depreciation according to plan					
Depreciation brought forward	-27,790	-241,974	-7,544	–	**-277,308**
Acquired companies	-7	–	-31	–	**-38**
Depreciation for the year	-1,509	-14,009	-903	–	**-16,421**
Divestments/disposals	253	1,414	1,103	–	**2,770**
Other reclassifications	-2	1	1	–	**–**
Divested companies	2,137	27,003	414	–	**29,554**
Translation differences	-334	-3,779	-109	–	**-4,222**
Accumulated depreciation according to plan carried forward	**-27,252**	**-231,344**	**-7,069**	**–**	**-265,665**
Impairment losses					
Impairment losses brought forward	-4,644	-78,026	-512	-656	**-83,838**
Impairment losses for the year	-5	-3	–	–	**-8**
Reversed impairment losses for the year	–	1,836	86	–	**1,922**
Divestments/disposals	2	-12	78	–	**68**
Other reclassifications	–	–	-33	–	**-33**
Divested companies	8	406	–	–	**414**
Translation differences	-86	-1,363	-10	-15	**-1,474**
Accumulated impairment losses carried forward	**-4,725**	**-77,162**	**-391**	**-671**	**-82,949**
Residual value according to plan carried forward	**31,361**	**197,129**	**3,202**	**21,025**	**252,717**
Advance payments to suppliers					**111**
Total					**252,828**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 11,763 million (11,890), which are not subject to depreciation.

[2] Borrowing costs during the construction period have been reported as an asset in the amount of SEK 0 million (0) for the year. The average interest rate for 2022 was 2.21% for borrowings in SEK, 2.47% for borrowings in EUR and 5.50% for borrowings in GBP.

[3] Government grants received, balance brought forward, amount to SEK 8,072 million (7,904).

[4] Government grants received during the year amounted to SEK 112 million (195).

At 31 December 2022, contractual commitments for the acquisition of property, plant and equipment amounted to SEK 17,266 million (16,525).

Estimated useful life	
Hydro power installations	5–50 years
Nuclear power installations	3–60 years
Combined heat and power installations	5–50 years
Wind power installations	10–25 years
Solar power installations	5–25 years
Distribution assets	10–35 years
Office and warehouse buildings and workshops	15–100 years
Office equipment	3–10 years

Estimated useful lives are unchanged compared to the preceding year.

Note 18 Shares and participations owned by the Parent Company Vattenfall AB and other Group companies

Shares and participations owned by Parent Company Vattenfall AB

	Corporate Identity Number	Registered office	Number of shares 2022	Participation in % 2022	Carrying amount Parent Company 2022	Carrying amount Parent Company 2021
Sweden						
Borås Elhandel AB[1]	556613-7765	Borås	1,000	100	100	100
Chlorout AB[7]	556840-9253	Stockholm	500	100	–	–
Enwell Holding AB[1]	556813-3846	Stockholm	1,230,000	100	190	181
Forsmarks Kraftgrupp AB[2]	556174-8525	Östhammar	198,000	66	198	198
Försäkrings AB Vattenfall Insurance[7]	516401-8391	Solna	200,000	100	924	924
Gotlands Energi AB[5]	556008-2157	Gotland	112,500	75	13	13
InCharge AB[1]	559178-6081	Stockholm	50,000	100	–	–
Klimatum AB[1]	559030-1148	Stockholm	100	100	39	39
Produktionsbalans PBA AB[2]	556425-8134	Stockholm	4,800	100	5	5
Ringhals AB[2]	556558-7036	Varberg	248,572	70	379	379
Svensk Kärnbränslehantering AB[2]	556175-2014	Solna	360	36[8]	–	–
Vattenfall Business Services Nordic AB[7]	556439-0614	Stockholm	100	100	130	130
Vattenfall Computing Services AB[7]	559217-9229	Stockholm	50,000	100	14	14
Vattenfall Elanläggningar AB[6]	556257-5661	Solna	1,000	100	1	1
Vattenfall Eldistribution AB[6]	556417-0800	Solna	8,000	100	38,000	38,000
Vattenfall France Holding AB[7] Liquidated	556815-4214	Stockholm	30,500	100	–	3
Vattenfall Kundservice AB[7]	556529-7065	Umeå	100,000	100	30	30
Vattenfall Nuclear Fuel AB[2]	556440-2609	Solna	100	100	96	96
Vattenfall Power Management AB[1]	556573-5940	Stockholm	6,570	100	12	12
Vattenfall Services Nordic AB[2]	556417-0859	Stockholm	16,000	100	19	19
Vattenfall Vattenkraft AB[2]	556810-1520	Stockholm	1,000	100	1	1
Vattenfall Vindkraft AB[4]	556731-0866	Stockholm	1,000	100	14,000	14,000
Västerbergslagens Energi AB[5]	556565-6856	Ludvika	14,674	51	15	15
Denmark						
Vattenfall A/S[7]	213 11 332	Copenhagen	10,040,000	100	82	33
Vattenfall Energy Trading A/S[3] Liquidated	310 811 81	Copenhagen	500	100	–	49
Vattenfall Network Solutions A/S[6]	31894522	Copenhagen	5,000	100	89	7
Vattenfall Vindkraft A/S[4]	31597544	Kolding	150,000	100	4,870	4,870
Vindstød A/S[1]	340 451 43	Århus	1,333,333	90[9]	179	179
Finland						
Vattenfall Sähkömyynti Oy[1]	1842073-2	Helsinki	85	100	684	5
Germany						
Vattenfall GmbH[7]	(HRB) 124048	Berlin	500,000,000	100	51,366	51,366
Poland						
Vattenfall IT Services Poland Sp.z.o.o[7]	0000402391	Gliwice	58,000	100	12	12
Netherlands						
Vattenfall N.V.[7]	33292246	Amsterdam	136,794,964	100	44,138	44,138
Other countries						
Vattenfall Eolien S.A.S.[4]	832352538	Boulogne Billancourt	1,000	100	182	182
Vattenfall HEAT UK Limited[5]	2951085	London	17,000,002	100	457	457
Vattenfall Network Ltd[6]	2731769	London	15,000,002	100	176	176
Vattenfall Network Solutions Ltd[6]	2692708	London	2,000	100	1,866	–
Vattenfall Wind Power Ltd[4]	6205750	London	646,000,001	100	10,510	10,510
Vattenfall UK Sales Limited[1]	05461926	London	104,000,400	100	–	–
Total					**167,097**	**166,144**

[1] Customers & Solutions.
[2] Power Generation – Generation.
[3] Power Generation – Markets.
[4] Wind.
[5] Heat.
[6] Distribution.
[7] Other.
[8] The Group owns a further 30% via Forsmarks Kraftgrupp AB.
[9] The remaining 10% of the shares will be paid 2023.

Larger shareholdings owned by other Group companies than the Parent Company Vattenfall AB
When calculating the participation percentages, consideration is taken for the non-controlling interests in the respective companies.

	Registered office	Participation in % 2022
Sweden		
Vattenfall Kraftgården AB	Ragunda	74
Denmark		
Vattenfall Vindkraft Nørrekær Enge A/S	Esbjerg	100
Germany		
DanTysk Sandbank Offshore Wind GmbH & Co. KG	Hamburg	51
Fernheizwerk Neukölln AG	Berlin	81
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	Hamburg	67
Kernkraftwerk Krümmel GmbH & Co. oHG	Hamburg	50
Nuon Epe Gasspeicher GmbH	Gronau	100
Vattenfall Energy Trading GmbH	Hamburg	100
Vattenfall Energy Solutions GmbH	Hamburg	100
Vattenfall Europe Information Services GmbH	Hamburg	100
Vattenfall Europe New Energy GmbH	Hamburg	100
Vattenfall Europe New Energy Ecopower GmbH	Rostock	100
Vattenfall Europe Sales GmbH	Hamburg	100
Vattenfall Europe Windkraft GmbH	Hamburg	100
Vattenfall Next Energy GmbH	Berlin	100
Vattenfall Real Estate Energy Sales GmbH	Berlin	100
Vattenfall Smarter Living GmbH	Berlin	100
Vattenfall Wärme Berlin AG	Berlin	100
Vattenfall Wasserkraft GmbH	Berlin	100

	Registered office	Participation in % 2022
Netherlands		
DELTA Energie B.V.	Middelburg	100
Feenstra N.V.	Amsterdam	100
Feenstra Verwarming B.V.	Lelystad	100
Nuon Epe Gas Service B.V.	Amsterdam	100
Vattenfall Storage B.V.	Amsterdam	100
Vattenfall Customers & Solutions Netherlands N.V.	Amsterdam	100
Vattenfall Duurzame Energie N.V.	Amsterdam	100
Vattenfall Energy Sourcing Netherlands N.V.	Amsterdam	100
Vattenfall Energy Trading Netherlands N.V.	Amsterdam	100
Vattenfall Klantenservice N.V.	Amsterdam	100
Vattenfall Eemshaven B.V.	Amsterdam	100
Vattenfall Renewables NSW I B.V.	Amsterdam	100
Vattenfall Sales Nederland N.V.	Amsterdam	100
Vattenfall Warmte N.V.	Amsterdam	100
Zuidlob Wind B.V.	Amsterdam	100
UK		
Aberdeen Offshore Wind Farm Ltd	Aberdeen	100
Kentish Flats Ltd	London	100
Nuon UK Ltd	Cornwall	100
Ormonde Energy Ltd	London	51
Pen Y Cymoedd Wind Farm Ltd.	Cornwall	100
Thanet Offshore Wind Ltd	London	100

Subsidiaries with material non-controlling ownership interests
Forsmarks Kraftgrupp
Forsmarks Kraftgrupp conducts nuclear power operations from three nuclear reactors in Östhammar municipality, Uppsala County. Forsmarks Kraftgrupp is owned by Vattenfall AB (66.0%) and Mellansvensk Kraftgrupp AB (25.5%)—the latter of which has Fortum as its largest owner—and Sydkraft Nuclear Power AB (8.5%). The German state is the largest, controlling shareholder of Uniper, which owns Sydkraft Nuclear Power AB. These part-owners have a consortium agreement that regulates operations and decision making for Forsmarks Kraftgrupp. Forsmarks Kraftgrupp reports on a consolidated basis to the Vattenfall Group since, under the consortium agreement, Vattenfall controls Forsmarks Kraftgrupp according to the criteria stated in IFRS 10 – "Consolidated Financial Statements".

Sales of the electric power that is generated are made on a pro rata basis to the part owners at cost, pursuant to the consortium agreement. In addition, the consortium agreement entails that the part owners are responsible for the company's funding on a pro rata basis, and that the company's operations shall in principle not generate any profit. Generation in 2022 amounted to 25.5TWh (25.5), and the average availability for Forsmark was 90.1% (89.7%).

Ringhals
Ringhals conducts nuclear power operations from four nuclear reactors on the Swedish west coast in Varberg municipality. Two of the reactors have been taken out of operation and decommissioning has begun. Ringhals is owned by Vattenfall AB (70.4%) and Sydkraft Nuclear Power AB (29.6%). The part-owners have a consortium agreement that regulates how the operations of Ringhals are conducted and how decision-making is done. Ringhals is reported as a Group company in the Vattenfall Group since Vattenfall has control over Ringhals according to IFRS 10 – "Consolidated Financial Statements".

Sales of the electric power that is generated are made on a pro rata basis to the part owners at cost, pursuant to the consortium agreement. In addition, the consortium agreement entails that the part owners are responsible for the company's funding on a pro rata basis, and that the company's operations shall in principle not generate any profit. Generation in 2022 amounted to 13.9 TWh (14.8), and the average availability for Ringhals was 73.5% (77.7%).

DanTysk Sandbank Offshore Wind
The DanTysk offshore wind farm, west of the island of Sylt (Germany) and just over the border with Denmark, was one of the first large marine wind farms built in the German North Sea. The wind farm comprises 80 wind turbines of 3.6 MW each with a total capacity of 288 MW. DanTysk began generating electricity in December 2014. The Sandbank wind farm comprises 72 wind turbines of 4 MW each with a total capacity of 288 MW. The wind farm is located 90 kilometres off the coast of Schleswig-Holstein (Germany), adjacent to DanTysk. Sandbank was inaugurated in 2017.

Both wind farms are part of the company DanTysk Sandbank Offshore Wind GmbH & Co. KG, in which Vattenfall Europe Windkraft GmbH owns 51% of the shares, and the partner Stadtwerke München holds 49% of the shares. Vattenfall has control over DanTysk Sandbank Offshore Wind in accordance with IFRS 10 – "Consolidated Financial Statements".

Hollandse Kust Zuid
Hollandse Kust Zuid is an offshore Wind project under construction, located in the North Sea. It is the first subsidy-free windfarm to be developed in Europe. The project covers 322 km^2, consisting of 140 WTGs with an aggregated capacity of 1.5 GW, corresponding to the annual electricity consumption of 2 million households. Construction of the wind farm began in 2021 and is expected to be completed in the second quarter 2023.

Vattenfall Duurzame Energie N.V. owns 50.51% of the shares. The other owners are BASF, 24.25%, and Allianz, 25.24%. Vattenfall has control over Hollandse Kust Zuid in accordance with IFRS 10 – "Consolidated Financial Statements".

Following is condensed financial information for Forsmarks Kraftgrupp, Ringhals, DanTysk Sanbank Offshore Wind and Hollandse Kust Zuid:

	2022				2021			
	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind	Hollandse Kust Zuid	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind	Hollandse Kust Zuid
Income statements in summary								
Net sales	7,021	5,065	6,177	119	6,131	5,615	4,646	–
Profit for the year	-3,210	-4,590	2,741	35	907	918	1,520	-7
– of which allocated to non-controlling interests	-935	82	1,343	17	288	37	745	3
Balance sheets in summary								
Non-current assets	61,128	49,752	13,214	19,894	71,759	55,922	13,953	7,598
Current assets	15,112	8,052	970	1,629	5,305	3,788	697	1,407
Total assets	**76,240**	**57,804**	**14,184**	**21,523**	**77,064**	**59,710**	**14,650**	**9,005**
Equity	11,260	-1,768	10,258	14,334	14,300	2,455	13,375	6,368
Liabilities	64,980	59,572	3,926	7,189	62,764	57,255	1,275	2,637
Total equity and liabilities	**76,240**	**57,804**	**14,184**	**21,523**	**77,064**	**59,710**	**14,650**	**9,005**
Statement of cash flows in summary								
Cash flow for the year	-122	223	28	-26	78	87	171	1,323

Note 19 Participations in associated companies and joint arrangements

Accumulated tax-loss carryforwards

	2022	2021
Balance brought forward	6,110	4,347
Assets held for sale	–	23
New share issues and shareholders' contributions	752	467
Withdrawals/Repaid shareholders' contributions	-71	-132
Divested companies	-23	-12
Reclassifications from other shares and participations	–	-34
Impairment losses	–	-30
Changes in other comprehensive income	–	1,435
Profit participations and dividends	-181	-63
Translation differences	507	109
Balance carried forward	**7,094**	**6,110**

Shares and participations owned by the Parent Company Vattenfall AB or by other Group companies

				Carrying amount		Carrying amount Parent Company	
	Corporate Identity Number	Registered office	Participation in % 2022	2022	2021	2022	2021
Associated companies and joint ventures owned by the Parent Company Vattenfall AB							
Sweden							
Hybrit Development AB	559121-9760	Stockholm	33	250	262	537	477
Norway							
NorthConnect KS	996625001	Kristiansand	33	49	48	–	51
NorthConnect AS	995878550	Kristiansand	30	13	12	–	10
Associated companies and joint ventures owned by other Group companies than the Parent Company Vattenfall AB							
Sweden							
Blakliden Fäbodberget Holding AB	559148-3408	Solna	30	251	176	–	–
UK							
East Anglia Offshore Wind Ltd[1]	06990367	London	50	51	49	–	–
Muir Mhòr Offshore Wind Farm Limited	717262	Edinburgh	50	180	–	–	–
Germany							
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	HRA 200395	Oldenburg	26	26	6	–	–
GASAG AG	HRB 44343	Berlin	32	5,567	4,988	–	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	HRA 99143	Hamburg	20	–	–	–	–
Kernkraftwerk Stade GmbH & Co. oHG	HRA 99146	Hamburg	33	–	–	–	–
SOLYTIC GmbH (Sold)	HRB 190395	Berlin	0	–	25	–	–
Vattenfall Eurofiber GmbH[1]	HRB 202647	Berlin	50	148	87	–	–
E & V Windfeld Birkhorst GmbH[1]	HRB 13342	Schenkenberg	50	2	2	–	–

	Corporate Identity Number	Registered office	Participation in % 2022	Carrying amount 2022	Carrying amount 2021	Carrying amount Parent Company 2022	Carrying amount Parent Company 2021
Netherlands							
B.V. Nederlands Elektriciteit Administratiekantoor	09018339	Arnhem	23	–	–	–	–
C.V. Windpoort[1]	34122462	Heemskerk	40	–	1	–	–
Molenrak B.V.[1]	82937230	Amsterdam	58	232	214	–	–
OSwinT B.V.	74311883	Swifterbant	23	7	6	–	–
V.O.F. Windpark Oom Kees[1]	09210903	Amsterdam	13	5	2	–	–
Westpoort Warmte B.V.[1]	34121626	Amsterdam	50	313	232	–	–
Total				**7,094**	**6,110**	**537**	**538**

[1] Joint ventures.

Participations in the results of associated companies

	2022	2021
Sweden		
Blakliden Fäbodberget Holding AB	-43	-9
Enwell AB (reclassified to subsidiary 2021)	–	-7
Hybrit Development AB	-71	-133
Norway		
NorthConnect KS	–	5
NorthConnect AS	–	1
UK		
East Anglia Offshore Wind Ltd	–	–
Muir Mhòr Offshore Wind Farm Limited	–	–
Germany		
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	18	-10
GASAG AG	252	279
Kernkraftwerk Brokdorf GmbH & Co. oHG	–	–
Kernkraftwerk Stade GmbH & Co. oHG	–	–
SOLYTIC GmbH	-23	-5
Vattenfall Eurofiber GmbH	-56	-34
E & V Windfeld Birkhorst GmbH	–	–
Netherlands		
B.V. Nederlands Elektriciteit Administratiekantoor	–	-74
C.V. Windpoort	1	–
Molenrak B.V.	–	–
NoordzeeWind C.V.	–	-138
OSwinT B.V.	1	-2
V.O.F. Windpark Oom Kees	3	–
Westpoort Warmte B.V.	55	49
Windpark Hoofdplaatpolder B.V.	–	18
V.O.F. Noordpier Wind	–	2
Total	**137**	**-58**

Note 20 Share in the Swedish Nuclear Waste Fund

	2022	2021
Balance brought forward	52,772	48,270
Payments	1,714	1,608
Disbursements	-1,385	-1,274
Returns	-5,584	4,168
Balance carried forward	**47,517**	**52,772**

According to the Swedish Nuclear Activities Act (1984:3), any organisation in Sweden with a permit to own or run a nuclear installation is obliged to dismantle the plant in a safe manner, to manage spent fuel and other radioactive waste and to conduct necessary research and development. The permit holder shall also finance this dismantling. The financing of future fees for spent nuclear fuel is currently ensured by Swedish law. The reactor owner is required to pay a generation-based fee to the board of the Swedish Nuclear Waste Fund, which manages paid-in funds. Due to changed investment policy for the Swedish Nuclear Waste Fund in quarter 2 2018, the measurement category for Share in the Swedish Nuclear Waste Fund has been changed from amortised cost to fair value through profit or loss.

As stated in Note 31 to the consolidated accounts, Other interest-bearing provisions, provisions for future expenses for decommissioning within Swedish nuclear power operations amount to SEK 91,388 million (81,259 million). Contingent liabilities attributable to the Swedish Nuclear Waste Fund are described in Note 40 to the consolidated accounts, Contingent liabilities.

Note 21 Inventories

Accounting policy

Inventories held for own use are valued at the lower of their cost and net realisable value. Net realisable value is the estimated sales price in operating activities, less estimated costs for completion and to bring about a sale. The consumption of nuclear fuel is calculated as a depletion of the energy content of the fuel rods, and is based on the cost of each batch of fuel loaded into the core. The cost of inventories is calculated, depending on the type of inventory, either through application of the first-in, first-out (FIFO) method or through the application of a method based on average prices. Both methods include costs that arose on acquisition of the inventory assets.

Inventories held for trading are valued at fair value less costs to sell. For CO_2 emission allowances that are held for trading, fair value is based on quoted prices (Level 1). For other commodities fair value measurement is derived from an observable market price (API#2 for coal), which means a categorisation into Level 2 of the fair value hierarchy. See Note 3 to the consolidated accounts, Accounting policies.

Inventories under constructions pertains to the operations within business area Wind, started during 2020, where Vattenfall constructs and builds wind- and solar parks with the purpose of selling to an external party. These are valued at the lower of their cost and net realisable value. Inventory sold through develop to sell transactions in 2022 amounts to 671 MSEK (2,781), of which the major part pertains to the sale of Jaap Rodenburg Wind B.V.

The value of the energy stored in the form of water in reservoirs is not reported as an asset.

Financial information

	2022	2021
Inventories held for own use		
Nuclear fuel	5,538	5,975
Materials and spare parts	3,596	3,130
Fossil fuel	2,403	1,094
Biological assets	12	20
Renewable fuel	255	205
Other	593	192
Total	**12,397**	**10,616**
Inventories held for trading		
Fossil fuel	3,024	2,458
CO_2 emission allowances/certificates	1,536	25,680
Biomass	344	81
Total	**4,904**	**28,219**
Inventories under construction		
Development projects, wind power	3,328	2,551
Development projects, solar power	340	153
Total	**3,668**	**2,704**
Total inventories	**20,969**	**41,539**

Inventories recognised as an expense in 2022 amount to SEK 22,565 million (11,556). Impairment losses for inventory for own use amounted to SEK 23 million (16) during the year. Reversed impairment amounted to SEK 20 million (32).

Note 22 Intangible assets: current

Accounting policy

CO_2 emission allowances held for own use

Purchased emission allowances held for own use are reported as intangible assets under current assets at cost less accumulated impairment losses. As carbon dioxide is emitted, an obligation arises to deliver emission allowances (EUAs, CERs, ERUs) to the authorities in the respective countries. The obligation is reported as an expense and a liability in the amount at which it is expected to be settled.

Certificates held for own use

Accumulated certificates, which are received free of charge, are reported as intangible assets under current assets at fair value when obtained. The corresponding amount is recognised as revenue under Net sales. Purchased certificates held for own use are reported at cost less accumulated impairment losses. When electricity is sold, an obligation arises to deliver certificates to the authorities in the respective countries. The obligation is reported as an expense and a liability in the amount at which it is expected to be settled and occurs in cases where Vattenfall has a shortage of certificates.

Financial information

	CO_2 emission allowances		Certificates		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**
Balance brought forward	4,844	150	17	42	**4,861**	**192**
Purchases	7,073	12,553	67	44	**7,140**	**12,597**
Sold	-6,482	-5,439	-1	-28	**-6,483**	**-5,467**
Redeemed	-2,748	-2,459	-21	-41	**-2,769**	**-2,500**
Disposals	-20	-11	–	–	**-20**	**-11**
Translation differences	312	50	2	–	**314**	**50**
Balance carried forward	**2,979**	**4,844**	**64**	**17**	**3,043**	**4,861**

Note 23 Trade receivables and other receivables

Accounting policy

For trade receivables calculation of the loss reserve is based on expected credit losses for the remaining term. A collective method is used where the receivables are grouped together based on e.g., the number of days past due including any past-due receivables, and a credit loss percentage is calculated for the respective intervals, where in the model Vattenfall has based its calculations on experience from historic loss levels for similar receivables while taking into account forward-looking macroeconomic conditions that may affect expected cash flows. The factors above have resulted in expected credit losses amounting to 0.2–25% depending on grouping. For individual, significant receivables, an individual assessment may be made. Impairment of trade receivables is reported in operating expenses.

Financial information

	2022	**2021**
Accounts receivable – trade	41,982	33,536
Receivables from associated companies	348	411
Other receivables	11,686	10,496
Total	**54,016**	**44,443**

Age analysis

The collection period is normally between 10 and 30 days.

	2022			2021		
	Receivables, gross	**Impaired receivables**	**Receivables, net**	**Receivables, gross**	**Impaired receivables**	**Receivables, net**
Accounts receivable – trade						
Not due	40,401	206	40,195	32,403	351	32,052
Past due 1–30 days	1,253	147	1,106	959	23	936
Past due 31–90 days	487	147	340	289	118	171
Past due >90 days	1,585	1,244	341	1,019	642	377
Total	**43,726**	**1,744**	**41,982**	**34,670**	**1,134**	**33,536**
Receivables from associated companies						
Not due	348	–	348	411	–	411
Past due 1–30 days	–	–	–	–	–	–
Past due 31–90 days	–	–	–	–	–	–
Past due >90 days	–	–	–	–	–	–
Total	**348**	**–**	**348**	**411**	**–**	**411**
Other receivables						
Not due	11,683	–	11,683	10,494	–	10,494
Past due 1–30 days	–	–	–	–	–	–
Past due 31–90 days	–	–	–	–	–	–
Past due >90 days	4	1	3	13	11	2
Total	**11,687**	**1**	**11,686**	**10,507**	**11**	**10,496**

Note 24 Advance payments paid

	2022	2021
Margin calls paid, energy trading	19,591	7,872
Other advance payments	608	490
Total	**20,199**	**8,362**

A margin call paid is a marginal security (collateral) that Vattenfall pays its counterparty, that is, to the holder of a derivative position to cover the counterpart's credit risk, either bilaterally via OTC or through an exchange. In Vattenfall's business activities, margin calls occur in energy trading and in the financing activities.

Margin calls paid within energy trading are recognised on the balance sheet as advance payments paid and are thereby recognised in the statement of cash flows as cash flows from changes in operating assets.

Note 25 Prepaid expenses and accrued income

	2022	2021
Accrued income, energy	16,079	10,350
Prepaid expenses, other	2,950	688
Accrued income, other	1,746	1,364
Total	**20,775**	**12,402**

Note 26 Short-term investments

	2022	2021
Interest-bearing investments	64,724	101,063
Margin calls paid, financing activities	1,122	1,643
Total	**65,846**	**102,706**

Note 27 Cash and cash equivalents

	2022	2021
Cash and bank balances	86,916	41,306
Cash equivalents	19,624	26,870
Total	**106,540**	**68,176**

Cash equivalents are short-term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

Note 28 Assets held for sale

Accounting policy

Non-current assets (or disposal groups) are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. To be classified as held for sale a number of criteria must be met, see the heading "Important estimations and assessments". Assets held for sale are valued at the lower of their carrying amount and fair value less costs to sell and are not subject to amortisation or depreciation. Assets (and liabilities) held for sale are classified as current assets (current liabilities) when the sale transaction is expected to be settled within twelve months after the balance sheet date.

Financial information

Assets held for sale as per 31 December 2022 refer to assets in BA Heat.

	2022	2021
Property, plant and equipment	5,313	–
Other non-current assets	327	–
Cash and cash equivalents	4,307	–
Total assets	**9,947**	**–**
Other interest-bearing provisions	3,658	–
Trade payables and other liabilities	180	–
Total liabilities	**3,838**	**–**

Note 29 Interest-bearing liabilities and related financial derivatives

Interest-bearing liabilities include Hybrid Capital and other interest-bearing liabilities – mainly bond issues. The hybrid bonds are reported as an interest-bearing liability and are subordinated to Vattenfall's other debt instruments. The credit rating agencies Moody's and Standard & Poor's classify 50% of the hybrid bonds as equity in their credit analyses. The two SEK bonds of SEK 3 billion, one GBP bond of GBP 250 million and the EUR bond of EUR 1 billion have set terms of 62 years, and the USD bond of USD 400 million has a set term of 63 years. Vattenfall has an option at specifically defined points in time to redeem the bonds at a call date prior to maturity. These call dates arise for the first time in 2023 for the USD-denominated bond, and in 2027 for the EUR-denominated bond.

For a description of risks related to this area please refer to the risk section on page 81–92.

Hybrid capital is reported as follows:

	2022	2021
Balance brought forward	20,421	19,304
Redemption of Hybrid Capital	-3,059	-2,941
Issue of Hybrid Capital	–	6,481
Effects from hedge accounting	–	1
Reclassification to/from other interstbearing debt	3,061	-3,057
Translation differences	1,508	633
Balance carried forward	**21,931**	**20,421**

Reported values for Hybrid Capital and other interest-bearing liabilities are specified as follows:

	Non-current portion maturity 1–5 years		Non-current portion maturity >5 years		Total non-current portion		Current portion		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Bond issues	44,686	15,672	17,283	18,801	**61,969**	**34,473**	300	3,259	**62,269**	**37,732**
Commercial paper	–	–	–	–	**–**	**–**	71,018	46,189	**71,018**	**46,189**
Liabilities to credit institutions	–	–	–	–	**–**	**–**	1,668	–	**1,668**	**–**
Liabilities to owners of non-controlling interests	–	–	10,655	10,648	**10,655**	**10,648**	-988	100	**9,667**	**10,748**
Liabilities to associated companies	–	–	–	–	**–**	**–**	930	1,452	**930**	**1,452**
Lease liability	–	–	5,813	5,341	**5,813**	**5,341**	916	809	**6,729**	**6,150**
Other liabilities	289	218	121	159	**410**	**377**	2,142[1]	3,339[1]	**2,552**	**3,716**
Total interest-bearing liabilities excl. Hybrid Capital	**44,975**	**15,890**	**33,872**	**34,949**	**78,847**	**50,839**	**75,986**	**55,148**	**154,833**	**105,987**
Hybrid Capital	11,122	3,639	6,638	16,782	**17,760**	**20,421**	4,171	–	**21,931**	**20,421**
Total interest-bearing liabilities	**56,097**	**19,529**	**40,510**	**51,731**	**96,607**	**71,260**	**80,157**	**55,148**	**176,764**	**126,408**
Derivatives (swaps) attributable to the above interest-bearing liabilities	-79	219	1,078	-1,848	**999**	**-1,629**	-486	-29	**513**	**-1,658**

[1] Of which, margin calls within financing activities SEK 2,142 million (3,340).

Undiscounted future cash flows including interest payments on the interest-bearing liabilities mentioned above, future cash flow for derivatives, trade payables and financial instruments with contractual payments on 31 December, are shown in the table below.

Floating interest cash flows with future interest fixing dates are estimated based on observable interest rate curves at year end. All future cash flows in foreign currency are translated to SEK using the rate on the balance sheet date for the annual accounts.

	Non-current portion, maturity 1–5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Interest-bearing liabilities	63,039	30,567	48,041	75,302	**111,080**	**105,869**	81,799	85,546	**192,879**	**191,415**
Derivatives (swaps)	241	-218	1,208	-2,062	**1,449**	**-2,280**	-505	-151	**944**	**-2,431**
Trade payables and other financial liabilities	382	384	1,726	1,634	**2,108**	**2,018**	48,797	39,241	**50,905**	**41,259**
Total	**63,662**	**30,733**	**50,975**	**74,874**	**114,637**	**105,607**	**130,091**	**124,636**	**244,728**	**230,243**

The table below shows the largest benchmark bond issues by Vattenfall:

Type	Issued	Currency	Nominal amount	Coupon, %	Maturity
Euro Medium Term Note	2022	EUR	650	FRN	2024
Euro Medium Term Note	2020	EUR	500	0,050	2025
Euro Medium Term Note	2019	EUR	500	0,500	2026
Euro Medium Term Note	2021	EUR	500	0,125	2029
Euro Medium Term Note	2009	GBP	750	6.875	2039

Note 30 Pension provisions

Accounting policy
Vattenfall's pension obligations in the Group's Swedish and German companies are to a large extent defined benefit pension obligations. The concerned pension plans are primarily retirement pensions, disability pensions and family pensions. There are also pension plans in these and other countries that are defined contribution plans.

