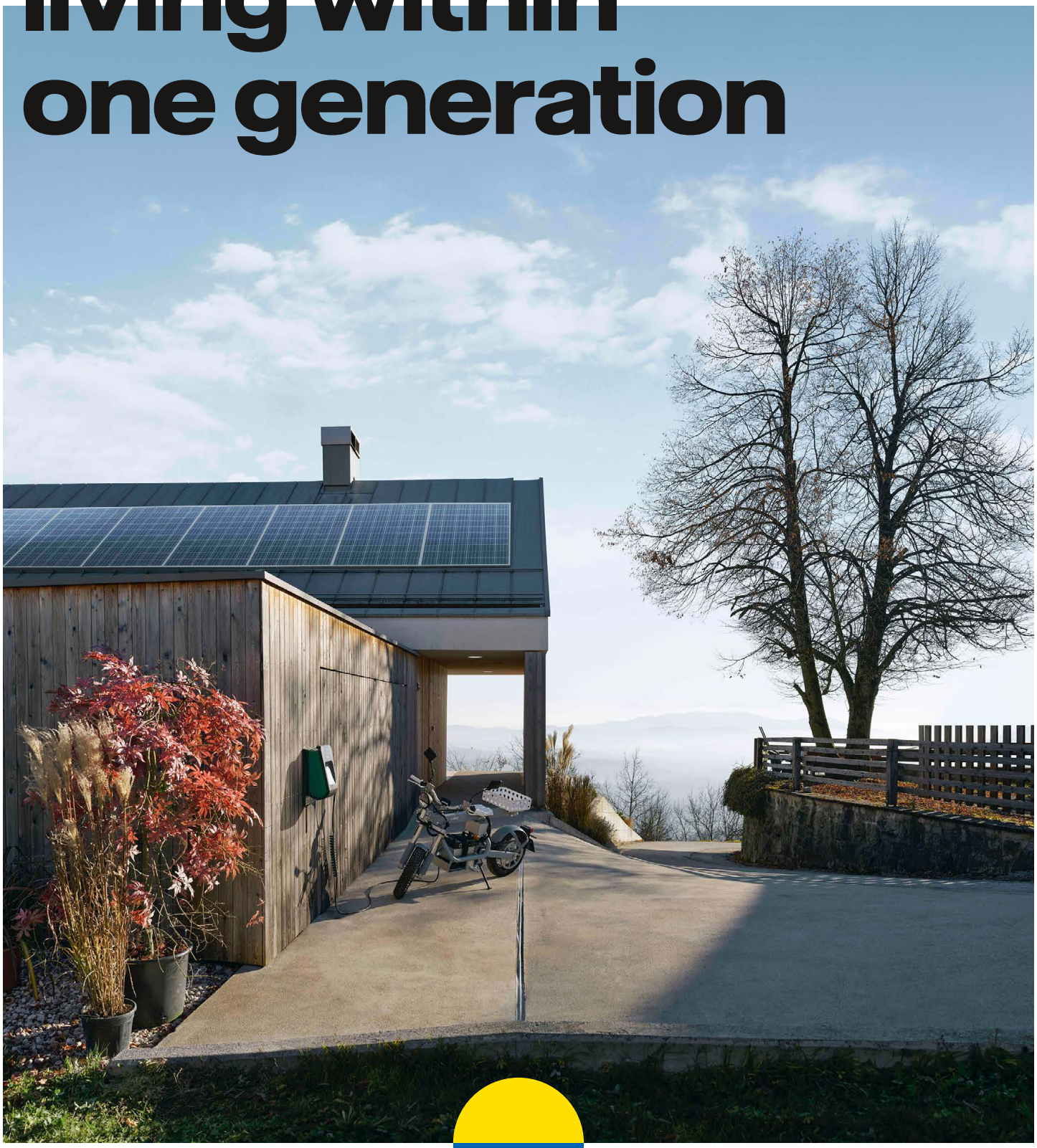
Vattenfall Annual and Sustainability Report 2021

Fossil-free living within one generation



VATTENFALL

Contents

● Administration report and financial statements
● Statutory sustainability report

About the report
The 2021 Annual and Sustainability Report 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 4–5, 14–15, 20–21, 62–71, 90–170 and are assured by our auditors. Pages 16–17, 21, 30, 63–67, 72–89, 95–97 and 171 include Vattenfall's statutory sustainability report according to the Swedish Annual Accounts Act. Vattenfall has been reporting in accordance with the Global Reporting Initiative's (GRI) Guidelines annually since 2003 and has applied the GRI Standards, "Core" option. 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 uses the Annual and Sustainability Report as 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**.

To reach our goal of a fossil-free tomorrow, we must think beyond convention today

To live fossil free tomorrow, we need to think beyond convention today. Beyond how we have always done things. Beyond what is expected of us. Beyond what we are told is possible.

That is the mindset that drives everything we do. That is why we are working with partners from beyond our own industry. To produce fossil-free steel. To make aviation fuel sustainable. To roll-out charging infrastructure for electric vehicles.

By thinking beyond convention, we can reinvent products and services, disrupt entire industries, and challenge the norms that make society reliant on fossil fuels. Only then can we reach our goal of fossil-free living within one generation.

THE EDIT

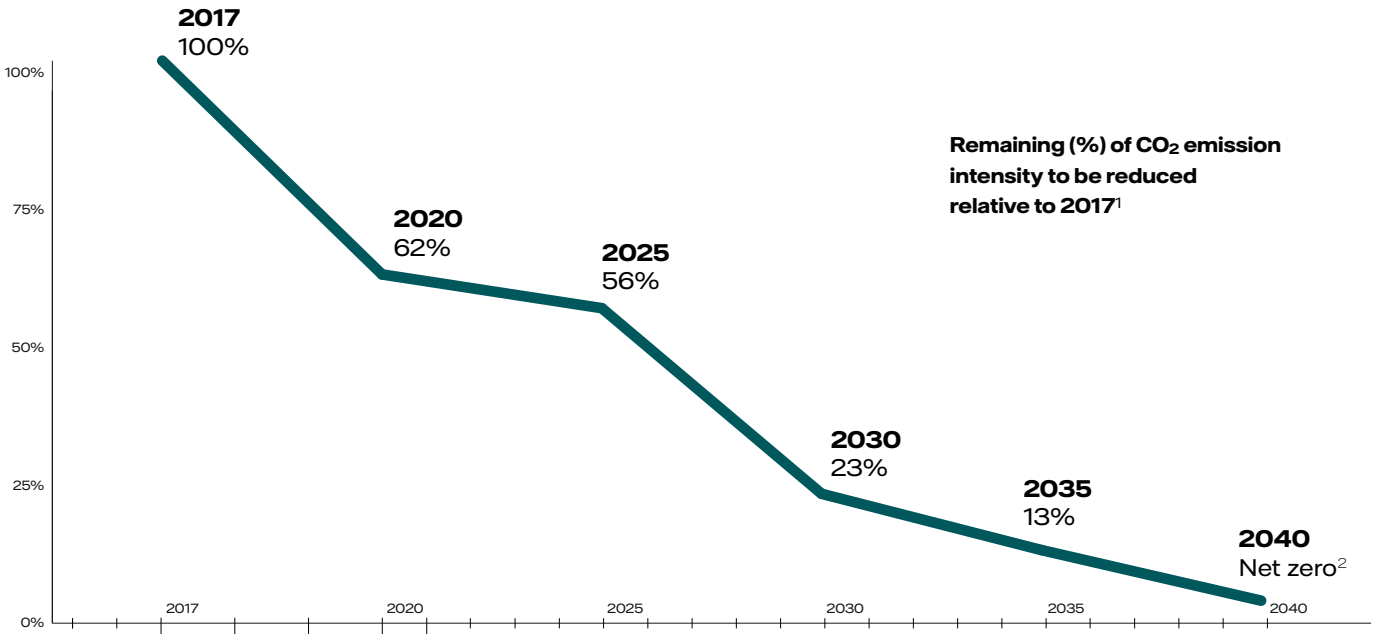
We believe that innovative and far-reaching collaborations are the key to achieving our goal. In that spirit, we've invited people from different fields with diverse perspectives to share their views on some of the big topics from this Annual & Sustainability Report. Read them in The Edit.

Read The Edit

Our journey to fossil freedom

We have come a long way on our journey to fossil freedom, but we know we must do more. In 2021, we strengthened our emission reduction targets to be in line with the 1.5-degree target in the Paris Agreement, and we committed to achieving net zero emissions across our full value chain by 2040. To read about our "Road to net zero" and our future milestones, see pages 10–13.

Our decarbonisation journey and key milestones to enable fossil-free living within one generation



For future milestones, please refer to the "Road to net zero" (pages 10–13).

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

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

2019
Closure of coal-fired Hemweg-8 power plant in Amsterdam, the Netherlands

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

2017
Phase out of lignite with closure of Klingenberg CHP plant in Berlin, Germany and Pen y Cymoedd inaugurated as then the largest onshore wind farm in Wales

[1] The CO_2 emission intensity is based on emission related to Vattenfall's activities and operations. Also referred to as Scope 1 and 2.
[2] Vattenfall has committed to be net zero by 2040, which means that any remaining emissions (<5%) will be neutralised by carbon removals.

Beyond traditional partnerships

Thinking beyond convention means collaborating beyond our own sector to reach our goal of fossil-free living within one generation. Together with our partners, we are developing technologies and processes to decarbonise the industries that have the biggest impact on how we live.

E-mobility
We have several partnerships within e-mobility in order to support the electrification of transport. One example is our partnership with Aral and BP, where we introduced a hybrid card to make payment easier for customers as well as providing installation of wall charging boxes for their commercial fleets.

First Movers Coalition
Launched at COP26, Vattenfall is one of the founding members of the First Movers Coalition, led by the World Economic Forum and the US State Department. The aim is to speed up the transition to a fossil-free future by committing to increase the share of emerging technologies and products critical to the net zero transition in procurements.

HYBRIT
We are collaborating with SSAB and LKAB to fundamentally transform steel production. Under the name HYBRIT, we are working together to commercialise the first fossil-free steel, with the potential to reduce Sweden's CO_2 emissions by at least 10% and global CO_2 emissions by up to 7%. The first fossil-free steel was produced and delivered by SSAB to Volvo Group in 2021.

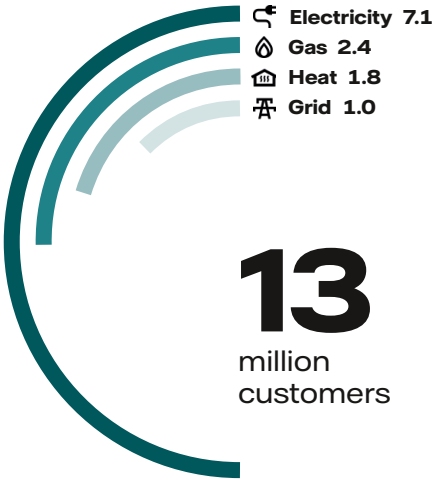
Aviation fuel
We have signed a letter of intent with partners Shell, LanzaTech and SAS to explore the world's first large-scale production of sustainable synthetic aviation fuel, produced using fossil-free electricity and captured CO_2 from district heating. This has the potential to meet 25% of SAS' global need for sustainable aviation fuel by 2030.

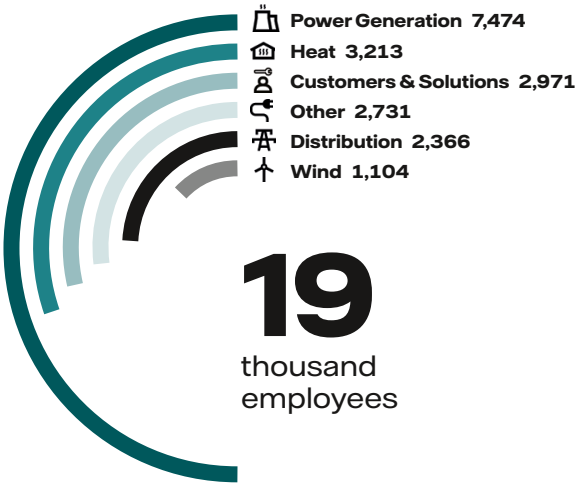
Hollandse Kust Zuid
We are building the world's largest offshore wind farm off the coast of the Netherlands, completely subsidy free, together with our partners BASF and Allianz. This is the first partnership of its kind and we will continue to look for partners in developing our wind farms.

Excess heat
We are working to integrate excess heat from production processes into our district heating grid. At the Buch CHP plant in Germany, a heat pump will feed excess heat from lubricating oil, generators and a gas compressor into the district heating system. In Sweden, Vattenfall and Cloud&Heat Technologies started a strategic partnership on a joint data centre pilot project. The facility is located at Vattenfall's biomass-fired district heating plant in Jordbro and delivers excess heat to Vattenfall's heat network.

This is Vattenfall

We are one of Europe's largest producers and retailers of electricity and heat. Vattenfall's main markets are Sweden, Germany, the Netherlands, Denmark and the UK. The Group has approximately 19,000 employees. The Parent Company, Vattenfall AB, is wholly owned by the Swedish state, and its headquarters are in Solna, Sweden.





"We're proud to know that our facility will provide heat to our neighbourhood."

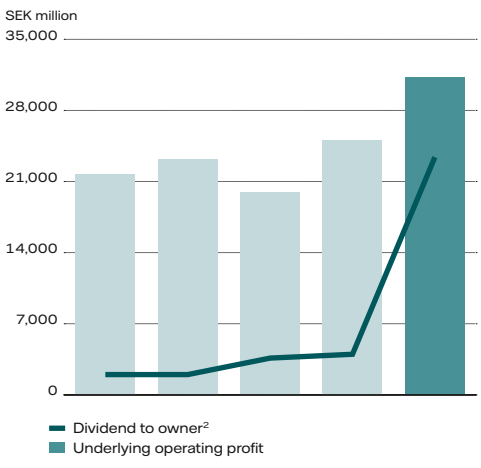
Read more about AstaReal's experience on page 75.

"We have long said that sustainability is the business. Without a doubt, the risk of not acting is much greater than the risk of being at the forefront."

Read more about the "Road to net zero" on pages 10–13.

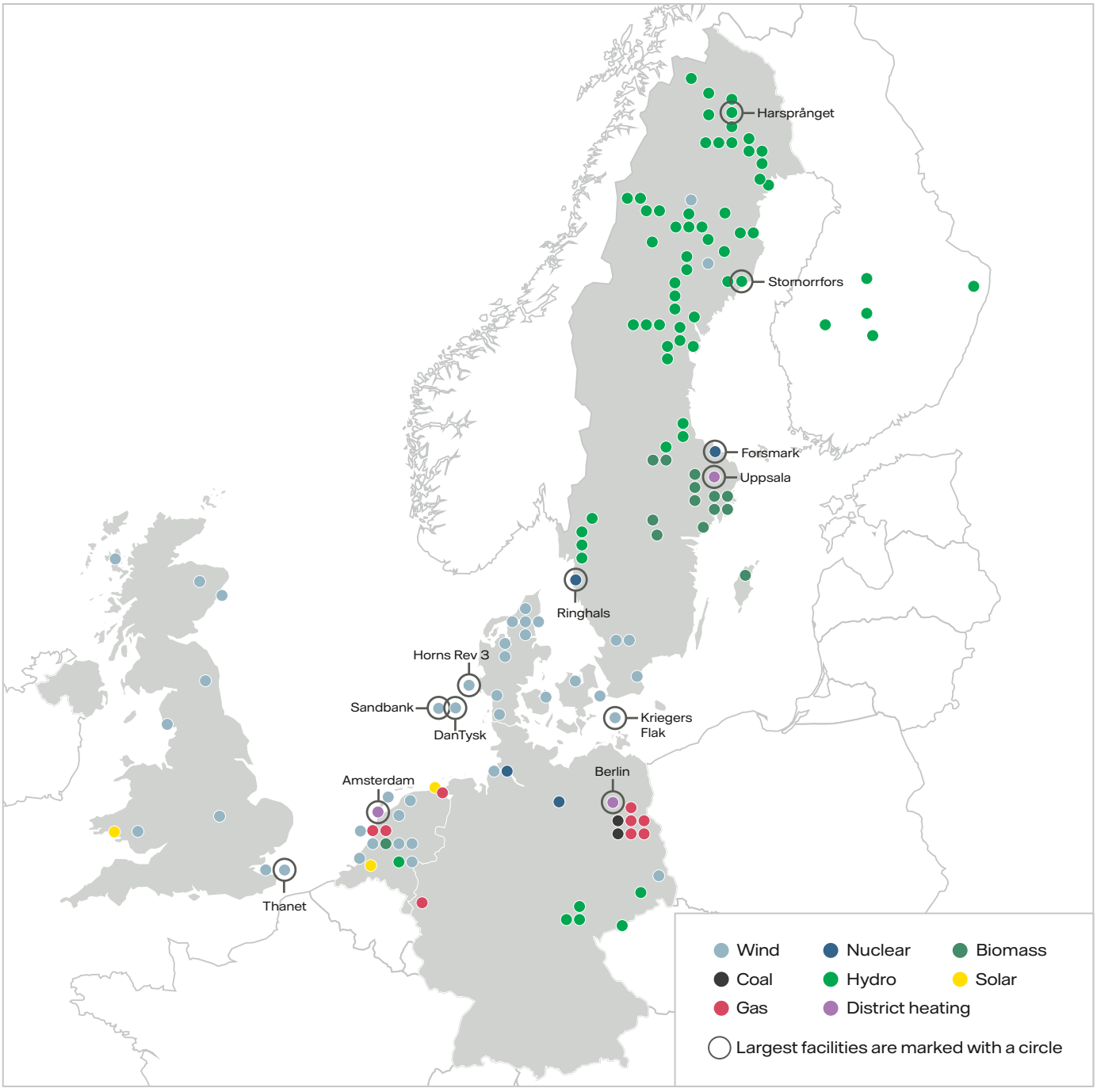
Underlying operating profit[1] and dividend

According to the owner's directive, Vattenfall 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. In 2021, the underlying operating profit was SEK 31.2 billion and the dividend proposed by the Board of Directors to our owner is SEK 23.4 billion.



[1] For calculation, see page 109.
[2] Value for 2021 refers to dividend proposed by the Board of Directors.

Overview of Vattenfall's assets and production plants



Largest plants

Wind farms

Kriegers Flak offshore wind farm, 604 MW
Horns Rev 3 offshore wind farm, 407 MW
Thanet offshore wind farm, 300 MW
DanTysk offshore wind farm, 288 MW
Sandbank offshore wind farm, 288 MW

Power plants

Ringhals nuclear power plant, 2,204 MW
Forsmark nuclear power plant, 3,271 MW

Hydro power

Harsprånget, 871 MW
Stornorrfors, 599 MW

District heating

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

Offices

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

Other operations

Distribution
Operations in Sweden and the UK.

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

EV charging solutions
Vattenfall operates 28,700 charging points throughout Sweden, Germany, Norway and the Netherlands.

A year of increased pace, ambitions and opportunities

Strong results and higher climate ambitions for Vattenfall in 2021. A year in which we saw increased global cooperation on the climate and both the opportunities and consequences of the energy transition became even clearer.

To be in line with the 1.5-degree target in the Paris agreement, we have tightened our climate targets to reach net zero across our full value chain by 2040. Vattenfall is where we should be – at the front of the wave and the business opportunities are many for a company like ours. We see value in being a leader in this transition, which is driven largely by customer demand. Sustainability is increasingly becoming a competitive advantage and business necessity.

The second half of 2021 was largely characterised by the challenging market situation, with record high electricity prices in both Continental Europe and in the Nordics and extreme volatility. Many customers are struggling with their electricity bills, and the discussion about what needs to be done to ease the situation is ongoing. We try to help our customers on a case-by-case basis to the best of our ability. For us, it is clear that the long-term solution is to transition away from fossil fuels and accelerate investments in electricity grids and fossil-free electricity production. The dark beginning of 2022 with Russia's invasion of Ukraine in violation of international law further underlines the need to phase out dependence on fossil fuels. My thoughts go to those affected by this unjust war.

We took several important steps to deliver on our strategy during 2021. We started construction of what will be the world's largest offshore windfarm, Hollandse Kust Zuid in the Netherlands. We inaugurated the largest wind farm in Scandinavia, Kriegers Flak in Denmark, and together with our partners, prequalified to participate in the first floating offshore tender in France. We have continued to expand our charging network for electric vehicles. We have started production in our new biofuel-fired heat plant Carpe Futurum in Uppsala and construction of our first district heating network in the UK, Brent Cross South in London. In our partnership with SSAB and LKAB – HYBRIT – the first fossil-free steel was produced and delivered by SSAB to the first customer, Volvo. We are making sure to stay at the forefront of the latest developments when it comes to new Small Modular (nuclear) Reactors. And in Germany we are optimising our pumped hydro power plants to be able to deliver high-value flexibility to a market with more intermittent renewable capacity. There are many more examples. We are not just talking; we are also acting here and now to make fossil-free living possible within one generation.

We are intensifying our strong focus on safety in our operations and we recently adopted a new Health & Safety strategy. It is unacceptable and a tragedy every time a fatal accident occurs – and unfortunately, they still do. I will not rest when it comes to this. Health and safety concerns our employees daily work lives and must be integrated into both our routines and mindsets.

Strong results in a turbulent market

Financially we had an exceptional year with strong results, where one-offs and temporary effects played a major role. We checked several boxes as we ended a number of legal disputes and closed big financial transactions, which have strengthened both our financial and strategic position as well as reduced our risk exposure.