Defined benefit pension plans
The Group's defined benefit pension obligations are calculated separately for each plan in accordance with the Projected Unit Credit Method by calculating employees' current and past service cost. Estimated future salary adjustments are taken into consideration as well as taxes levied on pension costs, for example, the Swedish special employers' payroll tax ("särskild löneskatt"). The net obligation comprises the discounted present value of the total earned future salaries less the fair value of any plan assets. The discount rate consists of the interest rate on the balance sheet date of high quality corporate bonds with lifetimes that correspond to the Group's pension obligations. When there is no deep market in corporate bonds of this kind, the market rate yield on government bonds with an equivalent lifetime should be used instead.

Items related to the earnings of defined benefit pensions and interest on the net of defined benefit plans assets and liabilities are recognised in the income statement. Remeasurements recognised in Other comprehensive income under the heading "Items that will not be reclassified to profit or loss" consist of actuarial gains and losses. Actuarial gains and losses arise from the effects of changes in actuarial assumptions and from experience adjustments (the effects of differences between the previous actuarial assumptions and what has actually occurred). The difference between the actual and the calculated return on pension assets are also recognised in Other comprehensive income.

Defined contribution pension plans
Defined contribution pension plans are post-employment benefit plans according to which fixed fees are paid to a separate legal entity. There is no legal or constructive obligation to pay additional fees if the legal entity does not have sufficient assets to pay all benefits to the employees. Fees for defined contribution pension plans are reported as an expense in the income statement in the period they apply to.

Important estimations and assessments
The value of pension obligations for defined benefit pension plans is determined through actuarial computations that are based on assumptions about the discount rate, future salary increases, inflation and demographic conditions.

For pension provisions in Sweden, the discount rate in 2022 was changed to 4.0% (1.75%). The discount rate is based on mortgage bonds with high credit ratings, the market for which is large and liquid. In Germany, where the discount rate is based on high quality corporate bonds, the discount rate in 2022 was also changed to 4.0% (1.25%).

Financial information
Swedish pension plans
The Swedish pension plans supplement the Swedish social insurance system and are the result of agreements between employer and employee organisations. Essentially all Vattenfall employees in Sweden are enrolled in the collectively bargained ITP–Vattenfall pension plan. For employees born in 1978 and earlier, the plan is mostly a defined benefit solution, while for employees born in 1979 and later, the plan is entirely a defined contribution solution.

In defined benefit pension solutions, the employee is guaranteed a lifetime pension that corresponds to a set percentage of the employee's final salary. Defined benefit pensions are secured through provisions on the balance sheet, and the obligation is covered by credit insurance with PRI Pensionsgaranti. In addition, certain pensions attributable the time prior to Vattenfall's incorporation are covered by a government guarantee via the Swedish National Debt Office. Defined contribution pensions are secured through insurance with any of the insurance companies that are electable within the framework of the ITP plan.

Certain of Vattenfall's obligations in the ITP plan such as spousal benefits and disability pensions are secured through an insurance policy from Alecta. According to a statement (UFR 10) issued by the Swedish Financial Reporting Board, this plan is a multi-employer defined benefit plan. As in previous years, Vattenfall has not had access to such information to make it possible to report this plan as a defined benefit plan. The pension plan according to ITP secured by insurance in Alecta is therefore reported as a defined contribution plan. This year's share of the total savings premium in Alecta is 0.20651%, while Vattenfall's share of the total number of actively insured in Alecta is 1.29226%. Alecta's surplus can be distributed among the policyholders and/or the insured. At the end of 2022, Alecta's surplus in the form of its so-called collective funding amounted to 172% (169%). Collective funding consists of the fair value of Alecta's assets as a percentage of the insurance obligations calculated in accordance with Alecta's actuarial calculation assumptions.

German pension plans
The pension plans in Germany are based on collective agreements. Substantial defined benefit plans exist for employees in Berlin and Hamburg.

Berlin
Two pension plans exist, both secured through Pensionskasse der Bewag, a mutual insurance company. Obligations are secured through funds paid in by Vattenfall and its employees. Pensionskasse der Bewag's operations are supervised by a regulatory authority.

The pension plan for employees and retirees shown as a defined benefit plan is based on the statutes of the Bewag pension fund and a supplementary agreement to grant a pension subsidy. For employees who began their employment before 1 January 1984 and work until retirement age, the pension is based on up to 80% of the salary. Half of the statutory pension and the entire benefit from Pensionskasse der Bewag, including surpluses, are credited to the guaranteed amount. Vattenfall's obligations encompass the entire pension obligation. The plan assets attributable to personnel hired before 1 January 1984 are reported as plan assets at fair value. The assets of Pensionskasse are investment funds that are not listed on the stock exchange. The fair value is determined by the repurchase price.

The second plan covering employees who began their employment between 1 January 1984 and 31 December 2006 is also classified as a defined benefit plan. The pension which is dependent on employment time could amount to maximum 50% of the monthly salary.

Hamburg
Vattenfall has pension obligations for employees in Hamburg that mainly consist of the company's obligations to personnel and pensioners employed before 1 April 1991 in the former company HEW AG, and who have been employed for at least 10 years. The sum of the retirement pension, statutory pension and pensions from third parties normally amounts to a maximum of 65% of pensionable salary.

Dutch pension plans
In the Netherlands Vattenfall has the majority of the pension obligations secured through the ABP pension fund and the "Metaal en Techniek" pension fund. The ABP and "Metaal en Techniek" plans are classified and reported as defined contribution plans.

Defined-benefit pension plans

	2022			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	11,268	549	14,324	**26,141**
Present value of fully or partly funded obligations	–	14,110	132	**14,242**
Present value of obligations	**11,268**	**14,659**	**14,456**	**40,383**
Fair value of plan assets	–	12,453	118	**12,571**
Net defined benefit liability	**11,268**	**2,206**	**14,338**	**27,812**

	2021			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	14,941	267	18,459	**33,667**
Present value of fully or partly funded obligations	–	19,683	127	**19,810**
Present value of obligations	**14,941**	**19,950**	**18,586**	**53,477**
Fair value of plan assets	–	13,041	108	**13,149**
Net defined benefit liability	**14,941**	**6,909**	**18,478**	**40,328**

Changes in obligations

	2022	2021
Balance brought forward	53,477	52,140
Benefits paid by the plan	-2,331	-2,264
Service cost	531	763
Contributions by plan participants	22	12
Actuarial gains (–) or losses (+) due to changes in financial assumptions	-16,709	-2,084
Actuarial gains (–) or losses (+) due to plan experience	2,217	-682
Actuarial gains (–) or losses (+) due to reclassifications	25	9,860
Current interest expense	745	536
Divested companies	–	-5,608
Liabilities associated with assets held for sale	-305	–
Translation differences	2,711	804
Balance carried forward	**40,383**	**53,477**

Changes in plan assets

	2022	2021
Balance brought forward	13,149	8,316
Benefits paid by the plan	-587	-512
Contributions by employer	90	50
Contributions by plan participants	22	12
Interest income	167	98
Difference between calculated and actual return and effects from asset ceiling	-1,313	20
Reclassification of pension plan	–	7,380
Divested companies	–	-2,441
Translation differences	1,043	226
Balance carried forward	**12,571**	**13,149**

Plan assets consist of the following

	2022	2021
Shares and participations	7,278	7,822
Interest-bearing instruments	2,287	2,570
Property	2,521	2,444
Other	485	313
Total	**12,571**	**13,149**

Pension costs

	2022	2021
Defined benefit plans:		
Current service cost	478	741
Interest expenses	745	536
Interest income	-167	-98
Past service cost	53	22
Total cost for defined benefit plans	**1,109**	**1,201**
Cost for defined contribution plans	852	867
Total pension costs	**1,961**	**2,068**

In calculating pension obligations, the following actuarial assumptions have been made (%):

	Sweden		Germany	
	2022	2021	2022	2021
Discount rate	4.00	1.75	4.00	1.25
Future annual salary increases	3.00	3.00	2.50	2.50
Future annual pension increases	2.00	2.00	0-2.25	0-2.25

Sensitivity to key actuarial assumptions

	Sweden				Germany			
	2022		2021		2022		2021	
		%		%		%		%
Impact on the defined benefit obligation at 31 December of a:								
Increase by 50 basis points in the discount rate	-839	-7.4	-1,274	-8.5	-1,688	-5.7	-2,670	-6.9
Decrease by 50 basis points in the discount rate	938	8.3	1,444	9.7	1,798	6.1	3,011	7.8
Increase by 50 basis points in the annual pension increases	951	8.4	1,433	9.6	1,015	3.5	1,543	4.0
Decrease by 50 basis points in the annual pension increases	-859	-7.6	-1,328	-8.9	-870	-3.0	-1,415	-3.7

At 31 December 2022 the weighted duration of pension obligations was 12.3 (14.1) years for Germany and 13.6 (16.8) years for Sweden.

Note 31 Other interest-bearing provisions

Accounting policy
A provision is reported on the balance sheet when the Group has a legal or constructive obligation as a result of a past event and it is probable that an outflow of financial resources will be required to regulate the obligation and a reliable estimate of the amount can be made. Where the effect of the time when payment is made is material, provisions are estimated by discounting the anticipated future cash flow at an interest rate before tax that reflects market estimates of time value of money. The discount rate does not reflect such risks that are taken into consideration in the estimated future cash flow.

Changes in discounted provisions for dismantling, restoration or similar measures, which at the time of acquisition have also been reported as tangible non-current assets, are reported as follows: In cases where the change is due to a change in the estimated outflow of resources or a change in the discount rate, the cost of a non-current tangible asset is changed in an amount corresponding to the provision. The periodic change of the present value is recognised as a financial expense.

Provisions are also reported for onerous contracts, that is, where unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received from the contract.

Important estimations and assessments
Provisions for future commitments for nuclear power operations
Provisions for future commitments for nuclear power operations, which pertain to future obligations for handling the decommissioning of Vattenfall's nuclear power plants in Sweden and Germany as well as for handling nuclear waste, are based on long-term cash flow estimations with respect to future commitments. These long-term cash flow estimations mainly pertain to technical plans, estimations on the amount of the commitments, when in time these are expected to fall due, and the discount rate. In many cases, these cash flow estimations must be approved by the pertinent authorities.

For provisions for future commitments for nuclear power operations in Sweden, the discount rate has been reduced to 2.00% (2.25%), leading to an increase of the provision of approximately SEK 5,000 million. In Germany the discount rate increased to 0.25% (0%) compared with the preceding year reducing the provison by SEK 300 million.

Other provisions than pension provisions and provisions for future commitments for nuclear power operations
For other types of provisions, such as provisions for future commitments for gas and wind operations and other environmental measures/undertakings, and for personnel-related provisions for non-pension purposes, provisions for legal disputes, or other provisions, the following discount rates are used, when discount effect is material: Sweden 2.00% (2.25), Germany 1.75% (2.00) Netherlands 0–2.00% (0–2.00), Denmark 1.75% (1.75) and the UK 2.75% (2.75).

Financial information

	Non-current portion		Current portion		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**
Provisions for future commitments of nuclear power operations	108,714	98,304	2,338	1,944	**111,052**	**100,248**
Provisions for future commitments of gas and wind operations and other environmental measures/undertakings	11,204	11,239	251	448	**11,455**	**11,687**
Personnel-related provisions for non-pension purposes	2,918	3,762	673	836	**3,591**	**4,598**
Provisions for legal disputes	634	582	13	1,008	**647**	**1,590**
Other provisions	4,769	2,750	1,107	274	**5,876**	**3,024**
Total	**128,239**	**116,637**	**4,382**	**4,510**	**132,621**	**121,147**

Provisions for future commitments for nuclear power operations
Vattenfall's nuclear power producers in Sweden and Germany have a legal obligation upon the cessation of production to decommission and dismantle the nuclear power plants and to restore the plots of land where the plants are located.

The Swedish obligation also encompasses the safeguarding and final storage of spent radioactive fuel and other radioactive materials used by the plants. The provisions include future commitments for the handling of low- and intermediate-level radioactive waste. SVAFO has a dialogue with the Swedish state regarding obligations for certain categories of the historical radioactive waste, on which the parties have different opinions. A provision has been recorded for the part SVAFO believes it has an obligation for. As the permit-holder in Sweden, Vattenfall is responsible for the financing of this handling. As shown in Note 20 to the consolidated accounts, Share in the Swedish Nuclear Waste Fund, Vattenfall's share in the Swedish Nuclear Waste Fund amounts to SEK 47,517 million (52,772). Increases in provisions are booked through the income statement when there are not sufficient head room on the underlying assets.

	Sweden	**Germany**	**Total**
Balance brought forward	81,259	18,989	**100,248**
Provisions for the period from the income statement	2,925	852	**3,777**
Interest effects	1,748	–	**1,748**
Revaluations versus non-current tangible assets	7,575	–	**7,575**
Reversed provisions	–	-211	**-211**
Provisions used	-2,119	-1,538	**-3,657**
Translation differences	–	1,572	**1,572**
Balance carried forward	**91,388**[1]	**19,664**[2]	111,052

[1] Of which, approximately 37% (36) pertains to the dismantling of nuclear power plants and approximately 63% (64) to the handling of spent radioactive fuel.
[2] Of which, approximately 69% (69) pertains to the dismantling of nuclear power plants and approximately 31% (31) to the handling of nuclear waste.

Other provisions

	Provisions for dismantling and other environmental measures	Personnel-related provisions for non-pension purposes	Provisions for legal disputes	Other provisions
Balance brought forward	11,687	4,598	1,590	3,026
Acquired companies	–	–	–	348
Provisions for the period from the income statement	1,081	141	34	2,736[1]
Interest effects	199	28	34	–
Reclassified to/from other provision	–	-26	–	–
Revaluations	984	-79	-1,075	–
Provisions used	-395	-910	-4	-121
Provisions reversed	-63	-125	-18	-248
Assets held for sale	-2,851	-334	–	–
Translation differences	813	298	86	135
Balance carried forward	**11,455**	**3,591**	**647**	**5,876**

[1] Of which SEK 1,445 million relates to Sourcing-related obligations. Cost for contracted sales of electricty and gas in future periods have increased sharply. To a large extent, Vattenfall procures the volumes required to fulfil the contracts through forward transactions.

Provisions for future commitments for heat and wind operations and other environmental measures/undertakings
Provisions are made in Germany and the Netherlands for the dismantling and removal of assets and restoration of sites where the Group conducts heat operations. Provisions are also made for restoration of sites where the Group conducts wind operations and for environmental measures/undertakings within other activities carried out by the Group.

Personnel-related provisions for non-pension purposes
Provisions are made for future costs pertaining to long-term time accounts, jubilee payments, severance payments related to restructuring measures, and other costs for giving notice to personnel.

Provisions for legal disputes
Provisions are made for possible future commitments due to ongoing legal disputes and actions.

Other provisions
Other provisions include, among others, provisions for onerous contracts, restructuring and guarantee commitments.

Future commitments of non-current provisions
With the current assumptions, provisions are expected to result in outgoing payments as shown below:

	Provision for nuclear Germany	Provision for gas and wind operations	Personnel-related provision	Provision for legal disputes	Other provisions	Total
2–5 years	5,998	1,565	1,233	3	4,681	**13,480**
6–10 years	8,054	4,619	763	631	88	**14,155**
11–20 years	3,274	3,468	868	–	–	**7,610**
Beyond 20 years	–	1,552	54	–	–	**1,606**
Total	**17,326**	**11,204**	**2,918**	**634**	**4,769**	**36,851**

Payments of future commitments for nuclear power in Sweden are not included in the amounts reported above, since the owners of the reactors are compensated in corresponding amounts from the Swedish Nuclear Waste Fund, please see note 20.

Note 32 Other non-interest-bearing liabilities (non-current)

Of total liabilities of SEK 2,108 million (2,018), SEK 1,726 million (1,634) falls due after more than five years. Of the total liabilities, SEK 1,736 million (1,652) pertains to deferred income and SEK 372 million (366) to other liabilities.

Note 33 Trade payables and other liabilities

	2022	2021
Accounts payable – trade	37,561	26,135
Liabilities to associated companies	17	16
Other liabilities	11,219	13,090
Total	**48,797**	**39,241**

Note 34 Advance payments received

	2022	2021
Margin calls received, energy trading	25,131	61,891
Other advance payments	1,561	899
Total	**26,692**	**62,790**

A margin call received is marginal security (collateral) that Vattenfall's counterparty pays to Vattenfall as the holder of a derivative position to cover Vattenfall's credit risk, either bilaterally via OTC or through an exchange. In Vattenfall's business activities, margin calls occur in energy trading and in the treasury operations.

Margin calls received within energy trading are recognised on the balance sheet as Advance payments received and are thereby recognised in the statement of cash flows as cash flows from changes in operating liabilities.

Note 35 Accrued expenses and deferred income

	2022	2021
Accrued personnel-related costs	3,004	2,746
Accrued expenses, CO_2 emission allowances	2,881	4,814
Accrued nuclear power-related fees and taxes	105	220
Accrued interest expense	1,380	1,338
Other accrued expenses	8,272	5,694
Deferred income, energy	956	564
Accrued expenses, energy	5,153	2,687
Other deferred income	1,354	397
Total	**23,105**	**18,460**

Note 36 Financial instruments by measurement category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Accounting policy
Classification and measurement
Financial assets
Financial assets are classified in various categories based in part on the objective (the business model) of holding the financial asset, and in part on the financial instrument's contractual cash flows, in the event they consist only of principal amounts and interest. The classification is determined at the original point of acquisition. Settlement day accounting is applied for spot purchases and spot sales of financial assets.

Amortised cost
Financial assets (debt instruments) are classified in this category if they are held in a business model whose objective is to hold financial assets in order to collect their contractual cash flows, and if the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. These instruments are measured at amortised cost, where the reported gross value is adjusted for expected credit losses. For Vattenfall this category includes Other non-current receivables, Trade receivables and other receivables, Advance payments paid, certain Short-term investments, and Cash and bank balances.

Fair value through profit or loss
This category includes all of Vattenfall's financial assets (debt instruments) that are not measured at amortised cost. This includes assets held for trading, which entails that the objective is that they will be sold in the near term, assets held for sale, and assets that Vattenfall is monitoring and measuring based on fair value. Debt instruments are also classified in this category if the contractual terms do not consist solely of payments of principal and interest. This category also includes Cash equivalents with terms shorter than three months, which Vattenfall monitors and measures based on their fair value. The category also includes certain Short-term investments with original terms in excess of three months.

Derivative assets are always measured at fair value through profit or loss, except for derivative instruments designed as hedge instruments in an effective hedge, where the principles for hedge accounting are used. Unrealised changes in the fair value of energy derivatives, for which hedge accounting is not applied, are included in the cost of purchases with an amount of SEK 17,709 million.

Vattenfall classifies holdings of equity instruments at fair value through profit or loss. Vattenfall does not apply the irrevocable option to measure equity instruments that are not held for trading at fair value through other comprehensive income.

The assets in this category are remeasured on a regular basis to fair value with changes in value reported in profit or loss.

Financial liabilities

Financial liabilities at fair value through profit or loss

Derivative liabilities are always classified in this category. These financial liabilities are measured at fair value with changes in value recognised in profit or loss.

Other financial liabilities

In this category, interest-bearing and noninterest-bearing financial liabilities that are not held for trading purposes are reported. Other financial liabilities are measured at amortised cost. Trade liabilities have a short anticipated term and are therefore valued at a nominal amount without discounting.

Impairment

Impairment of financial assets is based on models for expected credit losses. For trade receivables that do not include a significant financing component, a simplified method is used, where calculation of the loss reserve is based on expected credit losses for the remaining term. A collective method is used where the receivables are grouped together based on e.g., the number of days past due including any past-due receivables, and a credit loss percentage is calculated for the respective intervals, where in the model Vattenfall has based its calculations on experience from historic loss levels for similar receivables while taking into account forward-looking macroeconomic conditions that may affect expected cash flows. For individual, significant receivables, an individual assessment may be made. Impairment of trade receivables is reported in operating expenses.

For other financial assets where the policies for impairment are applied, a loss reserve is reported that corresponds to 12 months' expected credit losses at initial recognition. If the credit risk increases significantly since initial recognition, a reserve corresponding to expected credit losses during the entire term is reported. Vattenfall presumes that the credit risk has not increased significantly if the instrument has a low credit risk on the balance sheet date, such as instruments with an investment grade rating. The credit risk is considered to have increased significantly if the counterparty's rating has been lowered to a lower rating than investment grade or, alternatively, if the counterparty already had a lower credit rating than investment grade at initial recognition and this rating was significantly lowered further. Expected credit losses are calculated by assessing the probability of default, the loss given default and the exposure at default.

Hedge accounting

Hedge accounting is applied for derivative instruments that are included in a documented hedge relationship. The reporting of changes in value depends on the type of hedge entered into.

Cash flow hedges

Cash flow hedges are used primarily in the following cases: i) when forward commodity contracts are used to hedge commodity price risk in future purchases and sales, ii) when forward exchange rate contracts are used to hedge currency risk in future purchases and sales in foreign currencies, and iii) when interest rate swaps are used to replace borrowing at a floating interest rate with a fixed interest rate.

For derivative instruments that constitute a hedge instrument in a cash flow hedge, the effective part of the change in value is reported in Other comprehensive income while the ineffective part is recognised directly in profit or loss. The part of the change in value that is reported in Other comprehensive income is then transferred to the income statement in the period when the hedged item affects the income statement. In cases where the hedged item refers to a future transaction, which is later capitalised as a non-financial asset or liability on the balance sheet (for example, when hedging future purchases of non-current assets in a foreign currency), the part of the change in value reported in Other comprehensive income is transferred to and included in the cost of the asset or liability.

Hedges of fair value

A hedge of fair value is primarily used in cases where interest rate swaps are used to replace borrowing at a fixed interest rate with a floating interest rate.

Hedges of net investments in foreign operations

Hedging of net investments is primarily used when loans in foreign currencies are used to hedge the currency risk of the company's investments in foreign subsidiaries.

Financial information

Risks arising from financial instruments are described under the heading Risks and risk management on pages 81–92 in this Annual and Sustainability Report.

Financial instruments by measurement category

Presented below are assets and liabilities where the carrying amount differs from the fair value.

	2022		2021	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	3,411	3,471	2,894	2,927
Short-term investments	1,939	1,939	2,472	2,472
Financial liabilities at amortised cost				
Hybrid Capital, non-current interest-bearing liability	17,760	17,823	20,421	21,603
Other non-current interest-bearing liabilities	78,848	78,407	50,839	55,982
Current interest-bearing liabilities	75,986	76,207	55,148	55,482

For other financial assets and liabillities there are no substantial differences between carrying amount and fair value.

Offsetting financial assets and financial liabilities

Presented below are financial assets and liabilities that are subject to enforceable master netting arrangements and similar agreements.

Assets 31 December 2022

				Related amounts not set off on the balance sheet		
	Gross amounts of recognised financial assets	Gross amounts of recognised financial liabilities set off on the balance sheet	Net amounts of financial assets presented on the balance sheet	Financial liabilities, not intended to be settled net[1]	Cash collateral received	Net amount
Derivatives, financial operations	4,446	–	4,446	2,883	1,535	28
Derivatives, commodity contracts	452,292	342,019	110,273	–	24,939	85,334
Total	**456,738**	**342,019**	**114,719**	**2,883**	**26,474**	**85,362**
Derivatives, not subject to offsetting	6,160	–	6,160	–	–	6,160
Total derivative assets			**120,879**			**91,522**

[1] These items cannot be settled net as each transaction has a unique due date and they were not entered into with the purpose to be settled net. Settlement can be entailed only in case of default.

Assets 31 December 2021

				Related amounts not set off on the balance sheet		
	Gross amounts of recognised financial assets	Gross amounts of recognised financial liabilities set off on the balance sheet	Net amounts of financial assets presented on the balance sheet	Financial liabilities, not intended to be settled net[1]	Cash collateral received	Net amount
Derivatives, financial operations	5,108	–	5,108	1,550	3,322	236
Derivatives, commodity contracts	675,973	527,433	148,540	–	60,427	88,113
Total	**681,081**	**527,433**	**153,648**	**1,550**	**63,749**	**88,349**
Derivatives, not subject to offsetting	2,237	–	2,237	–	–	2,237
Total derivative assets			**155,885**			**90,586**

[1] These items cannot be settled net as each transaction has a unique due date and they were not entered into with the purpose to be settled net. Settlement can be entailed only in case of default.

Liabilities 31 December 2022

	Gross amounts of recognised financial liabilities	Gross amounts of recognised financial assets set off on the balance sheet	Net amounts of financial liabilities presented on the balance sheet	Related amounts not set off on the balance sheet: Financial assets, not intended to be settled net[1]	Related amounts not set off on the balance sheet: Cash collateral pledged	Net amount
Derivatives, financial operations	3,574	–	3,574	2,883	574	117
Derivatives, commodity contracts	531,376	342,019	189,357	–	19,581	169,776
Total	**534,950**	**342,019**	**192,931**	**2,883**	**20,155**	**169,893**
Derivatives, not subject to offsetting	4,063	–	4,063	–	–	4,063
Total derivative liabilities			**196,994**			**173,956**

[1] These items cannot be settled net, as each transaction has a unique due date and they were not entered into with the purpose to be settled net. Net settlement can be applied only in case of default.

Liabilities 31 December 2021

	Gross amounts of recognised financial liabilities	Gross amounts of recognised financial assets set off on the balance sheet	Net amounts of financial liabilities presented on the balance sheet	Related amounts not set off on the balance sheet: Financial assets, not intended to be settled net[1]	Related amounts not set off on the balance sheet: Cash collateral pledged	Net amount
Derivatives, financial operations	3,187	–	3,187	1,550	1,511	126
Derivatives, commodity contracts	654,041	527,433	126,608	–	7,855	118,753
Total	**657,228**	**527,433**	**129,795**	**1,550**	**9,366**	**118,879**
Derivatives, not subject to offsetting	23	–	23	–	–	23
Total derivative liabilities			**129,818**			**118,902**

[1] These items cannot be settled net, as each transaction has a unique due date and they were not entered into with the purpose to be settled net. Net settlement can be applied only in case of default.

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2022

	Level 1	Level 2	Level 3	Total
Assets				
Share in the Swedish Nuclear Waste Fund	47,517	–	–	**47,517**
Derivative assets	–	121,871	-992	**120,879**
Short-term investments, cash equivalents, other shares and participations	74,826	9,029	–	**83,855**
Total assets	**122,343**	**130,900**	**-992**	**252,251**
Liabilities				
Derivative liabilities	–	196,994	–	**196,994**
Total liabilities	**–**	**196,994**	**–**	**196,994**

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2021

	Level 1	Level 2	Level 3	Total
Assets				
Share in the Swedish Nuclear Waste Fund	52,772	–	–	**52,772**
Derivative assets	–	154,744	1,141	**155,885**
Short-term investments, cash equivalents, other shares and participations	116,013	11,404	–	**127,417**
Total assets	**168,785**	**166,148**	**1,141**	**336,074**
Liabilities				
Derivative liabilities	–	129,818	–	**129,818**
Total liabilities	**–**	**129,818**	**–**	**129,818**

Sensitivity analysis for electricity and fuel derivatives

The price of electricity is the main factor impacting the change in fair value recognised in other comprehensive income. Changes in fair value that are recognised in the income statement originate from the prices for gas and oil. The sensitivity analysis is based on volumes and market prices at year-end. The analysis pertains to profit before tax.

Fair valuation on the balance sheet date of 31 December 2022 of +/–10% would change the fair value of Vattenfall's electricity and fuel derivatives by +/– SEK 978 million (+/–1,371) in other comprehensive income (hedge-accounted derivatives) and +/– SEK 1,082 million (–/+1,555) in the income statement (non-hedge-accounted derivatives).

Sensitivity analysis for Level 3 contracts

For the determination of fair value of financial instruments, Vattenfall strives to use valuation techniques that maximise the use of observable market data where it is available and rely as little as possible on entity-specific estimates.

Entity-specific estimates are based on internal valuation models that are subject to a defined process of validation, approval and monitoring. In the first step the model is designed by the business. The valuation model and calibration of the valuation model is then independently reviewed and approved by Vattenfall's risk organisation. If deemed necessary, adjustments are required and implemented. Afterwards, Vattenfall's risk organisation continuously monitors whether the application of the method is still appropriate. This is made by usage of several back-testing tools. In order to reduce valuation risks, the application of the model can be restricted to a limited scope.

Vattenfall's Level 3 contracts consist of virtual gas storage contracts. The net value as per 31 December 2022 has been calculated at SEK -992 million (1,141) and is most sensitive to the optionality volatility. A change in the value of the daily volatility of +/–5% would affect the total value by approximately +/– SEK 170 million (+/–104).

Financial instruments: Effects on income by category

Net gains (+)/losses(–) and interest income and expenses for financial instruments recognised in the income statement:

	2022			2021		
Total Vattenfall	**Net gains/ losses[1]**	**Interest income**	**Interest expenses**	**Net gains/ losses[1]**	**Interest income**	**Interest expenses**
Financial assets at fair value through profit or loss	-51,665	296	–	-143	134	-43
Financial assets measured at amortised cost	19	336	–	15	343	–
Financial liabilities at fair value through profit or loss	-26	–	–	-69	–	–
Financial liabilities measured at amortised cost	-1,056	–	-3,347	-1,233	–	-2,839
Total	**-52,728**	**632**	**-3,347**	**-1,430**	**477**	**-2,882**

[1] Exchange rate gains and losses are included in net gains/losses.

Derivative assets

	Non-current portion, maturity 1–5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Financial contracts	1,193	453	676	3,977	**1,869**	**4,430**	2,576	678	**4,445**	**5,108**
Commodity and commodity-related contracts	29,430	30,866	-112	-56	**29,318**	**30,810**	87,116	119,967	**116,434**	**150,777**
Total	**30,623**	**31,319**	**564**	**3,921**	**31,187**	**35,240**	**89,692**	**120,645**	**120,879**	**155,885**

Derivative liabilities

	Non-current portion, maturity 1–5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Financial contracts	932	528	1,753	2,129	**2,685**	**2,657**	889	530	**3,574**	**3,187**
Commodity and commodity-related contracts	42,410	26,419	242	1,231	**42,652**	**27,650**	150,768	98,981	**193,420**	**126,631**
Total	**43,342**	**26,947**	**1,995**	**3,360**	**45,337**	**30,307**	**151,657**	**99,511**	**196,994**	**129,818**

Note 37 Specifications of the cash flow statement

Other, including non-cash items

	2022	2021
Undistributed results from participation in associated companies	73	110
Unrealised foreign exchange gains/losses	75	43
Unrealised changes in values related to derivatives	17,232	-8,743
Changes in the Swedish Nuclear Waste Fund	-171	-35
Changes in provisions	-500	-1,627
Other	2,435	-1,254
Total	**19,144**	**-11,506**

Dividends received totalled SEK 193 million (140).

Other investments in non-current assets

	2022	2021
Investments in intangible assets: non-current, including advance payments	-1,007	-822
Investments in property, plant and equipment, including advance payments	-23,907	-24,335
Total	**-24,914**	**-25,157**

Divestments

	2022	2021
Divestments of shares and participations	11	18,897
Divestments of intangible assets: non-current	2	-7
Divestments of property, plant and equipment	738	689
Total	**751**	**19,579**

Financial liabilities

	Hybrid Capital	Current liabilities	Non-current liabilities	Total
Financial liabilities as at 1 January 2021	-19,304	-36,380	-49,091	**-104,775**
Cashflow	-3,541	-15,004	-276	**-18,821**
Change in interest-bearing leasing liabilities	–	–	-1,442	**-1,442**
Translation differences	2,424	-3,736	-705	**-2,017**
Acquired/divested interest-bearing liabilities/short-term investments	–	-28	15	**-13**
Other non-cash items	–	–	660	**660**
Financial liabilities as at 31 December 2021	**-20,421**	**-55,148**	**-50,839**	**-126,408**
Cashflow	–	-17,143	-26,261	**-43,404**
Change in interest-bearing leasing liabilities	–	–	-1,318	**-1,318**
Translation differences	-1,510	-3,695	-2,655	**-7,860**
Other non-cash items	–	–	2,225	**2,225**
Financial liabilities as at 31 December 2022	**-21,931**	**-75,986**	**-78,848**	**-176,765**

Note 38 Specifications of equity

Share capital

As of 31 December 2022 the registered share capital comprised 131,700,000 shares with a share quota value of SEK 50.

Translation reserve

The translation reserve comprises all exchange rate differences arising from the translation of financial reports from non-Swedish operations that prepare their reports in a currency other than that in which the Group reports. Further, the translation reserve includes exchange rate differences arising from the reassessment of debts raised as hedges for net investments in non-Swedish operations.

Reserve for hedges

The reserve for hedges comprises mostly unrealised changes in values of commodity derivatives used to hedge future sales (cash flow hedges). The reserve for hedges is expected to affect the income statement and cash flow, respectively, in the periods indicated below:

	2022		2021	
	Cash flow	Income statement	Cash flow	Income statement
Within 1 year	-13,585	-32,230	16,128	44,472
Between 1–5 years	-7,817	1,049	5,748	10,692
Beyond 5 years	-171	–	–	–
Total	**-21,573**	**-31,181**	**21,876**	**55,164**
Other	950	–	707	–
Total	**-20,623**	**-31,181**	**22,583**	**55,164**

The change in the reserve for hedges relating to Cash flow hedges – dissolved against income statement amounted to SEK 106,390 million (31,554), of which SEK 106,370 million (31,599) has been reported in net sales.

Retained earnings including profit for the year

Retained earnings including profit for the year include earned profits in the Parent Company and its subsidiaries, associated companies and joint ventures, and effects of remeasurements of defined benefit pension plans.

Translation exposure of equity in other currencies than SEK

	Equity		Hedging after tax		Net exposure after tax		Average net exposure after tax	
Original currency	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
EUR	97,209	142,006	26,409	24,339	70,800	117,667	131,598	76,026
DKK	13,590	8,120	–	–	13,590	8,120	10,728	6,590
GBP	21,076	16,127	4,978	4,843	16,098	11,284	14,153	9,398
Total	**131,875**	**166,253**	**31,387**	**29,182**	**100,488**	**137,071**	**156,479**	**92,014**

Note 39 Collateral

	2022	2021
Shares in subsidiaries pledged to PRI Pensionsgaranti, as security for credit insurance in respect of pension obligations in Vattenfall's Swedish operations	7,295	7,295
Blocked bank funds as security for trading on the Nordic electricity exchange and trading with CO_2 emission allowances	37,941	19,527
Total	**45,236**	**26,822**

In addition to the collateral mentioned above, Vattenfall has the following significant commitments:

To fulfil the requirements for security in the derivative market, in its energy trading and financial operations Vattenfall has pledged security to counterparties for the negative fair value of derivative positions. As per 31 December 2022 this security amounted to SEK 19,591 million (SEK 7,872 million) for energy trading and SEK 1,122 million (SEK 1,643 million) for the treasury transactions. The amounts are reported as assets on the balance sheet under Advance payments (Note 24 to the consolidated accounts, Advance payments paid) and under Short-term investments (Note 26 to the consolidated accounts, Short-term investments). The counterparties are obligated to repay this security to Vattenfall in the event the negative fair value decreases.

In a similar manner, Vattenfall's counterparties in energy trading and the treasury transactions have pledged security to Vattenfall. Security received as per 31 December 2022 amounted to SEK 25,131 million (SEK 61,891 million) for energy trading and SEK 2,142 million (SEK 3,340 million) for the financial operations. The amounts are reported as liabilities on the balance sheet under Advance payments received for the energy trading position (Note 34 to the consolidated accounts, Advance payments received) and Interest-bearing liabilities (current) for the financial operations (Note 29 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives).

Note 40 Contingent liabilities

Commitments related to Swedish Hydro Power

In certain rivers, joint regulation facilities exist for several hydro power plants. The owners of the power plants have payment obligations for their share of these regulation costs. Vattenfall has an obligation to compensate certain owners of water rights, in rivers where hydro power stations are built, through the delivery of power. In 2022, such compensation deliveries amounted to 0.8 TWh (0.8), for a value of approximately SEK 595 million (359).

Under Swedish law, Vattenfall has strict and unlimited liability for third-party loss resulting from dam accidents. Together with other hydro power producers in the Nordic countries, Vattenfall has liability insurance that is limited to payment of a maximum of SEK 10,000 million (10,000) in benefits for these types of claims.

In the Energy Agreement from 2016 it was made clear that the hydro power industry must itself finance the transition to modern environmental standards. Toward this end, the company Vattenkraftens Miljöfond Sverige AB was established in 2018 by Vattenfall, Statkraft, Fortum, Tekniska verken i Linköping, Mälarenergi, Jämtkraft and Skellefteå Kraft. Joint financing of SEK 10 billion, of which Vattenfall accounts for just over 50 percent, over a 20-year period will be used to improve the water environment in and around hydro power plants in Sweden. Vattenfall's payment to Vattenkraftens Miljöfond in 2022 totalled SEK 24 (7) million.

Commitments related to German Nuclear Power

In Germany, nuclear power operators have strict and unlimited liability to third parties. By law, nuclear power plants are required to have insurance or other financial guarantees for amounts up to EUR 2,500 million. Claims of up to EUR 256 million are covered by the German Mutual Atomic Energy Reinsurance Pool. The nuclear power plants and their German parent companies (in Vattenfall's case, Vattenfall GmbH) are liable for amounts in excess of this, in proportion to the ownership interests the respective parent companies have in the nuclear power plants. It is not until these resources are exhausted that a joint liability insurance agreement (Solidarvereinbarung) takes force between the owners of the German nuclear power plants (Vattenfall GmbH, E.ON, RWE and EnBW), for amounts up to EUR 2,500 million. Since the liability is unlimited, the nuclear power plants and their German parent companies are ultimately liable for losses that exceed this amount.

Vattenfall owns nuclear power plants in Germany together with a partner in the legal form oHG partnerships. The liability of partners in those partnerships is joint and several. Accounting is based on the assessment that the partnerships themselves as well as the partners are able to fulfil the legal and financial obligations of the partnerships. The total amount of the liabilities (including provisions) of the German nuclear companies as per 31 December 2022 is as follows:

	Share %	Total liabilities	Of which reported in Vattenfall's consolidated statements
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	66.7	12,352	12,352
Kernkraftwerk Krümmel GmbH & Co. oHG	50.0	15,815	7,907
Kernkraftwerk Stade GmbH & Co. oHG	33.3	1,177	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	20.0	16,298	–

Commitments related to Swedish Nuclear Power

The NuclearThird Party Liability (NTPL) in Sweden is strict and unlimited. Pursuant to the Act on Liability and Compensation for Radiological Accidents (LRO) (Lag (2010:950) om ansvar och ersättning vid radiologiska olyckor), the owner of a nuclear power reactor shall have an insurance or other economic kind of security that covers 1200 million EUR. For other Nuclear facilities the demanded amount is 700 million EUR. However, for the year 2022 other Nuclear Facilities got an exemption stating that the cover needed was 370 million SEK. Insurance covering NTPL is issued by the Nordic Nuclear Insurers (NNI) and by the Nuclear Industry mutually owned insurance company ELINI (European Liability Insurance for the Nuclear Industry). As the insurance market could not cover the total of the securities demanded by LRO, the owners of the Nuclear companies have issued Parental Company Guarantees (PCG). The PCGs are pro rata, i.e. each owner is only responsible for its part of the PCG. In the special case of the plant in Ågesta, Vattenfall AB is the permit holder and has issued the full amount of the required PCG.

Commitments in MEUR:

	Share %	Collateral required	of which, insurance cover	of which, PCG
Ringhals	70.4	1,200	1,068	132
Forsmark	66.0	1,200	1,068	132
Svafo	53.6	370	159	211
SKB	55.8	370	180	190
Ågesta	100.0	370	159	211

Other commitments

As a consequence of the Group's continuing business activities, companies in the Group become parties to legal processes. In addition, disputes arise in the Group's operations that do not lead to legal processes. Vattenfall's management assesses these legal processes and disputes on a regular basis and makes provisions in cases where it believes an obligation exists and this can be judged with a reasonable degree of certainty. In 2022, Vattenfall was not party to any legal actions, concerning alleged anti-competitive behaviour or incidents of bribery or corruption. For legal processes or disputes where at present it cannot be determined whether an obligation exists or where for other reasons it is not possible to calculate the amount of a possible provision with a reasonable degree of certainty, management makes the overall judgement that there is no risk for material impact on the Group's result of operations or financial position. As part of the Group's business activities, in addition to the contingent liabilities stated here, guarantees are made for the fulfilment of various contractual obligations.

Norfolk Bank Zone, East Anglia Offshore Wind Ltd are equally owned by Vattenfall Wind Power Limited and Scottish Power Renewables and part of the construction of 7.2GW of wind capacity off the coast of East Anglia as part of The Crown Estate's Round Three wind program. Vattenfall AB has issued guarantees with a total nominal value of SEK 56 million per 31 December 2022.

In addition Vattenfall has commitments related to PRI and contingent liabilities related to eSett Oy, Forsmark, Ringhals and Nord Pool Spot A/S.

Note 41 Commitments under consortium agreements

Power plants are often built on a joint venture basis. Under the consortium agreements, each owner is entitled to electricity in proportion to its share of ownership, and each owner is liable, regardless of output, for an equivalent proportion of all the joint venture's costs. Vattenfall's investments often entail a liability for costs in proportion to its share of ownership. For more information, see Note 18 to the Consolidated accounts, Shares and participations owned by the Parent Company Vattenfall AB and other Group companies.

Note 42 Number of employees and personnel expenses

Number of employees at 31 December, full-time equivalents:

	2022			2021		
	Men	Women	Total	Men	Women	Total
Sweden	6,996	2,825	**9,821**	6,901	2,615	**9,516**
Denmark	410	147	**557**	347	108	**455**
Germany	3,418	1,206	**4,624**	3,326	1,091	**4,417**
Netherlands	2,772	970	**3,742**	2,726	926	**3,652**
UK	303	130	**433**	266	118	**384**
Other countries	300	161	**461**	285	126	**411**
Total	**14,199**	**5,439**	**19,638**	**13,851**	**4,984**	**18,835**

Average number of employees during the year, full-time equivalents:

	2022			2021		
	Men	Women	Total	Men	Women	Total
Sweden	6,978	2,758	**9,736**	6,877	2,583	**9,460**
Denmark	385	133	**518**	324	100	**424**
Germany	3,376	1,155	**4,531**	3,909	1,221	**5,130**
Netherlands	2,757	953	**3,710**	2,693	918	**3,611**
UK	299	126	**425**	257	113	**370**
Other countries	293	149	**442**	282	122	**404**
Total	**14,088**	**5,274**	**19,362**	**14,342**	**5,057**	**19,399**

Personnel costs:

	2022	2021
Salaries and other remuneration	14,992	14,267
Social security costs[1]	5,565	5,534
Total	**20,557**	**19,801**

[1] Pension costs are specified in Note 30 to the Consolidated accounts, Pension provisions.

Benefits for board members of Vattenfall AB and senior executives[1] of the Vattenfall Group

	2022			2021		
Amounts in SEK thousand	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension
Board of Directors						
Lars G. Nordström, Chairman of the Board (until April 28th, 2022)	295	–	–	869	–	–
Mats Granryd, board member (until April 28th, 2022), Chairman of the Board (as of April 28th, 2022)	778	–	–	461	–	–
Viktoria Bergman, board member	445	–	–	428	–	–
Ann Carlsson, board member	455	–	–	428	–	–
Håkan Erixon, board member	481	–	–	461	–	–
Tomas Kåberger, board member	481	–	–	461	–	–
Fredrik Rystedt, board member	506	–	–	485	–	–
Åsa Söderström Winberg, board member (until April 28th 2022)	150	–	–	443	–	–
Daniel Kristiansson, board member (since April 28th, 2022)[2]	–	–	–	–	–	–
Jenny Lahrin, board member (until April 28th, 2022)[2]	–	–	–	–	–	–
Total, Board of Directors	**3,591**	**–**	**–**	**4,036**	**–**	**–**

[1] For a description of how Vattenfall defines senior excutives please refer to the Corporate Governance section on page 101.
[2] Employed by the Government Offices.

Amounts in SEK thousand	2022 Directors' fees and base salary including vacation pay	2022 Other remuneration and benefits	2022 Pension	2021 Directors' fees and base salary including vacation pay	2021 Other remuneration and benefits	2021 Pension
Executive Group Management						
Anna Borg, CEO	17,363[1]	101	5,033	16,217	102	4,763
Kerstin Ahlfont, CFO	7,120	127	2,095	6,957	94	2,058
Christian Barthélémy, Head of Staff Function HR (from January 1st, 2021)	6,003	68	1,190	5,632	365[2]	1,126
Helene Biström, Head of Business Area Wind (from May 1st, 2021)	6,039	353	1,779	3,886	131	1,165
Anne Gynnerstedt, Head of Legal & CEO Office Staff Function and Secretary to the Board of Directors	5,325	76	1,556	5,153	77	1,529
Martijn Hagens, Head of Business Area Customers & Solutions, Acting Head of Business Area Heat (from May 1st, 2022)	9,334	81	1,445	7,894	45	1,376
Ulrika Jardfelt, Head of Business Area Heat (until October 29th, 2022)	6,449	57	1,569	6,429	69	1,850
Karin Lepasoon, Head of Communications (from October 1st, 2021; until September 6th, 2022)	4,110	84	1,162	1,276	12	381
Åsa Jamal, Head of Communications (from September 1st, 2022)	1,548	18	463	–	–	–
Andreas Regnell, Head of Strategic Development	5,085	90	1,507	4,868	91	1,439
Anna-Karin Stenberg, Head of Business Area Markets (from April 1st, 2021)	5,852	13	1,715	4,286	3	1,243
Torbjörn Wahlborg, Head of Business Area Generation	7,900	86	2,326	7,739	86	2,285
Other senior executives						
Björn Linde, Head of Business Unit Nuclear Generation	4,163	108	1,223	4,134	106	1,176
Annika Viklund, Head of Distribution Business Area	5,845	77	1,720	5,884	49	1,679
Former senior executives						
Magnus Hall, former CEO (employed until January 20th, 2021)[3]	–	–	–	3,072	18	387
Gunnar Groebler, former Head of Business Area Wind (until May 15th, 2021)[4]	–	–	–	2,443	51	591
Total Executive Group Management and senior executives	**92,136**	**1,339**	**24,783**	**85,870**	**1,299**	**23,048**
Total Board of Directors, Executive Group Management and other senior executives	**95,727**	**1,339**	**24,783**	**89,906**	**1,299**	**23,048**

[1] Of this amount, SEK 317 thousand pertained to a retroactive salary review relating to income year 2021, including retroactive holiday pay.
[2] Of this amount, SEK 270 thousand pertained to payment of variable remuneration, related to a previous position at Vattenfall.
[3] Magnus Hall was formally employed until 20 January 2021.
[4] Gunnar Groebler was formally employed until 15 May 2021.

Board of Directors
The Annual General Meeting on 28 April 2022 resolved in favor of increased fees with 5.0% respectively 3.8%, entailing that directors' fees for the period until the end of the next Annual General Meeting shall amount to SEK 882 thousand for the Chairman of the Board and SEK 405 thousand for each of the other directors elected at the Annual General Meeting. In addition, it was resolved in favor of increased fees with 4.9% respectively 5.1% for the service on the Audit Committee, entailing a fee of SEK 108 thousand for the committee chair and SEK 82 thousand for the other committee members. For service on the Remuneration Committee, it was resolved in favor of an unchanged fee of SEK 60 thousand to the committee chair and SEK 45 thousand to the other committee members. No directors' fees are paid to board members who are employed by the Swedish Government Offices or to employee representatives. The fees paid to each individual board member are shown in the table above. The board members' respective committee assignments are described in the Corporate Governance section on pages 93–108.

President and Chief Executive Officer
Anna Borg, President and CEO, received a salary of SEK 17,363 thousand in 2022. The value of other benefits in 2022 amounted to SEK 101 thousand pertaining to a car benefit and health insurance. Anna Borg's pension is a defined contribution solution. Premiums paid in 2022 totaled SEK 5,033 thousand for the full year.

The President and CEO of Vattenfall AB does not receive any variable salary component.

The retirement age for Vattenfall's CEO is 65 years. The CEO's term of employment is until further notice, with a mutual notice period of six months. In the event Vattenfall serves notice, the CEO is entitled to a maximum of 12 months' severance pay after the notice period, but not longer than until the date of retirement. The amount of the severance pay shall be based on the fixed salary that applied at the time the notice was served. In the event the CEO accepts new employment or earns income from other business activities, the severance pay shall be reduced by an amount corresponding to the new income or other benefit received during the period in question. Severance pay is paid out monthly. The CEO's terms of employment are in agreement with the Swedish government's guidelines.

Other senior executives
Salaries and other remuneration
For other members of the Executive Group Management, a total of eleven individuals (11), the sum of salaries and other remuneration for 2022, including the value of company cars and other benefits, was SEK 65,817 thousand. For other persons defined as senior executives by Vattenfall, who are not members of the Executive Group Management – a total of 2 individuals (2) – the sum of salaries and other remuneration for 2022, including the value of company cars and other benefits, was SEK 10,193 thousand.

Retirement benefits
Kerstin Ahlfont, Christian Barthélémy, Helene Biström, Anne Gynnerstedt, Ulrika Jardfelt, Karin Lepasoon, Åsa Jamal, Andreas Regnell, Anna-Karin Stenberg, Torbjörn Wahlborg, Annika Viklund and Björn Linde have defined contribution pension solutions. Martijn Hagens has a pension solution under collective agreements in the Netherlands. All pensions for these executives are in compliance with the Swedish government's guidelines.

Terms of notice on the part of the company
According to the government's guidelines, the notice period for a senior executive in the event the company serves notice shall not exceed six months. In addition, severance pay equivalent to a maximum of 12 months' salary[1] is payable thereafter. In the event the individual in question accepts new employment or receives income from other business activities, the severance pay shall be reduced by an amount corresponding to the new income or benefit received during the time in question. The severance pay is paid out monthly. All senior executives have severance terms that are in compliance with the government's guidelines.

Incentive programmes
The members of the Executive Group Management and other senior executives do not receive any variable salary component.

Payment from variable remuneration programmes
Vattenfall offers short-term variable performance-based remuneration programmes to certain categories of employees in order to attract, retain and motivate.

Amounts in SEK thousand	Payment 2022	Payment 2021
Type of programme:		
Profit-sharing	332,108	172,628
Short-term incentive programmes	373,969	291,513
Long-term incentive programmes	84,295	67,152

[1] Contracts entered into before the Annual General Meeting on 27 April 2017 include severance pay corresponding to a maximum of 18 months.

Note 43 Gender distribution among senior executives

	Women, %		Men, %	
	2022	2021	2022	2021
Gender distribution among board members	23	33	77	67
Gender distribution among other senior executives	60	60	40	40

Note 44 Related party disclosures

Vattenfall AB is 100%-owned by the Swedish state. The Vattenfall Group's products and services are offered to the state, state authorities and state companies in competition with other vendors under generally accepted commercial terms. In a similar manner, Vattenfall AB and its Group companies purchase products and services from state authorities and state companies at market prices and otherwise under generally accepted commercial terms. No significant share of the Vattenfall Group's net sales, purchasing or earnings is attributable to the Swedish state or any of its authorities or companies.

Disclosures of transactions with key persons in executive positions in the company are shown in Note 42 to the Consolidated accounts, Number of employees and personnel costs.

Disclosures of transactions with associated companies and joint arrangements in 2022 and associated receivables and liabilities as per 31 December 2022 are described below.

	Associated companies		Joint ventures	
	2022	2021	2022	2021
Income	446	294	18	2
Expenses	451	234	23	3
Receivables	513	479	1,250	1
Liabilitys	941	1,467	1	2

Note 45 Events after the balance sheet date

No significant events have occurred after the balance sheet date.

Note 46 Operations requiring permits

During the year Vattenfall conducted operations that require permits under national legislation in Sweden, Finland, Denmark, Germany, the Netherlands and the UK. Vattenfall AB conducts operations that require permits in accordance with the Swedish Environmental Code. These consist primarily of electricity and heat production plants that require permits and/or registration. Vattenfall's other operations requiring permits that make up a significant part of the business are conducted primarily by subsidiaries.

Note 47 Other operating income and expenses

Other operating income 2021 consists mainly of result from sale of and compensation for Nuclear production rights in Germany (SEK 12.5 billion) and the capital gain from the sale of Stromnetz Berlin (SEK 8.4 billion).

	2022	2021
Other operating income	2,154	22,307
Other operating expenses	-2,944	-852
Total	**-790**	**21,454**

Parent Company Vattenfall AB

Administration report
Vattenfall AB, 556036-2138, which is the Parent Company of the Vattenfall Group, is a limited liability company with its registered office in Solna. Vattenfall AB's is owned 100% by the Swedish government. The company's business is integrated with the business of Vattenfall Group and therefore the information regarding the business is referred to the information for Group with additional description of businesses which is included in the Parent Company.

Vattenfall AB consists of several business areas, described below
- Customer & Solution is responsible for sales of electricity, gas and energy services as well as e-mobility charging solutions for both private and business customers. The business aims to be the transition partner for our customers and a decarbonisation trailblazer.
- Heat is responsible for Vattenfall's heat business (district heating and decentralised solutions) and gas-fired condensing plants.
- Generation is responsible for Vattenfall's nuclear power operations and offers maintenance services business.
- Markets is handling the access to the electricity market and the risk for themselves and other business areas within Vattenfall. Business areaTrading within Markets implements hedging on the energy market. Hedging reduces and controls the risks on volatile market.
- Treasury is the internal bank and is also handling the security hedging.
- Staff functions, which is a support function for the company.

A condensed income statement and balance sheet and important changes within the preceding year
- Net sales amounted to SEK 40,078 million (40,045).
- Profit before appropriations and income taxes was SEK -24,317 million (-4,219).
- Dividend received from subsidiaries amounted to SEK 15,972 million (2,231), mainly from Vattenfall GmbH.
- The lower operating profit is to a large extent attributable to changes in market value for energy derivatives, for future years energy production amounting to SEK -24,301 million and is included in cost of purchase related to production.
- The Parent Company is charged with SEK -8,911 million for increased commitments for future decommissioning of Ringhals and Forsmark resulting from increased provisions and the negative development of the share in the Swedish Nuclear Waste Fund for those companies.
- The balance sheet total was SEK 435,557 million (468,482).
- Investments during the period amounted to SEK 1,772 million (7,303).
- Cash and cash equivalents, and Short-term investments amounted to SEK 132,911 million (145,743).
- Dividend paid to the owner of SEK 23,414 million (4,000).
- In the balance sheet liabilities related to group contribution have been moved from non-current other noninterest-bearing liabilities to current other noninterest-bearing liabilities, group. Also a move has been done between other non-current receivables and other non-current receivables, group.

Research and Development
Information regarding the company's activities for Research and Development is described in Group activities in Vattenfall AB's Annual and Sustainability Report.

Sustainability report
Vattenfall AB prepare The Sustainability Report according to the Swedish Årsredovisningslagen 6 kap 11§ and includes Vattenfall AB and the subsidiaries within group.

Health and Safety
Information regarding the company's activities for Research and Development is described in Group activities in Vattenfall AB's Annual and Sustainability Report.

Environment
Information regarding the company's activities for Research and Development is described in Group activities in Vattenfall AB's Annual and Sustainability Report.

Foreign Branches
Vattenfall AB Filial Norge NUF, corporate identity number 979975554, is a business in the Norweigian market.

Proposed distribution of profits
The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 31,772,251,562. In accordance with the dividend policy adopted by the Annual General Meeting of Vattenfall AB, the Board of Directors propose, in view of the result for the year, that the profits to be distributed as follows:

To be distributed to the shareholder	4,000,000,000
To be carried forward	27,772,251,562
Total	**31,772,251,562**

The board of directors is given statement according to ABL 18 kapitlet 4 § Aktiebolagslagen (2005:551).
The company's and the group's financial position is assessed as good. The board further considers that the proposed dividend is justifiable taking into account the requirements that the company's and the group's operations and related risks place on the size of the equity as well as the company's and the group's consolidation needs, liquidity and position in general. The company and the group are also deemed to be able to fulfill their obligations both in the short and long term.

Parent Company income statement

Amounts in SEK million, 1 January–31 December	Note	2022	2021
Net sales	5, 6	40,078	40,045
Cost of purchases related to production	6	-67,495	-37,035
Other external expenses		-5,194	-5,250
Personnel expenses	31	-2,999	-2,247
Other operating incomes and expenses, net		8	-52
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	14, 15	**-35,602**	**-4,539**
Depreciation, amortisation and impairments	7	-688	-629
Operating profit (EBIT)		**-36,290**	**-5,168**
Result from participations in subsidiaries	8	15,972	2,231
Result from participations in associated companies	9	-61	1
Other financial income	10	1,702	1,537
Other financial expenses	11	-5,640	-2,820
Profit before appropriations and income taxes		**-24,317**	**-4,219**
Appropriations	12	6,839	5,086
Profit before income taxes		**-17,478**	**867**
Income taxes	13	6,357	445
Profit for the year		**-11,121**	**1,312**

Parent Company statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2022	2021
Profit for the year	-11,121	1,312
Total other comprehensive income	–	–
Total comprehensive income for the year	**-11,121**	**1,312**

Parent Company balance sheet

Amounts in SEK million	Note	31 December 2022	31 December 2021
Assets			
Non-current assets			
Intangible assets: non-current	16	278	330
Property, plant and equipment	17	7,110	7,003
Shares and participations	18	167,754	166,802
Deferred tax assets	13	8,992	2,272
Other non-current receivables	19	3,836	5,570
Other non-current receivables, group	19	68,367	65,553
Total non-current assets		**256,337**	**247,530**
Current assets			
Inventories		355	342
Intangible assets: current		17	9
Current receivables	20	33,847	12,430[1]
Current receivables, group	20	11,947	60,727[1]
Current tax assets	13	143	1,701
Short-term investments	21	65,029	101,877
Cash and cash equivalents	22	67,882	43,866
Total current assets		**179,220**	**220,952**
Total assets		**435,557**	**468,482**

Amounts in SEK million	Note	31 December 2022	31 December 2021
Equity, provisions and liabilities			
Equity			
Restricted equity			
Share capital (131,700,000 shares with a share quota value of SEK 50)		6,585	6,585
Revaluation reserve		37,989	37,989
Other reserves		1,286	1,370
Non-restricted equity			
Retained earnings		42,894	64,911
Profit for the year		-11,121	1,312
Total equity		**77,633**	**112,167**
Untaxed reserves	12	**2,328**	**7,168**
Provisions	23	**6,360**	**5,621**
Non-current liabilities			
Hybrid capital	24	17,760	20,421
Other interest-bearing liabilities	24	71,504	37,902
Other interest-bearing liabilities, group	24	222	1,573
Other noninterest-bearing liabilities	25	8,919	279[1]
Total non-current liabilities		**98,405**	**60,175**
Current liabilities			
Hybrid capital	24	4,171	–
Other interest-bearing liabilities	24	75,722	54,960
Other interest-bearing liabilities, group	24	117,406	197,355
Other noninterest-bearing liabilities	26	37,694	13,924
Other noninterest-bearing liabilities, group	26	15,838	17,112[1]
Total current liabilities		**250,831**	**283,351**
Total equity, provisions and liabilities		**435,557**	**468,482**

[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports, for more information see administration report for the Parent Company.

See also information on Collateral (Note 28), Contingent liabilities (Note 29) and Commitments under consortium agreements (Note 30), in the notes to the Parent Company accounts.

Parent Company cash flow statement

Amounts in SEK million, 1 January–31 December	Note	2022	2021
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		-35,602	-4,539
Tax paid		1,195	-3,337
Interest received		2,206	1,779
Interest paid		-2,807	-2,909
Other, incl. non-cash items	34	7,760	1,423
Funds from operations (FFO)		**-27,248**	**-7,583**
Changes in inventories		-14	69
Changes in operating receivables		28,829	-54,782
Changes in operating liabilities		28,192	11,233
Cash flow from changes in operating assets and operating liabilities		**57,007**	**-43,480**
Cash flow from operating activities		**29,759**	**-51,063**
Investing activities			
Investments in subsidiaries	18	-957	-5,237
Investments in associated companies and other shares and participations	18	-59	-134
Other investments in non-current assets		-756	-1,932
Total investments		**-1,772**	**-7,303**
Divestments		16	129
Dividend received from subsidiaries		15,971	2,196
Changes in short-term investments		36,848	-72,576
Cash flow from investing activities		**51,063**	**-77,554**
Cash flow before financing activities		**80,822**	**-128,617**
Financing activities			
Loans raised		111,006	197,241
Amortisation of other debts		-147,758	-42,204
Dividend paid to owner		-23,414	-4,000
Effect of early termination of swaps related to financing activities		82	-60
Amortisation received from subsidiaries		293	78
Group contributions received		1,700	-2,043
Group contributions paid		1,285	-271
Cash flow from financing activities		**-56,806**	**148,741**
Cash flow for the year		**24,016**	**20,124**
Cash and cash equivalents			
Cash and cash equivalents at start of year		43,866	23,742
Cash flow for the year		24,016	20,124
Cash and cash equivalents at end of year		**67,882**	**43,866**

Parent Company statement of changes in equity

Amount in SEK million	Share capital	Revaluation reserve	Other reserves[1]	Non-restricted equity	Total
Balance brought forward 2021	6,585	37,989[2]	1,492	68,789	114,855
Dividend paid to owner	–	–	–	-4,000	-4,000
Fund for development costs	–	–	-121[3]	121[3]	–
Profit for the year	–	–	–	1,312	1,312
Balance carried forward 2021	**6,585**	**37,989**	**1,371**	**66,222**	**112,167**
Dividend paid to owners	–	–	–	-23,414	-23,414
Fund for development costs	–	–	-85[3]	86[3]	1
Profit for the year	–	–	–	-11,121	-11,121
Balance carried forward 2022	**6,585**	**37,989**	**1,286**	**31,773**	**77,633**

[1] Other reserves consist of Statutory reserve SEK 1,286 million (1,286) and Fund for development costs SEK 0 million (85).