Electricity prices increased significantly across all of our markets during the year. The average price for 2021 was five times higher than the previous year in the Nordics and three times higher on the Continent. On the Continent, the main driver was increasing prices for gas and CO_2 emission allowances. This also affected electricity prices in the Nordic countries, as did cold and dry weather. Despite the remarkable increase from last year's very low price levels, the prices Vattenfall received for the Nordic electricity production was stable compared to 2020. This was largely owing to our price hedges to balance risk and stabilise earnings over time, and the effects from growing differences between price areas in Sweden.

Our operations performed very well in 2021 and the underlying operating profit increased by SEK 5.4 billion to SEK 31.2 billion. Wind power nearly doubled its contribution thanks to increased capacity in Denmark and the Netherlands as well as higher electricity prices in the UK and on the Continent. Our pumped storage power plants in Germany also made an important contribution.

Increase in underlying operating profit

+ SEK 5.4 bn

SEK 31.2 billion

Increase in generated fossil-free electricity

+ 2.9 TWh

93.0 TWh


“The businesses of tomorrow are shaped today. I am convinced that the risk of not taking action now is higher than the risk of actively developing our business for the market of the future.”

The agreement with the German state for compensation for the early closure of nuclear power affected our result with SEK 12.5 billion and the sale of our electricity distribution business in Berlin, Stromnetz Berlin, to the State of Berlin with SEK 8.4 billion. We also received the final ruling from the Higher Administrative Court in Berlin that the district heating network indeed does belong to Vattenfall after the city had filed a claim to take over the network.

Net profit for the year was SEK 48.0 billion. This figure was strongly affected by the above-mentioned agreement on nuclear compensation as well as the sale of Stromnetz Berlin which together explain a significant part of the increase in ROCE to 22.2%. The market situation had a large temporary effect on our adjusted net debt, which fell markedly due to margins calls received. This impacted our other financial target, FFO/AND, significantly as it increased to 171.2%. Excluding the large one-off and temporary effects, ROCE was 11.5% and FFO/AND was within our target range.

The Board of Directors has proposed a dividend of SEK 23.4 billion, which allows us to retain sound financial stability, and continue to invest in the energy transition.

> "It may not sound like much, but the difference between 2 and 1.5 degrees is critical."

Increased emission reduction targets for net zero by 2040

It may not sound like much, but the difference between 2 and 1.5 degrees is critical. We have further increased our emission reduction targets for 2030 and beyond, aiming to reach net zero in our full value chain by 2040. The new targets were set to support limiting global warming to no more than 1.5 degrees. The targets are approved by the Science Based Targets initiative (SBTi), which provides external validation in line with the latest climate science research. Vattenfall is one of the few leading energy companies that have taken this critical step.

Already in 2020, we achieved our 2-degrees SBTi target of reducing absolute CO_2 emissions by nearly 40% from 2017 – ten years ahead of schedule. Now we will continue our accelerated path. This means we will reduce our emissions intensity by 77% from 2017 to 2030 and achieve net zero by 2040. You can read more about the implications of our new commitments in the following pages.

Increased focus on biodiversity and the social agenda

While climate is at the centre of our strategy, we also continue to strengthen our positive contribution to all 17 UN Sustainable Development Goals. We are collaborating with multiple initiatives to better measure our biodiversity impacts and obtain guidance on how to implement a net positive impact approach. In other words, we want to enhance biodiversity rather than simply do no harm. We have also increased our ambitions to support the circular economy and committed to an immediate ban on disposing wind turbine blades in landfills – and we are targeting 100% recycling of blade components no later than 2030.

Similarly, we continue to raise our maturity and ambition level with respect to social sustainability, for example by striving to not just respect but rather to impact human rights positively throughout our value chain. This aim is underpinned by continuous improvement in raising awareness of human rights issues, as well as developing new tools to improve our ability to identify and manage our potential impacts.

For the transition to a world without fossil fuels to be successful, it is important that the benefits of the transition are tangible for everyone and the build-out of infrastructure accepted.

Thinking beyond convention

To succeed with our climate goals and with our own business strategy, we need to think beyond the conventional role of energy companies and act together with others. For Vattenfall, partnerships with companies in other sectors are therefore a key to success and there is a strong need to develop fossil-free supply chains. HYBRIT, our partnership for fossil-free steel, is the example where we have progressed the furthest. Another example is the sale of 49.5% of Hollandse Kust Zuid to BASF which means that they can decarbonise the electricity supply for one of their sites in Belgium while we secure fossil-free electricity for our Dutch customers. This is a good example of how we partner up with customers in both ownership and production of new fossil-free capacity, sharing risk and free up resources for more investments. In the autumn, we also announced a new partnership looking into the possibilities for producing sustainable aviation fuel, together with Shell, LanzaTech and SAS.

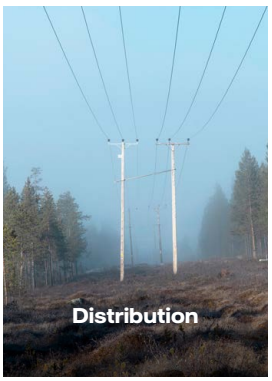
> "We will continue to look for partnerships where we see that we together can create value both for our customers, our owner, and the climate."

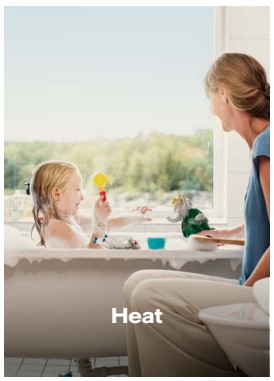
During the year, Vattenfall became a founding member of the First Movers Coalition. An initiative launched at COP26 by the World Economic Forum and the US State Department. It aims to create demand for new technologies needed to reduce emissions in the hardest-to-abate industrial sectors. Joining companies commit to purchase such technologies by 2030, which means that producers and innovators will know that there is a market when they launch their products and services. This is yet another example of the cross-industry cooperation needed if we are going to make difference fast enough to reach the climate targets.

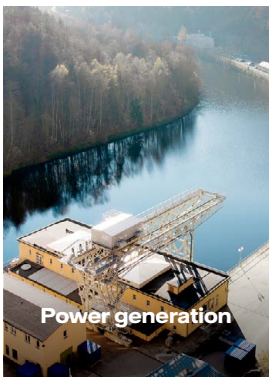
We will continue to look for partnerships where we see that we together can create value both for our customers, our owner, and the climate.

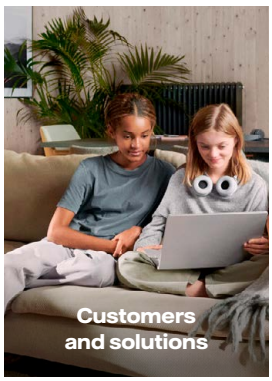
Investing in the transition

For several years, we have placed most of our growth investments into fossil-free electricity, mainly wind power. This will be the case also going forward. We want to continue being a leader in the development of both onshore and offshore wind farms. Technological development has increased the competitiveness of wind power, with lower costs and increased effect. Electrification will require massive amounts of electricity, and wind power









>70%

Implement enhancing measures in >70% of areas with rich biodiversity by 2025

→ Read more

0

Commitment to landfill zero decommissioned turbine blades as of 2021

→ Read more

2030

Phase out coal by 2030

→ Read more

25%

Use of new concrete reduces CO_2 emissions from dam construction by 25%

→ Read more

+10

Absolute Net promoter Score +10 from customers in 2021

→ Read more

will be the most cost-effective power source to build out rapidly. As with BASF, we will continue to find different ways of developing, owning, and operating wind power together with partners.

Electrification will be key to decarbonise industries, transportation and heating. All fossil-free technologies, including nuclear power, will be needed and play a relevant role, even if the energy mix in each market will be different.

We invested more than SEK 24 billion in 2021. Almost SEK 11 billion of that went into our Wind business, almost SEK 6 billion into our electricity grids, and another SEK 2 billion into our large-scale hydro and nuclear power operations. Looking into the future, we have an ambitious plan and there are multiple major projects coming up, for example the Vesterhav offshore wind projects in Denmark (344 MW) for which we took the final investment decision in December. We plan to invest SEK 55 billion in the coming two-year period, of which SEK 34 billion is earmarked for growth. Of this, two-thirds will go into expanding our Wind business. We will invest heavily in our electricity grids – SEK 12 billion – for both reinvestments and expansions. Further, we are investing approximately SEK 2 billion each in our large-scale nuclear and hydro power operations in Sweden to ensure that they remain well-equipped to supply stable and safe base load power well into the future.

SEK 24 bn

Total investments in 2021

Cooperation needed to secure the transition

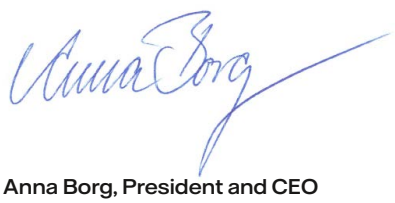
Phasing out fossil fuels from electricity production, industries and transportation will require construction of fossil-free power production at a pace we have not seen before. It will also require connections to the electricity grid and for the power to be transported to where it is needed. Modernisation and expansion of the electricity grid is therefore crucial for the whole transition to be possible – for all sectors. Grid regulations need to facilitate long-term stability as well as investments and rapid growth.

Permitting processes take too long across all our markets and need to be shortened significantly. Regulations need to be adapted to a reality of pivotal change rather than small adjustments to an existing system. New emerging technologies – for example large-scale use of fossil-free hydrogen or Small Modular Reactors need to be planned for and anticipated by regulators in order to be introduced to the market as soon as possible. It is welcome that the EU Commission has stated that nuclear power along with renewable energy forms the basis of a fossil-free EU. In this context, the Swedish government's decisions, in December 2021 and January 2022, regarding the short and medium-term storage and final repository for spent nuclear fuel were important. The permit processes can now move forward.

The transition will entail many benefits – including fewer emissions, cleaner air, less noise in cities, and more. But there will also be conflicting interests, such as between reducing CO_2 emissions on a global scale and protecting the local environment or between erecting wind turbines and military interests. These are not conflicts we can resolve alone as an energy company. Politicians, local municipalities, businesses and civil society need to come together on how the electrification of society can be realised. The climate transition will not go unnoticed, and many will have opinions on the location of wind turbines or power lines – understandably so. Most agree on the route we need to take – the question is what choices and prioritisations that need to be made along the way.

The energy transition will also be challenging in terms of people. Nothing will happen if we do not have the right people to deliver on our strategy. The competition for the right skills, more and new competencies, and employees will be tough. We need to attract the right people, keep the talents that we have, and develop people to be equipped for the challenges ahead.

I am very proud of what all our employees in Vattenfall accomplished in 2021, and I am confident that we are on the right track. The businesses of tomorrow are shaped today. I am convinced that the risk of not taking action now is higher than the risk of actively developing our business for the market of the future. A prerequisite for all these ambitions is freedom and peace in our region.



Anna Borg, President and CEO

In focus

Road to net zero

2021 was a momentous year for cooperation on the climate with large international organisations pushing hard for action. Decarbonisation is the right thing to do, not only from a societal perspective, but also from a business perspective and we have doubled our ambitions towards 2030 and set a new target to be net zero by 2040.

2021 – setting the stage for the future
2021 was a pivotal year for cooperation on climate action. The EU presented its "Fit for 55" package in July, detailing how it would implement the European Green Deal. The Intergovernmental Panel on Climate Change (IPCC) released their Sixth Assessment Report in August, painting with increasing clarity the disastrous consequences of failing to limit warming to 1.5°C or less. Then in October, the UN Human Rights Council officially recognised the right to a clean, healthy, and sustainable environment as a fundamental human right. And in November, the eyes of the world turned to Glasgow and COP26, where global heads of state and other leaders assembled to update the climate commitments they had made at COP21 in Paris, when the historic agreement to limit warming to well-below 2°C was made.

It was also a momentous year within Vattenfall. We have long said that sustainability is the business. Without a doubt, the risk of not acting is much greater than the risk of being at the

forefront, and at Vattenfall we see that, driven by customer demand, the pace of change will continue to accelerate. Sustainable businesses will continue to be much more valuable than unsustainable businesses, and leading the development and driving the change will remain a competitive advantage. Against that backdrop, we took action to define our next two decades of climate action, doubling our decarbonisation ambitions and aligned ourselves with the 1.5°C trajectory of the Science Based Targets initiative[1].

Starting in-house

First and foremost, we must decarbonise our own operations as they represent slightly less than 40% of Vattenfall's total CO_2 footprint, and are under our direct control. It is therefore imperative that the highest focus goes to reduce our own CO_2 intensity.

Progress since 2017

A lot of progress has been made in the past four years, as our emissions intensity has declined from 153 g/kWh to under 100. This has been primarily driven by the phase-out of coal. We have phased out lignite in our Klingenberg plant in Berlin and closed down our Hemweg 8 and Moorburg coal-fired plants in Amsterdam and Hamburg, respectively. And by installing Europe's then-largest Power-to-Heat plant at the Reuter site in Berlin, we were able to decommission one of the coal-fired units there as well. Moreover, we have replaced production from inefficient heat plants by adding a modern and hydrogen or biogas-ready gas asset (Marzahn) to our Berlin district heating network. This ensures the security of supply for our heat customers while we execute our long-term transition towards becoming fossil free. In Sweden, we have phased out peat. Combined, these initiatives save about eight million tonnes of CO_2 per year.

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 that demand can be met. To that end, we have installed more than 900 MW additional wind and solar capacity since 2017, which brings our total installed capacity to 4,050 MW and increased our production from these sources by over 46%.

The coming decade and beyond

Looking forward, the phase out of fossil fuels will continue to be our first priority; and we continue to focus on phasing out coal completely from our operations by 2030. 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 in 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.

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, power-to-heat, integration of waste heat and heat pumps.

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

In all geographies, we are continuously exploring opportunities to integrate excess industrial heat into our district heating networks. For example we are collaborating with the owners of new data centres to locate them near our district heating assets in order to use the heat they produce in our networks to heat local homes and businesses.

These initiatives should bring Vattenfall's CO_2 emissions down from 10.4 million tonnes in 2021 to under six million tonnes in 2030, the equivalent emissions reduction of removing over three million cars from the road[4].

Our commitments[2]

2030

SCIENCE BASED TARGETS

Own emissions
Scope 1+2: 77% reduction in emissions intensity (153 gCO_2e/kWh to 35 gCO_2e/kWh)

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

2030

Our suppliers emissions[3]
Scope 3 (Capital Goods, goods and services): 50% reduction in emissions intensity

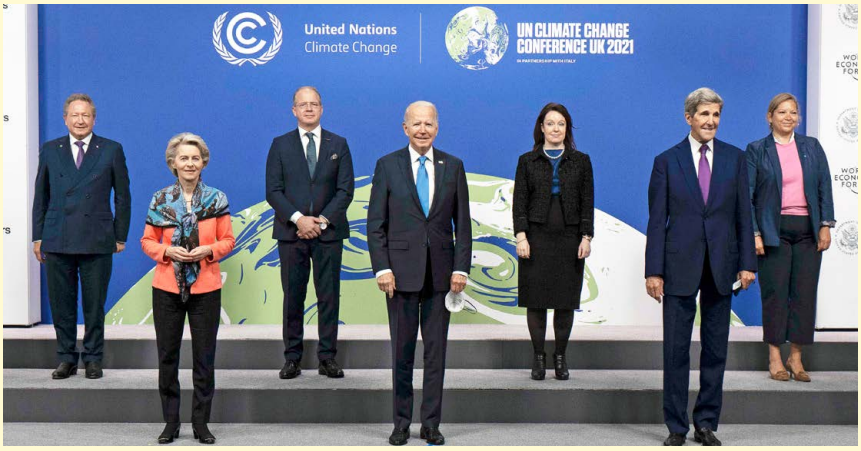
2040

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

[2] Base year 2017 unless stated otherwise. [3] Base year 2020.

[1] SBTi publicly discloses temperature alignment based on the ambition of a company's Scope 1 and 2 targets. Scope 3 targets are also evaluated during the target validation process. SBTi thoroughly reviews scope 3 ambition to ensure it meets the temperature alignment or supplier engagement specifications outlined in the SBTi criteria.

[4] Calculated using estimates from odyssee-mure, see https://bit.ly/3vv6duj and https://bit.ly/3CaBZhl



During COP26, Vattenfall became a founding member of the First Movers Coalition.

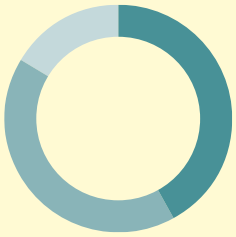
Complementing our decarbonisation initiatives, we will continue to upgrade and modernise our nuclear and hydro power production to ensure the cost-effective, safe, steady, and – especially in the case of hydro – flexible provision of fossil-free electricity into the system, while also increasing the pace of our build-out of wind and solar. Our ambition is to commission four times our current wind and solar capacity by 2030, which would bring our total commissioned capacity to over 16 GW, and our pipeline is much larger still. Offshore wind will contribute the largest share of this, and our 1.5 GW project Hollandse Kust Zuid is a good example of this expansion. It will be the world's first subsidy-free offshore windfarm when it is commissioned in 2023-2024.

Such a dramatic transition will not be easy to accomplish, and both our decarbonisation and renewable energy sources (RES) build-out paths have their challenges. Our decarbonisation path consists of a series of major projects, some of which are interlinked, and all of which have lead times of between five and ten years. We must make decisions today that relate to changes to be made in the late 2020s, for example. Regulatory and market uncertainty and the future availability of resources must be considered. The role of natural gas in electricity and heating in 2030 and beyond is a prime example of this uncertainty. We countinuously look for innovative ways to decarbonise our operations and we have structured our decarbonisation roadmap to give us the flexibility to profitably achieve net zero in 2040, regardless of the conditions which eventually occur.

Scaling up investments in RES will bring about its own set of challenges. Public support for renewable energy and grid investment projects is decreasing in our core markets, threatening not only our success, but the pace of the energy transition in general (see pages 34–35). Furthermore, ensuring that materials are responsibly sourced is another challenge, as production of certain products like solar panels tends to flow through countries with weaker human rights protections (see pages 85–87).

In both cases, skilled workers will be key, and we must invest in employee development to ensure we have the competencies needed for the transition, while also ensuring that Vattenfall remains attractive to external talents we may need to recruit as well. We need to stick to our budgets and deadlines while ensuring quality and sustainability, and our employees will be fundamental in this.

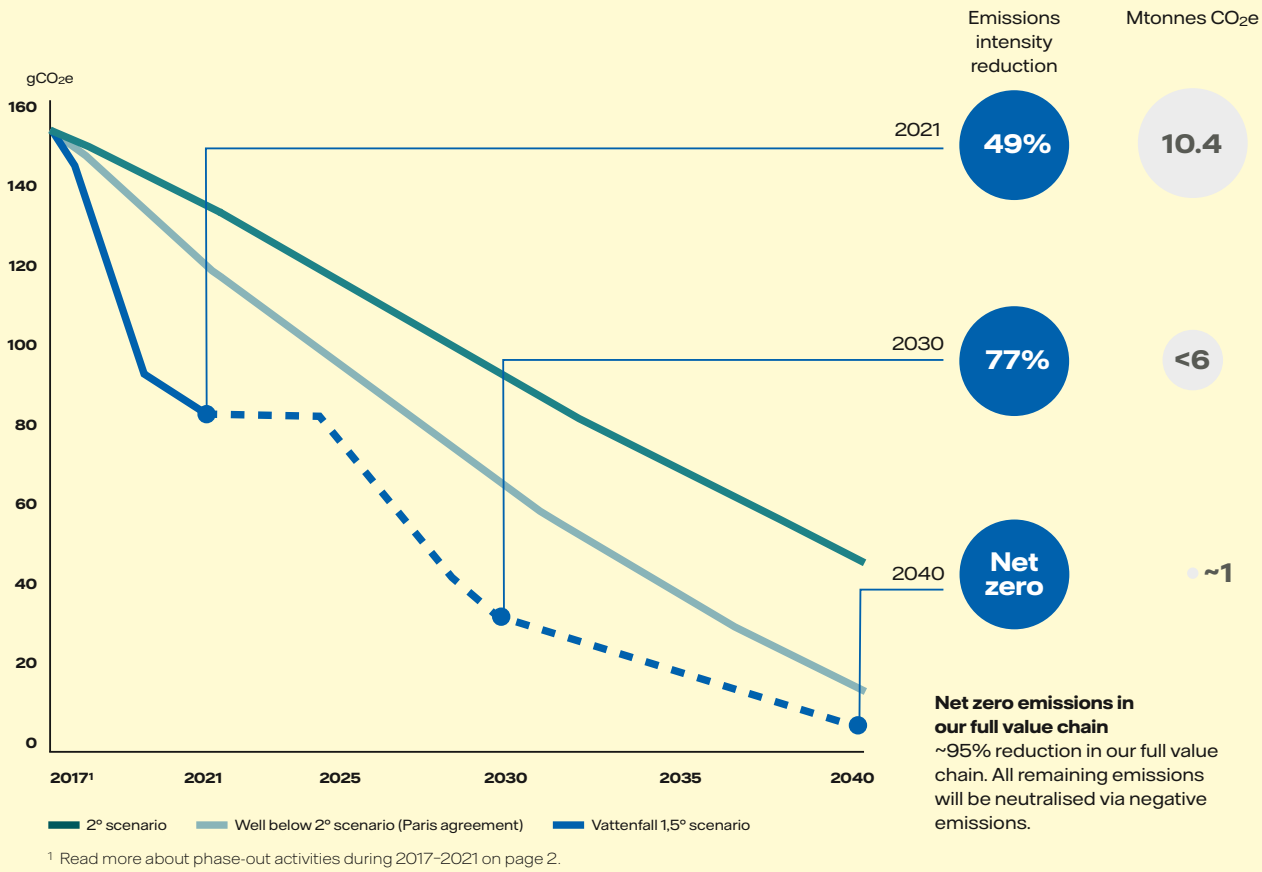
CO_2 emissions, Mtonnes[1]



Own operations 10.4
Customers 12.9
Suppliers 4.8

[1] See more on page 76–77.