[2] Pertains to the revaluation of shares in Vattenfall Eldistribution AB. This revaluation is a non-taxable item, and the book value before the revaluation was SEK 11 million.

[3] Pertains to the year's capitalised costs less depreciation according to plan for own development work that have been reserved in the Fund for development costs. The capitalised costs are considered to be tax-deductible once the assets they pertain to become operational and depreciation according to plan is made.

In an extraordinary general meeting on 22 December 2022, decisions were taken on a bonus issue amounting to SEK 39,275 million, without issue of new shares, and the following reduction of share capital with the same amount without withdrawal of shares. The net effect of this is that restricted equity is reduced by SEK 39,275 million and unrestricted equity is increased with the same amount. The effect of these decisions will be accounted for during 2023 when they have been registered at the Swedish Companies Registration Office.

As of 31 December the registered share capital comprised 131,700,000 shares with a share quota value of SEK 50.

Notes to the Parent Company accounts

Amounts in SEK million unless indicated otherwise.

Note 1 Company information

Vattenfall AB's 2022 Annual Report was approved in accordance with a decision by the Board of directors on 22 March 2023. Vattenfall AB (publ) with corporate identity number 556036-2138, which is the Parent Company of the Vattenfall Group, is a limited liability company with its registered office in Solna, Sweden and with the address SE-169 92 Stockholm, Sweden. The balance sheet and income statement of the Parent Company included in Vattenfall's Annual and Sustainability Report will be submitted at the Annual General Meeting (AGM) on 26 April 2023.

Note 2 Proposed distribution of profits

The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 31,772,251,562. In accordance with the dividend policy adopted by the Annual General Meeting of Vattenfall AB, the Board of Directors propose, in view of the result for the year, that the profits to be distributed as follows:

To be distributed to the shareholder	4,000,000,000
To be carried forward	27,772,251,562
Total	**31,772,251,562**

For more information see Parent Company statement of changes in Equity and the administration report.

Note 3 Accounting policies

General
The Parent Company's accounts are prepared in accordance with the Swedish Annual Accounts Act and recommendation RFR 2 – "Accounting for Legal Entities", issued by the Swedish Financial Reporting Board (RFR). RFR 2 entails that the Parent Company should apply all standards and interpretations issued by IASB and IFRIC as endorsed by the European Commission for application within the EU. This should be done as far as possible within the framework of the Swedish Annual Accounts Act by taking into consideration the relationship between accounting and taxation.

The parent company does not report leasing in accordance with IFRS 16 as per the exception rule in RFR 2.

The applied accounting policies are outlined in applicable parts of Note 3 to the consolidated accounts, Accounting policies, or in the respective notes for the Group, with the following addition for the Parent Company.

Important changes in the financial statements compared with the preceding year
No changed accounting standards and interpretations valid from 2022 have had any material effect on the Parent Company's financial statements.

Inventories
The cost of inventories is calculated, depending on the type of inventory, either through application of the first-in, first-out (FIFO) method or through the application of a method based on average prices. Both methods include costs that arose on acquisition of the inventory assets.

Depreciation and amortisation
As in the consolidated accounts, depreciation and amortisation are based on cost and are applied on a straight-line basis over the estimated useful life of the asset in question. In addition, certain accelerated depreciation/amortisation (the difference between depreciation/amortisation according to plan and depreciation/amortisation for tax purposes) in the Parent Company is reported under Appropriations and Untaxed reserves, respectively.

Financial instruments
The Parent Company reports financial instruments in accordance with IFRS 9 – "Financial Instruments". The principles for classification and measurement of financial instruments, impairment of financial assets, and hedge accounting are described in Note 36 to the consolidated accounts – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income.

The Parent Company effectively hedges net investments in foreign operations via currency forward contracts and loans in foreign currency. Effects of changes in exchange rates are therefore not recognised for loans raised for the financing of foreign subsidiaries, associated companies and joint arrangements. Nonmonetary assets acquired in a foreign currency are recognised at the exchange rate at the time of the acquisition.

Foreign currency
Assets and liabilities in foreign currencies that not applies hedge accounting for are recognised at the exchange rates of the balance sheet date.

Capitalised costs for own development work
For costs for own development work that are capitalised, a corresponding amount is transferred from unrestricted equity to the fund for development costs.

Income taxes
Tax legislation in Sweden allows companies to defer tax payments by making provisions to untaxed reserves. In the Parent Company, untaxed reserves are reported as a separate item on the balance sheet that includes deferred tax. In the Parent Company's income statement, provisions to untaxed reserves and dissolution of untaxed reserves are reported under the heading Appropriations.

Anticipated Dividend
Dividend from a company is normally reported to the recipient in connection with the Annual General meeting of the company paying the dividend. In some cases, the parent company can account for the expcted dividend before the Annual General meeting, calld anticipated dividend. A prerequisite is that the company paying the dividend fullfill all legally requirements to actually pay the dividend next year.

Important estimations and assessments in the preparation of the financial statements
Preparation of the financial statements requires the company's executive management and Board of directors to make estimations and assessments as well as to make assumptions that affect application of the accounting policies and the reported amounts of assets, liabilities, income and expenses. These estimations and assessments are based on historic experience and other factors that seem reasonable under current conditions. The results of these estimations and assessments are then used to establish the reported values of assets and liabilities that are not otherwise clearly documented from other sources. The final outcome may deviate from the results of these estimations and assessments. The estimations and assessments are revised on a regular basis. The effects of changes in estimations are reported in the period in which the changes were made if the changes affected this period only or in the period the changes were made and future periods if the changes affect both the current period and future periods. Important estimations and assessments are described further in Note 18 to the Parent Company, Shares and participations and note 9, Impairment losses and reversed impairment losses, note 29, Interest – bearing liabilities and related financial derivates, note 30 Pension provisions and note 31 Other interest – interest bearing provisions in the consolidated accounts.

Significant accounting policies applicable as from 1 January 2022
As from 2022, no changed accounting standards and interpretations are considered to have any material effect on the Parent Company's financial statements.

Note 4 Exchange rates

See Note 5 to the consolidated accounts, Exchange rates.

Note 5 Net sales

Net sales per geographical area	2022	2021
Nordic	37,489	32,896
Germany	2,179	6,804
Netherlands	408	330
Other countries	2	15
Total	**40,078**	**40,045**

Net sales for products and services	2022	2021
Sales of electricity	30,091	32,602
Sales of gas	269	49
Sale of heat and steam	1,977	2,028
Service and consulting	448	442
Total Revenues from contracts with customers	**32,785**	**35,121**
Other Revenues	7,293	4,924
Total	**40,078**	**40,045**

Contract balances	2022	2021
Contract liabilities	261	255
– of which, released as revenue from opening balance during the year	-15	-14

Note 6 Intra Group transactions

Of the Parent Company's total income from sales and total purchase costs, transactions with subsidiaries account for 31% (29%) of sales and 32% (51%) of purchase costs.

Note 7 Impairment losses

Contract balances	2022	2021
Other operating expenses	1	–
Total	**1**	**–**

The loss refers to contratcts in the future and the customer has revaluated the object.

Note 8 Result from participations in subsidiaries

	2022	2021
Dividends	15,971[1]	2,195
Capital gains/losses on divestments	1	36
Total	**15,972**	**2,231**

[1] SEK 200 Million refers to anticipated dividend, see note 3 in the parent company Accounting Policies.

Note 9 Result from participations in associated companies

	2022	2021
Dividends	–	1
Impairment of shares[1]	-61	–
Total	**-61**	**1**

[1] See note 18 in the Parent Company, Shares and participations.

Note 10 Other financial income

	2022	2021
Interest income from subsidiaries	1,424	1,408
Other interest income	278	129
Total	**1,702**	**1,537**

Note 11 Other financial expenses

	2022	2021
Interest expenses to subsidiaries	614	0
Other interest expenses	3,640	2,487
Foreign exchange gains and losses, net	1,386	333
Total	**5,640**	**2,820**

Note 12 Appropriations and untaxed reserves

Appropriations

	2022	2021
Group contributions paid	-1,366	-1,779
Group contributions received	3,365	692
Provision/Dissolution of untaxed reserves, net	4,840	6,173
Total	**6,839**	**5,086**

Untaxed reserves

	Balance brought forward	Provision (+)/ dissolution (-)	Balance carried forward
Accelerated depreciation	2,328	–	2,328
Tax allocation reserves for 2016-2023 tax years	4,840	-4,840	–
Total	**7,168**	**-4,840**	**2,328**

Note 13 Income taxes

The reported tax income/tax expense is broken down as follows:

	2022	2021
Current tax	-363	-1,514
Deferred tax	6,720	1,959
Total	**6,357**	**445**

The difference between the nominal Swedish tax rate and the effective tax rate is explained as follows:

	2022		2021	
	%	SEK M	%	SEK M
Profit before tax		-17,478		867
Swedish income tax rate at 31 December	20.6	3,600	20.6	-179
Current tax adjustment attributable to previous years	-0.1	-24	0.0	–
Capital gains, non-taxable	0.0	–	-0.8	7
Dividend, non-taxable	18.8	3,290	-52.2	453
Non-taxable income	0.0	–	-0.1	1
Impairment losses, non-deductible	-0.1	-12	0.0	–
Interest expence, non-deductible	-2.5	-443	2.2	-19
Other non-deductible expenses	-0.7	-127	9.3	-81
Tax reduction	0.4	73	0.0	–
Tax changes correction of previous year's result	0.0	–	-30.3	263
Effective tax rate in Sweden	**36.4**	**6,357**	**-51.4**	**445**

The tax effect of the standard interest on tax allocation reserves amounts to SEK 0 million (11.5).

Balance sheet reconciliation – Deferred tax:

	Balance brought forward		Changes via income statement		Balance carried forward	
	2022	2021	2022	2021	2022	2021
Non-current assets	2	2	–	–	2	2
Current assets	-1,362	-1,500	-85	138	-1,447	-1,362
Provisions	93	86	-4	7	89	93
Other non-current liabilities	676	453	2,918	223	3,594	676
Current liabilities	2,863	1,272	3,891	1,591	6,754	2,863
Total	**2,272**	**313**	**6,720**	**1,959**	**8,992**	**2,272**

There are no tax deficit in the Paternal Company.

Note 14 Leasing

Leasing expenses
Future payment commitments, as of 31 December 2022 for leasing contracts and rental contracts are broken down as follows:

	Operating leases
2023	34
2024-2027	96
2028 and beyond	50
Total	**180**

Leasing expenses for the year amounted to SEK 36 million (25).

Note 15 Auditors' fees

Annual audit assignment:

Annual audit assignment	2022	2021
PWC	11	7
Total	**11**	**7**

Auditing activities besides the annual audit assignment	2022	2021
PWC	1	–
Total	**1**	**–**

Tax consulting	2022	2021
Other	1	–
Total	**1**	**–**

Other assignments	2022	2021
PWC	–	3
Total	**–**	**3**

Note 16 Intangible assets: non-current

	2022			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	634	1,169	–	**1,803**
Investments	5	104	–	**109**
Transfer from construction in progress	-35	–	–	**-35**
Divestments/disposals	–	–	–	**–**
Accumulated cost carried forward	**604**	**1,273**	**–**	**1,877**
Amortisation according to plan				
Amortisation brought forward	-255	-1,102	–	**-1,357**
Amortisation for the year	-48	-78	–	**-126**
Divestments/disposals	–	–	–	**–**
Accumulated amortisation according to plan carried forward	**-303**	**-1,180**	**–**	**-1,483**
Impairment losses				
Impairment losses brought forward	-116	–	–	**-116**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**185**	**93**	**–**	**278**

	2021			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	570	1,143	–	**1,713**
Investments	64	54	–	**118**
Transfer from construction in progress	–	–	–	**–**
Divestments/disposals	–	-28	–	**-28**
Accumulated cost carried forward	**634**	**1,169**	**–**	**1,803**
Amortisation according to plan				
Amortisation brought forward	-207	-1,034	–	**-1,241**
Amortisation for the year	-48	-96	–	**-144**
Divestments/disposals	–	28	–	**28**
Accumulated amortisation according to plan carried forward	**-255**	**-1,102**	**–**	**-1,357**
Impairment losses				
Impairment losses brought forward	-116	–	–	**-116**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**263**	**67**	**–**	**330**

Estimated useful life	
Development costs	3–4 years
Concessions and similar rights	3–30 years
Costs to obtain a contract	1–6 years

At 31 December 2022 there were no contractual commitments for acquisition of intangible non-current assets.

Note 17 Property, plant and equipment

	2022				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,446	11,855	766	1,061	**15,128**
Investments	–	2	165	480	**647**
Transfer from construction in progress	3	879	30	-878	**34**
Divestments/disposals	-9	-22	-63	–	**-94**
Reclassifications	1	-1	–	–	**–**
Accumulated cost carried forward	**1,441**	**12,713**	**898**	**663**	**15,715**
Depreciation according to plan					
Depreciation brought forward	-873	-6,789	-460	–	**-8,122**
Depreciation for the year	-32	-393	-137	–	**-562**
Divestments/disposals	9	11	63	–	**83**
Reclassifications	–	–	–	–	**–**
Accumulated depreciation according to plan carried forward	**-896**	**-7,171**	**-534**	**–**	**-8,601**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Impairment losses for the year	–	-1	–	–	**-1**
Accumulated impairment losses carried forward	**-1**	**-3**	**–**	**–**	**-4**
Residual value according to plan carried forward	**544**	**5,539**	**364**	**663**	**7,110**
Accumulated accelerated depreciation	–	-2,328	–	–	**-2,328**
Carrying amount	**544**	**3,211**	**364**	**663**	**4,782**

	2021				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,484	10,117	659	2,094	**14,354**
Investments	240	713	121	739	**1,813**
Transfer from construction in progress	23	1,730	19	-1,772	**–**
Divestments/disposals	-261	-745	-33	–	**-1,039**
Reclassifications	-40	40	–	–	**–**
Accumulated cost carried forward	**1,446**	**11,855**	**766**	**1,061**	**15,128**
Depreciation according to plan					
Depreciation brought forward	-864	-6,499	-370	–	**-7,733**
Depreciation for the year	-269	-993	-123	–	**-1,385**
Divestments/disposals	260	703	33	–	**996**
Accumulated depreciation according to plan carried forward	**-873**	**-6,789**	**-460**	**–**	**-8,122**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Accumulated impairment losses carried forward	**-1**	**-2**	**–**	**–**	**-3**
Residual value according to plan carried forward	**572**	**5,064**	**306**	**1,061**	**7,003**
Accumulated accelerated depreciation	–	-2,278	–	–	**-2,278**
Carrying amount	**572**	**2,786**	**306**	**1,061**	**4,725**

Calculated depriciation	
Plant and machinery for heat	3–50 years
Buildings	15–100 years
Equipment	3–10 years

At 31 December 2022 there were no contractual commitments for the acquisition of property, plant and equipment.

Note 18 Shares and participations

Important estimations and assessments
Participations in subsidiaries are tested for impairment in accordance with the accounting policies described in Note 9 to the consolidated accounts, Impairment losses and reversed impairment losses. The recoverable amount for the participations is determined by calculating the value in use or fair value less costs to sell. For these calculations, certain estimations must be made regarding future cash flows along with other adequate assumptions regarding the required rate of return, for example.

Financial information

	2022				2021			
	Participations in subsidiaries	Participations in associated companies	Other shares and participations	Total	Participations in subsidiaries	Participations in associated companies	Other shares and participations	Total
Balance brought forward	166,143	539	120	**166,802**	160,878	486	110	**161,474**
Investments	–	–	–	**–**	4,930	–	10	**4,940**
Shareholder contributions	771	59	–	**830**	307	124	–	**431**
New share issue	186	–	–	**186**	–	–	–	**–**
Profit participations in associated companies	–	–	–	**–**	–	6	–	**6**
Reclassificarion	–	–	–	**–**	77	-77	–	**–**
Liquidation	-3	–	–	**-3**	-49	–	–	**-49**
Impairment losses	–	-61	–	**-61**	–	–	–	**–**
Balance carried forward	**167,097**	**537**	**120**	**167,754**	**166,143**	**539**	**120**	**166,802**

For a breakdown of the Parent Company's shares and participations in subsidiaries, associated companies and other shares and participations, see Notes 18-19 to the consolidated accounts.

Note 19 Other non-current receivables

	2022					2021				
	Receivables from subsidiaries	Receivables from associated companies	Derivative assets	Other receivables	Total	Receivables from subsidiaries	Receivables from associated companies	Derivative assets	Other receivables	Total
Balance brought forward	65,476	77	5,481	89	**71,123**	62,375	38	6,913	-248	**69,078**
New receivables	1,540	470	–	366	**2,376**	2,609	118	–	336	**3,063**
Payments received	–	-263	–	-30	**-293**	–	-79	–	–	**-79**
Foreign exchange gains/losses	1,052	-5	–	–	**1,047**	492	–	–	1	**493**
Derivative changes	–	20	-2,070[1]	–	**-2,050**	–	–	-1,432[1]	–	**-1,432**
Other changes	–	–	–	–	**–**	–	–	–	–	**–**
Balance carried forward	**68,068**	**299**	**3,411**	**425**	**72,203**	**65,476**	**77**	**5,481**	**89**	**71,123**

[1] Net change and measurement at fair value.

Note 20 Current receivables

	2022	2021
Advance payments paid	145	134
Accounts receivable – trade	3,579	1,697
Receivables from subsidiaries	11,947	60,727[1]
Other receivables	19,822	3,528[1]
Derivative assets	2,855	1,548
Prepaid expenses and accrued income	7,446	5,523
Total	**45,794**	**73,157**

[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports, for more information see administration report for the Parent Company.

Age analysis of current receivables

The collection period is normally 30 days.

	2022			2021		
	Receivables gross	**Impaired receivables**	**Receivables net**	**Receivables gross**	**Impaired receivables**	**Receivables net**
Accounts receivable - trade						
Not due	3,457	7	**3,450**	1,640	5	**1,635**
Past due 1–30 days	97	1	**96**	41	1	**40**
Past due 31–90 days	9	–	**9**	7	–	**7**
Past due >90 days	32	8	**24**	22	7	**15**
Total	**3,595**	**16**	**3,579**	**1,710**	**13**	**1,697**

Receivables from subsidiaries, Receivables from associated companies, and Other receivables include no receivables that are due for payment.

Note 21 Short-term investments

	2022	2021
Fixed-income investments	63,907	100,234
Margin calls, financing activities[1]	1,122	1,643
Total	**65,029**	**101,877**

[1] With respect to pledged assets, see Note 28 to the Parent Company accounts, Collateral.

Note 22 Cash and cash equivalents

	2022	2021
Cash and bank balances	48,259	16,997
Cash equivalents	19,623	26,869
Total	**67,882**	**43,866**

Note 23 Provisions

Accounting policies

The Parent Company's defined benefit pension plans are reported in accordance with the simplification rule. For the pension plans that are subject to the Act on Safeguarding of Pension Obligations, ("Tryggandelagen"), the calculation of future obligations to pay pensions is made in accordance with the stipulations of the Act. For other pension plans, the obligations are calculated on the basis of actuarial principles. See also Note 30 to the consolidated accounts, Pension provisions.

Together with Svafo the parent Company ows Ågestaverket, a nuclear power station that previously produced district heating in southern Stockholm. For dismantling, restoration and final storage, has the parent company a provision for future costs. These costs are financed through payment to Swedish Nuclear Waste, which is managed by Kammarkollegiet. See also Note 20, Share in Nuclear Waste Fund and Note 31, Other interest-bearing provisions in the notes to the consolidated accounts.

Financial information

	2022	2021
Pension provisions[1,2]	4,567	4,152
Personnel-related provisions for non-pension purposes	311	328
Provisions for environmental measures/ undertakings	7	8
Provisions for future commitments of nuclear operations	843	563
Provisions for legal dispute	632	570
Total	**6,360**	**5,621**
[1] Of which, information registered by PRI	4,385	3,936
[2] Of which, covered by credit insurance with FPG/PRI	4,565	4,150

Note 24 Other interest-bearing liabilities

	Non-current portion maturity 1–5 years		Non-current portion maturity >5 years		Total non-current portion		Current portion		Total	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
Bond issues	43,747	16,237	16,167	17,775	**59,914**	**34,012**	300	3,257	**60,214**	**37,269**
Commercial paper and transactions of repo	–	–	–	–	**–**	**–**	70,983	42,500	**70,983**	**42,500**
Liabilities to credit institutions	–	–	–	–	**–**	**–**	1,668	–	**1,668**	**–**
Liabilities to subsidiaries	222	2,991	–	1,038	**222**	**4,029**	117,406	197,355	**117,628**	**201,384**
Derivative liabilities	8,609	770	2,981	663	**11,590**	**1,433**	593	2,325	**12,183**	**3,758**
Other liabilities (margin calls within financing activities)[1]	–	–	–	–	**–**	**–**	2,178	6,878	**2,178**	**6,878**
Total interest-bearing liabilities excluding Hybrid capital	**52,578**	**19,998**	**19,148**	**19,476**	**71,726**	**39,474**	**193,128**	**252,315**	**264,854**	**291,789**
Hybrid capital[2]	11,122	13,871	6,638	6,550	**17,760**	**20,421**	4,171	–	**21,931**	**20,421**
Total interest-bearing liabilities	**63,700**	**33,869**	**25,786**	**26,026**	**89,486**	**59,895**	**197,299**	**252,315**	**286,785**	**312,210**

[1] With respect to pledged assets, see Note 28 to the Parent Company accounts, Collateral.
[2] See Note 29 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives.

Note 25 Other noninterest-bearing liabilities (non-current)

	2022	2021[1]
Contract debts	261	255
Future commitments of nuclear power operations	8,641	0
Other liabilities	17	24
Total	**8,919**	**279**

[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports, for more information see administration report for the Parent Company.

Note 26 Other noninterest-bearing liabilities (current)

	2022	2021[1]
Accounts payable – trade	1,563	736
Liabilities to subsidiaries	15,838	16,851
Other liabilities	612	370
Derivatives debts	29,697	9,184
Accrued expenses and deferred income	5,822	3,893
Total	**53,532**	**31,034**

[1] The value has been adjusted compared with information previously published in Vattenfall's financial reports, for more information see administration report for the Parent Company.

Breakdown of accrued expenses and deferred income:

	2022	2021
Accrued personnel-related costs	410	394
Accrued interest expenses	1,007	846
Other accrued expenses	1,082	2,323
Deferred income and accrued expenses, electricity	3,311	309
Other deferred income	12	21
Total	**5,822**	**3,893**

Note 27 Financial instruments by measurement category

The measurement categories for assets and liabilities below correspond to the categories described in Note 36 to the consolidated accounts, Financial instruments by measurement category, offsetting of financial assets and liabilities, and financial instruments effects on income.

Presented below are assets and liabilities where the carrying amount differs from the fair value.

	2022		2021	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	72,203	69,052	71,123	70,632
Short-term investments	65,029	65,027	101,877	101,877
Total	**137,232**	**134,079**	**173,000**	**172,509**
Financial liabilities at fair value through profit or loss				
Financial liabilities at amortised cost				
Long-term hybridkapital	17,760	17,823	20,421	21,603
Other non-current interest-bearing liabilities	71,726	61,482	39,475	39,557
Other non-current non interest-bearing liabilities	8,919	8,363	12,869	12,869
Short-terrm hybridkapital	4,171	4,171	–	–
Current interest-bearing liabilities	193,128	193,384	252,315	252,650
Total	**295,704**	**285,223**	**325,080**	**326,679**

Note 28 Collateral

Collateral and pledged assets (given)

	2022	2021
Shares pledged to the Swedish insurance company PRI Pensionsgaranti as security for credit insurance for pension obligations in Vattenfall's Swedish operations[1]	7,295	7,295
Pledged security to counterparties (derivative market)[2]	1,120	1,643
Total	**8,415**	**8,938**

Collateral and pledged assets (received)

	2022	2021
Pledged security from counterparties (derivative market)[2]	2,142	3,340

[1] To fulfil the requirements for security in the derivative market, in its financial operations Vattenfall has pledged security to counterparties for the negative fair value of derivative positions. The counterparties are obligated to repay this security to Vattenfall in the event the negative fair value decreases. In a similar manner, counterparties of Vattenfall have pledged security to Vattenfall.

[2] Pledged shares contains of shares of Vattenfall Eldistribution AB.

Note 29 Contingent liabilities

Guarantees pertaining to:

	2022	2021
Swedish Nuclear Waste Fund	41,243	19,748
Contractor guarantees provided by order of subsidiaries	61,787	40,727
Guarantees provided as collateral for the subsidiaries within Vattenfall Energy Trading's energy trading	26,165	25,193
Other contingent liabilities	35,334	12,102
Total	**164,529**	**97,770**

Swedish Nuclear Waste Fund

According to the Swedish Act (2006:647) on the Financing of Nuclear Waste Products, a party that has a permit to conduct nuclear engineering activities, such as Ringhals AB and Forsmarks Kraftgrupp AB, is required to provide security to the Swedish state as a guarantee that sufficient funds exist to cover the future costs of nuclear waste management. The security is provided in the form of guarantee commitments from the owners of the nuclear power companies. In a decision made on 27 January 2022, the Swedish government set new guarantee amounts for the years 2022 and 2023. Following this decision, as security for the subsidiaries Forsmarks Kraftgrupp AB and Ringhals AB, the parent company Vattenfall AB will make guarantee commitments for a combined value of SEK 34,136 million (19,425). Two types of guarantees will be issued. The first guarantee – so-called Financing Security, totaling SEK 9,466 million (11,382) – is intended to cover the current deficit of the Nuclear Waste Fund assuming no more nuclear waste fees are paid. This deficit is calculated as the difference between expected costs and existing funds. The second guarantee – so-called Supplementary Security, totaling SEK 24,669 million (8,043) – pertains to potential future cost increases stemming from unforeseen events. The amounts for both of these types of security have been determined based on a probability-based risk analysis in which the former amount has been determined as such that there is a 50% probability that it, together with currently funded amounts (the median value), will provide full cost coverage for all waste produced to date. The later amount consists essentially of the supplement that would be required if the corresponding probability was 90%.

This also includes AB Svafo. The Swedish state decided in December 2019 the amount for the period 2020–2022. The parent company Vattenfall AB will make guarantee commitments for the value of SEK 323 million.

See also Note 20 to the consolidated accounts, Share in the Swedish Nuclear Waste Fund and Note 35 to the consolidated accounts, Other interest-bearing provisions.

Commitments related to Swedish Nuclear Power

The Nuclear Third Party Liability (NTPL) in Sweden is strict and unlimited. Pursuant to the Act on Liability and Compensation for Radiological Accidents (LRO) (Lag (2010:950), the owner of a nuclear power reactor shall have an insurance or other economic kind of security that covers EUR 1,200 million .

For other Nuclear facilities the demanded amount is EUR 700 million. However, for the year 2022 other Nuclear Facilities got an exemption stating that the cover needed was SEK 370 million. Insurance covering NTPL is issued by the Nordic Nuclear Insurers (NNI) and by the Nuclear Industry mutually owned insurance company ELINI (European Liability Insurance for the Nuclear Industry). As the insurance market could not cover the total of the securities demanded by LRO, the owners of the Nuclear companies have issued Parental Company Guarantees (PCG). The PCGs are issued *pro rata* to each owner's ownership share, i.e. each owner is only responsible for its part of the PCG. However, in the special case of the Ågesta site, Vattenfall AB is the license holder and have issued the full amount of the necessary PCG.

	Share %	Requested collateral	Of which insurance cover	Of which PCG
Ringhals	70.4	1,200	1,068	132
Forsmark	66.0	1,200	1,068	132
Svafo	53.6	370	159	211
SKB	55.8	370	180	190
Ågesta	100.0	370	159	211

Contract guarantees provided by order of subsidiaries

As collateral for contractors' obligations, Vattenfall AB has issued guarantees amounting to SEK 61,787 million (40,727), mainly attributable to obligations in the Wind Business Area.

Guarantees provided as collateral for subsidiaries in Vattenfall Energy Trading's energy trading

Vattenfall AB has issued guarantees with a total nominal value of SEK 71,410 million (76,652) for energy trading conducted by the subsidiary Vattenfall Energy Trading. As per 31 December 2022 a total of SEK 26,165 million (25,193) of these guarantees had been utilised, which is included in the reported amount of contingent liabilities.

Other contingent liabilities

Other contingent liabilities SEK 35,334 million (12,102) consists mainly of guarantees that Vattenfall AB has issued for the Customers & Solutions and Wind Business Areas (for the latter, see Note 40 to the consolidated accounts, Contingent liabilities), and pension obligations, which amounted to SEK 1,717 million (1,473).

In addition to the contingent liabilities mentioned above, Vattenfall has the following significant commitments

In 2009 Vattenfall AB, together with its subsidiary SKB (the Swedish Nuclear Fuel and Waste Management Company) and the other part-owners of that company, signed a long-term cooperation agreement with the Östhammar and Oskarshamn municipalities. The agreement covers the period 2010 to approximately 2031 and regulates development efforts in association with the implementation of the Swedish nuclear waste programme. Through development initiatives in areas such as training, enterprise and infrastructure, over time the parties will generate value-added worth SEK 1,500 million to SEK 2,000 million. The parties are to finance the development efforts in proportion to their ownership interests. The Vattenfall Group's ownership interest is 56%. Implementation of the efforts is being carried out across two periods: a period before all necessary permits have been received (Period 1), and a period during implementation and operation of the facilities (Period 2). In 2022 Vattenfall reported a provision of SEK 406 million (25) for its share of Period 1 activities.

Note 30 Commitments under consortium agreements

Vattenfall AB is 100%-owned by the Swedish state. The Vattenfall Group's products and services are offered to the state, state authorities and state companies in competition with other vendors under generally accepted commercial terms. In a similar manner, Vattenfall AB purchase products and services from state authorities and state companies at market prices and otherwise under generally accepted commercial terms. No significant share of the Vattenfall Group's net sales, purchasing or earnings is attributable to the Swedish state or any of its authorities or companies.

Disclosures of transactions with key persons in executive positions in the company are shown in Note 42 to the Consolidated accounts, Number of employees and personnel costs.

Disclosures of transactions with major associated companies in 2022 and associated receivables and liabilities as per 31 December 2022 are described below.

Blakliden Fäbodberget Wind Holding AB

This is wind farm from which Vattenfall AB purchases electricity. urchases amounted to SEK 10,831 million (0). Operating revenue from the company amounted to SEK 391 million (0). Loan assets amounted to SEK 298 millon (76).

Note 31 Average number of employees and personnel costs

Average number of employees

	2022			2021		
	Men	Women	Total	Men	Women	Total
Sweden	1,258	682	**1,940**	1,190	610	**1,800**

Personnel costs

	2022	2021
Salaries and other remuneration	1,559	1,455
Social security expenses	1,440	792
– of which pension costs[1]	751	251
Total	**2,999**	**2,247**

[1] SEK 5 million (4.8) of the pension costs are attributable to CEO.

None of the board members receive any pension benefits in connection with their board duties.

Salaries and other remuneration:

	2022			2021		
	Senior executives[1]	Other employees	Total	Senior executives[1]	Other employees	Total
Sweden	82	1,477	**1,559**	74	1,381	**1,455**

[1] For a description of how Vattenfall defines senior excutives please refer to the Corporate Governance section on page 101.

Total salaries and other remuneration to board members and Presidents include bonuses of SEK 0 million (0). For benefits to senior executives at Vattenfall AB, see Note 42 to the consolidated accounts, Number of employees and personnel costs.

Note 32 Gender distribution among senior executives

See Note 43 to the consolidated accounts, Gender distribution among senior executives.

Note 33 Related party disclosures

See Note 44 to the consolidated accounts, Related party disclosures.

Note 34 Specification of the cash flow statement

Other, including non-cash items

	2022	2021
Realised foreign exchange gains/losses	10,105	1,729
Changes in provisions	739	245
Other	-3,084[1]	-551[1]
Total	**7,760**	**1,423**

[1] Refers to unrealiased derivatives in operating profit before depreciation SEK -7,817 million (2,790), non-cash flow effects SEK 2,734 million (-3,341) and changes in appropriations SEK 1,999 million (0).

Financial liabilities

	Current	Non-current
Financial liabilities at 1 January 2021	95,706	55,849
Cashflow	152,412	8,536
Non-cash effecting currency effects	1,985	1,083
Other non-cash flow effecting items	2,212	-5,572
Financial liabilities at 31 December 2021	**252,315**	**59,896**
Cashflow	-73,134	27,747
Non-cash effecting currency effects	15,892	1,340
Other non-cash flow effecting items	2,226	503
Financial liabilities at 31 December 2022	**197,299**	**89,486**

Note 35 Events after the balance sheet date

See Note 45 to the consolidated accounts, Events after the balance sheet date.

Auditor's report

Unofficial translation
To the general meeting of the shareholders of Vattenfall AB (publ), corporate identity number 556036-2138

Report on the annual accounts and consolidated accounts

Opinions

We have audited the annual accounts and consolidated accounts of Vattenfall AB (publ) for the year 2022 except for the corporate governance statement on pages 94–106. The annual accounts and consolidated accounts of the company are included on pages 1, 4–5, 14–15, 21, 82–92 and 107–161 in this document.

In our opinion, the annual accounts have been prepared in accordance with the Annual Accounts Act and present fairly, in all material respects, the financial position of parent company and the group as of 31 December 2022 and its financial performance and cash flow for the year then ended in accordance with the Annual Accounts Act. The consolidated accounts have been prepared in accordance with the Annual Accounts Act and present fairly, in all material respects, the financial position of the group as of 31 December 2022 and their financial performance and cash flow for the year then ended in accordance with International Financial Reporting Standards (IFRS), as adopted by the EU, and the Annual Accounts Act. Our opinions do not cover the corporate governance statement on pages 94–106. The statutory administration report is consistent with the other parts of the annual accounts and consolidated accounts.

We therefore recommend that the general meeting of shareholders adopts the income statement and balance sheet for the parent company and the group.

Our opinions in this report on the annual accounts and consolidated accounts are consistent with the content of the additional report that has been submitted to the parent company's audit committee in accordance with the Audit Regulation (537/2014) Article 11.

Basis for Opinions

We conducted our audit in accordance with International Standards on Auditing (ISA) and generally accepted auditing standards in Sweden. Our responsibilities under those standards are further described in the Auditor's Responsibilities section. We are independent of the parent company and the group in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements. This includes that, based on the best of our knowledge and belief, no prohibited services referred to in the Audit Regulation (537/2014) Article 5.1 have been provided to the audited company or, where applicable, its parent company or its controlled companies within the EU.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions.

Our audit approach

Audit scope

We designed our audit by determining materiality and assessing the risks of material misstatement in the consolidated financial statements. In particular, we considered where management made subjective judgements; for example, in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain. As in all of our audits, we also addressed the risk of management override of internal controls, including among other matters consideration of whether there was evidence of bias that represented a risk of material misstatement due to fraud.

We tailored the scope of our audit in order to perform sufficient work to enable us to provide an opinion on the consolidated financial statements as a whole, taking into account the structure of the Group, the accounting processes and controls, and the industry in which the group operates.

Materiality

The scope of our audit was influenced by our application of materiality. An audit is designed to obtain reasonable assurance whether the financial statements are free from material misstatement. Misstatements may arise due to fraud or error. They are considered material if individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the consolidated financial statements.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall group materiality for the consolidated financial statements as a whole as set out in the table below. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

Key audit matters

Key audit matters of the audit are those matters that, in our professional judgement, were of most significance in our audit of the annual accounts and consolidated accounts of the current period. These matters were addressed in the context of our audit of, and in forming our opinion thereon, the annual accounts and consolidated accounts as a whole, but we do not provide a separate opinion on these matters.

Key audit matter	How this matter has been reflected in the audit
Valuation of tangible fixed assets For information on important estimates and assessments, see Note 3 and for note information regarding impairments, see Note 9 and for tangible fixed assets, see Note 17. Vattenfall reports fixed assets of SEK 276 901 million, which corresponds to 35% of total assets. At each reporting period, Vattenfall must assess whether there are indications as to whether there is a trigger for impairment of any asset or, when applicable, a group of assets. If such an indication exists, a valuation of the asset is prepared and the valuation is compared with the book value. In the valuation models, future cash flows are calculated. In the calculations, assumptions about future price development, volume and discount rate are significant assumptions. Indicators for impairment may include price changes and regulatory / political changes. This area requires and is dependent on estimates and assessments from management. Hence, we have assessed the valuation of tangible assets as a key audit matter in the audit.	– We have assessed Vattenfall's process for identifying indications of impairment and the process for establishing values for impairment tests. – In our audit, we have read Vattenfall's documentation regarding valuation methods prepared. We have tested prepared calculations with respect to mathematical accuracy. – With regard to input data for price development of raw material prices and calculated discount rates, we have, when possible, verified and compared these on a sample basis with external sources. We have also assessed how the company has addressed climate-related risks in the valuations. – We have also assessed the reasonableness of the significant assumptions and carried out our own sensitivity analysis when we assessed them to be relevant. – We have also assessed whether the information disclosed is appropriate.
Provisions for future commitments on nuclear power operations For information on important estimates and assessments see note 3 and for note information regarding provisions for future expenses for nuclear expenses see note 31. Vattenfall has significant commitments to manage waste generated from operations and future decommissioning of nuclear power plants in Sweden and Germany. These provisions amounted to SEK 111,052 million in the group's balance sheet as of December 31, 2022. The majority of the cash outflow for this management is far in the future according to a joint decommissioning plan for all nuclear operations in Sweden, which makes the calculation of future expenses complex. This area requires management to make estimates and judgments regarding a number of parameters such as technological development, time horizon, cost estimate and discount rate. In light of this, we have assessed the reporting of provisions for future expenses for nuclear power as a particularly significant area in the audit.	– We have evaluated and assessed Vattenfall's process for reporting provisions for future expenses for nuclear power. – We have evaluated and assessed Vattenfall's accounting principles regarding the accounting of provisions for future expenditures for nuclear power. – We have obtained cost estimates and evaluated how these are generated in relation to decommissioning plans for both decided and planned decommissioning. – We have assessed the reasonableness of the assumptions that the management applied in the calculations for the accounting of the provisions. – We have also assessed whether the disclosures included in the financial statement are appropriate.
Valuation of derivatives and hedge accounting within Markets For information regarding Market, volume and liquidity risks, see pages 89–90, for important estimates and assessments, see Note 3 and for note information regarding derivatives, see Note 36. The trading operations in Vattenfall Markets, which is part of BA Power Generation, are an essential part of Vattenfall's operations. The trading business contains issues of a complex accounting nature. Vattenfall buys and sells energy via Markets and also uses hedge accounting to reduce volatility. The business uses derivatives of various kinds, including commodity derivatives that are not traded on a marketplace. The fair value valuation of these derivatives can be complicated, especially when markets or periods are illiquid. Hence, we have assessed the valuation of derivatives and hedge accounting within Markets as a key audit matter in the audit.	– We have reviewed Vattenfall's internal controls related to the Trading operations in Vattenfall Markets with a focus on the process for valuation of derivatives, hedge accounting and assessments regarding fair value valuation. – We have reviewed significant IT controls in the system used for the Trading business. – We have assessed the relevance of the valuation models used, including the reasonableness of assumptions and other input data. – We have reviewed the existence and completeness of open derivative positions and reviewed that hedge accounting is applied in accordance with IFRS 9. – We have also assessed whether the information disclosed is appropriate.

Other Information than the annual accounts and consolidated accounts
This document also contains other information than the annual accounts and consolidated accounts and is found on pages 9–19, 22–25, 31–48 and 183–192. The remuneration report for the year 2022 also constitutes other information. The Board of Directors and the Managing Director are responsible for this other information.

Our opinion on the annual accounts and consolidated accounts does not cover this other information and we do not express any form of assurance conclusion regarding this other information.

In connection with our audit of the annual accounts and consolidated accounts, our responsibility is to read the information identified above and consider whether the information is materially inconsistent with the annual accounts and consolidated accounts. In this procedure we also take into account our knowledge otherwise obtained in the audit and assess whether the information otherwise appears to be materially misstated.

If we, based on the work performed concerning this information, conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Board of Directors and the Managing Director
The Board of Directors and the Managing Director are responsible for the preparation of the annual accounts and consolidated accounts and that they give a fair presentation in accordance with the Annual Accounts Act and, concerning the consolidated accounts, in accordance with IFRS as adopted by the EU. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of annual accounts and consolidated accounts that are free from material misstatement, whether due to fraud or error.

In preparing the annual accounts and consolidated accounts, The Board of Directors and the Managing Director are responsible for the assessment of the company's and the group's ability to continue as a going concern. They disclose, as applicable, matters related to going concern and using the going concern basis of accounting. The going concern basis of accounting is however not applied if the Board of Directors and the Managing Director intend to liquidate the company, to cease operations, or has no realistic alternative but to do so.

The Audit Committee shall, without prejudice to the Board of Directors responsibilities and tasks in general, among other things oversee the company's financial reporting process.

Auditor's responsibility
Our objectives are to obtain reasonable assurance about whether the annual accounts and consolidated accounts as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs and generally accepted auditing standards in Sweden will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these annual accounts and consolidated accounts.

A further description of our responsibility for the audit of the annual accounts and consolidated accounts is available on Revisorsinspektionen's website: www.revisorsinspektionen.se/revisornsansvar. This description is part of the auditor's report.

Report on other legal and regulatory requirements

Opinions
In addition to our audit of the annual accounts and consolidated accounts, we have also audited the administration of the Board of Directors and the Managing Director of Vattenfall AB (publ) for the year 2022 and the proposed appropriations of the company's profit or loss.

We recommend to the general meeting of shareholders that the profit be appropriated in accordance with the proposal in the statutory administration report and that the members of the Board of Directors and the Managing Director be discharged from liability for the financial year.

Basis for Opinions
We conducted the audit in accordance with generally accepted auditing standards in Sweden. Our responsibilities under those standards are further described in the Auditor's Responsibilities section. We are independent of the parent company and the group in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions.

Responsibilities of the Board of Directors and the Managing Director
The Board of Directors is responsible for the proposal for appropriations of the company's profit or loss. At the proposal of a dividend, this includes an assessment of whether the dividend is justifiable considering the requirements which the company's and the group's type of operations, size and risks place on the size of the parent company's and the group' equity, consolidation requirements, liquidity and position in general.

The Board of Directors is responsible for the company's organisation and the administration of the company's affairs. This includes among other things continuous assessment of the company's and the group's financial situation and ensuring that the company's organisation is designed so that the accounting, management of assets and the company's financial affairs otherwise are controlled in a reassuring manner. The Managing Director shall manage the ongoing administration according to the Board of Directors' guidelines and instructions and among other matters take measures that are necessary to fulfill the company's accounting in accordance with law and handle the management of assets in a reassuring manner.

Auditor's responsibility
Our objective concerning the audit of the administration, and thereby our opinion about discharge from liability, is to obtain audit evidence to assess with a reasonable degree of assurance whether any member of the Board of Directors or the Managing Director in any material respect:

- has undertaken any action or been guilty of any omission which can give rise to liability to the company, or
- in any other way has acted in contravention of the Companies Act, the Annual Accounts Act or the Articles of Association.

Our objective concerning the audit of the proposed appropriations of the company's profit or loss, and thereby our opinion about this, is to assess with reasonable degree of assurance whether the proposal is in accordance with the Companies Act.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with generally accepted auditing standards in Sweden will always detect actions or omissions that can give rise to liability to the company, or that the proposed appropriations of the company's profit or loss are not in accordance with the Companies Act.

A further description of our responsibility for the audit of the administration is available on Revisorsinspektionen's website: https://www.revisorsinspektionen.se/revisornsansvar. This description is part of the auditor's report.

The auditor's examination of the ESEF report

Opinion
In addition to our audit of the annual accounts and consolidated accounts, we have also examined that the Board of Directors and the Managing Director have prepared the annual accounts and consolidated accounts in a format that enables uniform electronic reporting (the Esef report) pursuant to Chapter 16, Section 4 as of the Swedish Securities Market Act (2007:528) for Vattenfall AB (publ) for the year 2022 .

Our examination and our opinion relate only to the statutory requirements.

In our opinion, the Esef report has been prepared in a format that, in all material respects, enables uniform electronic reporting.

Basis for Opinions
We have performed the examination in accordance with FAR's recommendation RevR 18 Examination of the Esef report. Our responsibility under this recommendation is described in more detail in the Auditors' responsibility section. We are independent of Vattenfall AB (publ) in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the Board of Directors and the Managing Director
The Board of Directors (and the Managing Director) are responsible for the preparation of the Esef report in accordance with the Chapter 16, Section 4(a) of the Swedish Securities Market Act (2007:528), and for such internal control that the Board of Directors (and the Managing Director) determine is necessary to prepare the Esef report without material misstatements, whether due to fraud or error.

Auditor's responsibility
Our responsibility is to obtain reasonable assurance whether the Esef report is in all material respects prepared in a format that meets the requirements of Chapter 16, Section 4(a) of the Swedish Securities Market Act (2007:528), based on the procedures performed.

RevR 18 requires us to plan and execute procedures to achieve reasonable assurance that the Esef report is prepared in a format that meets these requirements.

Reasonable assurance is a high level of assurance, but it is not a guarantee that an engagement carried out according to RevR 18 and generally accepted auditing standards in Sweden will always detect

a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the Esef report.

The audit firm applies ISQC 1 Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and other Assurance and Related Services Engagements and accordingly maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with professional ethical requirements, professional standards and legal and regulatory requirements.

The examination involves obtaining evidence, through various procedures, that the Esef report has been prepared in a format that enables uniform electronic reporting of the annual accounts and consolidated accounts. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement in the report, whether due to fraud or error. In carrying out this risk assessment, and in order to design procedures that are appropriate in the circumstances, the auditor considers those elements of internal control that are relevant to the preparation of the Esef report by the Board of Directors and the Managing Director, but not for the purpose of expressing an opinion on the effectiveness of those internal controls. The examination also includes an evaluation of the appropriateness and reasonableness of assumptions made by the Board of Directors and the Managing Director.

The procedures mainly include a validation that the Esef report has been prepared in a valid XHTML format and a reconciliation of the Esef report with the audited annual accounts and consolidated accounts.

Furthermore, the procedures also include an assessment of whether the consolidated statement of financial performance, financial position, changes in equity, cash flow and disclosures in the Esef report has been marked with iXBRL in accordance with what follows from the Esef regulation.

The auditor's examination of the corporate governance statement

The Board of Directors is responsible for that the corporate governance statement on pages 94–106 has been prepared in accordance with the Annual Accounts Act.

Our examination of the corporate governance statement is conducted in accordance with FAR's auditing standard RevR 16 The auditor's examination of the corporate governance statement. This means that our examination of the corporate governance statement is different and substantially less in scope than an audit conducted in accordance with International Standards on Auditing and generally accepted auditing standards in Sweden. We believe that the examination has provided us with sufficient basis for our opinions.

A corporate governance statement has been prepared. Disclosures in accordance with chapter 6 section 6 the second paragraph points 2–6 of the Annual Accounts Act and chapter 7 section 31 the second paragraph the same law are consistent with the other parts of the annual accounts and consolidated accounts and are in accordance with the Annual Accounts Act.

PricewaterhouseCoopers AB was appointed auditor of Vattenfall AB (publ) by the general meeting of the shareholders on 28 April 2022 and has been the company's auditor since 28 April 2022.

Stockholm 27 March 2023
PricewaterhouseCoopers AB

Eva Carlsvi
Auditor in charge
Authorized Public Accountant

Aleksander Lyckow
Authorized Public Accountant

Other

We strive to accurately, comprehensively, and transparently report Vattenfall's activities, results, and impacts. Hence, the following section provides all remaining supplementary disclosures mandated by regulators such as EU taxonomy or standard bearers like GRI content index as well as providing more information to understand the rationale and context of Vattenfall such as methodologies, auditor assurance reports, and a glossary.

GRI Content Index and supplementary disclosures

About this report
Vattenfall's Annual and Sustainability Report (ASR) is a report in which information about the company's work with sustainability issues and outcomes is described together with the company's financial performance.

Vattenfall has been reporting in accordance with the Global Reporting Initiative (GRI) guidelines since 2003. This report has been prepared in accordance with the GRI Standards. This means that Vattenfall meets the disclosure requirements of the new GRI Universal Standards 2021 and has identified the aspects that are material for the company. Omitted information is reported in the GRI Index on pages 167–168. We do not have Group targets for all disclosed topics instead, they are steered and managed locally. Reporting on local communities focuses on the Business Areas and topics where Vattenfall's operations have the greatest impact on local communities. Vattenfall's overall ambition for its sustainability reporting is that it will be transparent and relevant. The GRI Index indicates where information about Vattenfall's reporting in accordance with GRI can be found in the ASR.

Reporting profile and scope
The ASR describes the areas in which the Group has considerable environmental, social, and financial impacts. Reporting on local communities does not correspond exactly to the GRI guidelines; instead, examples are used from the most relevant operations to describe Vattenfall's impact and handling. Vattenfall's activities, performance and results are reported as an integrated part of Vattenfall's strategy. The reporting covers all of the Vattenfall Group's operations during the 2022 financial year, unless indicated otherwise, and the figures provided pertain to the 2022 financial year. Vattenfall reports sustainability data annually in the ASR, and this year's report was published on 29 March 2023.

Boundaries
Vattenfall has limited its reporting to the areas in which the company has full control over data collection and information quality, which entails all operations of the company, including subsidiaries, unless indicated otherwise. While GRI Standards entail a greater focus on impacts along the entire value chain, the company cannot yet measure all data outside of its own operations in a reliable manner; instead, activities connected to both suppliers and customers are described. Important events and information about changes in the organisation during the year are provided on pages 8 and 100. Changes in Vattenfall's supply chain are described on pages 68–72. Changes in the capital structure and other changes in capital are described in Note 38 to the Consolidated accounts, Specifications of equity. The limitations and changes in the reporting are also described in the respective sections or in comments to diagrams and tables. Vattenfall uses different definitions of "supplier" and "new supplier" for its four purchasing streams reported on page 69. A supplier of goods and services is defined as an entity providing goods and services to Vattenfall and whose paid invoices exceeded SEK 3,000 in 2022.

A coal supplier is an entity that delivered coal to Vattenfall's power plants for own use. A supplier of biomass, nuclear fuel, or gas is an entity that Vattenfall has a contract with. For all categories, a new supplier is an entity that did not previously have a contractual relationship with Vattenfall and which signed its first contract with us for deliveries during the 2022 reporting period.

Data collection and accounting policies
Environmental data is collected via the Group's environmental reporting process. Group-wide definitions are used for all environmental parameters to enhance quality. Accounting policies for the financial reporting are described in Note 3 to the Consolidated accounts, Accounting policies. The principles of consolidation for environmental data are the same as for financial data. Consolidation includes subsidiaries in which Vattenfall AB owns shares corresponding to more than 50% of the voting rights or in some other way has control. Absolute CO_2 emissions are also reported in accordance with Vattenfall's share of ownership (pro rata) in the respective plants. Reported direct (Scope 1) CO_2 emissions are calculated based on fuel consumption in each plant and reported directly in our environmental data collection system. It should be noted that the calculation methods differ from country to country. The calculation methods are set by national legislation, with ties to the EU Emissions Trading System. All other emissions including Scope 2 and material Scope 3 have either been measured or calculated based on periodically recurring measurements. GHG Protocol Methodology for the respective Scope has been applied for all emission calculations. Figures for energy, waste generated, and water withdrawal and discharge are based, like all environmental data, on the production units' own reporting. Depending on the size and type of operation, the measurement equipment differs from unit to unit. However, all reporting is to be in accordance with the Group-wide definitions and principles. The employee data that is presented is based on verified figures from Vattenfall's annual accounts. Vattenfall uses contractors to a considerable extent but does not report the number of those persons due to the difficulty in obtaining quality data for this type of reporting. Significant corrections of last year's figures have been commented in sections at the affected information.

Statutory sustainability reporting
Vattenfall is subject to statutory sustainability reporting in accordance with the Swedish Annual Accounts Act. The statutory sustainability report is found in the following sections of the Vattenfall ASR and meets the reporting requirements for the environment, social responsibility, personnel, human rights, and anti-corruption:
- Strategic targets, page 20
- Business model and value creation, pages 6, 51
- EU taxonomy reporting, page 171–180
- Integrity and risk management, pages 68–69, 82–88
- Internal governance, pages 99–100
- Materiality analysis and stakeholders, pages 53–55
- Human rights, pages 66–67
- Sustainable supply chain, pages 68–72
- Human resources, pages 26–27, 73–77
- Environment, pages 56–65
- External assurance, pages 181–182.

External assurance
The sustainability information in the ASR for 2022 has been reviewed by Vattenfall's auditor, PwC, from which we are independent. In addition, it has been approved by Vattenfall's Board of Directors.

Sustainability initiatives and principles that the company has aligned itself with or supports, and important memberships in interest association and organisations
The Vattenfall Group has adhered to the UN's voluntary Global Compact since 2002 through the Swedish partnership for Global Responsibility. Vattenfall has been a direct participant since 2008. Consequently, Vattenfall has undertaken to support the UN Global Compact and to adhere to the OECD Guidelines for Multinational Enterprises. Implementation and monitoring of compliance with the Vattenfall Code of Conduct for Suppliers and Partners, based on the UN Global Compact, is in progress. Vattenfall also adheres to the UN Guiding Principles on Business and Human Rights. Vattenfall uses the ASR as its main source of information for the Communication on Progress for the UN Global Compact (UNGC), and a cross reference between UNGC and the GRI can be found in the GRI Content Index. The cross reference is primarily done to the disclosure on management approach of each relevant aspect. If this connection is not possible or if the information is available on another page, the principle is directly linked to an indicator. In addition to these undertakings, Vattenfall has opted to align itself with a number of voluntary sustainability initiatives and organisations at the Group level. Examples of these include:
- Business for Social Responsibility (BSR)
- WindEurope
- EV100
- SolarPower Europe
- CSR Sweden
- Equal by 30
- SDG LGBTI Manifesto.

Vattenfall conducts its operations primarily in northwest Europe (Sweden, Germany, the Netherlands, Denmark, the UK, France, and Finland). These countries have all ratified the International Labour Organization's (ILO) eight fundamental conventions. A country that has ratified an ILO convention must regularly report on its performance to the ILO.

GRI Standard	Disclosure number	Disclosure title	Page and/or Note number(s)	Omissions	UNGC Principle(s)
GRI 2: General Disclosure 2021					
	The organisation and its reporting practices				
	2-1	Organisational detials	Note 1, 5, 94		
	2-2	Entities included in the organization's sustainability reporting	Note 18, 166		
	2-3	Reporting period, frequency and contact point	166, 194		
	2-4	Restatements of information	166		
	2-5	External assurance	98, 166, 181–182		
	Activities and workers				
	2-6	Activities, value chain and other business relationships	5–8, 35–46, 68–72, 166		
	2-7	Employees	4, 166, 184	2-7-b-iii not applicable: non-guaranteed hours employees are not likely to exist in the organisation. 2-7-b-i/ii/iv/v information incomplete: a breakdown is not available until next reporting period due to system constraints.	
	2-8	Workers who are not employees		Information unavailable: Vattenfall does not consolidate this information on Group level currently	
	Governance				
	2-9	Governance structure and composition	94-107	2-9-cvi/cvii/cviii not applicable: Vattenfall's highest governance body is not composed based on those parameters.	
	2-10	Nomination and selection of the highest governance body	96-97		
	2-11	Chair of the highest governance body	96-97		
	2-12	Role of the highest governance body in overseeing the management of impacts	96		
	2-13	Delegation of responsibility for managing impacts	95-100		
	2-14	Role of the highest governance body in sustainability reporting	96-98, 166		
	2-15	Conflicts of interest	95- 96, 103-106		
	2-16	Communication of critical concerns		Information unavailable: Vattenfall does not consolidate data on this specific type of communication	
	2-17	Collective knowledge of the highest governance body	96-100		
	2-18	Evaluation of the performance of the highest governance body	97		
	Governance, cont.				
	2-19	Remuneration policies	74, 98, 101, Note 42		
	2-20	Process to determine remuneration	74, 98		
	2-21	Annual total compensation ratio		Information incomplete: Vattenfall does not have this information on Group level currently	
	Strategy, policies and practices				
	2-22	Statement on sustainable development strategy	9-12		
	2-23	Policy commitments	66-73		
	2-24	Embedding policy commitments	50-78		
	2-25	Processes to remediate negative impacts	68-69		
	2-26	Mechanisms for seeking advice and raising concerns	68-69		
	2-27	Compliance with laws and regulations		Information incomplete: Vattenfall does not consolidate this information on Group level currently	
	2-28	Membership associations	166		
	Stakeholder Engagement				
	2-29	Approach to stakeholder engagement	54-55		
	2-30	Collective bargaining agreements	74		
GRI 3: Material Topics 2021					
	3-1	Process to determine material topics	53, 170		
	3-2	List of material topics	53		
	3-3	Management of material topics	53		
	EU1	Installed capactiy	189		
	EU2	Energy production, net	189		
	EU3	Numbers of customers	189		
	EU4	Length of transmission and distribution lines, based on voltage	189		
	EU5	Allocation of CO_2 emission allowances	189		
GRI 205: Anti-corruption 2016					10: Anti-corruption
	205-2	Communication and training about anti-corruption policies and procedures	67–68	205-2-c Information unavailable: Vattenfall currently does not measure number of business partners aware of our anti-corruption policies but is included in the code of conduct for suppliers which we expect all suppliers to adhere to.	

GRI Standard	Disclosure number	Disclosure title	Page and/or Note number(s)	Omissions	UNGC Principle(s)
GRI 206: Anti-competitive behavior 2016					10: Anti-corruption
	206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	69		
GRI 207: Tax 2019					
	207-1	Approach to tax	78		
	207-2	Tax governance, control, and risk management	78		
	207-3	Stakeholder en-gagement and management of concerns related to tax	78		
	207-4	Country-by-country reporting	78, Note 1, Note 8, Note 42	207-4-b-v Not applicable: Vattenfall accounting policies eliminate Intra-Group transactions	
GRI 302: Energy 2016					8-9: Environment
	302-1	Energy consumption within the organisation	183		
GRI 303: Water and Effluents 2018					8-9: Environment
	303-1	Interactions with water as a share resource	62-63		
	303-2	Management of water discharge-related impacts	62-63		
	303-3	Water withdrawal	62-63		
	303-4	Water discharge	62-63		
	303-5	Water consumption	62-63		
GRI 304: Biodiversity 2016					8-9: Environment
	304-2	Significant impacts of activities, products, and services on biodiversity	60-61, 79-80		
GRI 305: Emissions 2016					7-9: Environment
	305-1	Direct (Scope 1) GHG emissions	56-58, 183		
	305-2	Energy indirect (Scope 2) GHG emissions	56-58, 183		
	305-3	Other indirect (Scope 3) GHG emissions	56-58, 183	305-3-2.5.3 Information incomplete: Emissions of biogenic emissions of CO_2 from the combustion or biodegradation of biomass that occur in the value chain has not been included	
	305-4	GHG emissions intensity	56-58, 183		
	305-7	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	56, 183	305-7-aiii/aiv/av Information incomplete: emissions of POPs, VOC and HAP are not reported because they are not measured regularly since they are not significant for Vattenfall plants.	
Electric Utility Sector-Specific Environmental Social Indicators					
	EN21	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	56, 183		
GRI 306: Waste 2020					8-9: Environment
	306-1	Waste generation and significant waste-related impacts	64-65		
	306-2	Management of significant waste related-impacts	64-65		
	306-3	Waste generated	64-65		
Electric Utility Sector-Specific Environmental Performance Indicators					
	EN23	Waste by type and disposal method	64		
GRI 308: Supplier Environmental Assessment 2016					7: Environment
	308-1	New suppliers that were screened using environmental criteria	69		
GRI 403: Occupational Health and Safety 2018					1-2: Human rights 4-6: Labour
	403-1	Occupational health and safety management system	76-77		
	403-2	Hazard identification, risk assessment, and incident investigation	76-77		
	403-3	Evaluation of the management approach	76-77		
	403-4	Worker participation, consultation, and communi-cation on occupational health and safety	76-77		
	403-5	Worker training on occupational health and safety	76-77		
	403-6	Promotion of worker health	76-77		
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	76-77		
	403-9	Work-related injuries	76-77	403-9-b Information incomplete: We are not able to report LTI frequency for contractors due to lack of reliable data.	
GRI 405: Diversity and Equal Opportunities 2016					6: Labour
	405-1	Diversity of governance bodies and employees	73, 184		
GRI 414: Supplier Social Assessment 2016					
	414-1	New suppliers that were screened using social criteria	69		
Electric Utility Sector-Specific Social Indicators					
	EU28	Power outage frequency	184		
	EU29	Average power outage duration	183		

Vattenfall's application of the TCFD core recommendations

Governance	Page(s)	Strategy	Page(s)	Risk Management	Page(s)	Metrics and Targets	Page(s)
Describe the board's oversight of climate-related risks and opportunities.	93-102	Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.	87-88	Describe the organisation's processes for identifying and assessing climate-related risks.	87-88	Disclose the metrics used by the organisation to assess climate related risks and opportunities in line with its strategy and risk management process.	81-88, 56-58
Describe management's role in assessing and managing climate-related risks and opportunities.	96	Describe the impact of climate related risks and opportunities on the organisation's businesses, strategy and financial planning.	87-88	Describe the organisation's processes for managing climate-related risks.	87-88, 36-46	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	56-58
		Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	87-88	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management.	87-88	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	56-58

For more information on Vattenfall's Water and Climate reporting, **see the CDP website**.