CO_2 emissions intensity and targets (Scope 1 + 2)



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

[1] Read more about phase-out activities during 2017–2021 on page 2.

Supporting customers to decarbonise

Emissions from our customers currently represent approximately 54% of Vattenfall's total emissions, making them our largest category of emissions, and therefore also a key priority.

Progress since 2017

In 2017, emissions from customers totalled around 14.2 million tonnes. In 2021, they totalled 12.9, a reduction of 9%. Much of this has been achieved by reducing our coal sales to power-plant customers, while some has been achieved via efficiency improvements at our gas customers, for example by using smart heating technologies or better insulation.

The coming decade and beyond

Coal does not fit with our strategy, and that goes not only for our production, as described above, but also for our trading and sales activities. To that end, we have closed our coal trading desk, and as of 2022 we will no longer deliver coal to power plant customers. Reducing emissions from gas sales to residential and business customers will therefore be the main focus for decreasing our customers emissions moving forward.

Vattenfall believes that being the decarbonisation partner of choice for both B2C and B2B customers is the best way to build a profitable and sustainable business going forward.

To become partner of choice, we will offer our customers innovative products and services to accompany them on their own journeys towards fossil-free living. We are already underway, as we are expanding our biogas offering in the Netherlands and are developing our portfolio in other markets to ensure that we can offer customers fossil-free gas alternatives like biogas, biomethane or hydrogen, depending on how the various markets evolve. Similarly, we have led the research and development of a new type of heat pump which will be suitable for a broader range of customers. We will continue to empower all of our customers to use their energy efficiently, offering insight on their consumption and advice to reduce their CO_2 footprint. We will expand our flexibility services, including batteries, market access, demand-response, or individually tailored solutions, to reduce their energy costs. We will complement this with services further enabling them to integrate decentralised, fossil-free electricity, for example from solar panels. Through these actions, products and services, we believe that we can achieve our targeted emissions reductions while simultaneously growing our customer base.

Smart technologies help customers to use their energy efficiently.

Solar panels enable our customers to integrate decentralised fossil-free electricity.

As with decarbonising our own operations, we recognise that decarbonising our customers will be challenging, and the road ahead has many uncertainties. Regulatory and incentive schemes must be adapted to the urgency of the climate challenge to ensure that more sustainable alternatives are attractive and affordable; technologies like heat pumps must continue to improve; and markets for non-fossil gas alternatives must continue to develop. Nevertheless, we believe our strategy and expertise give us the flexibility to react to market developments as they come, while ensuring that we are the best-in-class partner to aid our customers in their decarbonisation journeys.

Beyond our own boundaries

While we work to support our customers to decarbonise, we as Vattenfall are also customers and recognise the value of working with our suppliers to help us decarbonise the products we buy. In 2020, our supplier-related emissions from goods and services were ~1.2 million tonnes, and in the autumn of 2021, we set a target to reduce that by 50% per kWh we produce by 2030. This means that we cannot simply buy less to achieve our target; and it also means that, as we grow in wind and solar, and source more steel and cement in the process, our total emissions may increase. Our target is thus an important tool to ensure that our emissions decrease, despite an increase in goods sourced. We have taken the first steps on this journey, by engaging in dialogues with hundreds of suppliers and introducing sustainability criteria in multiple tenders.

We see other ways in which we can have impact in the broader value chain as well. We actively partner with other industries to support decarbonisation, for example in steel, cement, and aviation. We have also joined the First Movers Coalition[1], pledging to purchase low-carbon products and technologies from these and other hard-to-abate sectors, thereby using not only our expertise but also our purchasing power to further accelerate the transition.

Partnership key to long-term success

Though Vattenfall's decarbonisation journey started years ago, it is clear that we are still in the early stages of the process. As we face the challenges that come with achieving our own decarbonisation goals, as well supporting our customers and partners to achieve theirs, we will continue to learn and to share these learnings in order to maximise the impact we can have. Knowledge exchange and partnering is key to decarbonise society as a whole. Together, we can do more.

[1] www.weforum.org/first-movers-coalition

THE EDIT

Read what our guest writers Fatih Birol and Vinisha Umashankar have to say on the topic of achieving net zero in The Edit.

Read the articles:

Fatih Birol

Vinisha Umashankars

Important events

In 2021, Vattenfall took several concrete steps towards a net zero future together with our customers and partners and we committed to reaching net zero emissions across our full value chain by 2040. We developed and executed strategically important projects and we put several legal processes and transactions behind us.

Construction started on Vattenfall's first district heating network in the UK – Brent Cross South in London
In January, construction started on the district heating network in Brent Cross South, a redevelopment project in London. The project will see more than 6,000 homes and 400,000 square metres of retail and office space built in the coming 15 to 20 years. It is expected that the first homes will be connected to the district heating network in 2023, which means that it will become Vattenfall's first such network in the UK.

Agreement on compensation for nuclear phase-out in Germany
In March, an agreement was signed with the German federal government on compensation for the early closure of nuclear power in Germany. The agreement was passed into a law in September 2021 and the agreement terminates all disputes regarding the German nuclear phase-out.

HYBRIT- demonstration plant for production of fossil-free sponge iron planned in Gällivare
In March, the Swedish partnership project for fossil-free steel HYBRIT – the partnership between Vattenfall, SSAB and LKAB – announced the planned establishment of a demonstration plant for production of 1.3 million tonnes of fossil-free sponge iron, the raw material for steel, is planned for Gällivare in northern Sweden. The plant is scheduled for completion in 2026. The project reached an important milestone in August, when the world's first fossil-free steel was delivered to a customer, Volvo Group.

Demonstration plant for production of fossil-free sponge iron planned in Gällivare.

London Brent Cross South - Vattenfall's first district heating network in the UK.

Amsterdam South Connection in operation
In March, the Amsterdam South Connection delivered the first heat to the southeast and northwest district heating networks in Amsterdam. This is an important part of the work to enable the connection of up to 290,000 homes to the district heating network by 2040. Earlier this year Vattenfall decided to invest in an additional growth project in the city, the new Hakfort heat transfer station. This will allow for the connection of 20,000 homes to the district heating network, which is planned to be completed at the end of 2022.

Agreement on sale of 49.5% of the Hollandse Kust Zuid offshore wind farm
At the end of June, Vattenfall signed an agreement with BASF for the sale of 49.5% of Vattenfall's Hollandse Kust Zuid offshore wind farm in the Netherlands. The purchase price paid by BASF amounts to EUR 0.3 billion, based on the achieved status of the project, bringing BASF's total commitment to approximately EUR 1.6 billion, including the company's contribution to fund the wind farm construction. The deal was closed in September. Construction of the wind farm has been started, and once fully operational, which is expected in 2023, this will be the world's largest offshore wind farm with an installed capacity of 1.5 GW. In December, BASF re-sold 25.2% of HKZ to the insurance company Allianz.

Sale of Stromnetz Berlin completed
On 1 July the sale of Stromnetz Berlin, Vattenfall's electricity distribution business in Germany, to the State of Berlin was finalised. The purchase price was EUR 2.1 billion (SEK 21.2 billion).

German court rules that Berlin's heat grid belongs to Vattenfall
On 5 July, the Higher Administrative Court in Berlin finally ruled that the city of Berlin had no right to take over Vattenfall's district heating grid in Berlin. This decision put an end to the legal proceedings that had been ongoing since 2014.

Towards

net zero

by 2040

Vattenfall increases emissions reduction targets – now in line with the 1.5-degree scenario
In September, Vattenfall decided to increase emission reduction targets for 2030 and beyond, aiming to reach net zero by 2040. The 2030 target is set to contribute to limit global warming at a maximum of 1.5 degrees Celsius and has been approved by the Science Based Targets initiative, SBTi.

Total capacity of

604 MW

– enough for 600,000 households

Inauguration of Scandinavia's largest wind farm, Kriegers Flak
In early September, Vattenfall inaugurated the Kriegers Flak offshore wind farm in Denmark with the attendance of the Crown Prince of Denmark and the Danish Minister for Industry, Business and Financial Affairs. Kriegers Flak is the largest wind farm in Scandinavia and has increased Danish wind power generation by 16%. The wind farm has 72 turbines and a total capacity of 604 MW, corresponding to the annual electricity consumption of approximately 600,000 Danish households.

First Movers Coalition formed – commits itself to purchase low carbon emission products and technologies
In November, the First Movers Coalition was launched at COP26 in Glasgow by the U.S. State Department and the World Economic Forum. Vattenfall joined as a founding member and thereby committed itself to increasing the share of emerging technologies critical to the net zero transition in its procurement.

Partnership for sustainable aviation fuel
In November, Vattenfall entered a partnership with Shell, Lanzatech and SAS to investigate the production of synthetic sustainable aviation fuel. Instead of using fossil material in the production process, the synthetic aviation fuel will be produced from fossil-free electricity and recycled carbon dioxide from district heating. The goal is for a new production facility that can produce up to 50,000 tonnes of synthetic aviation fuel annually, provided that an investment decision is made at a later stage.

Final investment decision for Vesterhav-projects
In December, Vattenfall took the final investment decision (FID) for the offshore wind farms Vesterhav South and North in Denmark. The wind farms are planned for commissioning in 2023. The combined capacity will be 344 MW which corresponds to the annual electricity consumption for 350,000 Danish households (see page 29 for more information). This is Vattenfall's third largest project in offshore wind power in Denmark after the completion of Kriegers Flak and Horns Rev 3.

Kriegers Flak – the largest wind farm in Scandinavia.

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 power
- 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
- Power plants based on renewable energy, thermal and nuclear power plants
- Electricity grids
- Decentralised solutions (e.g. solar panels, heat pumps, EV charging and smart appliances).

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

Intellectual capital
- Meteorology (weather-dependent energy sources)
- Sustainability framework and integration in operations
- New ways of working, structures and processes
- Research and development.

Vattenfall's business activities

Power and heat 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 in a greater share of renewable generation.

Electricity distribution
Being able to guarantee security of supply requires well-functioning distribution grids and development of smart and flexible network solutions. Vattenfall enables customers to feed self-generated electricity into the grid, thereby becoming so-called prosumers who both buy and sell electricity. Vattenfall conducts electricity grid operations in Sweden. 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 giving customers 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 and gain access to convenient and smart energy solutions.

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 our district heating grids.

Outputs

For customers

- Supply of safe, stable, affordable and low-CO_2 energy to a large number of customers in seven countries
- Enabling our customers to participate in the energy transition by offering decentralised solutions, such as solar power and heat pumps
- Leading the electrification of transport and operating approximately 28,700 charging points.

For partners

- Powering energy-intensive industries with fossil-free electricity and promoting electrification of industry, such as through collaborations with companies in the steel, cement and refinery industries
- Partnering with cities and regions to develop and implement climate neutrality plans.

For society

- 93 TWh of fossil-free electricity generated
- SEK 10.1 billion in paid taxes
- Support and encouragement to local suppliers by organising supplier education and encouraging participation in tenders
- Providing expertise to drive the energy transition and sustainability issues
- Participation in local environmental and biodiversity conservation projects, and in other local projects and activities.

For Vattenfall's owner and employees

- Providing a livelihood for nearly 19,000 employees with an emphasis on inclusion, diversity and safety
- Dividend of SEK 23.4 billion proposed by the Board of Directors for our owner for 2021.

Values

Net impact ratio[1]

+52

See page 73

~13 million
customers in distribution, electricity, gas, heat and energy solutions

SEK 31.2 billion
underlying operating profit

~93 TWh
of fossil-free electricity generated

SEK 10.1 billion
total taxes paid

~55 %
decrease in absolute (Scope 1+2) CO_2 emissions since 2017

39%
of all manager hires were female

19,000
employees and ~SEK 19.8 billion in personnel costs

[1] The net impact ratio is calculated as the difference between positive and negative impacts divided by positive impacts – similar to a profit ratio. It is calculated by Upright.

The UN's Sustainable Development Goals

See page 49

See page 43

See page 39

See pages 53, 87

See page 67

See page 57

The UN's Sustainable Development Goals

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

THE GLOBAL GOALS
For Sustainable Development

Vattenfall's contribution to the UN's Sustainable Development Goals

Vattenfall contributes to all 17 goals to varying degrees. Our impacts on and contributions to all of the goals are important, but we have grouped the goals to show where we contribute at a global level via our strategy, where we contribute at a more local level via our ways of working and where we contribute indirectly via our actions.

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 when it comes 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, whether in the form of e.g. health & safety or internal diversity standards, or working to have a net positive contribution to biodiversity at our external operating sites.

Indirect

Responsible supply chain SDGs with indirect impact

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

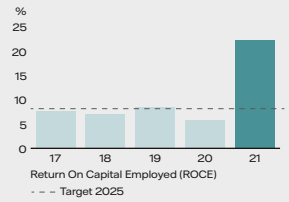
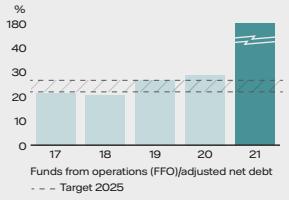
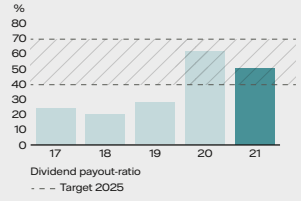
In 2016 we identified the six SDGs that are most relevant for Vattenfall and where we can have the most meaningful global impact. These remain valid internally, as reflected in our strategy, as well as for our stakeholders, as confirmed by our materiality analysis (see page 74 for more information). 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 made numerous final investment decisions that span various renewable energy sources and technologies such as wind farms, solar parks and battery storage for a robust pipeline of clean and affordable energy. Currently, Vattenfall operates 4.2 GW of renewable energy installed capacity.	49
	**9.4** Upgrade infrastructure and retrofit industries to make them sustainable by 2030.	By replacing and upgrading the flood gates of the more than 100 year old hydro power dam in Lilla Edet, with low-carbon cement, Vattenfall can handle higher water flows using a less CO_2-intensive construction process.	43
	**11.6** Reduce the adverse environmental impact of cities by 2030.	Vattenfall has set an ambition to operate 0.5 million charging points by 2030 further enabling the electrification of transport and reducing tailpipe emissions in and around cities.	39
	**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 heat operations is finding opportunities to use excess heat from various third parties such as the Belvedere waste-to-energy plant in the UK where heat losses from the plant will be fed into a local district heating network. More than 99% of residual products from our combustion plants are sold, mainly to the construction industry, for re-use.	53, 87
	**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.	67
	**17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.	The completion of three transformer stations to support the regional grid in Gävleborg County highlights the importance of public-private collaborations to Vattenfall in achieving industrial decarbonation projects like fossil-free data centres.	57

Targets and target achievement

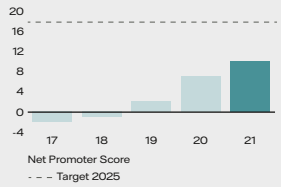
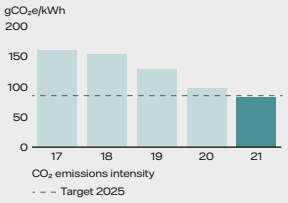
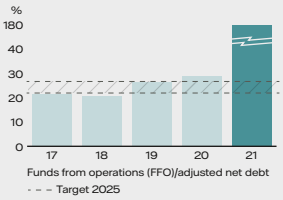
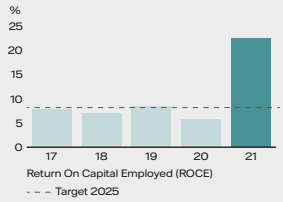
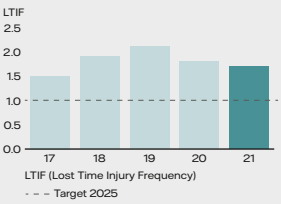
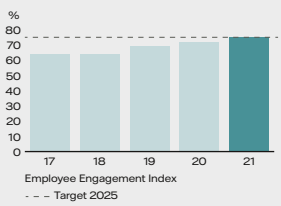
At Vattenfall we aspire to contribute to a sustainable energy system in all parts of the value chain. Our goal is to be a truly customer-centric company as we transition towards a long-term sustainable production portfolio. In 2020 Vattenfall set six strategic targets for 2025 for the Group and Vattenfall's owner has set three financial targets for the Group.

Financial targets

Target over a business cycle[1]	Outcome 2021 (2020)	Comments	Five-year trend
Profitability			
≥ 8% Return On Capital Employed (ROCE)[2]	**22.2%** (5.8%)	Result well above target, which was affected by compensation for the closure of nuclear power in Germany, changes in market values of energy derivatives and inventories and capital gains from the sale of the German electricity distribution business Stromnetz Berlin.	
Capital structure			
22%–27% Funds from operations (FFO)/adjusted net debt	**171.2%** (28.8%)	Large increase mainly due to temporary decrease in adjusted net debt following a positive net change in margin calls received related to our price hedging activities.	
Dividend policy			
40%–70% Dividend share of the year's profit after tax	**23.4** SEK billion[3] (4.0)	The Board of Directors has proposed a dividend of SEK 23.4 billion. The dividend pay-out ratio has shown a positive trend over the past five years and was within the target range both in 2020 and 2021.	

[1] 5–7 years.
[2] The key ratio is based on EBIT and average capital employed (see page 111).
[3] Dividend proposed by the Board of Directors.

Strategic targets for 2025

Target for 2025	Outcome 2021 (2020)	Comments	Five-year trend
Driving decarbonisation with our customers and partners			
+18 Customer engagement, Net Promoter Score (NPS)[1]	+10 (+7)	Higher NPS mainly owing to improvement within the Customers & Solutions operating segment as a result of strong performance in Germany and the Netherlands.	
Securing fossil-free energy supply			
≤ 86 gCO_2e/kWh CO_2 emissions intensity[2,3]	82 (97)	Improvement due to the closure of the coal-fired power plant Moorburg at the end of 2020, lower fossil-based production due to high fuel and CO_2 prices and increased fossil-free production (see more on pages 76-77).	
Conduct high-performing operations			
22%-27% Funds from operations (FFO)/adjusted net debt	171.2% (28.8%)	Large increase mainly due to temporary decrease in adjusted net debt following a positive net change in margin calls received related to our price hedging activities.	
8% Return On Capital Employed (ROCE)[4]	22.2% (5.8%)	Result was well above target and was affected by compensation from the closure of nuclear power in Germany, changes in market values of energy derivatives and inventories and capital gains from the sale of the German electricity distribution business Stromnetz Berlin.	
Motivating and empowering our people			
≤1.0 Lost Time Injury Frequency (LTIF)[5]	1.7 (1.8)	Ongoing initiatives to improve safety, including our common health and safety (H&S) strategy and framework for follow-up throughout the organisation (see more on pages 81-83).	
75 Employee Engagement Index[6]	75 (74[7])	Improved result puts Vattenfall among the highest-ranked organisations in the survey, well above the industry average (see more on page 61).	

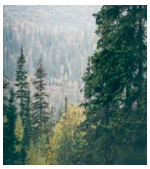
[1] NPS is a tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services.
[2] Including other greenhouse gases, such as N2O and SF6.
[3] Direct emissions (Scope 1) and indirect emissions from purchased electricity and heat (Scope 2) as defined in the Greenhouse Gas Protocol standard.
[4] The key ratio is based on EBIT and average capital employed (see page 111).
[5] 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 ratio pertains only to Vattenfall employees.
[6] Documentation for measurement of target achievement is derived from the results of the My Opinion employee survey, which is conducted on an annual basis.
[7] The value has been adjusted compared with previously published information due to change in methodology.

Strategy

We are at the epicentre of the energy transition which is progressing at an increasing speed, and brings opportunities for a company like ours. Vattenfall has formulated a strategy to reach our goal of enabling fossil-free living within one generation. The strategy steers our direction; the way we prioritise business opportunities, focus our efforts and engage our employees, so that we can create value for our stakeholders by remaining a leader in the decarbonisation of our sector and beyond.

Our beliefs about the future

Vattenfall operates in a complex context highly influenced by many factors, such as macroeconomic and geopolitical conditions, technology developments and regulations. Below, we summarise our view of the future, which represents the most important trends we need to monitor, leverage and navigate to successfully deliver on our strategy.

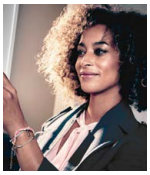


Sustainability is the business

Sustainability is increasingly becoming a competitive advantage and business necessity. This is driven by commitments as well as requirements from corporations, investors, customers and governments and encompasses all aspects of sustainability (financial, social and environmental). Only in recent years, sustainable investments have experienced double-digit growth, and companies committed to science-based targets increased six-fold in the EMEA region since 2019.[1] In addition, half of all consumers see sustainability as one of the five most important aspects within several product categories and over a third are willing to pay on average a quarter more for sustainable products.[2]

Competition intensifies further, with new players and capital entering the market

We believe more players and actors will want to join the race towards sustainability as the competitive advantage of sustainable business models and products grows. For the energy market, this means intensified competition for business opportunities within generation, distribution and consumption of sustainable and fossil-free energy solutions. Cash-rich oil and gas companies and automotive manufacturers will continue to move into the sector, as well as digital giants and innovators introducing disruptive innovations, to find new and attractive ways of engaging with energy customers. Fierce competition will pressure future margins and force companies to clearly leverage competitive advantages.



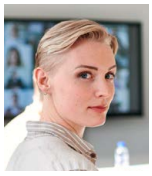
Broad common understanding crucial to ensure the required pace of change

While regulation and policy drive the transition forward, a common view for infrastructure build-out is lacking which risks slowing down permitting processes and the implementation of projects. Support for various technologies, may vary over markets and time. Therefore, it will be important for companies as well as politicians and other organisations to both monitor the public opinion to work together with all stakeholders to achieve the necessary pace in the energy transition (see pages 34–35).