Vattenfall reports in accordance with the TCFD supplemental guidance for the energy group	Page number(s)
Changes in compliance and operating costs, risks or opportunities (e.g. older, less-efficient facilities or unexploitable fossil fuel reserves in the ground)	37-46
Exposure to regulatory changes or changing consumer and investor expectations (e.g.,expansion of renewable energy in the mix of energy supply)	31-33, 37-46
Changes in investment strategies (e.g., opportunities for increased investment in renewable energy, carbon-capture technologies, and more efficient water use)	22-23, 37-46

Methodologies

Materiality analysis process

With the aid of an independent third party, Vattenfall updated its materiality assessment process to adopt the so-called "double materiality" approach and thereby align with best practice. The aim was to understand the extent to which material topics impact the company, and the extent to which the company impacts the material topics. The process generally looked as follows: identify topics and key stakeholders; establish a scoring and stakeholder engagement methodology; gather stakeholder input; analyse the quantitative and qualitative data; and finally disseminate a final report for approval and further processing.

Identifying material topics and key stakeholders
For comparability purposes, the materiality process uses the list of topics and the key stakeholder lists from the previous materiality analysis (i.e. the one conducted in 2020) as a basis and allows for amendments if there are clear rationales such as significant changes in Vattenfall's activities or portfolio, or external factors and expectations. Internal sustainability experts and an independent third-party review and compare the material topic list against key internal documents like environmental and human rights assessments, as well as (future) reporting regulations and international reporting standards such as the EU CSRD, SASB materiality map, GRI sectoral topics, WEF and CDP reports. As part of the assessment, stakeholders are also asked to add topics they feel should be covered but are not. Similarly, the key stakeholders list is updated and evaluated to cover a representative spread of across Vattenfall's markets and includes all relevant stakeholder groups such as employees, customers, suppliers, financial institutions, governmental actors, partners, NGOs, and Industry associations.

In 2022, the topic list review established that Vattenfall's impacts, activities, and portfolio was similar to 2020 and thus most of the 2020 topic list could reliably be carried over to the 2022 list. However, there were recommendations to merge and split several topics for clarity purposes; to add topics such as water and data privacy to match reporting requirements and standards; and to rephrase all topics in a more concise manner. As a result, the 2022 topic list consisted of 19 sustainability topics, three less than in the previous analysis. There were no noteworthy changes to the key stakeholder list in the 2022 materiality analysis.

Establishing a scoring and stakeholder engagement methodology
In general, a wide range and significant sample of stakeholders across geographies and sectors, via online survey, are asked to score each material topic on a 4-point scale from low to very high financial and impact materiality. Each score level on the scale was defined to differentiate between levels and financial and impact materiality. To support the quantitative ranking, a small selection of key stakeholders, typically experts in their fields, were interviewed to gather more nuanced feedback. Additionally, we asked stakeholders to identify which of their lower scoring topics were likely to increase in materiality in 10 years' time.

Gather stakeholder input through interviews, surveys, and consumer panels
In 2022, we had more than 4100 stakeholders from seven different stakeholder groups and 8+ different geographies participating in surveys or interviews. All quantitative and qualitative data were collected and anonymised.

Analysing the quantitative and qualitative data
Once collected, the raw scores of all the surveyed stakeholders are compiled and aggregated by method of taking a weighted average per stakeholder group. This was then combined to produce the final materiality matrix. In 2022, three topics were prioritised as their score was observably higher in both financial and impact materiality than the others. Similarly, six topics were labelled medium material since they scored observably lower on both axes (for more analysis see page 53). The qualitative interview notes and comments were sorted and filtered per stakeholder group and material topic. Subsequently, the interview data were verified and matched to the quantitative results by internal experts.

Disseminate a final report for approval and further processing
The resulting prioritisation and other findings were compiled into a report and presented to the Executive Group Management and key internal stakeholders for approval before being published on our website publicly. From there, the results inform the strategy process of Vattenfall and act as a guide for the topics reported on in the ASR. Vattenfall maintains that as a state-owned company it should attempt to address and report on all material topics while placing additional emphasis on the top material topics.

Total value creation methodology

The methodology for calculating the total value that Vattenfall creates with its activities and processes is developed in-house and strives to use available, reliable, and mature data to quantify the costs and benefits in three categories: economic, social and environmental. Additionally, we have a category of exploratory variables to capture the more intricate costs and benefits that Vattenfall creates. The scope of each category is described on page 51. In general, this methodology attempts to express the value creation in monetary terms, SEK million, and thus this section will outline the sources and assumptions of each variable in the calculation.

Economic variables
Due to the unprecendented swings in the energy markets, Profit, found in the consolidated Income statement on page 116, includes large accounting effects attributable to the realisation and valuation of electricity and fuel contracts, so called changes in fair values. They relate to the portion of our futures and forward contracts where we do not employ hedge accounting and changes in these values does not reflect Vattenfall's business performance and hence, economic value. Therefore, an additonal variable, temporary accounting effects, was introduced to remove effects related to changes in the fair value of energy derivatives and the fair value of inventories. (See Items affecting comparability that affected operating profit on page 113)

Social variables
The taxes and personnel costs values are found on page 78 and 146, respectively. Note that the taxes quantification differs from page 78 because it excludes social security costs to prevent double counting, since social security costs are also present in the personnel costs figure. Next, the costs associated with accidents and fatalities is calculated using the employee and contractor LTI and fatalities data found on page 77. These are transformed into monetary terms based on the assumptions of the Swedish National Traffic Authority: SEK 12.93 million per accident and SEK 44 million per fatality.

Environmental variables
For the calculation of Scope 1 + 2 CO_2 emissions cost, emission data on page 183 is multiplied with an assumed CO_2 price, SEK 1000 per tonne of CO_2, in accordance with the 2016 executive update of the UN Global Compact . Furthermore, the benefit of paid CO_2 allowances can be found in Note 22 under intangible assets: current, financial information table, "Redeemed." The other emissions costs are calculated per country using the country-specific statistical life time cost estimates associated with NOx, Sox and Particulate Matter published in the 2011 EEA report: "Revealing the costs of air pollution from industrial facilities in Europe." Vattenfall's other emissions data can be found on page 183.

Exploratory variables
Scope 3 costs and benefits are based on the same CO_2 price assumption as before. Scope 3 emissions data can be found on page 183. While the previous variables are related to Vattenfall operations, Scope 3 emissions are related to actions outside of the company. This is why they are visualised differently in the value creation graph. Next, Land use and biodiversity restoration costs are based on the dynamic land use impact calculated for 2020, 8 MSA.km^2, and it is estimated to cost 5 MEUR per MSA.km^2. Using values for 2020 assumes equal investment and resource use for 2022. Due to limitations in the model, impact on aquatic and marine environments, for example from our hydropower and offshore wind assets, is not included. More information on Vattenfalls static and dynamic impact can be found on page 79.

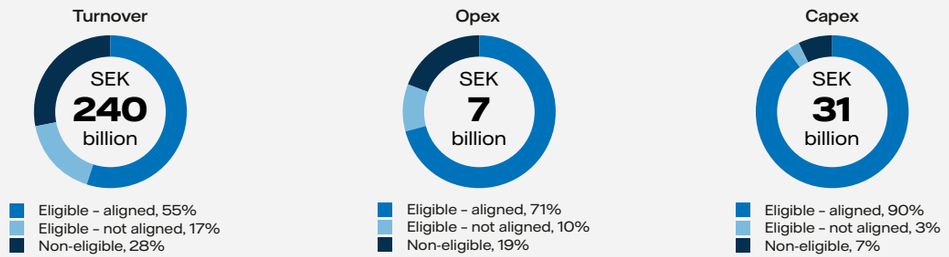
EU Taxonomy

The EU Taxonomy Regulation (EU 2020/825) aims to establish a common classification system that defines when an economic activity can be considered sustainable, i.e. taxonomy-aligned. Its ultimate aim is to steer investments into activities that help achieve the ambitions of the EU Green Deal. The Taxonomy requires large non-financial companies to disclose the share of turnover, operating expenditure (opex) and capital expenditure (capex) that are eligible and aligned under the taxonomy.

In 2022, the majority of Vattenfall's turnover, opex and capex was assessed as being eligible and aligned to the technical screening criteria set out in the Climate Delegated Act (Commission Delegated Regulation (EU) 2021/2139) and the Complementary Climate Delegated Act for nuclear and gas (Commission Delegated Regulation (EU) 2022/1214).

Eligibility Assessment
Implementation of the Taxonomy in Vattenfall has been done in a Group wide project where all operating segments have been involved to identify Vattenfall's eligible activities. The external reporting is based on reporting made on lowest level for all reporting units in the Group.

Turnover, operating expenses and investments for 2022 in the taxonomy reporting



[1] Taxonomy aligned.
[2] Partly taxonomy aligned.
[3] Not taxonomy aligned.

[4] Through the updated Ordinance (2017:1179) on Financing of Management of Residual Products from Nuclear Activities, the Swedish State has confirmed that the expected operating lifetime of each nuclear power reactor should be at least 50 years, and thus all of Vattenfall's existing reactors have extended their planned operating lifetime in line with this and are considered eligible under the taxonomy.

Vattenfall has identified the following main eligible activities in the Climate Delegated Act and Complementary Delegated Act:

4.3 Electricity generation from wind power[1]
4.5 Electricity generation from hydropower[1]
4.9 Transmission and distribution of electricity[2]
4.10 Storage of electricity[1]
4.28 Electricity generation from nuclear energy in existing installations[1]
4.29 Electricity generation from fossil gaseous fuels[3]
4.30 High-efficiency co-generation of heat/cool and power from fossil gaseous fuels[3]
4.31 Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system[3]

Other identified eligible activities, see KPI tables for turnover, opex and capex.

Alignment Assessment
For an economic activity to qualify as aligned under the EU taxonomy, it needs to substantially contribute to at least one of the environmental objectives as defined in the taxonomy, do no significant harm (DNSH) to the remaining objectives and comply with minimum social safeguards.

Substantial contribution and DNSH have been assessed on economic activity level and the minimum social safeguards on Group level. The taxonomy reporting is an integrated part of our financial reporting system.

Substantial Contribution
Climate Change Mitigation
All Vattenfall's eligible economic activities have been assessed against the substantial contribution criteria for climate change mitigation. Activities also contributing to the climate change adaptation objective have not been reported as such, to avoid double counting.

Aligned activities such as electricity generation from wind (4.3) and storage of electricity (4.10) (pumped hydropower storage) contribute to the objective by default.

Other major activities such as electricity generation from hydropower (4.5) and electricity generation from nuclear energy in existing installations[4] (4.28) are verified to be below the life cycle greenhouse gas (GHG) threshold of the EU taxonomy via Vattenfall's third party verified life cycle assessments.

For the activity distribution and transmission of electricity (4.9), the majority of the activity has been assessed as aligned since Vattenfall's distribution networks are part of the interconnected European system and the new generation connected to the grid complies with the climate requirements for new connections. A minor part of the activity has been reported as not aligned due to lack of verifiable data.

Other economic activities compliance is assessed at product or economic-activity level. Alignment is often fulfilled via compliance to EU and national legislation and is followed-up annually through our certified Environmental Management systems.

Do No Significant Harm

Climate Change Adaptation

The two IPCC climate scenarios RCP 4.5 and RCP 8.5 have been used to conduct the physical climate risk and vulnerability assessments for Vattenfall's operations. The scenarios used reflects the most detailed information available at the time of assessment, representing an intermediate and high GHG concentration scenario. For further details please see the information on climate risk management in Vattenfall on pages 87-88, also covering transitional risks.

Sustainable use and protection of water and marine resources, and Protection and restoration of biodiversity and ecosystems

The DNSH criteria for water and biodiversity is linked to various pieces of EU legislation which are implemented through national law in the different markets that Vattenfall operates in. Within current legal systems relevant requirements are set on operators through the permit conditions as set out by the competent national authorities. Legal compliance is followed-up by competent authorities as well as annual reviews of certified Environmental Management Systems.

One of the most important DNSH criteria for Vattenfall linked to *Sustainable use and protection of water and marine resources* relates to compliance with the Water Framework Directive (WFD). All Vattenfall's active markets have nationally implemented the WFD and competent authorities set the relevant environmental requirements on operators as part of permit conditions. Our current assessment is that as long as procedures and requirements, set out by competent authorities, are fulfilled the activity is aligned.

Transition to a Circular Economy

The DNSH-criteria on circular economy requires that components of high durability and recyclability are used where the criteria is applicable. Resource efficiency and circularity is a key focus area for Vattenfall. The requirement is fulfilled via contractual agreements with suppliers and contractors and via compliance to Vattenfall's overarching Environmental Management Systems in which circularity and resource management are an explicit part.

Pollution Prevention and Control

Compliance is secured by adhering to existing EU and national legislation. Legal compliance is followed-up through requirements from competent authorities and environmental reporting. Legal compliance is also followed up annually through our audits linked to certified Environmental Management Systems. As example, for the activity distribution and transmission of electricity (4.9), we have internal instructions as part of the Management System on polychlorinated biphenyls (PCBs) and electromagnetic fields.

Minimum safeguards

Vattenfall has a public Human rights policy describing our approach to respecting human rights. It includes commitments to follow UN Guiding Principles, OECD guidelines for Multinational Enterprises, ILO's eight fundamental conventions, and the principles of UN Global Compact. In our Code of Conduct for Suppliers and Partners, we extend these ambitions to the value chain.

On a reoccurring basis we do a gap analysis with an external organisation to ensure that we live by these policies. Issues identified are addressed in a structured activity plan followed up on Group level. The process is valid throughout the whole organisation.

See pages 66-78 for further information.

Accounting policy

The KPI's have been defined in accordance with Annex I to the article. 8 Delegated Act.

Basis for preparation of the EU Taxonomy reporting is the Vattenfall consolidated accounts prepared in accordance with IFRS, see note 3 to the Consolidated accounts. In addition, the Taxonomy reporting is based on Vattenfall's segment reporting as presented in note 7 to the Consolidated accounts, meaning that turnover KPI figures for the electricity producing activities are based on spot prices. Results from electricity production price hedges, which are done on group level, are not allocated by production type. Hence, results from electricity price hedges are recognised as a non-eligible activity.

Turnover in the Taxonomy reporting is equivalent to the Net sales in Vattenfall's income statement. The numerator of the KPI is the share of turnover assessed to be aligned, reported under section A.1 Environmentally sustainable activities.

Opex consist of maintenance costs, expenses for short term leases, research and development costs. Expenses covered by the opex definition in the taxonomy are reported as Other external expenses and Personnel expenses in Vattenfall's income statement. The numerator of the KPI is the share of opex assessed to be aligned, reported under section A.1 Environmentally sustainable activities.

Capex consists of additions to (i.e. investments in) property plant and equipment (reported in Vattenfall's balance sheet and in note 17), intangible assets (reported in Vattenfall's balance sheet and in note 16), and additions to right of use assets from leases (reported in Vattenfall's balance sheet and in note 14) whereby also business combinations are considered. The right of use assets, presented in note 14, are included in investments property, plant and equipment in note 17. Assets recognised in accordance with IFRIC 1 are reported as investment, in property plant and equipment. The numerator of the KPI is the share of capex assessed to be aligned, reported under section A.1 Environmentally sustainable activities.

According to the delegated act to article 8, Non-financial undertakings that have issued environmentally sustainable bonds or debt securities with the purpose of financing specific identified Taxonomy-aligned activities, must disclose adjusted Capex and Turnover KPIs for the Taxonomy-aligned capital expenditure and activity turnover financed by such bonds or debt securities. Vattenfall has issued Green Bonds for financing a variety of sustainable investments in Vattenfall's Green Bond portfolio (see page 24), though not allocated quantitively to specific projects or investments. Vattenfall has interpreted the concept of a sustainable bond in the EU Taxonomy as relating to the EU green bond standard, which is not yet available. Since Vattenfall has not issued any debt securities for the financing of specific aligned activities, no alternative KPI adjustments are presented for turnover or capex.

In certain cases, allocation keys have been used based on production volumes or other relevant allocation keys as Vattenfall's internal reporting system is not always set up in such way it supports the detailed requirements in the Taxonomy reporting requirements.

All assessments and reporting is based on our current interpretation of the EU Taxonomy Regulation and its Delegated Acts. Industry practices may develop over time and thus our accounting policy, together with the eligibility and alignment assessment, could change to reflect these developments.

Material changes 2022

During 2022, the Complementary Climate Delegated Act on Nuclear and Gas was adopted by the EU. That means Vattenfall's nuclear and gas production are now eligible under the EU Taxonomy rules. Vattenfall has assessed its nuclear operations, ie electricity generation from nuclear power, as being eligible and aligned while the gas operations, ie electricity and heat production from gas, is reported as eligible but assessed not to be aligned. The inclusion of nuclear and gas in the taxonomy is the main reason for the higher share of the eligible part for the Turnover KPI, Opex KPI and Capex KPI in 2022 compared to 2021.

Taxonomy – Turnover

				Technical screening criteria											
				Substantial contribution criteria		Do no significant harm(DNSH)								Category	
	Code	Absolute Turnover SEK million	Proportion of Turnover, %	Climat change mitigation, %	Climate change adaptation, %	Climate change mitigation Yes/No	Climate change adaptation Yes/No	Water and marine resources Yes/No	Circular economy Yes/No	Pollution Yes/No	Biodiversity and ecosystem Yes/No	Minimum safe guards Yes/No	Taxonomy aligned proportion of Turnover 2022	Taxonomy aligned proportion of Turnover 2021	*Enabling activity*	*Transitional activity*
A. TAXONOMY-ELIGIBLE ACTIVITIES																
A1. Environmentally sustainable activities (Taxonomy-aligned)																
Electricity generation using solar photovoltaic technology	4.1	181	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Electricity generation from wind power	4.3	28,613	12%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	12%			
Electricity generation from hydropower	4.5	29,078	12%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	12%			
Transmission and distribution of electricity	4.9	13,000	5%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	5%		E	
Storage of electricity	4.10	13,853	6%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	6%		E	
Storage of thermal energy	4.11	161	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
District heating/cooling distribution	4.15	4,001	2%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	2%			
Installation and operation of electric heat pumps	4.16	120	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Cogeneration of heat/cool and power from solar energy	4.17	3	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	4.19	42	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Cogeneration of heat/cool and power from bioenergy	4.20	202	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Production of heat/cool from bioenergy	4.24	1,555	1%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	1%			
Electricity generation from nuclear energy in existing installations	4.28	39,298	16%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	16%			
Installation, maintenance and repair of energy efficiency equipment	7.3	39	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	7.4	209	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	7.5	33	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of renewable energy technologies	7.6	467	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
A1. Turnover - Taxonomy aligned activities		**130,854**	**55%**										**55%**			
A2. Taxonomy eligible, but not environmentally sustainable activities (not Taxonomy-aligned)																
Transmission and distribution of electricity	4.9	60	0%													
District heating/cooling distribution	4.15	44	0%													
Installation and operation of electric heat pumps	4.16	377	0%													
Cogeneration of heat/cool and power from bioenergy	4.20	10	0%													
Electricity generation from fossil gaseous fuels	4.29	17,660	7%													
High-efficiency co-generation of heat/cool and power from fossil gaseous fuels	4.30	21,701	9%													
Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system	4.31	1,712	1%													
Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	7.4	3	0%													
A2. Turnover – Taxonomy not aligned activities		**41,568**	**17%**													
TOTAL – Taxonomy-eligible activities (A1+A2)		**172,422**	**72%**										**55%**			
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																
Turnover of taxonomy non-eligible activities		67,221	28%													
TOTAL (A+B)		**239,644**	**100%**													

In 2021, absolute turnover was SEK 180 billion, of which 39 percentage was eligible turnover.

Taxonomy - Opex

				Technical screening criteria											
				Substantial contribution criteria		Do no significant harm(DNSH)								Category	
	Code	Absolute Opex SEK million	Proportion of Opex, %	Climat change mitigation, %	Climate change adaptation, %	Climate change mitigation Yes/No	Climate change adaptation Yes/No	Water and marine resources Y/N	Circular economy Y/N	Pollution Y/N	Biodiversity and ecosystem Y/N	Minimum safe guards Yes/No	Taxonomy aligned proportion of Opex 2022	Taxonomy aligned proportion of Opex 2021	*Enabling activity*	*Transitional activity*
A. TAXONOMY-ELIGIBLE ACTIVITIES																
A1. Environmentally sustainable activities (Taxonomy-aligned)																
Electricity generation using solar photovoltaic technology	4.1	3	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Electricity generation from wind power	4.3	545	7%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	7%			
Electricity generation from hydropower	4.5	732	10%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	10%			
Transmission and distribution of electricity	4.9	1,638	22%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	22%		E	
Storage of electricity	4.10	134	2%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	2%		E	
Storage of thermal energy	4.11	1	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
District heating/cooling distribution	4.15	297	4%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	4%			
Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	4.19	1	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Cogeneration of heat/cool and power from bioenergy	4.20	30	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Production of heat/cool from bioenergy	4.24	197	3%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	3%			
Electricity generation from nuclear energy in existing installations	4.28	1,670	23%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	23%			
Installation, maintenance and repair of renewable energy technologies	7.6	9	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Acquisition and ownership of buildings	7.7	1	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
A1. Opex - Taxonomy aligned activities		**5,258**	**71%**										**71%**			
A2. Taxonomy eligible, but not environmentally sustainable activities (not Taxonomy-aligned)																
Transmission and distribution of electricity	4.9	1	0%													
District heating/cooling distribution	4.15	9	0%													
Installation and operation of electric heat pumps	4.16	1	0%													
Cogeneration of heat/cool and power from bioenergy	4.20	1	0%													
Electricity generation from fossil gaseous fuels	4.29	275	4%													
High-efficiency co-generation of heat/cool and power from fossil gaseous fuels	4.30	316	4%													
Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system	4.31	134	2%													
A2. Opex - Taxonomy not aligned activities		**737**	**10%**													
TOTAL - Taxonomy-eligible activities (A1+A2)		**5,996**	**81%**										**71%**			
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																
Opex of taxonomy non-eligible activities		1,364	19%													
TOTAL (A+B)		**7,359**	**100%**													

In 2021, absolute opex was SEK 8 billion, of which 61 percentage was eligible opex.

Taxonomy- Capex

				Technical screening criteria											
				Substantial contribution criteria		Do no significant harm(DNSH)								Category	
	Code	Absolute Capex SEK million	Proportion of Capex, %	Climat change mitigation, %	Climate change adaptation, %	Climate change mitigation Yes/No	Climate change adaptation Yes/No	Water and marine resources Y/N	Circular economy Y/N	Pollution Y/N	Biodiversity and ecosystem Y/N	Minimum safe guards Yes/No	Taxonomy aligned proportion of Capex 2022	Taxonomy aligned proportion of Capex 2021	*Enabling activity*	*Transitional activity*
A. TAXONOMY-ELIGIBLE ACTIVITIES																
A1. Environmentally sustainable activities (Taxonomy-aligned)																
Electricity generation using solar photovoltaic technology	4.1	32	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Electricity generation from wind power	4.3	16,733	54%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	54%			
Electricity generation from hydropower	4.5	771	3%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	3%			
Transmission and distribution of electricity	4.9	5,562	18%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	18%		E	
Storage of electricity	4.10	43	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Storage of thermal energy	4.11	230	1%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	1%		E	
District heating/cooling distribution	4.15	1,521	5%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	5%			
Installation and operation of electric heat pumps	4.16	89	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Cogeneration of heat/cool and power from bioenergy	4.20	2	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%			
Production of heat/cool from bioenergy	4.24	174	1%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	1%			
Electricity generation from nuclear energy in existing installations	4.28	1,752	6%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	6%			
Installation, maintenance and repair of energy efficiency equipment	7.3	4	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	7.4	127	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings	7.5	1	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Installation, maintenance and repair of renewable energy technologies	7.6	3	0%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	0%		E	
Acquisition and ownership of buildings	7.7	586	2%	100%	0%	N/A	Y	Y	Y	Y	Y	Y	2%			
A1. Capex - Taxonomy aligned activities		**27,630**	**90%**										**90%**			
A2. Taxonomy eligible, but not environmentally sustainable activities (not Taxonomy-aligned)																
Transmission and distribution of electricity	4.9	37	0%													
District heating/cooling distribution	4.15	49	0%													
Installation and operation of electric heat pumps	4.16	2	0%													
Cogeneration of heat/cool and power from bioenergy	4.20	7	0%													
Electricity generation from fossil gaseous fuels	4.29	235	1%													
High-efficiency co-generation of heat/cool and power from fossil gaseous fuels	4.30	432	1%													
Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system	4.31	52	0%													
Installation, maintenance and repair of energy efficiency equipment	7.3	6	0%													
Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)	7.4	6	0%													
A2. Capex - Taxonomy not aligned activities		**827**	**3%**													
TOTAL - TAXONOMY-ELIGIBLE ACTIVITIES (A1+A2)		**28,457**	**93%**										**90%**			
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																
Capex of taxonomy non-eligible activities		2,245	7%													
TOTAL (A+B)		**30,703**	**100%**													

In 2021, absolute capex was SEK 25 billion, of which 82 percentage was eligible capex.

Comments to Taxonomy KPI tables

Comments to Turnover KPI (page 173)
The majority of Vattenfall's turnover relates to production of electricity from nuclear, hydro- and wind power as well as storage of electricity (pump storage) and transmission and distribution of electricity, all being reported as aligned. These are also primary sources of turnover contributing to the numerator of the taxonomy aligned turnover KPI.

Vattenfall's heat and electricity generation from gas represent in essence all turnover reported as not aligned. The majority of turnover reported as non-eligible relates to sale of electricity, gas and heat to customers not produced by Vattenfall, regardless of how produced. In addition, effects from electricity hedges reported within turnover is also considered non-eligible as they are not allocated to the different production types in the segment reporting (note 7 to the Vattenfall consolidated financial statements). Activities being reported as non-eligible do not necessarily indicate the activities are considered to be not sustainable. It only indicates the activity is not listed in the taxonomy and therefore not assessed under the taxonomy regulation.

The increase of turnover being eligible and aligned relates to the inclusion of nuclear in the taxonomy as from 2022 and higher market prices on electricity produced. Vattenfall's gas operations, also included in the taxonomy as from 2022, are reported as eligible but not aligned.

Vattenfall Services perform construction activities on distribution and transmission grids to external customers and the turnover from these services has been allocated to the activity 4.9 Transmission and Distribution of electricity.

Turnover from heat and electricity produced by coal represents less than 3% of Vattenfall's total turnover.

Comments to Opex KPI (page 174)
The majority of Vattenfall's opex relates to production of electricity from nuclear and transmission and distribution of electricity as well as production of electricity from hydro- and wind power. The primary source of opex contributing to the numerator of the taxonomy aligned opex KPI is maintenance costs.

Vattenfall's heat and electricity generation from gas represent in essence all opex reported as not aligned.

Comments to Capex KPI (page 175)
The majority of Vattenfall's capex relates to production of electricity from wind power and transmission and distribution of electricity as well as production of electricity from nuclear. Vattenfall's heat and electricity generation from gas represent the absolute majority of capex reported as not aligned. The primary source of capex contributing to the numerator of the taxonomy aligned capex KPI is related to tangible fixed assets.

The increase of total capex in 2022 compared to 2021 by SEK 5 billion relates to investments in new wind farms, activity 4.3 Electricity generation from wind power.

Taxonomy tables for Nuclear and Gas

Template 1 - Nuclear and fossil gas activities

Disclosures referred to in Article 8.6 and 8.7

		Turnover Yes/No	Opex Yes/No	Capex Yes/No
Nuclear energy related activities				
1	The undertaking carries out, funds or has exposures to research, development, demonstration and deployment of innovative electricity generation facilities that produce energy from nuclear processes with minimal waste from the fuel cycle.	No	No	No
2	The undertaking carries out, funds or has exposures to construction and safe operation of new nuclear installations to produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production, as well as their safety upgrades, using best available technologies.	No	No	No
3	The undertaking carries out, funds or has exposures to safe operation of existing nuclear installations that produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production from nuclear energy, as well as their safety upgrades.	Yes	Yes	Yes
Fossil gas related activities				
4	The undertaking carries out, funds or has exposures to construction or operation of electricity generation facilities that produce electricity using fossil gaseous fuels.	Yes	Yes	Yes
5	The undertaking carries out, funds or has exposures to construction, refurbishment, and operation of combined heat/cool and power generation facilities using fossil gaseous fuels.	Yes	Yes	Yes
6	The undertaking carries out, funds or has exposures to construction, refurbishment and operation of heat generation facilities that produce heat/cool using fossil gaseous fuels.	Yes	Yes	Yes

Taxonomy tables for Nuclear and Gas

Template 2 - Eligible activities that are aligned (denominator)

Disclosures referred to in Article 8.6 and 8.7

TURNOVER - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
	Denominator	Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	39,298	30%	39,298	30%	0	0%
4.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
5.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
6.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
7.	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**91,556**	**70%**	**91,556**	**70%**	**0**	**0%**
8.	**Total applicable KPI**	**130,854**	**100%**	**130,854**	**100%**	**0**	**0%**

CAPEX - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
	Denominator	Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	1,752	6%	1,752	6%	0	0%
4.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
5.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
6.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
7.	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**25,878**	**94%**	**25,878**	**94%**	**0**	**0%**
8.	**Total applicable KPI**	**27,630**	**100%**	**27,630**	**100%**	**0**	**0%**

OPEX - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
	Denominator	Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	1,670	32%	1,670	32%	0	0%
4.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
5.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
6.	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
7.	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**3,588**	**68%**	**3,588**	**68%**	**0**	**0%**
8.	**Total applicable KPI**	**5,258**	**100%**	**5,258**	**100%**	**0**	**0%**

Taxonomy tables for Nuclear and Gas

Template 3 - Eligible activities that are aligned (numerator)

Disclosures referred to in Article 8.6 and 8.7

TURNOVER - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
Numerator		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	39,298	30%	39,298	30%	0	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of the applicable KPI**	**91,556**	**70%**	**91,556**	**70%**	**0**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of the applicable KPI**	**130,854**	**100%**	**130,854**	**100%**	**0**	**0%**

CAPEX - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
Numerator		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
2	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	1,752	6%	1,752	6%	0	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of the applicable KPI**	**25,878**	**94%**	**25,878**	**94%**	**0**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of the applicable KPI**	**27,630**	**100%**	**27,630**	**100%**	**0**	**0%**

OPEX - Eligible activities that are aligned

		Amount and proportion					
		CCM + CCA		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
Numerator		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0	0	0	0	0
2	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	1,670	32%	1,670	32%	0	0%
4	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
5	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
6	Amount and proportion of taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the numerator of the applicable KPI	0	0%	0	0%	0	0%
7	**Amount and proportion of other taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the numerator of the applicable KPI**	**3,588**	**68%**	**3,588**	**68%**	**0**	**0%**
8	**Total amount and proportion of taxonomy-aligned economic activities in the numerator of the applicable KPI**	**5,258**	**100%**	**5,258**	**100%**	**0**	**0%**

Taxonomy tables for Nuclear and Gas

Template 4 - Taxonomy eligible, but not taxonomy-aligned, economic activities

Disclosures referred to in Article 8.6 and 8.7

TURNOVER - Taxonomy-eligible but not taxonomy-aligned economic activities

		Amount and proportion					
		(CCM + CCA)		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	17,660	42%	17,660	42%	0	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	21,701	52%	21,701	52%	0	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	1,712	4%	1,712	4%	0	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**495**	**1%**	**495**	**1%**	**0**	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of the applicable KPI**	**41,568**	**100%**	**41,568**	**100%**	**0**	**0%**

An activity that is eligible, but not aligned does not comply with any of the environmental objectives. However above Vattenfall present the values under environmental objective "Climate change mitigation".

CAPEX - Taxonomy-eligible but not taxonomy-aligned economic activities

		Amount and proportion					
		(CCM + CCA)		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	235	28%	235	28%	0	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	432	52%	432	52%	0	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	52	6%	52	6%	0	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**108**	**13%**	**108**	**13%**	**0**	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of the applicable KPI**	**827**	**100%**	**827**	**100%**	**0**	**0%**

An activity that is eligible, but not aligned does not comply with any of the environmental objectives. However above Vattenfall present the values under environmental objective "Climate change mitigation".

OPEX - Taxonomy-eligible but not taxonomy-aligned economic activities

		Amount and proportion					
		(CCM + CCA)		Climate change mitigation (CCM)		Climate change mitigation (CCA)	
		Amount	%	Amount	%	Amount	%
1	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.26 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
2	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.27 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
3	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.28 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	0	0%	0	0%	0	0%
4	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.29 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	275	37%	275	37%	0	0%
5	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.30 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	316	43%	316	43%	0	0%
6	Amount and proportion of taxonomy-eligible but not taxonomy-aligned economic activity referred to in Section 4.31 of Annexes I and II to Delegated Regulation 2021/2139 in the denominator of the applicable KPI	134	18%	134	18%	0	0%
7	**Amount and proportion of other taxonomy-eligible but not taxonomy-aligned economic activities not referred to in rows 1 to 6 above in the denominator of the applicable KPI**	**12**	**2%**	**12**	**2%**	**0**	**0%**
8	**Total amount and proportion of taxonomy eligible but not taxonomy-aligned economic activities in the denominator of the applicable KPI**	**737**	**100%**	**737**	**100%**	**0**	**0%**

An activity that is eligible, but not aligned does not comply with any of the environmental objectives. However above Vattenfall present the values under environmental objective "Climate change mitigation".

Template 5 - Taxonomy non-eligible economic activities

Disclosures referred to in Article 8.6 and 8.7

Under the taxonomy, information should be disclosed for non-eligible economic activities, indicating the amount and share of nuclear and fossil gas related activities (4.26-4.31).

Nuclear energy related activities (4.26-4.28) and fossil gas related activities (4.29-4.31) are covered by the taxonomy, hence taxonomy eligible. Template 5 is therefore not applicable.

Auditor's Combined Assurance Report on the Sustainability Report and statement on the Statutory Sustainability Report

This is the translation of the auditor's report in Swedish.
To the annual general meeting of Vattenfall AB, corporate identity number 556036-2138

Introduction
We have been engaged by the Board of Vattenfall AB ("Vattenfall") to undertake a combined assurance engagement of Vattenfall's Sustainability Report for 2022. The Company has defined the scope of its Sustainability Report on page 166. The Statutory Sustainability Report is also defined on page 166.

Responsibilities of the Board and Management
The Board of Directors and Executive Management are responsible for the preparation of the Sustainability Report, including the Statutory Sustainability Report, in accordance with the applicable criteria and the Annual Accounts Act. The criteria are described on page 167–168 of the Sustainability Report, and consists of the GRI Sustainability Reporting Standards which are applicable to the Sustainability Report, as well as the accounting and calculation principles that Vattenfall has developed. This responsibility also includes the internal control which is deemed necessary to establish a Sustainability Report that does not contain material misstatement, whether due to fraud or error.

Responsibilities of the auditor
Our responsibility is to express a conclusion on the Sustainability Report based on the procedures we have performed, and to provide a statement on the Statutory sustainability Report. Our engagement is limited to the historical information that is presented and thus does not include future oriented information.

We conducted our engagement in accordance with ISAE3000 (revised) *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*. The engagement includes a limited assurance engagement on the complete Sustainability Report and audit of certain information as specified below. The objective of an audit is to obtain reasonable assurance that the information is free of material misstatements. A reasonable assurance engagement includes examining, on a test basis, evidence supporting the quantitative and qualitative information in the Sustainability Report.

A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the Sustainability Report, and applying analytical and other limited assurance procedures. We have conducted our examination regarding the statutory sustainability report in accordance with FAR's recommendation RevR 12, *the Auditor's Opinion on the Statutory Sustainability Report*. A limited assurance engagement and an examination according to RevR 12 have a different focus and a considerably smaller scope compared to the focus and scope of an audit in accordance with International Standards on Auditing and other generally accepted auditing standards in Sweden.

The audit firm applies ISQM 1 (International Standard on Quality Management) and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We are independent in relation to Vattenfall according to generally accepted auditing standards in Sweden and have fulfilled our professional ethics responsibility according to these requirements.

The procedures performed in a limited assurance engagement and an examination according to RevR 12 do not allow us to obtain such assurance that we become aware of all significant matters that could have been identified if an audit was performed. The stated conclusion based on a limited assurance and an examination in accordance with RevR 12, therefore, does not have the security that the conclusion of our reasonable assurance procedures.

Since this assurance engagement is combined, our conclusions regarding the reasonable assurance, the limited assurance and the examination according to RevR12 will be presented in separate sections.

Our reasonable assurance engagement includes the following information:

Outcome of the strategic targets, disclosed on page 20:
- Customer engagement, Net Promoter Score (NPS),
- CO_2 emissions intensity,
- Lost Time Injury Frequency (LTIF), and
- Employee Engagement Index

Our procedures are based on the criteria defined by the Board of Directors and the Executive Management as described above. We consider these criteria suitable for the preparation of the Sustainability Report.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusions below.

Conclusion
Based on the limited assurance procedures we have performed, nothing has come to our attention that causes us to believe that the Sustainability Report is not prepared, in all material respects, in accordance with the criteria defined by the Board of Directors and Executive Management.

In our opinion the information in the Sustainability Report which has been subject to our reasonable assurance procedures have, in all material respects, been prepared in accordance with the criteria defined by the Board of Directors and Executive Management.

A Statutory Sustainability Report has been prepared.

Stockholm, 27 March 2023
PricewaterhouseCoopers AB

Eva Carlsvi
Authorised Public Accountant

Karin Juslin
Sustainability Specialistt

Auditor's Limited Assurance Report on Vattenfall AB's Green Bond Investor Report

This is the translation of the auditor's report in Swedish.
To the annual general meeting of Vattenfall AB, corporate identity number 556036-2138

Introduction
We have been engaged by management by Vattenfall AB ("Vattenfall") to undertake a limited assurance engagement of Vattenfall's Green bond investor report 2022 ("Investor Report"). The Investor Report is located on page 24 in Vattenfall's Annual and Sustainability Report 2022.

Responsibilities of the Board and Executive Management
The Board of Directors and Executive Management are responsible for evaluating and selecting eligible assets, for the use and management of bond proceeds, and for preparing an Investor Report in accordance with applicable criteria. The criteria are defined on page 24 in the Annual and Sustainability Report 2022 and consist of relevant parts of Vattenfall's Green Bond Framework dated 2019-04-24, available on Vattenfall's website, as well as the accounting and calculation principles that the Company has developed. This responsibility includes the internal control relevant to the preparation of an Investor Report that is free from material misstatements, whether due to fraud or error.

Responsibilities of the Auditor
Our responsibility is to express a limited assurance conclusion on the Investor Report based on the procedures we have performed and the evidence we have obtained.

We have conducted our limited assurance engagement in accordance with ISAE 3000 (revised) *Assurance Engagements Other than Audits or Reviews of Historical Financial Information* issued by IAASB. A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the selected information in the Investor Report, and applying analytical and other limited assurance procedures. The procedures performed in a limited assurance engagement vary in nature from, and are less in extent than for, a reasonable assurance engagement conducted in accordance with IAASB's Standards on Auditing and other generally accepted auditing standards.

The firm applies ISQM 1 (International Standard on Quality Management) and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.
We are independent towards Vattenfall AB in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

The procedures performed consequently do not enable us to obtain assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement. Accordingly, we do not express a reasonable assurance conclusion.

Our procedures are based on the criteria defined by the Board of Directors and Executive Management as described above. We consider these criteria suitable for the preparation of the Report.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion below.

Conclusion
Based on the limited assurance procedures we have performed, nothing has come to our attention that causes us to believe that the Investor Report has not been prepared, in all material respects, in accordance with the reporting criteria.

Stockholm, 27 March 2023
PricewaterhouseCoopers AB

Eva Carlsvi	Karin Juslin
Authorised Public Accountant	Sustainability Specialist

Ten-year overview of sustainability data[1]

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Production and environment, TWh										
Electricity generation	181.7	172.9	173	119	127.3	130.3	129.3	112.8	111.4	108.9
– of which Hydro power	35.6	34.3	39.5	34.8	35.6	35.5	35.8	39.7	40.9	40.5
– of which nuclear power	51.9	49.9	42.2	46.9	51.9	55.0	53.4	39.3	40.4	39.6
– of which fossil power	87.9	82.7	84	30.8	31.9	31.6	30.2	22.7	18.4	16.3
– of which wind power	3.9	4.1	5.8	5.8	7.6	7.8	9.5	10.8	11.2	12.1
– of which biomass and waste	2.4	2.0	1.5	0.7	0.4	0.4	0.4	0.3	0.5	0.3
– of which solar power	–	–	–	–	–	–	–	–	0.1	0.1
Heat production, TWh	–	–	–	–	19.7	18.9	15.5	14.2	16.1	14.6
Direct energy consumption, TWh										
Gas	37.1	31.7	27.7	32.5	36.8	38.6	44.3	41.8	38.7	34.7
Hard coal	45.1	35.2	46.1	43.9	42.1	41.1	25.6	10.7	5.9	5.8
Lignite	157.0	153.5	152.7	3.2	1.5	–	–	–	–	–
Peat	0.7	0.4	0.5	0.5	0.4	0.6	0.2	–	–	–
Waste (non-biogenic)	3.2	2.9	2.6	1.9	1.2	1.2	1.2	0.7	0.8	0.7
Biomass, waste (biogenic)	9.8	7.1	4.3	4.6	3.7	3.9	4.1	3.5	4.0	3.8
Other fuels, including oil	5.7	5.7	1.9	1.5	0.4	0.6	0.5	0.3	0.4	0.3
Uranium (tonnes)	133.0	119.0	143.0	119.6	105.9	118.0	136.4	98.6	119.0	83.2
Indirect energy consumption, TWh										
Electricity[2]	–	–	–	–	5.6	6.5	6.3	6.9	6.5	6.1
Heat and steam	–	–	–	–	1.1	1.1	1.1	1.2	1.2	0.7
Emissions to air (Scope 1)										
Carbon dioxide equivalents (CO_2e)[3], Mtonnes	86.9	82.7	84.3	23.7	23.2	22.6	18.4	12.2	10.3	9.5[4]
Biogenic CO_2[5], Mtonnes	3.4	2.4	1.9	1.6	1.3	1.3	1.4	1.2	1.4	1.3
Nitrogen oxides(NOx), ktonnes	56.5	52.8	52.2	10.2	9.8	9.9	7.4	5.5	5	4.6
Sulphur dioxide (SO_2), ktonnes	58.2	53.1	50.1	4.2	4.1	4.2	2.3	1.5	1.3	1.2
Particulate matter (PM), ktonnes	2.1	1.7	1.5	0.3	0.3	0.2	0.1	0.1	0.1	0.1

[1] Data are presented in accordance to financial accounting and consolidated.
[2] Mainly at pumped storage plants, which amounted to 4.0 TWh 2022. Does not include electricity produced at site.
[3] Before 2017 only CO_2. From 2017 including CH_4, N_2O and SF_6.
[4] Of the total greenhouse emissions 0.1 Mtonnes CO_2e consist of SF_6, CH_4 and N_2O emissions. Characterisation factors are obtained from the IPCC Sixth Assessment report.
[5] CO_2 emissions from combustion of biomass.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Carbon dioxide equivalents (CO_2e)[6], Mtonnes (Scope 2)										
Market based	–	–	–	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Location based	–	–	–	–	0.1	0.1	0.2	0.1	0.1	0.1
CO_2e intensity[7], g/kWh (Scope 1 + scope 2 market based)	412	421	426	170	158	152	128	97.1	81.4	77.7
Carbon dioxideequivalents (CO_2e), Mtonnes (Scope 3)	–	–	–	19.9	26.0	24.4	23.3	20.5	21.4	16.1
Capital Goods, purchased goods and services	–	–	–	0.4	0.4	0.2	0.5	1.1	1.0	1.1
Fuel and energy related[8]	–	–	–	–	11.3	8.7	9.1	7.5	7.5	5.3
Waste generated in operations	–	–	–	–	0.3	0.2	0.2	0.2	0.2	0.2
Business travel	–	–	–	.03	0.030	0.025	0.017	0.008	0.002	0.008
Use of sold products	–	–	–	14.4	14.2	15.4	13.5	12.2	12.9	9.6
CO_2e intensity, sold electricity[9], g/kWh	–	–	–	–	167	133	123	89.6	79.5	71.9
Waste and by-products, ktonnes										
Hazardous waste	194	123	86	106	61	59	72	37	50	49
Non-hazardous waste	349	416	342	133	145	98	75	39	40	37
Ash from coal and lignite	6,126	5,912	6,219	775	671	579	423	160	110	106
Ash from biomass	67	42.3	38	41.3	37.4	38.4	32.9	21.6	20.8	25
Slag from waste incineration	330	245	229	237	168	170	173	100	105	99
Gypsum	3,219	3,000	3,048	208	169	185	128	45	26	22
Radioactive waste										
Low and medium radiactive operational waste, m^3	883	2,251	3,353	1,013	912	829	411	628	434	408
Core components, tonnes	18	10	7	17	15	31	13	58	84	1
Spent nuclear fuel, tonnes	161	193	197	124	175	137	260	274	136	157
SAIDI (minutes/customer)										
Sweden	183	177	212	150	125	187	439	148	112	157
Germany	13	15	11	10	11	15.2	9.9	8.9	–	–

[6] Not including pumped storage electricity use, which corresponds to 1.0 Mt location based.
[7] Includes scope 2 (before 2017 only CO_2 scope 1) and relates to electricity and heat production.
[8] Emissions from fuel and energy are updated from 2017 and now include upstream emissions from electricity purchased for sale to end customers.
[9] Relates to all electricity produced or sourced and sold to end customers.

Ten-year overview sustainability data, cont.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SAIFI (number/customer)										
Sweden	2.1	2.4	2.2	2.1	1.8	2.9	2.4	2.0	1.8	2.1
Germany	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	–	–
Our people										
Number employees, FTE,	31,819	30,181	28,567	19,935	20,041	19,910	19,814	19,859	18,835	19,638
– of which females	7,485	6,983	6,399	4,773	4,827	4,840	5,000	5,083	4,985	5,439
– of which temporary employed (not permanent contract)	1,154	882	761	550	609	618	664	723	686	830
Employee turnover	–	–	–	–	–	–	7.1%	7.5%	8.0%	10.2%
Sick leave										
– of which men	3.8%	3.7%	4.1%	3.5%	3.6%	3.5%	3.2%	3.1%	3.0%	2.8%
– of which females	5.3%	5.0%	5.8%	5.4%	5.7%	5.4%	5.1%	4.6%	4.2%	3.7%
Working related accidents										
Internal LTIF (employees)	2.6	2.7	2.6	2.0	1.5	1.9	2.1	1.8	1.7	1.1
External LTI[10] (contractors)	–	–	133	101	80	71	88	78	86	62
Gender diversity										
Female managers	18%	18%	19%	22%	23%	24%	26%	27%	30%	30%
Share of managers per age category total										
-29	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
30-49	51%	54%	52%	56%	58%	56%	56%	57%	57%	56%
50-	47%	45%	46%	43%	40%	43%	43%	42%	42%	43%

[10] As the Contractor LTIF calculation is not reliable enough, only LTI is reported.

Employee key ratios[1]

Employee numbers refer to full time employees (FTE) and are reported as a snapshot at year end 2022

	No. of employees	Women	Men	-29	30-49	50-
Managers	1,719	30%	70%	1%	56%	43%
Country						
Sweden	9,821	29%	71%	11%	50%	39%
Finland	75	59%	41%	8%	68%	24%
Denmark	557	26%	74%	10%	63%	27%
Germany	4,624	26%	74%	11%	48%	40%
Netherlands	3,742	26%	74%	11%	53%	36%
UK	433	30%	70%	11%	71%	17%
Poland	336	27%	73%	16%	80%	4%
France	49	51%	49%	10%	78%	12%
Norway	1	100%	0%		100%	
Total	**19,638**	**28%**	**72%**	**11%**	**52%**	**37%**
Of which, part-time	1,465	16%	4%			
Of which, temporary	830	4%	4%			

[1] Gender composition of the Board of Directors is 30% female, 70% male. See page 103-104 for details.

Ratings

Sustainability and Environment, Social, Governance (ESG) ratings are important for customers, investors and stakeholders in general to gain an understanding of a company's performance. Vattenfall believes in the benefits of transparency and participates in numerous surveys and ratings, both voluntarily and at the request of customers. For the latest ESG ratings assessment information please visit this page.

Ratlng firm	Evaluatlon	Latest assessment
EcoVadls	Vattenfall received a platinum rating, the highest possible rating, which places us in the top 1% of all rated companies for the second consectutive year.	April 2022
Sustalnalytlcs	Vattenfall scored in the top 13% of the electric utilities category and received an ESG risk , rating of "medlum" based on a strong risk management score and high risk exposure.	January 2022
CDP	On a scale of A to F, Vattenfall scored an A- for the "Climate Change" and a B for the "Water Security" questionnaire responses. This demonstrates that we implement current best practices in climate change and take coordinated action on water issues.	December 2022
ISS ESG	Score B "Prime" highest decile of companies assessed in the sector.	June 2022
MSCI	Vattenfall scored AA and among the top 37% of companies assessed in the utllitles sector.	October 2022

Quarterly overview

	2022				2021			
Amounts in SEK million	**Q4**	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Income statement items								
Net sales	78,819	53,076	48,170	59,579	63,529	36,125	34,554	45,911
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	-18,509	16,386	15,386	17,249	10,226	27,293	20,531	17,740
Operating profit (EBIT)	-24,062	12,192	11,730	12,783	7,750	22,926	16,210	13,385
Underlying EBIT	13,469	6,232	8,107	9,504	9,092	4,782	5,256	12,053
Financial net	-657	-2,464	-5,261	-4,350	-594	-744	568	-128
Profit before income taxes	-24,719	9,728	6,469	8,433	7,156	22,182	16,778	13,257
Profit for the period	-16,959	6,684	4,231	6,064	6,101	18,277	13,212	10,423
– of which, attributable to owners of the Parent Company	-17,605	6,242	4,478	5,782	5,774	18,178	13,002	9,875
– of which, attributable to non-controlling interests	646	442	-247	282	327	99	210	548
Balance sheet items								
Cash and cash equivalents and short-term investments	172,386	269,320	152,573	177,418	170,882	131,447	56,962	47,509
Equity	128,937	204,324	188,935	210,480	197,182	191,134	139,860	127,513
– of which, attributable to owners of the Parent Company	110,473	186,164	172,503	194,418	180,710	176,034	126,855	113,486
– of which, attributable to non-controlling interests	18,464	18,160	16,432	16,062	16,472	15,100	13,005	14,027
Interest-bearing liabilities	172,594	153,931	123,903	140,489	126,408	84,428	89,734	91,825
Net debt	-3,858	116,008	29,321	37,611	44,703	47,348	-32,328	-43,865
Adjusted net debt	76,766	44,123	43,673	33,611	26,923	21,270	104,503	112,225
Provisions	160,433	175,429	164,532	156,690	161,475	155,504	156,682	153,390
Noninterest-bearing liabilities	330,363	568,805	437,797	355,036	297,293	256,644	155,162	102,841
Capital employed, average	299,461	256,816	285,407	273,930	271,674	258,053	273,748	279,339
Balance sheet total	792,327	1102,489	915,167	862,695	782,358	687,710	541,438	475,569
Cash flow items								
Funds from operations (FFO)	14,597	7,305	11,911	8,382	18,616	6,054	7,439	13,987
Cash flow from operating activities	-107,860	90,385	21,687	-3,058	4,130	60,836	24,041	11,124
Free cash flow	-113,423	87,786	20,026	-5,514	334	57,309	22,629	8,847

	2022				2021			
Amounts in SEK million	**Q4**	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Key ratios								
In % unless otherwise stated. (x) means times.								
Operating margin	-30.5	23.0	24.4	21.5	12.2	45.1	36.8	2.9
Operating margin[1]	17.1	11.7	16.8	16.0	14.3	19.0	21.5	26.3
Pre-tax profit margin	-31.4	18.3	13.4	14.2	11.3	44.8	37.3	28.9
Pre-tax profit margin[1]	16.3	7.1	5.9	8.7	13.4	18.7	22.1	26.0
Return on equity	-0.7	14.8	23.6	31.0	36.9	40.2	30.3	10.0
Return on capital employed	4.2	17.3	19.3	21.8	22.2	22.4	14.5	5.9
Return on capital employed[1]	12.5	12.8	11.0	10.5	11.5	11.7	11.0	9.9
EBIT interest cover, (x)	2.3	7.9	10.3	14.9	15.8	16.6	12.1	5.2
EBIT interest cover, (x)[1]	6.4	5.9	6.0	7.3	8.3	8.7	9.3	8.6
FFO interest cover, (x)	8.1	9.1	9.3	10.9	12.9	12.1	13.1	12.3
FFO interest cover, net, (x)	9.2	10.2	11.0	13.9	15.9	14.5	14.7	13.9
Cash flow interest cover after maintenance investments, (x)	-1.1	20.8	15.8	21.9	27.4	33.4	22.0	18.8
FFO/gross debt	23.9	30.0	36.3	28.8	36.5	46.0	44.4	40.1
FFO/net debt	1,093.7	-39.8	-153.4	-107.7	-103.1	-82.1	123.1	83.8
FFO/adjusted net debt	55.0	n/a	103.0	120.5	171.2	182.7	38.1	32.8
EBITDA/net financial items, (x)	-17.1	12.6	8.8	17.6	10.4	31.1	29.4	19.2
EBITDA/net financial items, (x)[1]	16.9	8.3	7.2	14.2	13.7	16.7	19.9	17.8
Equity/total assets	16.3	18.5	20.6	24.4	25.2	27.8	25.8	26.8
Gross debt/equity	137.1	75.3	65.6	66.8	64.1	44.2	64.2	72.0
Net debt/equity	3.0	-56.8	-15.5	-17.9	-22.7	-24.8	23.1	34.4
Gross debt/gross debt plus equity	57.8	43.0	39.6	40.0	39.1	30.6	39.1	41.9
Net debt/net debt plus equity	2.9	-131.4	-18.4	-21.8	-29.3	-32.9	18.8	25.6
Net debt/EBITDA, (x)	0.1	-2.0	-0.4	-0.5	-0.6	-0.6	0.5	0.9
Adjusted net debt/EBITDA, (x)	2.5	-0.7	0.6	0.5	0.4	0.3	1.8	2.4
Other information								
Investments	8,259	7,536	4,830	4,941	7,753	7,103	5,305	5,396
Electricity generation, TWh	28.3	25.1	24.6	30.9	30.5	21.8	26.0	32.9
Sales of electricity, TWh	43.4	38.6	38.7	44.6	45.6	37.8	40.0	45.4
Sales of heat, TWh	4.7	1.3	2.4	5.8	5.1	1.3	2.7	6.5
Sales of gas, TWh	14.1	4.8	8.2	20.2	17.3	5.3	10.8	23.6
Number of employees, full-time equivalents	19,638	19,473	19,307	19,031	18,835	18,883	19,957	19,915

[1] Based on Underlying operating profit, that is, Operating profit excluding items affecting comparability.

Ten-year overview

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Income statement items										
Net sales	172,253	165,945	143,576	139,208	135,114	152,091	166,360	158,847	180,119	239,644
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	43,554	41,038	30,604	27,209	34,399	34,341	42,445	46,507	75,790	30,513
Operating profit (EBIT)	-6,218	-2,195	-5,069	1,337	18,524	17,619	22,141	15,276	60,271	12,645
Underlying EBIT	28,135	24,133	20,529	21,697	23,203	19,883	25,095	25,790	31,181	37,313
Financial net	-9,037	-6,045	-4,776	-6,382	-5,755	-3,616	-3,819	-3,270	-898	-12,732
Profit before income taxes	-15,255	-8,240	-9,845	-5,045	12,769	14,003	18,322	12,006	59,373	-87
Profit for the year	-13,543	-8,284	-19,766	-26,004	9,484	12,007	14,861	7,716	48,013	21
– of which, attributable to owners of the Parent Company	-13,668	-8,178	-16,672	-26,324	8,333	10,157	13,173	6,489	46,828	-1,102
– of which, attributable to non-controlling interests	125	-106	-3,094	320	1,151	1,850	1,688	1,227	1,185	1,123
Cash flow items										
Funds from operations (FFO)	31,888	32,131	29,009	28,186	26,643	23,275	34,949	35,024	46,096	42,194
Cash flow from operating activities	37,843	40,146	40,934	30,783	25,728	41,054	16,719	41,692	101,832	1,154
Free cash flow	23,579	23,234	25,013	19,217	13,091	27,575	1,571	29,153	90,820	-11,126
Balance sheet items										
Cash and cash equivalents and short-term investments	27,261	45,068	44,256	43,292	26,897	40,071	33,155	56,222	170,882	172,386
Equity	130,718	128,462	115,956	83,800	92,332	103,597	108,522	111,192	197,182	128,937
– of which, attributable to owners of the Parent Company	120,370	115,260	103,984	68,272	77,085	88,096	93,631	97,724	180,710	110,473
– of which, attributable to non-controlling interests	10,348	13,202	11,972	15,528	15,247	15,501	14,891	13,468	16,472	18,464
Interest-bearing liabilities	126,488	125,928	110,585	96,667	87,154	88,275	97,627	104,775	126,408	176,765
Net debt	98,998	79,473	64,201	50,724	59,260	47,728	64,266	48,178	-44,703	3,858
Adjusted net debt	162,590	158,291	137,585	124,741	124,360	112,324	132,014	121,480	26,922	76,765
Provisions	118,166	138,567	138,263	138,344	131,680	136,642	149,792	155,951	161,475	160,433
Noninterest-bearing liabilities	110,112	104,252	97,513	90,449	88,200	134,094	94,839	91,330	288,948	316,558
Capital employed, average	302,743	293,992	279,435	248,640	240,778	250,283	260,190	265,639	271,674	299,461
Balance sheet total	485,484	497,209	462,317	409,260	409,132	462,608	450,780	463,248	782,358	792,327

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Key ratios										
In % unless otherwise stated. (x) means times.										
Operating margin	-3.6	-1.3	-3.5	1.0	13.7	11.4	13.3	9.6	33.5	5.3
Operating margin[1]	16.3	14.5	14.3	15.6	17.2	12.9	15.1	16.2	17.3	15.6
Return on equity	-11.4	-6.9	-16.8	-33.4	11.1	11.9	14.0	6.7	36.9	-0.7
Return on capital employed	-2.1	-0.8	-1.8	0.5	7.7	7.0	8.5	5.8	22.2	4.2
Return on capital employed[1]	9.3	8.2	7.3	8.7	9.6	7.9	9.6	9.7	11.5	12.5
EBIT interest cover, (x)	-0.7	-0.1	-0.8	0.5	3.3	4.3	5.3	4.3	15.8	2.3
EBIT interest cover, (x)[1]	4.1	5.0	4.8	4.6	4.1	4.9	6.0	7.1	8.3	6.4
FFO interest cover, (x)	5.4	7.3	6.5	6.5	5.4	6.5	9.3	10.4	12.9	8.1
FFO interest cover, net, (x)	6.2	10.1	9.4	7.7	6.9	7.8	10.3	12.1	15.9	9.2
FFO/gross debt	25.2	25.5	23.2	27.8	30.6	26.4	35.8	33.4	36.5	23.9
FFO/net debt	32.2	40.4	39.9	53.0	45.0	48.8	54.4	72.7	-103.1	1,093.7
FFO/adjusted net debt	19.6	20.3	18.6	21.6	21.4	20.7	26.5	28.8	171.2	55.0
Equity/total assets	26.9	25.9	25.1	20.5	22.6	22.4	24.1	24.0	25.2	16.3
Gross debt/equity	96.8	98.0	95.4	115.4	94.4	85.2	90.0	94.2	64.1	137.1
Net debt/equity	75.7	61.9	55.4	60.5	64.2	46.1	59.2	43.3	-22.7	3.0
Gross debt/gross debt plus equity	49.2	49.5	48.8	53.6	48.6	46.0	47.4	48.5	39.1	57.8
Net debt/EBITDA, (x)	2.3	1.9	2.1	1.9	1.7	1.4	1.5	1.0	-0.6	0.1
Adjusted net debt/ EBITDA, (x)	3.7	3.9	4.5	4.6	3.6	3.3	3.1	2.6	0.4	2.5
Other information										
Dividend to owners of the Parent Company	–	–	–	–	2,000	2,000	3,623	4,000	23,414	4,000[2]
Investments	27,761	29,032	25,776	21,921	21,294	21,913	26,833	21,347	25,549	24,624
Electricity generation, TWh	181.7	172.9	117.4	119.0	127.3	130.3	130.3	112.7	111.4	108.9
Sales of electricity, TWh	203.3	199.0	197.2	193.2	157.3	174.1	169.4	164.1	168.9	165.3
Sales of heat, TWh	30.3	24.1	20.6	20.3	18.9	18.3	17.1	13.8	15.6	14.1
Sales of gas, TWh	55.8	45.5	50.7	54.8	56.3	60.7	59.2	56.8	57.1	47.3
Number of employees, full-time equivalents	31,819	30,181	28,567	19,935	20,041	19,910	19,815	19,859	18,883	19,638

[1] Based on Underlying operating profit, that is, Operating profit excluding items affecting comparability.
[2] Proposed dividend.

Definitions

The key ratios are presented as percentages (%) or times (x) and are based on full year 2022.

Alternative Performance Measures
In order to ensure a fair presentation of the Group's operations, the Vattenfall Group uses a number of Alternative Performance Measures that are not defined in IFRS or in the Swedish Annual Accounts Act. The Alternative Performance Measures that Vattenfall uses are described below, including their definitions and how they are calculated. The Alternative Performance Measures used are unchanged compared with earlier periods.

EBIT – Operating profit (Earnings Before Interest and Tax).

EBITDA – Operating profit before depreciation, amortisation and impairment losses (Earnings Before Interest, Tax, Depreciation and Amortisation).

Items affecting comparability – Capital gains and capital losses from shares and other non-current assets, impairment losses and reversed impairment losses and other material items that are of an infrequent nature. Also included here are, for trading activities, unrealised changes in the fair value of energy derivatives, which according to IFRS 9 cannot be recognised using hedge accounting and unrealised changes in the fair value of inventories. See Consolidated income statement for a specification of items affecting comparability.

Underlying EBITDA – Underlying operating profit before depreciation, amortisation and impairment losses. This measure is intended to provide a better view on the operating result by excluding items affecting comparability that are of an infrequent nature, while also excluding non-cash depreciation and amortisation.

Underlying operating profit – Operating profit (EBIT) excluding items affecting comparability. This measure is intended to provide a better view on the operating result by excluding items affecting comparability that are of an infrequent nature.