[1] The Science Based Targets initiative (SBTi) database, 2021 vs 2019.
[2] Simon & Kucher, Global Sustainability Study 2021.
[3] National targets and country-specific net zero scenario analyses.

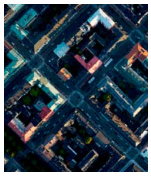
Accelerating demand for fossil-free electricity will challenge the energy system

As electrical vehicles are rolled out, and heating and industrial processes increasingly become powered by electricity, the demand for fossil-free electricity will accelerate. As a consequence, by 2050, generation of electricity needs to double in Sweden to meet demand.[3] In Germany, renewables capacity needs to more than quadruple and increase ten-fold in the Netherlands to allow for the phase-out of fossil fuels as well as increasing demand. A majority of the generated electricity will come from renewable and intermittent energy sources. This will challenge the energy system as it will have to cope with unprecedented fluctuations in electricity supply and demand. Capacity, sufficiently flexible to cover periods when weather dependent sources cannot deliver, and the necessary grid infrastructure, will therefore be crucial to ensure security of supply.



Bridging the skills gap will be critical to succeeding in the energy transition

Changing demographics and an accelerating energy transition will create an increasing labour shortage, resulting in fierce competition for key technical and project management skills. In addition, a competence shift is expected, where new skills within analytics and digitalisation, business development and cross-functional collaboration are needed. To attract talent, it will be essential for companies to offer innovative and competitive benefits and new, more flexible ways of working. Companies also need to retain and retrain current employees to ensure the right competence and to leverage the full potential of the workforce.



Corporations need to build resilience to unexpected change

Driven by increased digitalisation, geopolitical instability and new types of criminal activities, companies will increasingly be forced to tackle new and evolving threats such as cyber-attacks, disruptive events, disinformation and espionage. Companies must build the ability to secure assets and to ensure business continuity while facing these threats.

Fossil-free living within one generation

77%

Lower emission intensity of own emissions by 2030 (base year 2017)

Our increased ambitions aligned with the 1.5°C trajectory
(see pages 10-13)

Net zero

Emissions in our full value chain by 2040

Our 2030 ambitions[1]

2X
Electricity distributed in our grid
(see pages 56-57)

>125 TWh
Fossil-free electricity produced
(see page 25)

30%
More customers with low or no carbon heat
(see pages 52-53)

50%
CO_2 reductions in procurement of goods & services
(see page 86)

25 X
More e-mobility charging points in operation
(see pages 40-41)

4X
Commissioned solar & wind capacity added
(see pages 48-49)

[1] Base year 2020. Fossil-free electricity production was 93.0 TWh in 2021.

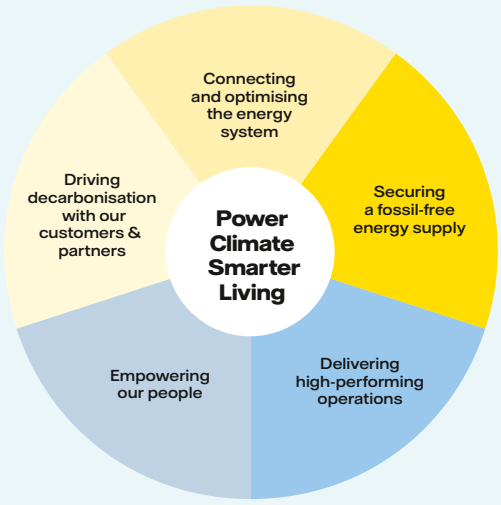
Our strategic focus areas

Vattenfall has five strategic focus areas to guide the company in its strategic direction. They illustrate how we create traction given the context we operate in, and how we can capture business opportunities in the energy transition. The strategy wheel is based on the integrated utility logic and describes the focus throughout the value chain (top three parts) and the internal organisation to make it happen (two lower parts).

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.

Remaining a leader in the energy transition by staying committed to our goal of enabling fossil-free living within one generation

With an increased focus on the climate agenda, such as the European Union's commitment to a 55% reduction of greenhouse gas emissions by 2030, the latest UN IPCC report and COP26, companies experience an increasing pressure to act, not only from legislators but also from society at large. At Vattenfall, we believe there are plenty of business opportunities for those who stay at the forefront of this development, and over the past few years, we have established ourselves as a leader in the energy transition by staying committed to our goal of enabling fossil-free living within one generation and by setting ambitious climate targets. Given the accelerated pace of change, and as we have already delivered on our earlier targets, we now double our climate ambition. Our 1.5-degree SBTi target for 2030 and Net Zero target across our full value chain by 2040 allow us to remain competitive, a leader in the decarbonisation of our sector and an enabler of industry decarbonisation.

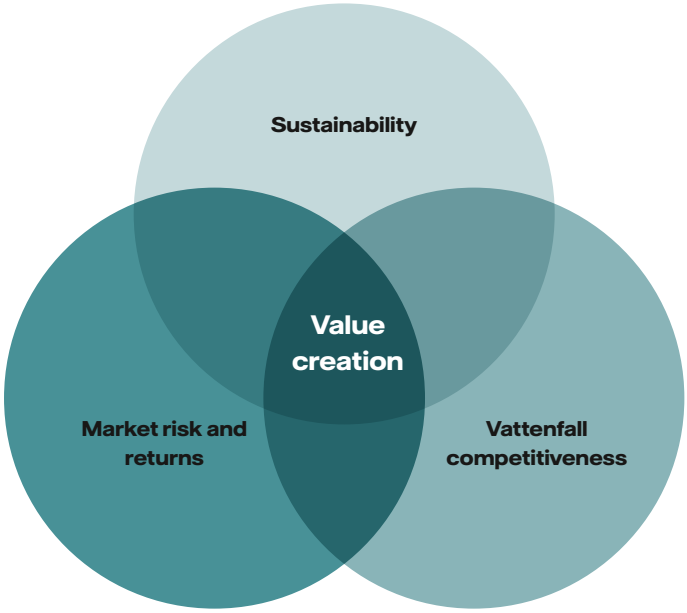
Increased business ambitions to 2030 to align with the 1.5-degree scenario

To make sure we deliver on our commitments, we have set a number of ambitions for 2030 (see page 24). In order to reach our climate targets we need to both generate more fossil-free electricity and cut CO_2 emissions in our own operations. While the exact path, targets and implementation of our strategy will adjust to changing market conditions and our competitive strengths, these ambitions serve to set the direction and range of our impact in the energy transition. Based on our current portfolio and pipeline (see pages 28–29, 42, 48) as well as expected demand development mentioned on page 23, our guiding ambition to reach our 2030 commitment is that we will produce more than 125 TWh fossil-free electricity by then. In addition, we enable electrification of society by expanding and strengthening our electricity grid and our charge point network for electric vehicles.

By aiming to cut CO_2 emissions in our procurement by 50% until 2030, we also take important steps towards net zero.

Focus on value creation improves prioritisation and competitiveness

Vattenfall creates value for its stakeholders by being a leader in the energy transition and delivering a solid financial performance. We strongly believe that these interests align. To ensure that we continue to create value, we need to prioritise business opportunities that fully leverage the aspects of sustainability, market risk and return, and Vattenfall competitiveness (see illustration to the right). First, all our businesses need to contribute to Vattenfall's sustainability commitments. Second, we need a clear understanding of market risks and expected returns, as well as the regulatory and competitive landscape. Finally, all our businesses need to be competitive in the markets or customer segments we serve, for example through economies of scale, synergies between different parts of the value chain or by being able to offer a higher value product. None of these three should be pursued at the cost of the other two and, in this way, facilitates decision making and prioritisation between investment opportunities. When done right, it means we can capture returns above market average and lead the energy transition as a profitable business.



Vattenfall creates value by prioritising businesses where sustainability and market opportunities align with Vattenfall's competitive advantages. An increased focus on value creation helps to align the business with our strategic direction.

Creating value by being an integrated utility

To remain an integrated utility – meaning that we are active throughout the energy value chain – is at the core of our strategy. This reduces overall risks through diversification and means that we can create competitive advantages by leveraging synergies. We also become an attractive partner through in-depth expertise and delivery capabilities across the energy value chain. In short, we believe that this puts us in an excellent position to generate value for our stakeholders.

Our strategy wheel, on page 24, illustrates how we engage in different parts of the value chain, and the organisation needed to deliver on our ambition. We grow in renewables, maintain and optimise existing fossil-free assets and phase-out fossil-based generation. We enable the energy transition by modernising and expanding the electricity distribution grid and optimising market services and we support our customers in their efforts to decarbonise.

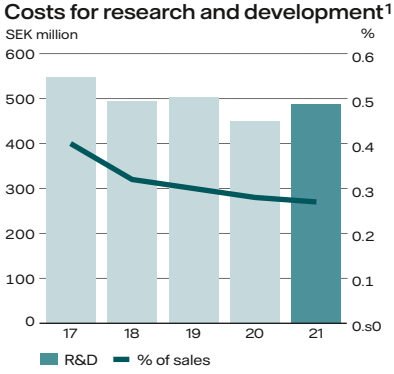
Through partnerships, we also contribute to decarbonising industries in several hard-to-abate sectors, such as steel, aviation fuel and chemicals. In these partnerships, Vattenfall supplies fossil-free electricity, electrical infrastructure and market services and co-creates and explores business opportunities together with all involved parties. See page 3 for examples.

To create the preconditions for delivering high-performing operations, we have established digital platforms for sharing information and rapidly test new ideas across business areas and we continuously work to streamline processes and information flow. The strategy wheel also highlights that, ultimately, Vattenfall's success is all about the people executing the strategy. Hence, it is crucial for the company to continuously attract new talent and competencies, retain people with critical capabilities and enhance and develop the skills of our employees.

Driving technical innovation through R&D

Through research and development (R&D), Vattenfall provides new capabilities to serve its customers better, increase efficiency in its operations and reduce its environmental impact. The R&D unit, with some 120 experts, is driving innovation together with colleagues throughout the organisation and has several projects in implementation. During 2021 Vattenfall spent SEK 488 million on R&D.

Costs for research and development[1]



[1] Excludes costs related to HYBRIT.

Two general R&D themes are flexibility services for grids and markets of various kinds, as well as the use of machine learning and data analysis . These are in place to further develop the company's business and make operations more efficient and environmentally responsible, and in line with reaching our climate goals.

One of the employees working within flexibility is Elise Ramqvist, who started her career in Vattenfall through a Master thesis project in 2018. After successful completion, Elise was employed and is now working with flexible solutions for Vattenfall's electricity grids. Already during her mechanical engineering studies at the Swedish KTH Royal Institute of Technology, Elise had the opportunity to study microgrids from a sustainability perspective. Jointly with a team of experts in R&D and colleagues from the distribution business, Elise drives innovation projects involving grid-connected battery storage solutions.

"During my studies, I realised the impact and value of sustainable energy solutions for society. At that point, I knew that I wanted to work for an employer committed to taking the lead in the energy transition. Our work aims at challenging the way we plan, build and operate our electricity grids today through different projects that aim at enabling flexibility and efficient use of the grid, as part of the energy transition", Elise Ramqvist explains.

[2] https://coordinet-project.eu/projects/coordinet

Disconnected islands through microgrids

In the pilot project Microgrid Island, a microgrid with two separately located battery energy storage systems, solar production, and smart control will be integrated in the existing grid on the island Arholma in the Stockholm Archipelago. The purpose is to evaluate microgrid technologies to find future solutions that improve the security of supply, voltage quality and reliability while being faster and cost-efficient for the grid customers.

"What really makes this project a front-runner is that the microgrid will be able to detect the need for as well as execute seamless so-called islanding. When going into island mode, the microgrid will disconnect the Arholma island from the mainland grid and instantly switch to be powered by the batteries. Such an event is typically triggered by faults on the mainland, thus avoiding interruption of supply to the grid customers on the island", Elise Ramqvist elaborates.

The largest battery energy storage system (BESS) in Sweden

With its 5 MW installed capacity and 20 MWh output, Sweden's largest BESS was successfully put into operation in Uppsala in 2020. The goal is to reduce congestion in transmission networks by means of peak shaving through participation in the local capacity market that is also part of the EU-project CoordiNet[2]. In addition, the BESS is pre-qualified and able to provide frequency regulation (FCR-D) to the Transmission System Operator (TSO) Svenska kraftnät, to support the stability of the national grid.

"I am currently working on the evaluation of the first out of ten years of battery capacity service in order to gain continuous learnings on the potential of grid-connected batteries to mitigate capacity limitations", Elise Ramqvist explains.

Biodiversity-friendly hydro power causing only minor production losses

Another colleague that makes a significant contribution within machine learning and data analysis is David Aldvén. He started his career at R&D as a biologist in 2016 after completing his PhD studies in biology and is now responsible for the hydro power environmental R&D programme.

"The most important part of my role is to be open to new cross-disciplinary collaboration, as new viewpoints often yield new innovative solutions. The common denominator for all projects in the hydro power environmental programme is to reach the goal of the programme: 'Biodiversity-friendly hydro power with minor production losses'. We want to find solutions with high ecological benefits that at the same time allow high output from hydro power. One such solution is to reduce the huge water spill of almost 10 m^3/s needed to attract fishes to a fish ladder, however we have found that we can spill 2 m^3/s and use water jets to get the same benefit for the fish, with lower production losses", David Aldvén explains.

Questions range from how fish respond to alterations in water velocities and turbulence and how this affects their choice of migration route, to counting and determining the health status of fish using artificial intelligence. Research into applied nature is also conducted in order to develop sustainable, cost-effective and functional solutions for fauna passages past hydro power plants.

"Currently most of the work in the environmental programme is focused on hydro power due to the environmental license renewal plan, where all our hydro power plants will get updated environmental licenses within the coming 20 years. This will be a great challenge, but also an opportunity to make Vattenfall's hydro power even more environmentally friendly", David Aldvén concludes.

As Elise's and David's work demonstrates, R&D is one of the means, but an important one, for Vattenfall to realise its strategy of fossil-free living within one generation.

Elise Ramqvist
R&D Engineer

David Aldvén
Fisheries Biologist

Green bond investor report

Vattenfall issued its first green bond in June 2019, and at year-end 2021 it had a total of EUR 2.1 billion in green financing outstanding. Vattenfall has decided to use green financing in its funding activities and expect all future long-term financing to be made under the Green Bond framework. Our framework[1] consists of four eligible categories: renewable energy and related infrastructure, energy efficiency, electrification of transport and heating, and industry projects. The framework has been analysed externally by the climate research institute CICERO[2] and received the highest rating, "Dark Green".

Investments under Vattenfall's Green Bond Framework

								Of which green bond spent[2]		
Category	**Project/country**	**Type**	**Capacity**	**Est. CO_2 reduction[1] (ktonnes)**	**Vattenfall's share**	**Start/ compl.**	**Total investment**	**2019-2020**	**2021**	**Total**
Renewable energy and related infrastructure	Kriegers Flak/ Denmark	Wind offshore	604 MW	300	100%	2019/ 2021	7,600 MDKK	2,414	6,398	8,812
	Princess Ariane (retained)[3]/ Netherlands	Wind onshore	180 MW	175	100%	2018/ 2020	220 MEUR	1,154	194	1,348
	Princess Ariane (sold)[3,4]/ Netherlands	Wind onshore	118 MW	115	0%	2018/ 2020	174 MEUR	1,089	-1,089	0
	Hollandse Kust Zuid 1-4/ Netherlands	Wind offshore	1,500 MW	2,000	50.5%	2020/ 2023	2,600 MEUR	14	2,311	2,325
Industry projects	HYBRIT/Sweden	Fossil-free steel	Pilot project	–	33%	2019/ 2021	858 MSEK	283	118	401
Total								**4,954**	**7,932**	**12,886**
Not yet used										9,038
Grand total										**21,925**

[1] 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.
[2] 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 2021.
[3] The project was previously called Wieringermeer and Wieringermeer extension.
[4] Sold in December 2021. Funds returned to portfolio.

Kriegers Flak
Scandinavia's largest offshore wind farm was inaugurated in September 2021. It is estimated that the wind farm will reduce CO_2 emissions by 300 ktonnes per year. With 72 offshore wind turbines, it has a capacity of 604 MW and can generate electricity corresponding to the annual energy consumption of approximately 600,000 Danish households.

HYBRIT
A pilot project conducted in collaboration with SSAB and LKAB using innovative hydrogen gas technology with the potential to significantly reduce CO_2 emissions from the steel industry, which accounts for approximately 10% of Sweden's total CO_2 emissions. In August, the first steel was produced using HYBRIT technology with good results and delivered by SSAB to the first customer, Volvo Group.

[1] https://group.vattenfall.com/siteassets/corporate/investors/funding_ratings/doc/vattenfall-green-bond-framework.pdf
[2] https://group.vattenfall.com/siteassets/corporate/investors/funding_ratings/doc/vattenfall-second-opinion-29may2019.pdf

Investment plan

Vattenfall's investment strategy reflects our 1.5-degree target and our goal of fossil-free living within one generation. Substantial growth investments will be made in fossil-free production. Other key investment areas are our electricity grids and our district heating business, which we are both expanding and developing; efforts that will contribute to electrification and a reduced climate footprint.

Total investments
Total planned net investments for 2022 and 2023 total SEK 55 billion. Gross investments amount to SEK 77 billion, where the difference is mainly attributable to partnering on Hollandse Kust Zuid, partnership assumptions for the Norfolk projects as well as develop-to-sell assumptions for some of the onshore wind and solar projects. The figures that follow relate to net investments.

Growth investments
Growth investments account for around 62% (SEK 34 billion) of the total investment budget. Approximately SEK 23 billion in investments are planned for the development and construction of new wind farms (see table on page 29 for major decided projects). Largest projects are Hollandse Kust Zuid in the Netherlands (~1,500 MW), the Vesterhav projects in Denmark (344 MW) and the Norfolk projects (up to 3,600 MW) in the UK. Development costs for potential wind power projects further ahead in the future, like Hollandse Kust West in the Netherlands, ScotWind in Scotland and offshore projects in Sweden and France, are also included. This means that a number of projects in the investment plan will take more than five years to complete, as large-scale 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. This mainly entails connecting new customers and areas to our electricity and heating networks. Major growth investments are being made in the electricity distribution operations in response to increased capacity requirements, to realise the connection of new renewables capacity as well as other new connections (see pages 56–57). In the heat business this includes projects such as a new heat storage facility at the Reuter site in Berlin and establishing a combined control centre for the district heating business in Berlin.

It also includes projects in the Netherlands such as in Diemen, where we are studying the opportunities for a biomass-fired heat-only boiler (100 MW heat), or installing a new e-boiler with 120 MW capacity at the site. Further growth activities amount to nearly SEK 2 billion and include investments in electric vehicle charging stations, solar and battery projects, heat and energy solutions and HYBRIT (see page 3).

Maintenance and replacement investments
Vattenfall is also investing heavily in maintenance, modernisation and replacement of facilities. Planned maintenance and replacement investments amount to approximately SEK 21 billion over the coming two years. These include several projects to decarbonise our Berlin heat assets, such as new gas turbines with heat recovery boilers (80 MW heat each) that are planned in Charlottenburg and transitioning from fossil-fueled capacity to sustainable heat production in Moabit and Klingenberg. We plan to invest SEK 9 billion in our electricity grids in Sweden to secure the quality of supply and reinforce the grids. Further, we are investing approximately SEK 2 billion to safeguard the safe operation of our Swedish nuclear plants by completing safety measures at Ringhals and Forsmark. Investments in dam safety as well as in maintenance and refurbishment of the Nordic hydro power fleet are also planned to total approximately SEK 2 billion in the plan.

Vattenfall's investment plan 2022-2023

Total investments per category

- Growth, SEK 34 billion
- Maintenance, SEK 16 billion
- Replacement, SEK 6 billion

Growth investments per technology

- Wind power, SEK 23 billion
- Heat supply, SEK 5 billion
- Electricity distribution, SEK 3 billion
- Other[1], SEK 3 billion

Growth investments per country

- Netherlands, SEK 18 billion
- Denmark, SEK 9 billion
- Sweden, SEK 5 billion
- Germany and other[2], SEK 2 billion

[1] Mainly charging solutions, solar and battery projects, heat and energy solutions and HYBRIT.
[2] Germany (SEK 3 billion) and other (SEK -1 billion). Other countries mainly include France and the UK, negative value due to expected income from partnerships and from sales of projects developed for sale.

Hollandse Kust Zuid

On 5 July 2021, Vattenfall started the construction of Hollandse Kust Zuid (1,500 MW) offshore wind farm in the Netherlands. Once completed, it will be the world's largest offshore wind farm. The project is built without subsidies and owned jointly with partners BASF and Allianz. It will generate fossil-free electricity equivalent to the annual consumption of more than two million Dutch households.

First construction campaign completed
Building a wind farm of this size, with 140 turbines, takes a lot of preparation and planning. Therefore, construction is split into phases. The first phase ran in the summer and autumn of 2021 and saw the installation of the first 34 monopiles. The second phase started in March 2022, with the installation of the remaining 106 monopiles. The first cables and turbines will be installed during spring 2022.

Local marine species in focus
Vattenfall tries to contribute proactively to the living conditions of local marine species and habitat diversity at the Hollandse Kust Zuid site. Read more about these efforts on pages 50–51.