FFO – Funds From Operations, see Consolidated statement of cash flow.

Free cash flow – Cash flow from operating activities less maintenance investments.

Interest-bearing liabilities – See Consolidated balance sheet – Supplementary Information.

Net debt – See Consolidated balance sheet – Supplementary Information.

Adjusted net debt – See Consolidated balance sheet – Supplementary Information.

Capital employed – Total assets less financial assets, noninterest-bearing liabilities and certain other interest-bearing provisions not included in adjusted net debt. see Consolidated balance sheet – Supplementary Information.

Other definition
Hybrid Capital – Perpetual subordinated securities, junior to all Vattenfall's unsubordinated debt instruments.

LTIF – Lost Time Injury Frequency (LTIF) is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality.

Unavailable Liquidity – Amount of cash on Vattenfalls consolidated balance sheet that are seen as Restricted cash, as determined in accordance with Rating agencys or due to Financial regulations.

Calculations and key ratios

Operating margin, %	= 100 x	EBIT / Net sales	12,645 / 239,644	=	5.3
Operating margin excl items affecting comparability, %	= 100 x	Underlying EBIT / Net sales	37,313 / 239,644	=	15.6
Pre-tax profit margin, %	= 100 x	Profit before income taxes / Net sales	-87 / 239,644	=	0.0
Pre-tax profit margin excl items affecting comparability, %	= 100 x	Profit before income taxes excl items affecting comparability / Net sales	24,575 / 239,644	=	10.3
Return on equity, %	= 100 x	Profit for the period attributable to owner of the Parent Company / Average equity for the period attributable to owner of the Parent Company excl the Reserve for cash flow hedges	-1,102 / 149,315	=	-0.7
Return on capital employed, %	= 100 x	EBIT / Capital employed, average	12,645 / 299,461	=	4.2
Return on capital employed excl items affecting comparability, %	= 100 x	Underlying EBIT / Capital employed, average	37,313 / 299,461	=	12.5
EBIT interest cover, (x)	=	EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	13,499 / 5,969	=	2.3
EBIT interest cover excl items affecting comparability, (x)	=	Underlying EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	38,167 / 5,969	=	6.4
FFO interest cover, (x)	=	FFO + financial expenses excl discounting effects attributable to provisions / Financial expenses excl discounting effects attributable to provisions	48,163 / 5,969	=	8.1
FFO interest cover, net, (x)	=	FFO + financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	47,309 / 5,115	=	9.2
Cash flow interest cover after maintenance investments, (x)	=	Cash flow from operating activities less maintenance investments + financial expenses excl discounting effects attributable to provisions and interest components related to pension costs / Financial expenses excl discounting effects attributable to provisions and interest components related to pension costs	-5,735 / 5,391	=	-1.1

FFO/gross debt, %	= 100 x	FFO / Interest-bearing liabilities	42,194 / 176,765	=	23.9
FFO/net debt, %	= 100 x	FFO / Net debt	42,194 / 3,858	=	1,093.7
FFO/adjusted net debt, %	= 100 x	FFO / Adjusted net debt	42,194 / 76,766	=	55.0
EBITDA/net financial items, (x)	=	EBITDA / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	30,513 / 5,115	=	6.0
EBITDA excl items affecting comparability/net financial items, (x)	=	EBITDA excl items affecting comparability / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	55,759 / 5,115	=	10.9
Equity/total assets, %	= 100 x	Equity / Balance sheet total	128,937 / 792,327	=	16.3
Gross debt/equity, %	= 100 x	Interest-bearing liabilities / Equity	176,765 / 128,937	=	137.1
Net debt/equity, %	= 100 x	Net debt / Equity	3,858 / 128,937	=	3.0
Gross debt/gross debt plus equity, %	= 100 x	Interest-bearing liabilities / Interest-bearing liabilities + equity	176,765 / 305,702	=	57.8
Net debt/net debt plus equity, %	= 100 x	Net debt / Net debt + equity	3,858 / 132,795	=	2.9
Net debt/EBITDA, (x)	=	Net debt / EBITDA	3,858 / 30,513	=	0.1
Adjusted net debt/ EBITDA, (x)	=	Adjusted net debt / EBITDA	76,765 / 30,513	=	2.5

Facts about Vattenfall's markets 2022

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, year-end 2022							
Hydro power[1]	8,543	136	–	2,807	24	–	11,510
Nuclear power	5,511	–	–	–	–	–	5,511
Fossil-based power	699	–	–	3,655	3,407	–	7,761
– of which, gas	–	–	–	1,384	3,407	–	4,791
– of which, hard coal	–	–	–	2,235	–	–	2,235
– of which, oil and other	699	–	–	36	–	–	735
Wind power	331	–	1,314	576	490	1,091	3,802
Biomass, peat, waste	189	–	–	26	1	–	216
Solar power	–	–	–	15	60	–	75
Total	**15,273**	**136**	**1,314**	**7,079**	**3,983**	**1,091**	**28,876**
Installed capacity heat, MW, year-end 2022	**2,231**	**–**	**–**	**5,646**	**1,479**	**–**	**9,356**
Generated electricity, TWh							
Hydro power[1]	36.9	0.3	–	3.2	–	–	40.5
Nuclear power	39.6	–	–	–	–	–	39.6
Fossil-based power	–	–	–	6.0	10.3	–	16.3
– of which, gas	–	–	–	4.2	10.3	–	14.5
– of which, hard coal	–	–	–	1.7	–	–	1.7
– of which, oil and other	–	–	–	0.1	–	–	0.1
Wind power	0.5	–	5.0	2.5	1.1	2.9	12.1
Biomass, peat, waste	0.2	–	–	0.2	–	–	0.3
Solar power	–	–	–	–	0.1	–	0.1
Total	**77.2**	**0.3**	**5.0**	**11.9**	**11.5**	**2.9**	**108.9**
Production of heat, TWh							
Fossil-based heat	–	–	–	9.1	1.4	–	10.5
– of which, gas	–	–	–	7.0	1.4	–	8.4
– of which, hard coal	–	–	–	2.0	–	–	2.0
– of which, oil and other	0.0	–	–	0.1	–	–	0.2
Biomass, peat, waste	3.3	–	–	0.8	–	–	4.1
Total heat Production	**3.3**	**–**	**–**	**9.8**	**1.4**	**–**	**14.6**

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Sales of electricity, TWh	85.9[2]	2.5	6.4	47.2[3]	23.3	–	165.3
Sales of Heat, TWh	3.0	–	–	9.4	1.6	–	14.1
Sales of gas, TWh	–	–	–	13.9[3]	33.3	–	47.3
Number of retail customers	859,147	318,308	109,726	4,129,521	2,005,658	–	7,422,360
Electricity volume, TWh retail customers	7.4	2.0	–	12.0[3]	5.7	–	27.1
Electricity volume, TWh businesses	22.8	6.5	–	10.3	10.1	–	49.7
Electricity volume, TWh resellers	5.4[2]	1.6	2.8	24.8[3]	–	–	34.6
Electricity volume, TWh other	50.3	-8	3.6	0.0	7.4	–	53.8
Number of network customers	974,816	–	–	–	–	–	974,816
Number of gas customers	–	–	–	621,729[3]	1,696,880	–	2,318,609
Electricity network							
Transited volume, TWh	71.9	–	–	–	–	–	71.9
Distribution network, km	124,378	0	0	–	–	–	124,378
Number of employees (full-time equivalents)							
Per country	9,821	75	557	4,624	3,742	433	19,252
Group total							19,638
CO_2 emissions per country, Mtonnes	0.2	–	–	4.8	4.4	–	9.4
CO_2 emission allowances received, Mtonnes CO_2/year	0.1	–	–	0.4	0.1	–	0.6

[1] In Germany mainly pumped-storage power plants.
[2] Including sales in Norway.
[3] Including sales in France.

Facts about Vattenfall's markets 2021

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, year-end 2021							
Hydro power[1]	8,526	136	–	2,807	6	–	11,475
Nuclear power	5,475	–	–	–	–	–	5,475
Fossil-based power	699	–	–	3,830	3,407	–	7,936
– of which, gas	–	–	–	1,531	3,407	–	4,938
– of which, hard coal	–	–	–	2,263	–	–	2,263
– of which, oil and other	699	–	–	36	–	–	735
Wind power	331	–	1,338	588	622	1,099	3,979
Biomass, peat, waste	189	–	–	26	1	–	216
Solar power	–	–	–	15	51	5	71
Total	**15,220**	**136**	**1,338**	**7,267**	**4,087**	**1,104**	**29,152**
Installed capacity heat, MW, year-end 2021	**2,231**	**–**	**–**	**5,627**	**1,473**	**–**	**9,331**
Generated electricity, TWh							
Hydro power[1]	37.1	0.4	–	3.3	–	–	40.9
Nuclear power	40.4	–	–	–	–	–	40.4
Fossil-based power	–	–	–	6.9	11.5	–	18.4
– of which, gas	–	–	–	5.2	11.5	–	16.7
– of which, hard coal	–	–	–	1.7	–	–	1.7
– of which, oil and other	–	–	–	0.1	–	–	0.1
Wind power	0.8	–	4.1	2.1	1.3	2.8	11.2
Biomass, peat, waste	0.2	–	–	0.3	–	–	0.5
Solar power	–	–	–	–	–	–	0.1
Total	**78.5**	**0.4**	**4.1**	**12.6**	**12.9**	**2.8**	**111.4**
Production of heat, TWh							
Fossil-based heat	0.1	–	–	9.9	1.6	–	11.7
– of which, gas	–	–	–	7.9	1.6	–	9.5
– of which, hard coal	–	–	–	2.0	–	–	2.0
– of which, oil and other	0.1	–	–	0.1	–	–	0.2
Biomass, peat, waste	3.4	–	–	1.0	–	–	4.4
Total heat Production	**3.5**	**–**	**–**	**10.9**	**1.6**	**–**	**16.1**

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Sales of electricity, TWh	83.7[2]	2.3	5.4	55.7[3]	21.9	–	168.9
Sales of Heat, TWh	3.2	–	–	10.5	1.9	–	15.6
Sales of gas, TWh	–	–	–	16.3[3]	40.8	–	57.1
Number of retail customers	861,442	302,274	100,996	3,708,694	1,995,084	–	6,968,490
Electricity volume, TWh retail customers	7.6	2.2	–	6.8[3]	6.3	–	22.9
Electricity volume, TWh resellers	4.7	0.9	2.2	21.5	–	–	29.3
Electricity volume, TWh businesses	24.0[2]	7.4	–	27.5[3]	9.5	–	68.3
Number of network customers	973,383	–	–	2,385,872	–	–	3,359,255
Number of gas customers	–	–	–	656,642[3]	1,715,114	–	2,371,756
Electricity network							
Transited volume, TWh	75.2	–	–	6.1	–	–	81.3
Distribution network, km	122,500	0	0	–	–	–	122,500
Number of employees (full-time equivalents)							
Per country	9,516	76	455	4,417	3,653	384	18,500
Group total							18,835
CO_2 emissions per country, Mtonnes	0.2	–	–	5.2	4.8	–	10.2
CO_2 emission allowances received, Mtonnes CO_2/year	0.1	–	–	0.4	0.1	–	0.5

[1] In Germany mainly pumped-storage power plants.
[2] Including sales in Norway.
[3] Including sales in France.

Pro rata

2022	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2022							
Hydro power[1]	8,341	136	–	2,807	24	–	11,308
Nuclear power	3,735	–	–	–	–	–	3,735
Fossil-based power	699	–	–	3,653	3,407	–	7,759
– of which, gas	–	–	–	1,382	3,407	–	4,789
– of which, hard coal	–	–	–	2,235	–	–	2,235
– of which, oil and other	699	–	–	36	–	–	735
Wind power	367	–	1,312	310	491	1,018	3,497
Biomass, peat, waste	189	–	–	26	1	–	216
Solar power	–	–	–	15	60	–	75
Total	**13,331**	**136**	**1,312**	**6,811**	**3,983**	**1,018**	**26,591**
Installed capacity heat, MW, 31 December 2022	**2,122**	**–**	**–**	**5,609**	**1,470**	**–**	**9,201**
Generated electricity, TWh							
Hydro power[1]	35.8	0.3	–	3.2	0.0	–	39.3
Nuclear power	26.7	–	–	–	–	–	26.7
Fossil-based power	–	–	–	5.9	10.3	–	16.3
– of which, gas	–	–	–	4.2	10.3	–	14.5
– of which, hard coal	–	–	–	1.7	–	–	1.7
– of which, oil and other	–	–	–	0.1	–	–	0.1
Wind power	0.6	–	5.0	1.3	1.1	2.7	10.7
Biomass, peat, waste	0.2	–	–	0.1	–	–	0.3
Solar power	–	–	–	0.0	0.1	–	0.1
Total	**63.3**	**0.3**	**5.0**	**10.6**	**11.5**	**2.7**	**93.4**
Produced heat, TWh	**3.2**	**–**	**–**	**9.8**	**1.4**	**–**	**14.4**
CO_2 emissions per country, Mtonnes	0.2	–	–	4.8	4.4	–	9.4

[1] In Germany mainly pumped-storage power plants.

2021	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, year-end 2020							
Hydro power[2]	8,324	136	–	2,807	6	–	11,273
Nuclear power	3,711	–	–	282	–	–	3,993
Fossil-based power	699	–	–	3,828	3,407	–	7,934
– of which, gas	–	–	–	1,529	3,407	–	4,936
– of which, hard coal	–	–	–	2,263	–	–	2,263
– of which, oil and other	699	–	–	36	–	–	735
Wind power	261	–	1,336	322	627	1,026	3,572
Biomass, peat, waste	189	–	–	26	1	–	216
Solar power	–	–	–	15	51	5	71
Total	**13,184**	**136**	**1,336**	**7,280**	**4,092**	**1,031**	**27,059**
Installed capacity heat, MW, year-end 2020	**2,122**	**–**	**–**	**5,590**	**1,473**	**–**	**9,185**
Generated electricity, TWh							
Hydro power[2]	36.1	0.4	–	3.3	–	–	39.8
Nuclear power	27.3	–	–	2.3	–	–	29.6
Fossil-based power	–	–	–	6.9	11.5	–	18.4
– of which, gas	–	–	–	5.2	11.5	–	16.7
– of which, hard coal	–	–	–	1.7	–	–	1.7
– of which, oil and other	–	–	–	0.1	–	–	0.1
Wind power	0.7	–	4.1	1.1	1.3	2.6	9.8
Biomass, peat, waste	0.2	–	–	0.3	–	–	0.5
Solar power	–	–	–	–	0.1	–	0.1
Total	**64.3**	**0.4**	**4.1**	**13.9**	**12.9**	**2.6**	**98.2**
Produced heat, TWh	**3.3**	**–**	**–**	**10.9**	**1.6**	**–**	**15.8**
CO_2 emissions per country, Mtonnes	0.2	–	–	5.2	4.8	–	10.1

[1] Rounding differences may be present for certain items.
[2] In Germany mainly pumped-storage power plants.

Glossary

Ancillary services: Are purchased by the Transmission System Operator in order to ensure a balanced and reliable electric power system and can be provided from power plants, assets with flexible electricity consumption, or energy storage. There are different types of ancillary services where the requirement on endurance and speed differ.

Availability: Refers to technical availability, which is the percentage of planned production time for an asset without unexpected technical difficulties or maintenance needs.

Base load: The minimum amount of electricity that must be supplied to the grid at any given time.

Biomass: Renewable fuel, such as forest residues, bark and pine oil.

Carbon capture, utilisation and storage, (CCUS): A process that involves the capture of CO_2 from sources, such as fossil fuel -powered power generation or industrial facilities. The CO_2 can also be captured directly from the atmosphere. If not being used on-site, the captured CO_2 is compressed and transported by pipeline, ship, rail or truck to be used in a range of applications, or injected into deep geological formations for permanent storage. CCUS using biomass as a fuel is called bio-CCUS.

CHP (combined heat and power): A plant that produces both heat and electricity. In such a plant a large share of the primary energy is used for electricity and heat production, with little wasted heat.

Circular economy: A circular economy is a framework for sustainable growth – with the overarching goal to reduce society's resource use and the resulting environmental impact.

Co-location/Co-use: The act of placing or using two or more facilities, activities or assets in a single location. For example, agrivoltaic is the combination of sustainable agriculture and solar power generation on the same agricultural land.

Conflict-affected and high-risk areas: Areas identified by the presence of armed conflict, widespread violence or other risks of harm to people

Decentralised production/energy solutions: Any form of energy provision that is not provided from the central electricity grid, for example local power generation such as rooftop solar panels, heating solutions including heat pumps and storage technologies.

Deep integration: Integration of hydrogen production directly at the wind farm or in the wind turbine.

Derivative instrument: A derivative is a financial instrument that is commonly used to manage risk. The value and change in value of derivative instruments are derived from the value of an underlying asset, which can be commodities, precious metals, currency, bonds, stocks and similar. Examples of derivative instruments are options, forward contracts and swaps.

Develop-to-sell: Refers to projects that are developed to be sold at completion as opposed to projects that are being built to own.

Dispatchable electricity source: Sources of electricity that can be readily turned on and off and used to adjust the supply of power to the grid on demand.

EEX: The European Energy Exchange. The German electricity exchange.

Efficiency: An efficiency rating indicates the relationship between energy input and energy output in a system.

Electrofuel: Electrofuel is categorised as a sustainable aviation fuel since the only inputs to the process of making electrofuel are fossil-free electricity, water and recycled carbon dioxide (in contrast to virgin fossil feedstock). Electricity will be mainly used to make hydrogen via electrolysis which together with carbon dioxide can be converted into ethanol and next converted to aviation electrofuel.

EPD: Environmental Product Declaration – a third-party environmental declaration in accordance with ISO 14025 (www.environdec.com).

EU ETS: The EU Emissions Trading System. The EU's trading system for CO_2 emission allowances. The system sets a cap for emissions from businesses within the system and facilitates optimisation through trading in emission allowances.

Forced labour: All work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.

Forward market: A market in which buyers and sellers agree on a set price for a future delivery of the underlying instrument, such as an electricity contract (see also derivative instrument).

Fossil fuels: Fuels based on hydrocarbons from ancient sedimentary layers – mainly coal, oil and natural gas.

Gender equity: A situation where benefits and responsibilities between men and women are distributed fairly and justly.

Global Compact: The United Nations' (UN's) ten principles for companies surrounding human rights, labour issues, the environment and anti-corruption.

Global warming potential: The relative potency of a greenhouse gas over its life-time in the atmosphere.

GRI: Global Reporting Initiative – a global standard for sustainability reporting. (see https://www.globalreporting.org/)

Grid stability: To ensure secure and stable operation of the electricity grid, it needs to keep a constant frequency of 50 Hertz, meaning that the production and consumption of energy must always be balanced which is referred to as grid stability.

Gross capacity: The electric output delivered directly from a plant's generator. Measured in MW (Megawatt).

High-risk minerals: Minerals that are mined in an area of armed conflict and traded illicitly to finance the conflict; deemed essential to the energy transition which may have no viable substitutes, and may face potential disruption in supply; or considered rare earth elements (REE).

HOB (Heat only boiler): A plant that produces heat for district heating as its sole output.

Hydrogen: Hydrogen as a fuel source can be produced in several different ways and is typically categorised into different colours depending on the production process. Grey hydrogen is currently the most common form of hydrogen production where the hydrogen is created from natural gas using steam reforming.

Blue hydrogen is also extracted using the steam reforming process, but the carbon emissions released from the production process are captured and stored. Green hydrogen doesn't generate any emissions in its entire life cycle as it is produced by electrolysing water using renewable energy.

IFRS: International Financial Reporting Standards – Vattenfall has been reporting in accordance with IFRS since 2005.

Installed capacity: Also known as nameplate capacity. Refers to the maximum amount of electricity that a power plant can produce under specific conditions according to the design data. Commonly measured in MW (Megawatt).

ISO 14001: An international standard in the ISO 14000 series for establishing environmental management systems.

ISO 9001: An international standard in the ISO 9000 series for establishing quality management systems.

Just Transition and Responsible Decommissioning: A process involving employers, unions, governments and communities, planning and delivering the transition of economies, sectors, and companies to low carbon, socially just and environmentally sustainable activities. At the company level, a just transition is process that plans emissions reduction efforts to maximise positive impacts and minimise negative impacts on workers and communities through retention and redeployment, skills training, new job creation, social inclusion and community renewal.

LEC (Levelised Energy Cost): The average cost of production per kilowatt hour electricity, calculated over the full lifetime of the generating asset. The net present value method is used to discount future costs with the average cost of capital (WACC).

Life cycle analysis (LCA): Methodology to establish a product's total environmental impact during its life cycle, from raw material extraction, through manufacturing processes and usage, to waste management, including all transportation and energy consumption.

LTI (Lost Time Injury): Work-related accidents resulting in absence longer than one day, and accidents resulting in fatality. Commonly expressed as LTIF, or Lost Time Injury Frequency, the number of such accidents per 1 million hours worked.

Margin call: Margin is collateral and funds that are collected to protect against future or current risk exposures resulting from market price changes or in the event of a counterparty default. A margin call occurs when the price of the underlying asset changes.

Merit order: The sequence in which power stations contribute power to the market. It is based on the marginal cost of production for each power station in the system.

Net capacity: The electric output that a plant delivers to distribution networks, i.e., gross capacity less the energy used by the plant itself. Measured in MW (megawatt).

Nominal capacity: The capacity that a generator is designed for. This concept is used mainly for electricity generation power plants, e.g. hydro power plants and wind turbines. Measured in MW (megawatt).

Nord Pool: The Nordic electricity exchange. Started in Sweden and Norway in 1996.

NOX: Collective term for nitrogen oxide, nitrogen dioxide and similar nitrogen compounds.

NPS (Net Promoter Score): NPS is a score ranging from -100 to 100 that measures the willingness of customers to recommend a company's products or services to others and is used to determine customers' overall satisfaction with a company and loyalty to the brand.

Offtaker: An offtaker is a party that, in advance, agrees to buy or sell goods that are still to be produced. In the energy market, this typically refers to the party that buys electricity through a PPA (see below).

OHSAS 18000: A series of standards that can be used as a basis for an occupational health and safety management system.

OTC (Over the Counter): Trading outside of exchanges (directly or via brokers) in physical and financial contracts.

Particulate Matter: Particulate matter consists of a mixture of solids and liquid droplets. Some particulate matter is emitted directly, otherwise it forms when pollutants emitted by various sources react in the atmosphere. Particulate matter comes in different sizes, with that smaller than 10 micrometers able to enter our lungs and cause serious health problems.

Peak load: The use of electricity at its highest points during a day.

Plannable electricity source: See Dispatchable electricity source

Power-as-a-service (PaaS): A business model which provides major energy users with guaranteed power services in exchange for a fixed monthly fee.

Power-to-Heat: Converting electricity to heat using electric boilers combined with hot water storage. With Power-to-Heat systems, the excess power generated primarily from renewable energy can be utilised later as district heating.

Power-to-X: An umbrella term referring to the conversion of electricity to an energy carrier, heat, product or raw material. Power-to-X includes e.g. power-to-gas, power-to-liquid, power-to-chemicals and power-to-heat. More specific examples are production of hydrogen, methane, ammonia, methanol, jet fuel, diesel etc. using electricity as the primary energy source.

Power Purchase Agreement (PPA): Typically refers to long-term bilateral electricity supply agreements, most commonly between the owner of a renewable asset and an electricity consumer.

Price areas: The Nordic electricity system is split into 15 price areas (or bidding areas) and generated electricity is always priced in the area where it is geographically located.

Primary energy: Primary energy is the form of energy that is accessible directly from the original sources. Vattenfall uses the interpretation applied by Eurostat and IEA. This means that all fuels are assigned a primary energy content corresponding to their heating value. Uranium is assigned a primary energy content corresponding to the heat released in the power plant. Solar, wind and hydro power are assigned a primary energy content corresponding to the extracted electricity (or heat).

Psychological safety: An environment where there is a shared expectation that one will not be embarrassed, rejected, or punished for sharing ideas, taking risks, or soliciting feedback.

Renewable energy sources: Non-finite energy sources such as hydro power, biomass, wind, the sun, ocean waves and geothermal energy.

Repowering: The process of replacing older wind power turbines with newer ones that either have a greater capacity or more efficiency, which results in a net increase of power generated.

Reservoir levels: Refers to the volume of water stored in a reservoir which on a specific occasion can be used for hydro power generation. Reservoir levels vary during the year depending on precipitation and hydro power generation.

Power units

- Power is energy per unit of time
- Power output is measured in watts (W)
- 1 kW (kilowatt) = 1,000 W
- 1 MW (megawatt) = 1,000 kW
- 1 GW (gigawatt) = 1,000,000 kW

Energy units

- Energy is power multiplied by time
- 1 kWh (kilowatt hour) = 1 kW in one hour
- 1 MWh (megawatt hour) = 1,000 kWh
- 1 GWh (gigawat hour) = 1,000,000 kWh
- 1 TWh (terawatt hour) = 1,000,000,000 kWh

Weight units

- ktonnes (kilotonnes) = 1,000 tonnes
- Mt or Mtonnes (megatonnes) = 1,000,000 tonnes

Voltage

- 1 kV (kilovolt) = 1,000 volts (V)

SAIDI (System Average Interruption Duration Index): An index of average power interruption times within electricity distribution. Measured in terms of interruption duration per customer and year.

SAIFI (System Average Interruption Frequency Index): An index of average power interruption frequency within electricity distribution. Measured in terms of the number of power interruptions per customer and year.

SF6: A greenhouse gas commonly used for electrical insulation that is 15,000 times more potent than CO_2.

SKB: Svensk Kärnbränslehantering AB (The Swedish Nuclear Fuel Management Company) – responsible for handling radioactive waste in Sweden.

Small modular rector (SMR): A type of nuclear reactors that are smaller and more flexible than conventional reactors, typically with an electrical power output of up to 300 MW per unit. Due to a modular and standardised design, components of SMRs can be pre-manufactured in a factory, then assembled, commissioned and operated at a separate site.

Smart meter: Smart meters replace existing gas and electricity meters and is usually an electronic device that records information such as consumption of electric energy, voltage levels, current, and power factor of an installation or building. They also have the ability to send and store meter readings automatically and at regular intervals over the internet.

SOx: Collective term for sulfphur oxides, sulfur dioxide and similar sulfur compounds.

Spot market: A market in which trading is conducted for immediate delivery.

Swap: A financial instrument that is a combination of a spot and forward transaction – a type of financial swap agreement.

Syn(thetic)fuel: See Electrofuel

Thermal power: Electricity generated via a heating process, such as a gas turbine or a steam process in a coal or nuclear power plant (compare combined heat and power).

TPI (Third Party Integration): A process in which excess or waste heat, which would otherwise be released to the atmosphere, is captured from the industrial facilities in which it is produced and integrated into the district heating network.

Value Chain: All activities, operations, business relationships and investment chains of an undertaking and includes entities with which the company has a direct or indirect business relationship, upstream and downstream.

Volatility: A measure of how the price of a product varies during a given period of time.

Waste hierarchy: The EU's prioritisation framework for how waste is to be avoided and managed.

Whistleblowing: A procedure that is voluntarily implemented by Vattenfall and which allows employees, contractors, suppliers, partners and other external and internal stakeholders to report serious irregularities and other complaints at Vattenfall.

For definitions of financial key ratios, see pages 187–188.

Contacts

Contact persons
Åsa Jamal, Communications,
asa.jamal@vattenfall.com, tel +46-8-739 50 00
Annika Ramsköld, Sustainability,
annika.ramskold@vattenfall.com, tel +46-8-739 50 00
Johan Sahlqvist, Group Control & Investor Relations,
johan.sahlqvist@vattenfall.com, tel +46-8-739 50 00

Financial calendar

26 April 2023	Annual General Meeting
27 April 2023	Interim report January–March
20 July 2023	Interim report January–June
26 October 2023	Interim report January–September

Forecasts and forward-looking statements
This document contains forward-looking statements that are based on Vattenfall's current expectations. Even if Vattenfall's management believes that these expectations are reasonable, no guarantee can be made that these expectations will prove to be correct. The forward-looking statements herein pertain to risks and uncertainties that could have a material impact on future earnings. The statements are based on certain assumptions, including such that pertain to financial conditions in general in the company's markets and the level of demand for the company's products. The outcome may vary significantly compared with what is presented in the forward-looking statements, depending on, among other things, changed conditions regarding the economy, markets and competition, legal requirements and other political actions and variations in exchange rates, as well as other factors referred to in the administration report. This English version of Vattenfall's Annual and Sustainability Report is a translation of the Swedish original, which is the binding version.

Rounding differences may occur in this document.

About Vattenfall's financial reports
Vattenfall's financial reporting includes interim reports, the year-end report and the annual report. In addition to these reports, the company issues financial information via press releases and on Vattenfall's websites.

Vattenfall's Annual and Sustainability Report 2022 is published in Swedish and English.
All financial reports are available on Vattenfall's websites. The reports are only available digitally for downloading and can therefore not be ordered in printed versions.

Production: Vattenfall AB in cooperation with Hallvarsson & Halvarsson.
Photos: Malin Arnesson, Josefin Blanck, Marcus Bäckström, Theo Cohen, DEME Group, Jimmy Eriksson, Robert Gabrielsson, Eva Grusell, Mattias Hamrén, Jeanette Hägglund, Bosse Johansson, Johanna Kassel, Peter Knutson, Nico Kroon Fotografier, Henrik Larsson, Andreas Lind, Jennie Lind, Jorrit Lousberg, Felix Odell, Jenny Pettersson, Elisabeth Redlig, Dan Sjunnesson, Martin Sorgenfrei, Hans Strand, Johan Strindberg, Elisabeth Toll, Twentyseven Design, Charles Walker, de Winder, Getty Images, NORD ID/NORD DDB.

A renewed Vattenfall with a clear goal

For more than 100 years we have electrified industries, powered people's homes and modernised our way of living through innovation and cooperation. We will now make it possible to live a fossil-free life within one generation. That is our goal. But to succeed it is not enough that we alone are fossil free. It is for this reason that we are looking beyond our own production. Only then can we truly make a difference.

Energy & solutions from a broader perspective

We view our responsibility from a broader perspective. With our capabilities we are now contributing to change on a much larger scale, and we are leading the shift to fossil-free sources of energy – even beyond our own production. This means that we are finding new and innovative fossil-free ways of producing and delivering power to our customers. But it also means that – together with our partners and customers – we are electrifying important industrial manufacturing processes, transports, and other areas in which we can reduce or entirely eliminate CO_2 emissions.

Ability & capacity to enable a fossil-free life

Climate change is a global problem that requires major, sweeping solutions. Vattenfall has operations in most countries in northern Europe. We are one of Europe's largest producers and retailers of electricity and heat. By using our engineering know-how in all parts of the value chain – production, distribution and sales to customers – we can develop solutions and innovations that are bringing us closer to our goal. We are helping our customers live more energy-efficiently by making sure they can choose smart technologies for producing their own electricity or heat, and change over to cleaner alternatives that are both affordable and easy to use.

VATTENFALL

SE-169 92 Stockholm, Sweden. Evenemangsgatan 13, info@vattenfall.com
Public company Stockholm VAT SE 556036-2138 www.vattenfall.com