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	Total investment, SEK million[3]
Hollandse Kust Zuid 1–4[4]	Netherlands	Wind offshore	1,500 MW	2,000	51%	2023	2,600 MEUR	25,979
Vesterhav-projects[4]	Denmark	Wind offshore	344 MW	170	100%	2023	769 MEUR	7,815
South Kyle[4]	United Kingdom	Wind onshore	240 MW	120	100%[5]	2023	254 MGBP	3,006
Uppsala Carpe Futurum[4]	Sweden	Biofuel	112 MWth	n.a.	100%	2022	1,843 MSEK	1,843
Heat storage Reuter[4]	Germany	Heat storage	2,750 MWh	n.a.	100%	2023	50 MEUR	502
A16 Klaverspoor[4]	Netherlands	Wind onshore	34 MW	30	75%	2022	46 MEUR	462
Nij Hiddum Houw[4]	Netherlands	Wind onshore	19 MW	20	100%	2022	30 MEUR	305
Heat transfer station Hakford[4]	Netherlands	District heating infrastructure	n.a.	n.a.	100%	2022	22 MEUR	224
Battery@Ray[4]	UK	Battery	20 MW	n.a.	100%	2022	15 MEUR	152

[1] All numbers in the table reflect the status as per 31 December 2021.

[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] Year-end exchange rate as per 31 December 2021.

[4] The project is taxonomy-eligible.

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

EU Taxonomy reporting

The EU taxonomy requires large companies to disclose the share of their turnover, opex and capex that can make a significant contribution to at least one of EU:s environmental objectives. For 2021 the requirement is to disclose financial information linked to economic activities listed in delegated acts on climate change mitigation and climate change adaptation. For the reporting year 2022 a more detailed reporting is required and delegated acts on more environmental objectives are expected. There is a current proposal from the European Commission on a complementary delegated act to also include economic activities linked to nuclear and natural gas which are currently excluded in already adopted delegated acts. Since legislation is pending, economic activities connected to nuclear and natural gas have been reported as non-eligible in the taxonomy reporting for 2021.

Turnover
In Vattenfalls taxonomy reporting, turnover is defined in accordance with "net sales" in the Consolidated income statement. In 2021, 39% of Vattenfall's turnover was eligible according to the taxonomy and was mainly derived from electricity generation from hydro power and pump storage, wind and solar power (including development and divestment of wind and solar farms) and distribution of electricity.

61% of turnover was non-eligible which primarily related to the sale of gas, electricity trading and sales, electricity generation from nuclear power and electricity, and heat generation from natural gas and coal. Coal-related turnover represented less than 2% of total turnover.

Operating expenses (opex)
In Vattenfalls taxonomy reporting, opex is defined as costs related to maintaining non-current assets, research and development expenses, and lease expenses not recognised in the balance sheet. For Vattenfall these expenses totalled SEK 8 billion in 2021 and are reported under "personnel expenses" and "other external expenses" in the Consolidated income statement.

Opex from taxonomy-eligible activities represented 61% and were primarily related to activities from electricity generation from wind and solar, distribution of electricity, and electricity generation from hydro power and pump storage.

39% of opex was non-eligible and was mainly related to electricity generation from nuclear power, and electricity and heat production from natural gas and coal.

Capital expenditure (capex)
In Vattenfalls taxonomy reporting, investments are defined in accordance with IAS 16 and IAS 38, whereby business combinations are considered, as well as additions to right-of-use assets reported in accordance with IFRS 16. The investments Vattenfall reports in accordance with IAS 16 and IAS 38 are listed in the section "Specification of investments" under "total investments" (page 113). Additions to right-of-use assets are described in "Note 14 Leasing" in the consolidated financial statements (in the table "Right-of-use-assets," under the line item "Additions to the right-of-use-assets during the year"). See pages 28–29 for information on the investment plan.

Vattenfall's capex for 2021, including additions to right-of-use-assets, amounted to SEK 25 billion. 82% of these related to taxonomy-eligible activities. Just over half of these were related to investments in electricity generation from wind and solar. Vattenfall also made extensive investments in electricity distribution grids, district heating grids, and electricity generation from hydro power. Investments in the electrification of transportation and innovative hydrogen technology (HYBRIT) are also included.

Non-eligible investments corresponded to 18%, mainly pertained to investments in electricity generation from nuclear power, and electricity and heat production from natural gas and coal.

Accounting policies, estimates, and assumptions
The taxonomy reporting is based on a review of Taxonomy-defined activities of all units within the Group. In certain cases, values have been allocated based on production volumes or other relevant allocation keys. Vattenfall's Taxonomy reporting is further based on its segment reporting, meaning that results from electricity-production price hedges are not allocated by production type. Price hedges are recognised as a non-eligible activity.

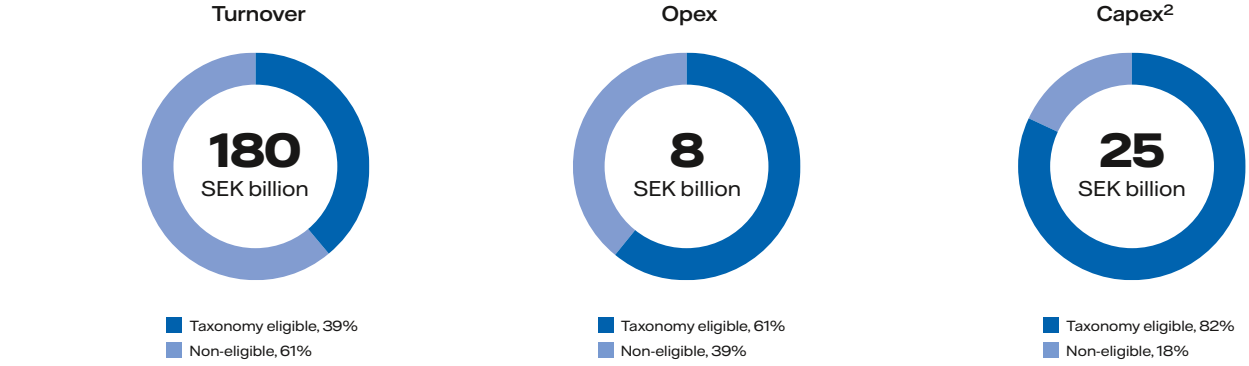
In early July 2021, Vattenfall divested the distribution company Stromnetz Berlin. Vattenfall has recognised all turnover (SEK 3.2 billion), opex (SEK 0.1 billion), and capex (SEK 0.8 billion) under the activity "distribution of electricity," which is eligible under the taxonomy.

For opex and capex, the taxonomy provide that certain expenses – so-called "category-C expenses"[1] – may fall under the taxonomy framework. Vattenfall's assessment is that these have not been possible to incorporate in the reporting based on the instructions published up until 31 January 2022.

Vattenfalls Taxonomy reporting is based on the interpretation of the taxonomy regulation up until 31 January 2022. As practice may change and develop over time, it might be necessary to update the accounting policies.

[1] As defined in the Commission Delegated Regulation (EU) 2021/2178, Annex I, section 1.1.2.2. c and 1.1.3.2. c

Turnover, operating expenses, and investments for 2021 in the taxonomy reporting:



[2] Green bonds were used to finance 32% of all investments made (see page 27 of the Green Bond Investor Report).

Markets and regulations

2021 has been the year of EU regulation. In July, the European Climate Law was adopted with a binding target of achieving climate neutrality by 2050. The development of the details in the EU taxonomy as well as sharp increases in electricity prices in the second half of the year, spurred a discussion on the future of European energy mix.

Turbulent year on the power markets
While economies suffered from Covid-19 restrictions in 2021 renewables such as wind and solar continued to grow rapidly and electric vehicles set new sales records. Clean energy technology is becoming a major area for investment. International collaboration and competition are further increasing. At the same time wholesale electricity prices reached new highs mainly driven by natural gas and coal prices. In parallel, price volatility was extremely high as a consequence of a tight supply and demand balance and the weather-dependent output of renewables production.

Debate about electricity market design
A rise in gas and electricity prices led to a heated debate at EU and national levels on how to limit the negative impact for customers and industry. Some countries including France introduced price caps for retail customers on gas and electricity bills.

Other markets like Denmark, Germany and the Netherlands did not intervene with additional regulation in order not to jeopardise the principles of the liberalised electricity and gas market design. Other measures such as electricity tax deductions and monetary support to consumers have been proposed to mitigate the high energy bills. The European Commission resisted pressure for adjustments referring national policymakers to tools such as tax deductions and subsidies. An alliance of EU member states outlined the need of reforms in order to decouple the price of electricity mainly from the cost of gas to prevent further market volatility.

Increased decarbonisation ambitions at EU level

Following the announcement of the European Green Deal in 2019 and a year of policy strategies in 2020, 2021 has been the year of EU legislation. With the European Climate Law, the EU has set itself a binding target of achieving climate neutrality by 2050. This requires current greenhouse gas emission levels to drop substantially in the coming decades. As an intermediate step towards climate neutrality, the EU has raised its 2030 climate ambition, committing to cutting emissions by at least 55%.

To be in line with the new 2030 decarbonisation ambitions, the European Commission tabled proposals in July 2021 under the so-called "Fit for 55" package. Overall, the package strengthens eight existing pieces of legislation and presents five new initiatives, across a range of policy areas and economic sectors: climate, energy and fuels, transport, buildings, land use and forestry. The legislative package still must be agreed by the European Council and the European Parliament.

Regulatory focus on hard-to-abate sectors
In the run-up to COP26, the UN Climate Change Conference in Glasgow in November 2021, many countries strengthened their commitments to further reduce CO_2 emissions. Germany, Sweden and Scotland have binding targets to become carbon neutral by 2045, France, Denmark, the UK and the Netherlands have a national 2050 carbon neutral target. Germany decided to phase-out coal power by 2030 instead of 2038 as planned earlier. Policy makers increasingly focus on the heavy industry (cement, steel, chemicals and aluminium) and heavy transport (shipping, trucking and aviation) – sectors where emissions are hard-to-abate. In Sweden the focus is on upscaling the already fossil-free electricity system in order to meet the increased demand as the industry and transport sectors electrify. An electrification strategy is to be presented by the Swedish government early 2022. In the UK, regulation of heat networks is being introduced for the first time (see pages 54–55).

EU taxonomy spurs debate on energy mix
The details of the EU taxonomy regulation were developed throughout the year and this lead to Member States becoming more vocal about their views on the energy mix.

Many markets in favour of new nuclear
Nuclear, as part of the fossil-free energy mix of the EU, has support from several Member States, like Bulgaria, Croatia, Czech Republic, Finland, France, Hungary, Poland, Romania, Slovakia and Slovenia, but also Sweden and the Netherlands. This does not mean that all of them plan to build new nuclear power plants, but that they see it as an important technology for the EU to reach the climate targets and enable the transition. At the moment, France, Finland and Slovakia are building new nuclear plants and seven Member States (Bulgaria, Czech Republic, Lithuania, Poland, Romania, Slovakia and Slovenia) plan to build 15 new reactors (not necessarily plants) to come online around 2030.[1]

In Sweden there is a public debate whether to rethink its earlier commitment to gradually decommission nuclear power. Licenses for an expansion of the storage of low- and medium active waste as well as the final repository for spent nuclear fuel were granted in December and January 2022, respectively. In the UK a new nuclear power station is under construction, and the UK Government is very supportive of additional new nuclear power. The incoming Dutch government included exploring possibilities to construct two new nuclear power plants in their program. President Emmanuel Macron announced the construction of six new pressurised water reactors. Despite an earlier coal exit Germany's new government repeated the decision of the former government to stick to its nuclear exit in 2022.

[1] Source: https://world-nuclear.org/information-library/country-profiles/others/european-union.aspx

Expansion of offshore wind – a vital part of energy transition

Many markets where electricity has currently mainly been produced via thermal power plants have acknowledged the dependence on offshore wind as a vital part of their energy future. Denmark, the UK and the Netherlands are among the key countries with already very high targets. The need to further electrify industry will lead to an enormous demand for fossil-free electricity that to date can most feasibly be delivered at a large scale via offshore wind. Doubling the required installed capacity, as planned in the Netherlands, and an increased ambition in France, is no exception but rather to be the rule and way to go. Also, Germany nearly doubled its offshore targets to 70 GW in 2045.

Sweden does not have a target for offshore wind but the TSO, Svenska kraftnät, has been given an assignment to develop a plan for offshore transmission connections. In the UK, the target is for 40 GW of offshore wind by 2030. During the year concerns about biodiversity and visual pollution linked to the expansion of renewables became a growing issue in all markets.

Biomass under discussion

Biomass as a future low-carbon fuel has different levels of support among policymakers. In the Netherlands, new government plans to phase out biomass and only allow woody biomass sourced from the EU in the meantime. Policymakers in other markets are more positive about biomass, nevertheless public concerns around this fuel are widespread on several of our markets.

Role of natural gas in the energy mix

Sweden's heating sector is mainly fossil-free. Other geographies are still heavily dependent on gas especially in the domestic heating sector. As decarbonisation of the European building sector will take time and costs will be significant, political focus is laid on this sector to accelerate the transition to be in line with EU and UK decarbonisation targets. Additional funding programmes were set up in 2021 to assist this sector in transforming to lower carbon emissions.

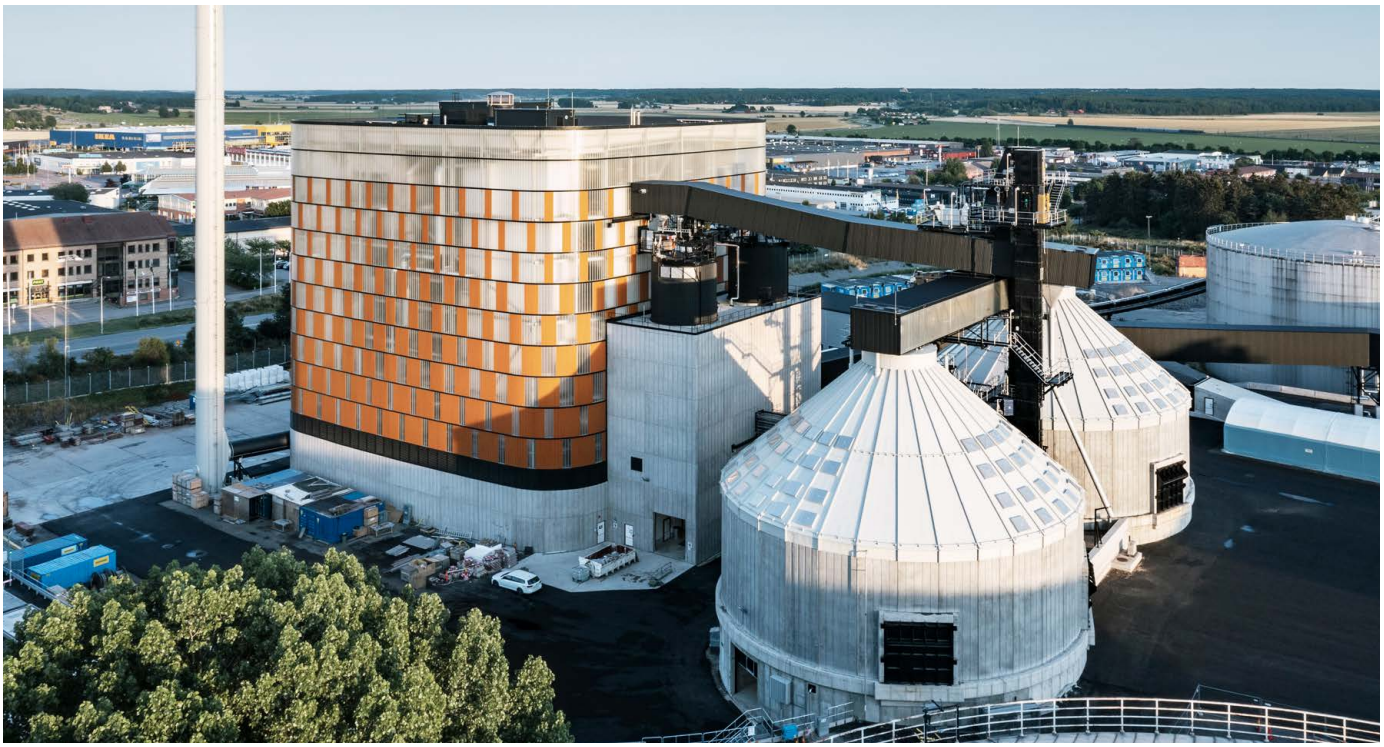
Several different technologies are offering themselves to policy makers, such as district heating from sustainable sources, (hybrid) heat pumps and as well as fossil-free gas and hydrogen. Sustainable sources for district heating such as geothermal energy, e-boilers and waste heat from data centres are being considered. Often implementation of these is time consuming. In France, a new certificate mechanism is being developed to support biogas development.

Increasing regulation of hydrogen

A new EU hydrogen strategy was launched in March 2021 focusing on fossil-free hydrogen. Governments in all Vattenfall markets have set up programmes and road maps to ramp up hydrogen production and transport infrastructure in 2021. Policies were set up in the national energy and climate plans to make hydrogen an alternative for the 2030s. In the UK, aviation and shipping are now integrated into the ETS system, and the European Commission has also tabled a proposal to include the shipping sector as of 2026 in the EU ETS, where the aviation sector has long been incorporated. To initiate new sectors a lot of money and a mix of public and private funding are needed. Electrification is increasingly seen as essential to decarbonise the economy. If direct electrification is not feasible, fossil-free hydrogen comes into play as outlined in the diverse hydrogen strategies. In France, hydrogen is a big part of the government recovery plan with more than EUR 7 billion to be invested by 2030.

Carbon capture and storage (CCS) framework

Both the EU and the UK are positive about the role that CCS can play in delivering the energy transition. Sweden is planning to introduce a steering mechanism to support bio-CCS (bio energy CCS). This will be a reverse auction, where the lowest bidder will get a contract for a certain amount of negative emissions for a certain time. The first reverse auction is planned for 2022 and funding for this is included in the proposed governmental budget for 2022. Also, previously CCS-critical Germany has announced that it will explore CCS options in the future.



Carpe Futurum, Uppsala.

In focus

A delicate balance

In spite of broad support for ambitious climate targets, the local opposition to and length of permit processes for energy infrastructure has been on the rise. The transition to a fossil-free society will mean changes for all of us, which calls for a new societal consensus as we need to act wisely and we need to do it now.

Interviewed for this article

Peter Takács
Vattenfall Public and Regulatory Affairs

Europe is faced with a necessary transition of society equivalent in magnitude to the Industrial Revolution, and it will have to be implemented in a matter of only 20 years without compromising democracy, property ownership and modern environmental laws. We will need much more fossil-free electricity generation, more grid capacity and more flexibility – and the change will invariably affect us all. That is why society must jointly find a systemic approach to balance conflicting interests that will arise when wind turbines and power lines rise above the tree tops.

As a major power company, Vattenfall has an impact on the climate and therefore a responsibility to contribute with solutions in this transition.

Strong support for action but opposition is on the rise

Statistics show that 9 out of 10 people in Vattenfall's major markets are in favour of setting more ambitious renewables targets, and 8 out of 10 want more public financial support for the transition to clean energy. But, even if there is strong support for climate change programmes, resistance to energy infrastructure projects seems to increase in all the markets and concerns everything from installation of solar and wind power to grid infrastructure. The opposition can potentially endanger the ability to reach the climate targets.

"Creating a general consent around the construction of the necessary energy infrastructure is important to enable the energy transition and reach the climate targets", says Peter Takács from Vattenfall Public and Regulatory Affairs[1]. "Interestingly, surveys show that people who already live near wind, solar or nuclear facilities are more positive to living next to them compared to people in general."

A huge dilemma

"Opposition to energy infrastructure is a huge dilemma for the whole energy transition and we are working throughout the company to meet these challenges," Peter Takács stresses. "Focus is often on the issue from a local point of view, related to a specific project site. But to keep the necessary pace of the energy transition, it is equally important to obtain active support for energy technology in government policy, by the general public and in the financial markets. Some trends are similar across business areas and countries but one-fits-all solutions are not the predominant option, except for the central element of early dialogue and a strong relationship building with the local communities, landowners and authorities."

Shared ownership, local suppliers and bats

In the case of wind power, the installed capacity is expected to more than double over a ten-year period, and even triple in some markets. This massive expansion will unavoidably be visible in the landscape and trigger opposition. To tackle this, wind farms are wherever possible developed in close cooperation with local communities and stakeholders, who may also end up owning part of the farm. To support the local community, strong focus must be placed on involving local small-scale suppliers. In the Netherlands both visual impact and bats have been actively considered in the design of the Princess Ariane wind farm (see box).

Society needs grids and threatened species need habitats

Also distribution system operators' construction of new power grids often face fierce opposition from people who do not want overhead lines placed on their land or within sight of their homes. Also NGOs campaign to keep specific areas in nature untouched. In the power line corridors Vattenfall is, for instance, considering the conservation of biodiversity by creating habitats for endangered or rare species.

From a societal point of view, however, it is essential that land is made available

Underground foundations and bat detection

At the largest Dutch onshore wind farm, Princess Ariane, four of the 82 turbines have been installed in a forest that is used by thousands of visitors every year and is home to important wildlife.

"It was very important for us to work as closely as possible with the forestry manager to ensure the turbines really blend in with the environment and minimise the impact of our operations for visitors," says Ruben Lindenburg, Head of Construction Management in Business Area Wind and former Project Manager for the site.

"For example, the foundation structures for each of the four turbines sited within the forest are below the ground and covered with grass," Ruben Lindenburg points out and explains that also protecting the forest's wildlife has been important. "We have installed a sophisticated bat detection system to avoid collisions with the turbines. The system monitors factors such as humidity and wind levels, and shuts down the turbines, when it is the optimum time for bats to fly."

[1] On 1 January 2022, Peter Takács moved to Vattenfall Distribution to a position as Manager Customer Relations, Energy Intensive Industries.

Princess Ariane onshore wind farm in the Netherlands.

for grid expansion by local authorities, just as permit processes for new grids must be radically shortened in order to enable the many business customers that wants to electrify their processes and for wind farms and solar installations to be connected to the grid (see pages 58-59).

The impact of hydro power
According to Peter Takács: "Hydro power naturally has a big impact on the rivers and the surrounding nature, so the inherent conflict between the energy transition, local environment and climate considerations must be actively addressed to create a common consensus. An ongoing dialogue and cooperation are for instance taking place with the Sami people in northern Sweden and extensive research is carried out into the effect of hydro power on biodiversity and ways to mitigate any negative impact."

Climate benefits of district heating
In markets where consumers are reluctant to switch to centralised heating systems like in the UK and Netherlands, it is important to emphasise district heating as a sustainable way to decarbonise urban areas. This to hopefully convince skeptics, who in many cases have objections to district heating because they see it as a central monopoly system, of the climate benefits of district heating through fossil-free heat generation. In the Netherlands, we have even seen politicians' views on biomass being turned from positive to negative due to protests. Heat operations are often located in urban areas, and in Berlin we have multiple urban biodiversity initiatives such as urban gardens for the local communities around heat plants (see page 76).

Professionalising the opposition
The so-called NIMBY – not in my backyard – effect is a serious threat to the implementation of new projects and must not be allowed to develop into a crippling 'build absolutely nothing anywhere near anything' or BANANA effect. Protests and opposition have always existed in the energy field. While some local communities are engaged in constructive dialogues, we can unfortunately also see a worrying trend that today's protests and discussions are becoming more aggressive.

"We have examples from our own business, where employees are afraid of going on site visits without security, where employees have been threatened online and their cars damaged when parked in company car parks", Peter Takács explains.

"The internet and social media have also made it much easier to spread hateful messages and to threaten people, and a few people can on the Internet make the resistance look much bigger, than it really is, to the rest of the world. We also see that protest groups have started to interact with other groups, sharing experience and inspiration on ways to most effectively stop our projects."

Climate heroes – even small things matter
It is important to understand that the climate situation is critical, but it is also necessary to highlight the positives – showcase positive technology development and highlight the advantages.

Peter Takács says, "I really think that most people want to be climate heroes – the question is how we can recognise and support them best possible in their efforts to make a difference? People are helping both society and us to reach our climate targets in time by allowing a glimpse of a wind farm in the horizon or an overhead line in the woods close to where they live. I think the whole society needs to highlight smaller actions like these in the bigger picture."

THE EDIT

Read what our guest writers Per Espen Stoknes and Knut Ivar Karevold have to say on the issue of climate acceptance in The Edit.

Read The Edit

"The environment and climate change" is one of the most important issues facing the EU at the moment.
(selected among 15 dif. choices) (2020/2021)

Sweden	55%
Germany	31%
The Netherlands	38%
France	24%
Denmark	43%

Standard Eurobarometer 94, Winter 2020/2021, page 21-23

How important is it that national governments set ambitious targets to increase the amount of renewable energy used by 2030? "Total important" (2019)

Sweden	92%
Germany	89%
The Netherlands	91%
France	91%
Denmark	97%
UK	94%

Special Eurobarometer 490, Report – Climate change, page 80 (2019)

Operating segments

Operating segments

Vattenfall reports its activities broken down by the Group's operating segments: Customers & Solutions, Power Generation, Wind, Heat and Distribution. The operating segments reflect the Business Area organisational structure except for Power Generation, which is divided into the Generation and Markets Business Areas.

Number of employees[1]

3,213
Customers & Solutions

7,260
Power Generation

1,279
Wind

3,126
Heat

2,366
Distribution

2,731
Other[2]

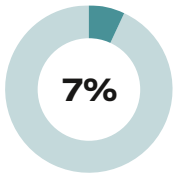
[1] Full-time equivalents.
[2] Pertains mainly to Staff Functions and Shared Service Centres.

Customers & Solutions

Responsible for sales of electricity, gas and energy services as well as e-mobility charging solutions.

- A market leader in Sweden with nearly 900,000 electricity contracts
- A market leader in the Netherlands with 4.6 million electricity and gas contracts
- A total of 4.3 million electricity and gas contracts in Germany with a leading position as electricity supplier in Berlin and Hamburg
- A challenger in sales of electricity in Denmark, Finland and France, and in France also of gas
- Operates 28,700 e-mobility charging points in Sweden, Germany and the Netherlands.

2,349
Underlying operating profit, SEK million



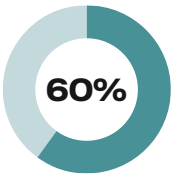
Share of underlying operating profit

Power Generation

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

- Operates a portfolio with 5.5 GW nuclear power capacity and 11.5 GW hydro power capacity across Sweden, Finland and Germany
- One of Europe's largest producers of fossil-free electricity, with 40.4 TWh from nuclear power and 40.9 TWh from hydro power in 2021
- Provides professional asset optimisation services and market access and is a leading player in commodity trading and in the market for power purchase agreements (PPAs) in northwestern Europe.

19,334
Underlying operating profit, SEK million



Share of underlying operating profit

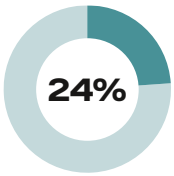
Wind

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

- One of the largest producers of offshore wind power in the world
- One of the largest producers of onshore wind power in Denmark and the Netherlands
- 11.2 TWh of electricity generated in 2021
- Strong wind power pipeline with 2.7 GW under construction and over 3.6 GW in mature-stage development
- Front-runner in innovative solutions in solar & batteries, such as co-location with wind farms and shared infrastructure.

7,866

Underlying operating profit, SEK million



Share of underlying operating profit

Heat

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

- One of Europe's leading providers of district heating in large metropolitan areas with approximately 1.8 million end customers
- Strong partnerships with cities for realisation of their carbon reduction plans, supported by a track record of fulfilling 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.

-343

Underlying operating profit, SEK million

Share of underlying operating profit

Distribution

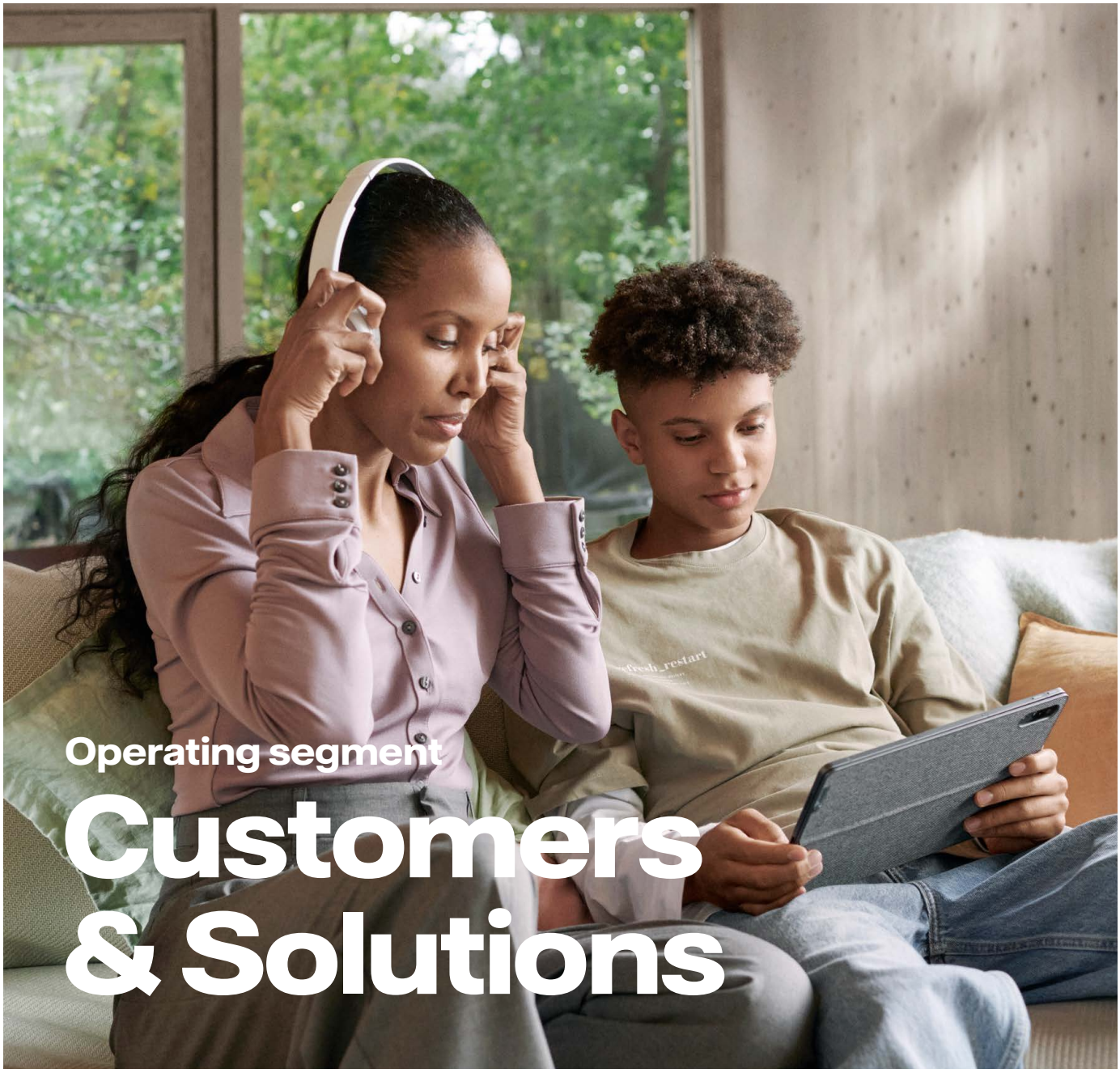
Responsible for Vattenfall's electricity distribution operations in Sweden and the UK.

- Leading operator of regional electricity distribution grids and among the top three largest actors in local grids 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. The unit has around 40 contracts including one of the largest all electric development sites in UK, Edinburgh park.

3,152

Underlying operating profit, SEK million

Share of underlying operating profit



Operating segment

Customers & Solutions

Operations

Vattenfall's Customers & Solutions business provides electricity, gas and energy solutions to retail and business customers, with 10.5 million customer contracts in Europe. Vattenfall is a market leader in the retail and business segments in Sweden (almost 900,000 electricity contracts), the Netherlands (4.6 million electricity and gas contracts), and Berlin and Hamburg, Germany (4.3 million gas and electricity contracts). In Denmark, Finland and France we are a challenger in the market for sales of electricity and also for gas in France. 28,700 electric vehicle charging points are connected to our InCharge platform. We offer a broad range of decentralised solutions in most of our markets and are one of the largest providers of energy solutions in the Netherlands through our subsidiary Feenstra.

Business environment

Customers are increasingly demanding renewable energy and behaviours have also started to change, 85% of consumers in the UK adopted at least one lifestyle change to be more sustainable, while one in five opted for low carbon transport or switched to renewable energy in 2021[1]. The comptetition is also stepping up and several market actors have committed to net zero and fossil-free ambitions just as we have. We are also seeing greater electrification of society, creating opportunities in e-mobility, customer heating, and decarbonisation of industry. As e-mobility adoption is surging in all markets, oil majors and other competitors are entering the charging infrastructure landscape which has intensified competition in the area. In the second half of 2021, natural gas and electricity prices have soared, posing difficulties for many customers as well as counterparts across the industry.

[1] Deloitte Sustainable Consumer March 2021, UK.

Key data

	2021	2020
Net sales (SEK million)	106,560	86,298
External net sales (SEK million)	102,300	84,661
Underlying operating profit[1] (SEK million)	2,349	2,146
Sales of electricity (TWh)	96.1	95.8
– of which, private customers	26.8	26.3
– of which, resellers	7.9	8.0
– of which, business customers	61.4	61.5
Sales of gas (TWh)	56.0	52.1
Net Promoter Score (NPS) absolute[2]	+10	+7

[1] Operating profit excluding items affecting comparability.
[2] Weighted 80% from Customers & Solutions and 20% from Heat. For definition, see footnote under Developments in 2021 below.

Net sales increased by 23% compared to 2020. Underlying operating profit increased by 9%, mainly owing to customer growth and lower average temperatures in the Netherlands and Germany. Several of our markets experienced colder weather during the first half of the year. This had a positive effect on sales of electricity, mainly in the Nordic countries, while it contributed to higher sales of gas in the Netherlands and Germany. Compared with year-end 2020, the total customer base grew by 3.7% to 10.5 million contracts.

Developments in 2021

We have continued to grow our portfolio to support customers in their energy transition. In 2021, the electricity supply mix to our consumers in the Netherlands reached a share of 80% renewable sources of Dutch origin. This makes us one of the suppliers with the highest share of Dutch renewable sources in the retail market. We also offer biogas to our retail customers in the Netherlands and are developing similar offerings for Germany. In Sweden, our electricity mix in the retail market is entirely fossil free.

The expansion of charging solutions for electric vehicles has continued with many new initiatives and partnerships. We operate 28,700 charging points, an increase by almost 30% from 2020. Vattenfall entered into partnerships with Coca Cola, Deutsche Telekom, the electronic wholesaler Elektroskandia Sverige AB and the automotive distributor Louwman Group. We successfully started offering wall boxes coupled with a renewable electricity contract to our retail customers in Germany. We continued to build out our public charging network in Stockholm. In the Netherlands, Vattenfall equipped 80 public charging stations with a new flexible charging software that controls the charging speed for electric vehicles. This will create room in the grid for integration of more renewable electricity in the future. Together with the City of Amsterdam and the construction company Heijmans, Vattenfall has installed a battery that can charge up to 16 electric vehicles simultaneously and enable faster charging during peak demand hours.

In November, a new high-temperature heat pump system was launched in the Netherlands. This can replace gas-fired boilers without large direct investments in changing the heat delivery system (radiators) and large-scale insulation, which reduces switching costs.

Our absolute Net Promoter Score (NPS)[1] increased to +10 compared to +7 for the previous year. Our customers value seamless continuity in supply, broad digital customer service offerings as well as flexible solutions for those facing financial difficulties. All these are aspects where Vattenfall have a clear focus. In 2021, we committed to further investing in protecting our customers' data privacy through increased data security standards. We also continued to evaluate sustainability and ethical practices of our supply chain, and have chosen to partner with suppliers who support the guidelines that we have identified as important, such as ensuring adequate working conditions, and work with circularity and climate aspects.

[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.

Vattenfall has set an ambition to operate 0.5 million charging points by 2030, further enabling the electrification of transport and reducing tailpipe emissions in and around cities.

Strategy and targets

The Customers & Solutions business aims to be the transition partner for our customers and a decarbonisation trailblazer. As we lead customers through the transition, we are developing our capabilities to expand into new markets that emerge as part of the energy transition, while maintaining our customer focus and best-in-class customer experience. We provide a wide range of smart, data-driven and decentralised sustainable energy solutions and services to private and business customers and will expand our offerings across the entire value chain.

We leverage Vattenfall's fossil-free electricity generation to offer a diversified commodity portfolio that covers fossil-free electricity and certified Environmental Product Declarations (EPDs).[1] To stay competitive, our focus is on growing our customer base while reducing the cost to serve. Vattenfall strives to optimise the customer experience by accelerating digitalisation and offering bundled and integrated solutions. Our goal is to offer 100% Dutch Guarantees of Origin (GoO)-certified electricity to B2C customers in the Netherlands by 2023. We offer biogas in the Netherlands and have developed innovative and affordable heating solutions to replace gas boilers in the country. These offerings will be expanded to our German customers. In addition to this, we are aiming to become the leading operator of e-mobility charging points in northwestern Europe to support the electrification of transport.

[1] https://group.vattenfall.com/who-we-are/sustainability/environmental-responsibility/sustainable-resource-use

Planned activities

- Balanced growth in electricity and gas sales both organically and inorganically
- Offer 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
- Expand to over 0.5 million charging points by 2030
- Continue our involvement with the Energy Poverty Initiative and further develop support systems for customers who have difficulties paying their bills.

In focus

Half a million charging points in 2030

Interviewed for this article

Tomas Björnsson
Vice President,
E-mobility

In the coming decades, Vattenfall will not only invest billions in new fossil-free electricity production, but also has the ambition to operate twenty-five times more charging points for electric vehicles by 2030 than in 2020. That will be a total of half a million units.

The electrification of transport is one of the most obvious ways to allow Vattenfall's customers to live fossil free. The expected growth of electric transport will help the transport sector to reduce CO_2 emissions worldwide by 50% over the next ten years and is an important part of reaching the target limit for global warming of 1.5 degrees.

"Whereas ten years ago there were still many uncertainties surrounding electric driving, today there is no doubt that the future of transport will be electric. From that perspective alone, it is natural for us to support our customers. But for us, it's not just about selling kilowatt-hours, it's about making charging as hassle-free as possible for those customers. The customer perspective is always central to this process," says Tomas Björnsson, Vice President of Vattenfall's e-mobility business.

Complex projects

Charging solutions for electric vehicles not only concern Vattenfall's more than ten million residential customers - the B2B market is also important. Tomas Björnsson continues: "Most new electric cars are owned by companies, and this is where we, as an energy company, can stand out. It's not only about installing a wall box, but also about managing large and complex infrastructure projects, rolling out 10, 50 or 100 charging points in one location or even thousands in multiple locations with multiple offices."

Vattenfall needs to reach the driver or the fleet owner the moment they decide to purchase a charging station or wall box, which is typically when they purchase the car.

"So, cooperation with car manufacturers and leasing companies is important. If you buy an electric Hyundai in the Netherlands, for example, you'll get an offer for a reduced price for a home charger, with controlled charging and a favourable energy contract," explains Tomas Björnsson.

Finding location partners

To achieve the ambition of half a million charging points by 2030, Vattenfall is selling charging solutions to private and business customers and is also investing in public charging points.

"We need to find location partners who offer services that customers can use while charging. Restaurants, fast food chains, supermarkets and so on. Partners who want to offer their

THE EDIT

Read what our guest writer Stefan Ytterborn has to say on the future of e-mobility in The Edit.

Read The Edit

customers charging options, but who do not have infrastructure as their main business. This is a win for everyone – both for the customer and for us and our partners."

Over the coming ten years, the e-mobility industry will shift from building charging points to optimising the use of those charging points. Vattenfall's response could be new smart charging functionalities, such as 'flexpower' where the charging is adapted based on the electricity price, grid constraints and inflow of renewables. This solution is already used in Amsterdam. 'Vehicle-to-grid' where energy is feeded from cars back to the grid could also be an option.

A long and winding route

The route to all these charging stations is not an easy one. "A recent Eurelectric study concluded that while electrification of transport will require further grid investments, it represents only a single-digit per cent of all investments to be made in grids", says Tomas Björnsson. "Of course, that remains a challenge, but electric cars are also part of the solution. Car batteries represent a source of flexible consumption that can be optimised and help an energy system that is increasingly based on fluctuating renewables like solar or wind," Tomas Björnsson explains. "Here, too, the solution lies largely in cooperating with partners and making the charging easy and convenient for the customer. The whole e-mobility market is still developing. Fortunately, we are an experienced player in this field and have been operating one of the largest public networks in Europe for some time, which gives us a unique experience. We have been participating in the development of many distinctive features or standards in e-mobility. For example, standardisation work and promoting open communication standards in industry organisations like eViolin."

> "At European level, everyone should have the right to charge a car. Including residents of a flat."

The role of governments

Initiativs from the private sector is however not enough. "Governments also play a crucial role in promoting electric transport," Tomas Björnsson says. "The most important thing is to encourage the purchase of electric cars or to discourage ownership of petrol and diesel cars by the owners having to pay for CO_2 emissions." This involves regulation and licensing on a country-by-country basis. "At European level, everyone should have the right to charge a car. Including residents of a flat, so that not only owners of a detached house or a house with a garage will have access to charging. I find it incredibly positive that the European directives are actually speeding up this process in all countries."

Convenient, easy and smooth for customers

Tomas Björnsson expects electric cars to become the norm in the coming years. "The industry needs to act increasingly from the customer perspective: how do we make it convenient, easy and smooth for a customer to actually switch to electric driving? How can we ensure that the customer doesn't have to think about alternating or direct current, kilowatts, kilowatt-hours or flexibility, but just take for granted that things work? That's where Vattenfall can play a crucial role." ■

Good customer service paves the way for a fossil-free future

Hassan Samadi

Transportation is one of the key areas on the path to a fossil-free future. By 2030, Vattenfall's ambition is to operate half a million charging points. This will require major initiatives, providing more opportunities to charge electric vehicles and a better geographical spread, although smaller and more basic changes will be just as crucial. In the Ordonnansen housing association in Solna, Vattenfall has installed charging infrastructure in its parking garage over the past two years. Charging points have been fitted to 23 of the 24 spaces in the parking garage.

"The last parking space is, among other things, being used for the parking of bicycles at present, as many of the residents bike to work," explains Hassan Samadi, who lead Ordonnansen's work group for the process and is a member of the association's board.

The decision to take an additional step towards fossil freedom emerged out of an interest in installing solar panels on the property's roof. In December 2019, Hassan, on assignment from the board of directors, contacted Vattenfall InCharge and Peter Nyström at Vattenfall B2B E-mobility and initiated the process. InCharge's charging solution included a bundled construction contract under which Vattenfall assumed responsibility for all installation work as well as administrative and technical support.

"Everything worked very well from the start," Hassan Samadi says. "Peter and the technical expert Erik Nylund both explained the pros and cons in a simple language and were very flexible. If our working group had evening meetings, both of them were able to participate and answer our questions."

This high level of customer service was an important aspect in why the installation, even though it took two years, never felt protracted or complicated.

"They showed a lot of patience when we had questions and their answers were always concrete and instructive. Peter and Erik started from the beginning, filled our knowledge gaps and presented the benefits of investing in charging points in general and Vattenfall InCharge's charging solution in particular."

Even though the installation has now been completed, contact between Ordonnansen and Vattenfall has not ceased, which has added to the positive experience.

"The fact that we were not abandoned as soon as the work had been completed was also important. We have great trust in Peter and Erik. The board of directors have, when necessary, been able to contact them and receive guidance and administrative support in a friendly and generous manner."

When the process first started two years ago there were those in the association who were sceptical. Not anymore.

"We have received a very good response from many members of the association. A very important aspect has been that the members realised how quick and smooth the installation was once it was up and running. More and more of my neighbours are now talking about getting an electric or hybrid car."

Operating segment

Power Generation

Operations

The Power Generation operating segment comprises the Generation and Markets Business Areas. Business Area Generation has hydro and nuclear assets across the Nordic markets and Germany. Business Area Markets has the role to maximise the value of Vattenfalls portfolio and dispatching, hedging, sourcing and trading for Vattenfall's and third-party assets and sales positions.

In 2021 the Power Generation segment generated a total of 81.3 (79.0) TWh of electricity from hydro and nuclear power. Vattenfall's total installed hydro power capacity of 11,475 MW generated 40.9 TWh (39.7) of electricity. At year-end, Vattenfall's Nordic reservoir levels were at 65% (82%) capacity, which is 6 percentage points above normal. Combined installed capacity of nuclear power was 5,475 MW and generation amounted to 40.4 TWh (39.3).

Business environment

With intermittent electricity production taking up a greater share, hydro and nuclear power – as the two most important large-scale dispatchable fossil-free means of generation – are facing more competition within the area of energy supply while they are becoming increasingly valuable to ensure a stable energy transition. This creates business opportunities for energy storage and dispatchable fossil-free electricity production.

Shortfalls in transmission and storage capacity in the electricity market periodically result in very large price differentials between regions as well as periods of high and low supply and demand balances. Investments in both transmission capacity, storage and flexible energy generation and consumption will be key to enable the decarbonisation of the energy system. Digitalisation is also a key enabler in unleashing the full potential of flexible energy generation and consumption and the European Commission is working on an Action Plan on digitalisation of the energy sector to support the transition to a better-functioning, smart, integrated and cleaner energy system.

Key data

	2021	2020
Net sales (SEK million)	126,318	90,133
External net sales (SEK million)	40,312	36,597
Underlying operating profit[1] (SEK million)	19,334	14,670
Electricity generation (TWh)	81.3	79.0
Sales of electricity (TWh)	22.2	20.0
– of which, resellers	17.5	17.9
– of which, business customers	4.7	2.1

[1] Operating profit excluding items affecting comparability.

Net sales increased by 40%. Underlying operating profit increased by 32%, mainly owing to higher hydro and nuclear power generation, increased contribution from pumped hydro storage operations in Germany given favourable prices as well as higher realised trading results. Achieved prices in the Nordic countries were at the same level as in 2020, partly affected by large price area differences in Sweden. A lower average hedging price was countered by a higher spot price following the recent sharp rise in electricity prices, mostly in the second half of the year.

Developments in 2021

Hydro power

Hydro power capacity has been increased through refurbishments and upgrades combined with optimised outages. At year-end this resulted in an increase in available hydro power capacity of 600 MW compared to 2016. The profitability of Vattenfall's pumped hydro storage operations in Germany has improved following a major review. In a year with extreme volatility in prices, these facilities have proven their business advantage.

Our investment in a new dam in Lilla Edet will secure safe hydro production in the river Göta Älv and is one example of the continued focus on safety and the environment. The old dam is more than 100 years old and will be replaced by a new dam with four significantly larger new flood gates to ensure that we can handle the future expected higher water flows in the river. A new type of concrete developed by Vattenfall will be used that contains less cement and may reduce CO_2 emissions by up to 25%.

Nuclear power

Average availability was 84.8% (76.4%) from our five units in Sweden. Annual maintenance at Ringhals 3 was prolonged by two months due to damages to a fuel element in conjunction with maintenace work. Nuclear power generation increased by 1.0TWh despite the closing of Ringhals 1 at year-end 2020 and a new prodcution record was reached at Forsmark with 25.5 TWh delivered volume.

In December the government approved the extension of the final repository for low- and intermediate-level radioactive waste, and in January 2022 approval was given for the final repository for spent nuclear fuel.

In Germany, the government and four big electricity providers, including Vattenfall, signed an agreement terminating all disputes on the compensation for the early phase-out of nuclear power. The corresponding law was passed on 31 October and compensation was paid in Q4.

At year-end, the Brokdorf plant (1,410 MW) in Germany was decommissioned which means that Vattenfall no longer has nuclear production in the country. At Brunsbüttel (806 MW) the segmentation of the reactor pressure vessel internals is ongoing and the qualification phase for dismantling of non-activated systems has started. At Krümmel (1,402 MW), preparations for dismantling are progressing.

Markets

Wholesale market prices increased during the year and the market was extremely volatile in the second half of the year. Vattenfall's performance was largely unaffected due to our diversified portfolio and hedging strategy which reduces sensitivity to price developments in specific products.

We entered several successful partnerships: with BASF for subsidy-free wind farm Hollandse Kust Zuid, and Nobian, as the first large industrial customer, connected its chlorine plant in the Netherlands to Vattenfall's flexible capacity to better balance the grid.

By replacing and upgrading the flood gates of a more than 100 year old dam in Lilla Edet, with a low-carbon cement, Vattenfall can handle higher water flows and reduce CO_2 emissions.

Strategy and targets

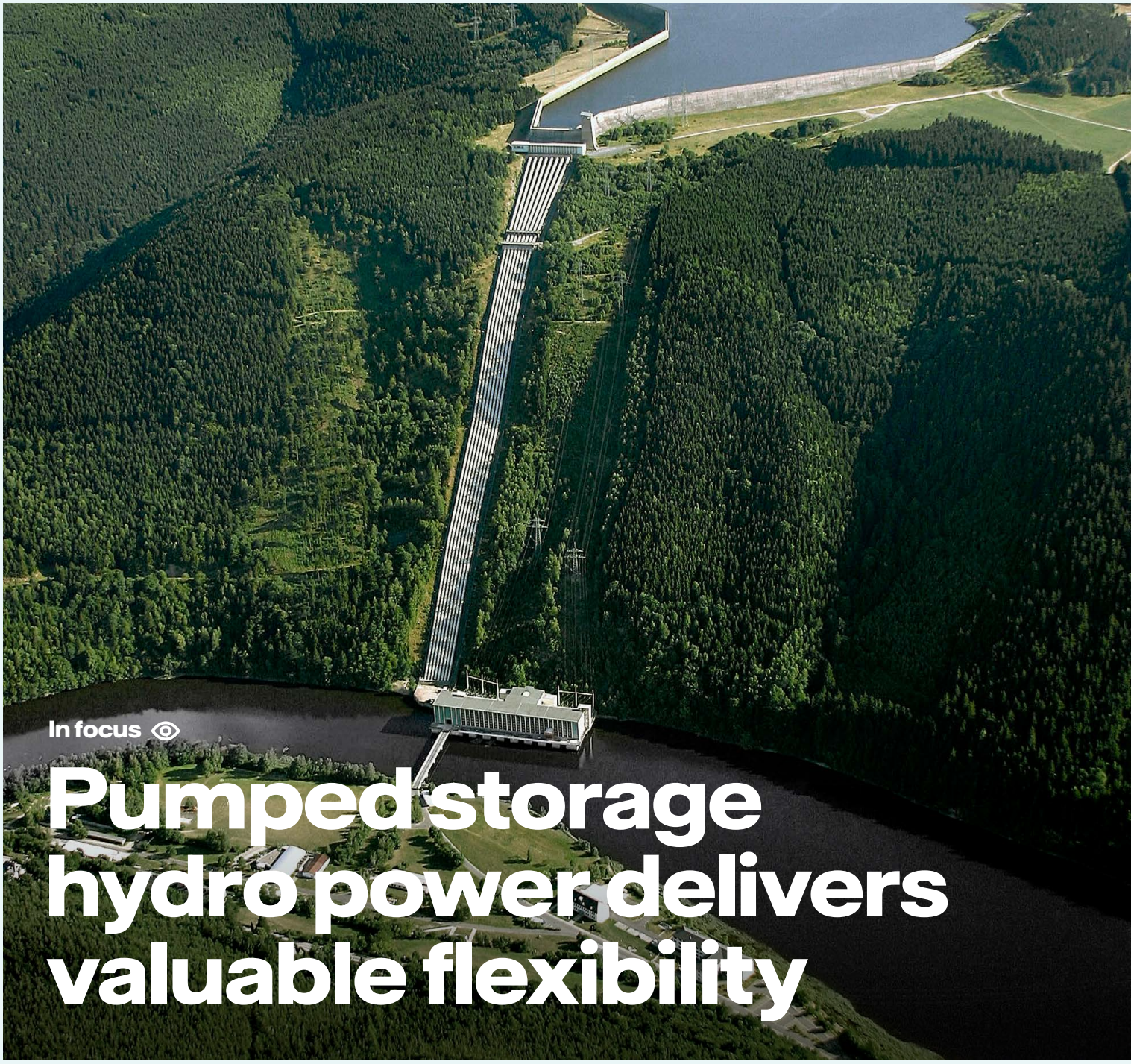
Vattenfall has solid experience in operating both hydro and nuclear power, and we will act to maximise the value of these assets. We aim to be a world leader in the operation of both nuclear and hydro power with high safety and sustainability standards, producing fossil-free electricity cost-efficiently and with high availability. The safe decommissioning of our closed reactors is also a core part of our responsibility. When we place the radioactive waste and spent fuel in final repositories, we demonstrate the feasibility of 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. We also sell renewable electricity from specific assets through corporate power purchase agreements (PPAs). The goal is 10 TWh annual capacity by 2026, and at year-end 2021 it amounted to almost 1 TWh.

To achieve a competitive edge in asset optimisation, including for hydro production, sourcing for consumer and business customers and commodity trading, we will implement new analytical methods and algorithms. We also intend to cooperate with more industrial customers to make their electricity consumption more flexible, which can contribute to stabilising the grid (see pages 44–45).

Planned activities

- Dismantling activities on reactors Ringhals 1 and 2 to start in Q3 2022
- First court hearings related to stricter environmental requirements for hydro power plants to take place for Rolfsån (2022), Dalälven and Gimån (both expected in 2024)
- Large number of initiatives to maximise ecological benefits while minimising production and flexibility losses in our hydro power plants (for examples, see page 26)
- Drive automation and algorithm development to further improve our capabilities to manage (PPAs), flexible assets and renewable energy sources



In focus

Pumped storage hydro power delivers valuable flexibility

Interviewed for this article

Sjur Jensen
Head of Business Unit Assets

Vattenfall's pumped storage plants deliver valuable flexibility to contribute to matching supply and demand in a market with an increasing amount of intermittent renewable energy.

13 million cubic metres of water stored in a mountain reservoir at the Vattenfall-owned Goldisthal plant in Germany represents a massive source of energy when released to the four turbines on the Schwarza river 302 metres below. The Goldisthal plant can accelerate from zero to full utilisation of its total 1,060 MW capacity in a mere 100 seconds, and that makes the plant a vital piece of the puzzle to ensure stability in the German electricity system.

Vattenfall has eight pumped storage hydro power plants in Germany with a total capacity of 2,900 MW, and their role has changed fundamentally in later years. They were built to balance the load between day and night by pumping water up into reservoirs during the night and releasing it during daytime to meet the higher demand for electricity. They struggled to compete with other flexible units such as coal- and gas-fired power plants, due to higher costs – which actually threatened their very existence.

As part of the ongoing energy transition, fossil-based assets such as coal- and gas-fired power plants are gradually being phased out and replaced by wind and solar plants with output that is dependent on weather conditions. The pumped storage plants now play an essential role in bridging the increasing mismatches between supply and demand.

Clouds in the crystal ball

"The expansion of intermittent renewable production and the phase-out of fossil-based production make the match between supply and demand increasingly difficult to predict", says Sjur Jensen, Head of Business Unit Assets, a part of Business Area Markets that is responsible for the commercial optimisation of Vattenfall's production portfolio. "Production patterns are not as clear as before and that is where we play a significant role as specialists in predicting the price, building optimisation algorithms and taking decisions on how to market our assets."

In order to mitigate the growing challenge of an increasing amount of renewable production in the system, the transmission and distribution system operators (TSOs and DSOs) develop the market for grid and ancillary services, introducing new products that help them to balance the grid in real time.

Within Vattenfall, the ability of the pumped storage plants to deliver flexibility is combined with investments in algorithms, automation, analytical capabilities and the real-time steering of the assets. This is all done to capture the value of the flexibility when trading in the day-ahead market, the market for grid or ancillary services and in the intraday markets that are seeing increased activity (see box). These services are in high demand and with the right algorithms and automation in decision making and execution, we are able to respond faster than before, which is of vital importance to succeed in the flexibility markets.

"We introduced algorithms for intraday trading in 2021 for our second largest plant, Markersbach, and this has boosted the ability to capture the full value of the plant's flexibility. Next in line is the Goldisthal plant. For all the facilities we have optimised, we decide where to market the flexibility, at what price and with what volume, just as we use and further develop supervisory control and data acquisition (SCADA) systems to automate the steering of the production", says Sjur Jensen.

> "...more flexibility will be needed to enable the transition to a fossil-free energy system."

High efficiency, capacity and availability

"The efficiency of the pumped storage plants is up to 80%, and they can ramp up and down rapidly and store large amounts of energy. They will therefore only become more valuable over time as not many technologies store energy for more than one-to-two hours at competitive costs, and more flexibility will be needed to enable the transition to a fossil-free energy system", Sjur Jensen explains. "We are working closely together with our generation business on updating the pumped storage plants to further increase their flexibility and capability to respond quickly to fluctuations in demand. This is done through physical upgrades as well as more precise measurements of water volumes and flow that allow safety margins to be fine-tuned."

Competing in the flexibility market

Looking into the energy transition, the pumped storage plants will compete mainly with batteries, and down the road also hydrogen when it comes to supplying flexible electricity services. While batteries have an efficiency of more than 90%, they are not normally used in electricity grids for durations of more than one-to-two hours and then mainly for grid services. Hydrogen, which is also a prioritised product for Vattenfall, is on the other hand likely to become an important energy storage medium due to its potential scale and broad range of applications in the chemical and refinery industry, transport sector as well as agriculture. For pure electricity production, however, its low efficiency rate is a hurdle that needs to be overcome.

Demand-side flexibility

"To complete Vattenfall's flexibility portfolio, we are also entering into partnerships with industry to support them through the flexibility services we offer.

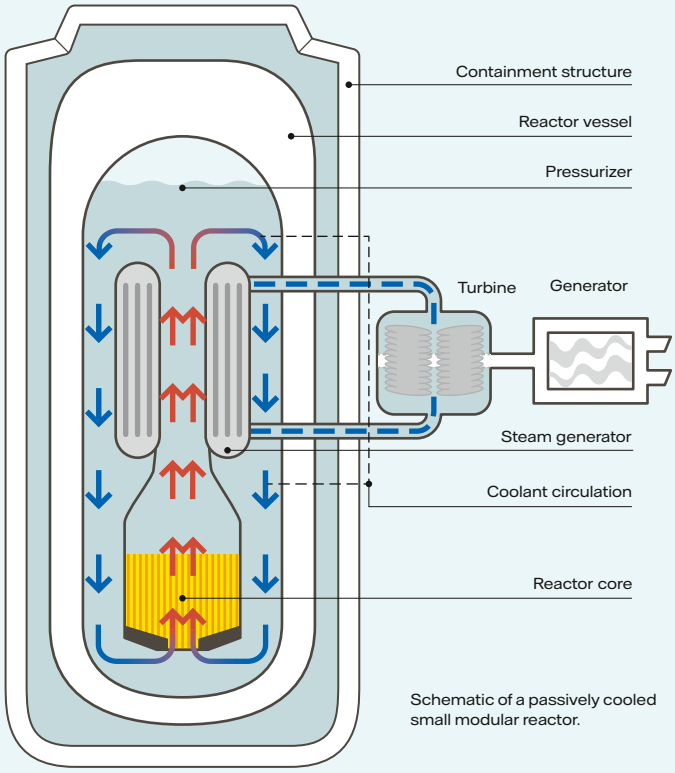
Companies are increasingly looking into demand-side flexibility, which allows them to consume more when prices are low and less when prices are high. However, most of the industrial processes are difficult to steer today. The system flexibility should be built in when new processes are designed. And it can be cheaper and easier to store final physical products than energy," Sjur Jensen concludes. ■

Pumped storage plants can deliver into three growing value pools through their flexibility:

1. Increasing differences between the hours in the day-ahead market (bids submitted before 12.00 on the day before delivery)
2. Increasing demand for grid services (ancillary services) that help the TSO/DSO to stabilise the grid and manage bottle necks in the grid
3. Increasing activity in the intraday markets where renewable energy generators, owners of flexibility assets and traders meet to balance their portfolios in order to avoid high imbalance costs.

In focus

Small modular reactors



Schematic of a passively cooled small modular reactor.

Interviewed for this article

Marcus Eriksson
Senior Advisor in Nuclear Technology

With more and more weather-dependent electricity generation coming into the grids, it is important, in the long perspective, to keep the doors open for new fossil-free technologies required to sustain the energy transition.

In Sweden, nuclear power has – together with hydro power – been the solid backbone of the country's energy supply for decades. However, as future demand for electricity is expected to double and more weather dependent generation is introduced into the system, the issue of securing a long-term plannable base and back-up power must be addressed, not least due to the long implementation times.

It is too early to say which fossil-free technologies that will be most competitive in the future, so it is important to keep all doors open. Hence, the regulatory framework associated with nuclear power plants needs to be developed to allow for flexibility in the choice of technology and facilitating an efficient licensing model for new reactor designs – also beyond the 2030s. Vattenfall is investigating several ways to meet rising demand in the future, including small modular reactors (SMRs).

Since the spring of 2020, Vattenfall has participated in a feasibility study by the Estonian start-up energy company Fermi Energia to explore the possibilities for SMR deployment in Estonia. Vattenfall has acquired a minority share in the Estonian company in order to work jointly on feasibility studies about costs, supply chain and capabilities to construct and operate SMR technology. This will provide Vattenfall with know-how in an area where the company is building up its competence.

What is a small modular reactor?

"SMRs are new ground for energy companies, politicians and society. As a company we want to learn and gain inhouse competence within emerging new technologies that could be part of the solution for the supply of fossil-free energy to drive decarbonisation," says Senior Advisor in Nuclear Technology, Marcus Eriksson, who is responsible for Vattenfall's cooperation with Fermi Energia.

The SMRs are essentially small nuclear power plants with simplified reactor design and more flexible in response to demand, offering more applications (co-generation), larger scalability as well as smaller impact on energy systems and finances. Like the big conventional nuclear

power plants, they have component parts such as a reactor, cooling system, generator and transformer, but they are manufactured in factories as modular and standardised systems. This means that there is less construction work on site as the components are shipped to the site where they are assembled.

"SMRs offer the advantages of standardised quality and economies of scale as they are not one of a kind every time, but part of a serial production based on industrial standard components. Thanks to technical innovation, improvements in computer modelling and modern construction techniques, SMRs demonstrate a simplified design requiring less components. This makes the nuclear reactors easier to build, operate and maintain," Marcus Eriksson explains.

Light water and advanced SMRs

The SMRs can be grouped in two types: light water designs and advanced versions. A light water SMR is basically a smaller version of the existing Swedish nuclear power plants with the same type of fuel that is already commercially available and it generates the same type of spent fuel – features that Vattenfall is highly experienced in handling with the highest degree of safety. This type of SMR is designed for generation of electricity and co-generation, e.g. district heating.

The so-called advanced SMRs utilise coolants such as gas, liquid-metal or molten salt and use types of fuels that are recycled and use fuel more efficiently so less waste is generated. These plants would, however, require additional infrastructure, which is not available in Sweden at present, including new manufacturing of fuel, reprocessing facilities and waste handling solutions. Due to different coolants, advanced SMRs allow for high-temperature output in the range 540ºC to 750ºC that can be used for production of hydrogen much more efficiently than conventional alkaline electrolysers, and can deliver high-temperature process heat for the cement, pulp, chemical and steel industries which offers new and powerful areas of use.

Safety is a top priority

The SMRs will be operated according to the same safety standards and measures as the conventional nuclear plants. They will, however, rely on a higher degree of built-in passive safety features that require less human interaction, which works to minimise human errors. These reactors are simpler in design, have fewer components that can fail and will be less dependent on active components that rely on electricity and moving parts that are susceptible to wear and tear.

> "SMRs offer the advantages of standardised quality and economies of scale."

Not just around the corner

"If we were to bet on SMR technology in the long term, light-water SMRs would be the most logical option for Vattenfall, since we have all infrastructure in place already and they can be used for both electricity and district heating production," Marcus Eriksson explains. "Introducing new types of plants like SMRs will require time both for construction and for drafting of new licensing requirements. And as our fleet of large nuclear power stations are designed to run for many more years, any SMRs would be complementary to those facilities."

The Estonian connection

Vattenfall's investment in this new technology is motivated by a desire to learn and gain inhouse competences, which the Fermi Energia project can deliver. It has a tangible goal to deploy the SMR technology in Estonia, it is outside Sweden but in the Baltic region and it will provide experience and insights into the licensing of this technology.

Vattenfall's agreement with Fermi Energia runs for five years until 2026, when the company targets to be ready to apply for a decision in principle to be made by the Estonian parliament for construction of an SMR. The plan is for commercial operation of the first SMR in 2032 and additional units in operation by 2035, when the country's base load system that relies on shale oil is scheduled to be phased out and replaced by other dispatchable energy sources.

"With the contribution of our knowledge in building a nuclear programme with strict safety and environmental regulation, we can raise the probability of success for the project. And if it is indeed successful, it will be a proof of the concept of the technology and a strong signal to other markets, such as Sweden, that this emerging technology is viable," Marcus Eriksson concludes. ■

Research cooperation on SMR technology

Vattenfall is part of a centre of excellence, called ANITA, for research on SMR technology together with the energy companies Fortum and Uniper, and the nuclear power specialists Westinghouse and Studsvik and the universities of Uppsala, Chalmers and the KTH Royal Institute of Technology. The centre's research is focused on how SMRs can support transitioning the Swedish energy system into a sustainable system and to resolve technical and regulatory matters in order to realise SMRs in the most effective way. The centre started in January 2022 and has received a SEK 25 million research grant from the Swedish Energy Agency, representing one-third of the total funding for the centre.

SMRs worldwide

Development of SMR technology is made in major nuclear countries such as the US, China, UK, Russia and France, which see a potential export opportunity. Interest for deployment is visible in countries that look at ways to decarbonise their energy system but that are unable to utilise renewables easily. At the same time existing nuclear countries look at SMRs as a potential to replace ageing nuclear plants.

While the interest in SMRs has been rising significantly, this interest has not yet translated into significant number of projects. Still, there is a limited number of actors – so called first-movers – willing to take the risk of a first SMR project. Clear deployment plans for SMRs are seen in Canada, UK, US and China. More recently, France has made a push for SMRs, with President Emmanuel Macron committing to have an SMR in operation by 2030.

Operating segment
Wind

Operations

Accelerated renewables growth is key to achieving a sustainable energy system and unlocking the climate benefits of widespread electrification of society. Vattenfall is a leading player within wind power. In offshore wind power we are one of the leading players globally and in onshore we are one of the market leaders in northwestern Europe, especially in the UK and the Netherlands. We operate a portfolio of more than 1,200 wind turbines with a total installed capacity of 4.2 GW across five countries. In 2021 we continued to expand our efforts within solar power (PV) and battery storage.

Business environment

The steep decline in costs and technological advancements over the past years have made new wind and solar power the most sustainable and economic sources of electricity.[1] In combination with the growing pressure to decarbonise, often through electrification, this results in strong, double-digit growth for both wind and solar power in Europe towards and beyond 2030. This has lead to changing market conditions in all of our markets: several new players, such as large oil and gas companies, have entered the industry which has intensified competition. Also, an increasing share of new wind and solar projects will be completed without subsidies, requiring developers to rethink project business cases.

[1] Wood Mackenzie, Europe levelised cost of electricity (LCOE) report, Sep 2021.

Key data

	2021	2020
Net sales (SEK million)	20,872	13,565
External net sales (SEK million)	7,791	6,901
Underlying operating profit[1] (SEK million)	7,866	3,970
Electricity generation (TWh)	11.2	10.8
Investments (SEK million)	12,654	5,810

[1] Operating profit excluding items affecting comparability.

Net sales increased by 54% compared to 2020. Underlying operating profit increased by 98% due to higher electricity prices, and new capacity mainly attributable to the Princess Ariane onshore wind farm and Kriegers Flak offshore wind farm. Earnings were also affected positively by divestment of onshore wind farms. Lower wind speeds and lower offshore availability due to increased maintenance work had a negative impact.

Developments in 2021

Offshore

At the end of June, Vattenfall signed an agreement with BASF on the sale of 49.5% of Vattenfall's Hollandse Kust Zuid (HKZ) offshore wind farm (1,500 MW) in the Netherlands. The deal was closed in September and construction of the wind farm has been started. Once operational in 2023 it will be the world's largest offshore wind farm.

The construction of Kriegers Flak in Denmark was finalised well within budget and on time. The inauguration was held in September together with the Danish Crown prince and Minister for Industry, Business and Financial Affairs. In the summer, Vesterhav Nord and Syd received the final offshore construction license and the final investment decision (FID) was taken in December. The construction started in January 2022 and final commissioning is planned for the end of 2023.

In the UK, planning consent for Norfolk Boreas (1,800 MW) was granted in December. First power is expected in the mid-2020s.

Onshore

In Sweden, all turbine towers have been erected at what will become Vattenfall's largest onshore wind farm to date, Blakliden/Fäbodberget (353 MW). In May, construction work began on the Grönhult wind farm (67 MW) in southern Sweden. The project was divested earlier in the year to an investment company (TRIG). Vattenfall is however responsible for construction and asset management of the farm. In the UK, construction on South Kyle (240 MW) is on track with all foundations completed.

In the Netherlands, several large and complex projects are nearing completion, including the wind farms A16 (34 MW), Jaap Rodenburg (38 MW), Nieuwe Hemweg (13 MW) , Moerdijk (27 MW) as well as the wind turbines at the Haringvliet hybrid energy park (22 MW wind; 38 MW solar).

In September, Vattenfall took the FID to construct the Blauw nearshore project in the Netherlands (130 MW, of which 77 MW will be owned by Vattenfall).

Solar power and batteries

Several solar power and battery projects were developed and built during the year. In Germany, the 28 MW Kogel-Leizen solar farm generated its first electricity, of which 10 MW are secured via a corporate power purchase agreement (PPA) by Bosch. Additional solar farms have been built at the existing Markersbach and Geesthacht pumped storage plants. In the Netherlands the solar farm Kooypunt with 13 MW has been constructed. At Haringvliet hybrid energy park 12 MW of battery storage was installed. In the UK, a FID was taken for a 20 MW battery storage system at the existing Ray onshore wind farm.

Vattenfall has made numerous final investment decisions in the wind operations for a robust pipeline of clean and affordable energy.

Strategy and targets

Our ambition is to be a leader in the energy transition by developing, constructing and operating on- and offshore wind power as well as large-scale solar PV and battery storage. At year-end 2021, Vattenfall has 2.7 GW under construction and 3.6 GW in mature stage development.

To continue building on our leading position in an increasingly competitive market, we aim to strengthen our project pipeline further by own development, bidding for, or acquiring additional attractive projects in wind and solar and continue to be industry-leading in Levelised Energy Cost. One part in reducing costs is to continue to innovate in operations and maintenance and keep focus on digitalisation of our entire value chain to improve performance. Another part is to sustainably integrate renewable production assets into the power system by combining generation technologies and integrating storage solutions. This will enable us to deliver new wind and solar projects without subsidies. In addition, we will continue to create partnerships with customers so that we can link the generation of fossil-free electricity directly to power demand.

It is also important for us to be an industry frontrunner within sustainability by delivering both environmentally and socially sustainable lifecycle solutions. We continue to focus on reducing greenhouse gas emissions, increase circularity, community engagement, sustainable procurement and biodiversity as this is important to deliver on our growth targets. An important part of this is to have an advisory role concerning regulatory changes to ensure environmental protection in a risk- and cost-conscious manner. In these efforts we work together with authorities, academia and NGOs to create trust and mutual understanding.

Planned activities

- Partner with industry to support decarbonisation of sectors beyond our own
- Work on deep integration of hydrogen production within offshore wind
- Expand granular knowledge on our emissions to identify reduction potential and understand cost impact
- Sustainability award criteria are to be applied with a weighting in a certain share of large procurement tenders
- Increase circularity in our operations. One example is blade waste recycling targets: landfill ban today, 50% recycling by 2025, 100% by 2030
- Increase knowledge on environmental impacts of our activities and work on mitigating actions, biodiversity enhancement measures and co-use.

In focus

Venturing beyond offshore wind power

Interviewed for this article

Sytske van den Akker
Environmental Specialist

Vattenfall is working towards becoming net biodiversity positive in 2030. Our wind farms are leading the way by considering nature and encouraging biodiversity in their designs.

Off the coast of the Netherlands, Vattenfall is constructing Hollandse Kust Zuid (HKZ), the first subsidy-free wind farm at sea. The 140 wind turbines spread over approximately 225 km² of the North Sea will have an installed capacity of 1.5 GW making it the world's largest offshore wind farm. Once operational in 2023, HKZ will have many firsts and will be at the cutting edge of wind farm development and operations. However, it is not just electricity production that makes the wind farm special.

HKZ will apply Nature Inclusive Design (NID) principles (see box for more information). The wind farm goes beyond just providing renewable energy and proactively looks to contribute to local marine species and habitat diversity through features such as water replenishment holes in the monopiles and rock reefs on top of the scour protection. In HKZ Vattenfall wants to monitor the positive effect of the nature inclusive measures on the native biodiversity, with special attention to Atlantic Cod, a species under pressure. Vattenfall will use this informa-

What is Nature Inclusive Design (NID)?
NID is a set of design principles that encourage engineers, and project managers to think beyond the functional considerations and design of the wind farm to have additional functions that strengthen the existing environment and enhance native biodiversity.

Examples of NID in Hollandse Kust Zuid:

- *Water replenishment holes:* Holes in the submerged part of the monopile foundations. These holes allow marine life to enter the monopile, that might provide shelter and feeding opportunities.
- *Artificial or rock reefs:* A pile of large rocks, placed on the scour protection, consisting of small rocks surrounding the monopile. These rock reefs increase habitat complexity and offer shelter, attachment and feeding opportunities for a wide range of marine species.

tion to further improve, to work towards a net positive impact. Environmental Specialist Sytske van den Akker was one of the many specialists driving the "Nature Inclusive Building Plan" within HKZ. A marine biologist by trade Sytske van den Akker immediately saw the added value of the water replenishment holes and artificial rock reefs and the principles of NID.

"For years, the North Sea has been intensively used for all kinds of human activities and now offshore wind farm operators are moving into the space, I felt compelled to make sure that we act responsibly and aim to have a positive impact on the surrounding environment. Furthermore, Vattenfall has a wide network of partners willing to make this initiative a success," says Sytske van den Akker.

All parties win when the environment wins

"During the tender and design phases of HKZ, we examined several options that could enhance the wind farm to provide added value for biodiversity without compromising wind farm operations and compliance with regulations. Also, it is essential to get a better understanding of the effectiveness of the specific NID elements for biodiversity. Therefore, biological monitoring of the rock reefs and the water replenishment holes is a very important part of the nature inclusive design plan for HKZ. Our experiences can be used to strengthen the knowledge base and optimise the NIDs for future offshore wind farms," explains Sytske van den Akker.

The experience and knowledge in NID for HKZ was key for the Dutch government. One of the tender conditions was that the site operator would need to present a demonstrable effort to design and build the wind farm in such a way that it actively enhances the sea's ecosystem. This plan supports the governments goal to actively enhance the sea's ecosystem,and the sustainable use of species and habitats that occur naturally in the Netherlands.

"We will go beyond the government's request by including a long term monitoring programme and collaborating with experts and relevant conservation organisations to conduct additional biodiversity monitoring campaigns to study the effects of the monopile holes and rock reefs on the marine ecosystem. Also, we added rock reefs in more locations than originally planned," says Sytske van den Akker.

> "Rock reefs and water replenishment holes might only be the start when it comes to future wind farm design."

Vattenfall is already cooperating with The Rich North Sea. They explore how marine life in the North Sea can flourish again by leveraging the potential of offshore wind farms and are primarily interested in understanding and documenting the ecological value of NID elements.

This project will provide The Rich North Sea with new and valuable insights into a variety of topics related to NID elements such as monitoring techniques and water conditions. Furthermore, The Rich North Sea is developing a toolbox where it collects best practices for future wind farms and will hopefully spur on adoption of NID in the North Sea.

Finally, wind farms based on NID bring Vattenfall closer to its 2030 environmental ambitions of working towards net positive impact where biodiversity enhancing measures form an integral part of all relevant activities (see page 78).

Embracing our growing role as stewards of the environment, it is crucial that Vattenfall implements measures like NID to maintain its license to operate and cement its position as preferred offshore wind farm operator and partner in the future.

Practicalities

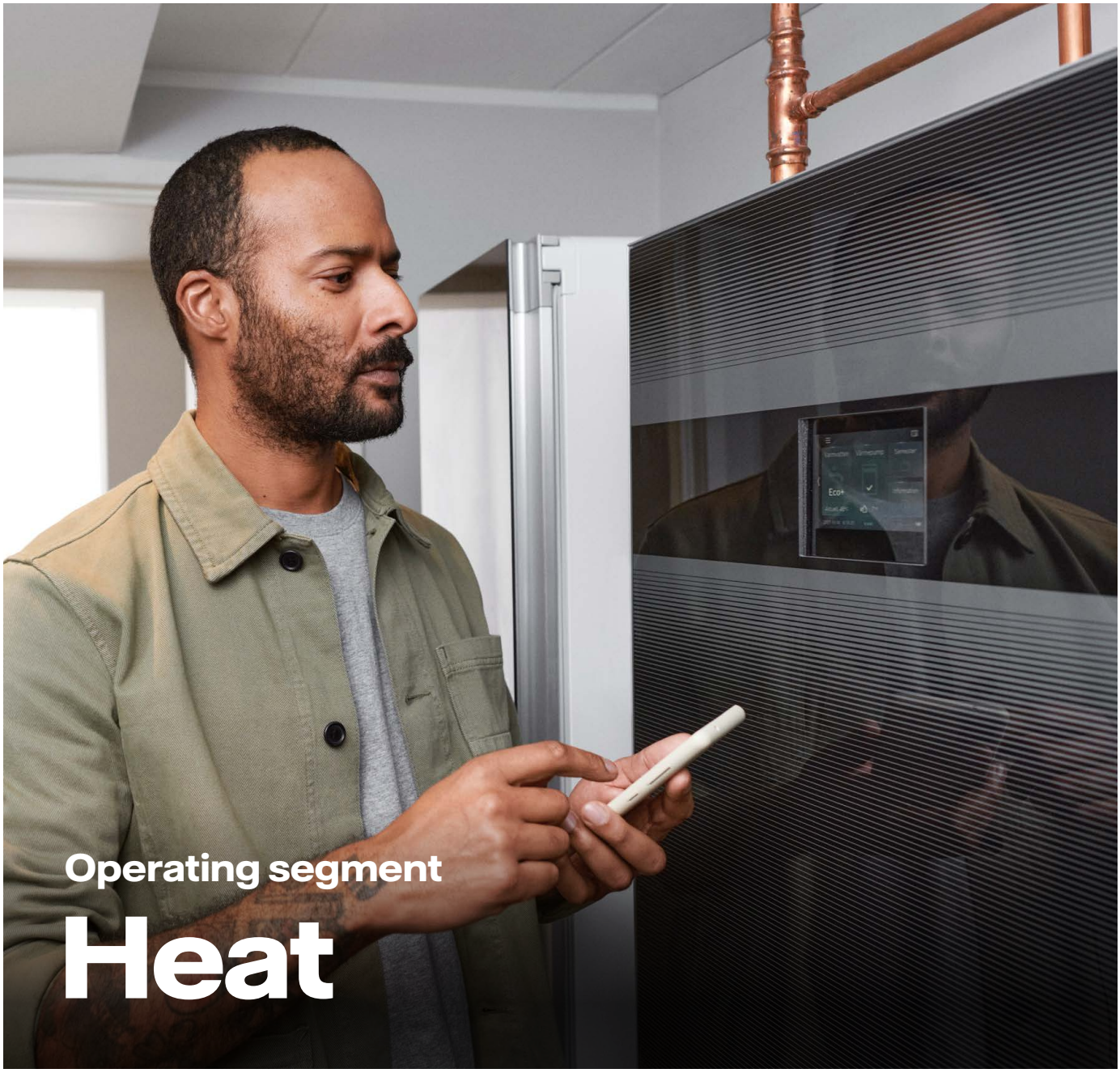
"Another appealing part of the 'Nature Inclusive Building Plan' is that it is not disruptive and integrates well into the design and construction stages of the HKZ wind farm. The core elements such as scour protection and monopiles with water replenishment holes can be installed as usual, as can the rock reefs before moving on with the construction," Sytske van den Akker explains.

All 140 turbines will have water replenishment holes and nine scour protection areas have been identified for the installation of rock reefs. While many believe there are benefits to biodiversity and the health of the marine ecosystem by introducing NID, the scientific evidence in the North Sea is as of yet limited.

"Vattenfall's extensive monitoring campaign together with our additional monitoring with The Rich North Sea will substantially add to this knowledge base. The campaign will last 11 years with regular measurements at set time periods. The first measurement campaign carried out by The Rich North Sea will serve as a reference and was conducted in 2021. The next measurement will take place in 2024, two years after construction. After that there will be two more field measurements which should give us a deeper understanding of the longer-term biodiversity impact of these elements." says Sytske van den Akker.

Future of offshore wind farm design

"Rock reefs and water replenishment holes might only be the start when it comes to future wind farm design. HKZ could serve as a blueprint on how to apply NID to other offshore wind farms. Applying NID in HKZ is a great example of Vattenfall's efforts to become net biodiversity positive in 2030 and NID is a decisive next step towards environmentally responsible, purpose-driven offshore wind farms." ■



Operating segment

Heat

Operations

Vattenfall is one of Europe's largest producers and distributors of district heating to growing metropolitan areas in the northwestern part of Europe, including Berlin, Amsterdam and Uppsala. The Heat operating segment comprises Vattenfall's heating and condensing businesses, including waste-to-energy plants. District heating supply is mainly based on the operation of large combined heat and power plants (CHPs). The Heat business also offers an array of decentralised energy solutions, including mini-CHPs, heat pumps, boilers, storage options and solar panel installations. With significant growth potential in Germany, the Netherlands and the UK, we continue to expand the number of customers in B2B as well as among large private and publicly owned property companies.

In Sweden, growth prospects are more limited due to market saturation and our focus is therefore on continuing to lower the CO_2 footprint and enabling decentralised solutions.

Business environment

Buildings account for a significant share of global emissions and decarbonisation of heating is key for reaching many cities and countries' climate neutrality goals. Thus, customers and society at large expect heat providers to be major contributors in decarbonising urban areas. In this market environment, low-carbon heating businesses attract high valuations because they are considered both low risk and potentially high growth. Market actors increasingly use fossil-free sources, such as geo and aqua-thermal energy, biomass, biogas and fossil-free hydrogen. There are also increasing efforts to use excess heat from energy-intensive industries as well as increasing focus on providing low-carbon heat to existing buildings. Notwithstanding these developments, heat is still a locally-focused business, with little impact from nationally spread competition.

Key data

	2021	2020
Net sales (SEK million)	34,759	23,328
External net sales (SEK million)	14,655	13,538
Underlying operating profit[1] (SEK million)	-343	978
Sales of heat (TWh)	15.6	13.8
Electricity generation (TWh)	18.9	23.0
CO_2 emissions[2] (Mtonnes)	10.2	12.1
Nitrogen oxides, NOx (ktonnes)	5.0	5.5
Sulphur dioxide, SO_2 (ktonnes)	1.3	1.5
Particulate matter, PM (ktonnes)	0.1	0.1

[1] Operating profit excluding items affecting comparability.
[2] CO_2 emissions are pro rata.

Net sales increased by 49% compared with 2020. Underlying operating profit decreased by 135% compared with 2020 mainly owing to lower clean spark spreads largely affecting the heat operations in Berlin. The end of commercial operation of the Moorburg power plant in December 2020 had a positive effect on underlying operating profit by SEK 1.1 billion, due to lower operating costs and lower depreciation. Sales of heat increased as a result of lower temperatures and a growing customer base, which also had a positive effect. Compared with year-end 2020, the number of customers increased by 2.0% to the equivalent of 1.8 million households.

Developments in 2021

In Berlin, construction of the heat storage facility at Reuter West continued. The heat storage facility will be hydraulically connected with the existing CHP and the power-to-heat boilers which will not only optimise the dispatching from the CHP plant but also enable flexible operation of both generation plants. At the cooling centre at Potsdamer Platz, preparations have begun to deploy a first industrial-scale high-temperature heat pump together with partner Siemens Energy AG. The project is called "EnEff:Qwark3" and the high-temperature heat pump will be used to increase the temperature of excess heat, hence making excess heat a usable product that enables the supply of carbon-free heat to Berlin's district heating network. This increases the efficiency of the cooling station while supplying district heating and cooling in Berlin.

In the UK, the construction of the district heating network at Brent Cross South in north London started. The project will supply more than 6,000 homes and 400,000 m^2 of retail and office buildings with low-carbon heating solutions. Vattenfall is also planning a heat network in the southeastern part of the city. In May, the right to capture heat from the Cory Riverside Energy's waste-to-energy plant at Belvedere was secured. Vattenfall will design and operate a low-temperature district heating network to utilise heat losses from the plant.

In the Netherlands, Vattenfall was granted a permit and subsidy to build a power-to-heat boiler at the Diemen CHP plant in Amsterdam. The power-to-heat boiler is expected to be the largest in Europe once commissioned and will be run exclusively on fossil-free electricity. The coal-fired power plant Hemweg 8 in Amsterdam, that was taken out of operation in 2019, is now being prepared for demolition. The site will be redeveloped into a hub for the production and storage of fossil-free heat, power and hydrogen.

Additionally, the Amsterdam South Connection, which couples the city's southeastern and northwestern district heating networks, started operations. The system includes an auxiliary heating plant and heat buffer and enables the integration and supply of more sustainable and renewable heat into the entire Amsterdam district heating network.

In Sweden, the new biofuel-fired plant, Carpe Futurum, has been put into operation and delivered the first heat to our customers in Uppsala. Carpe Futurum will have a capacity of up to 110 MW heat and uses recycled wood and bio-oil to replace the earlier peat-fuelled boiler. This reduces net CO_2 emissions by 150,000 tonnes per year.

By capturing the heat losses of the Belvedere waste-to-energy plant, Vattenfall can maximize resources by feeding it into a local district heating network.

Strategy and targets

Heat is at the center of Vattenfall's decarbonisation journey. And the focus of our decarbonisation efforts is on replacing fossil fuels with fossil-free alternatives, mostly in our Berlin and Amsterdam heat networks. We are phasing out hard coal by 2030 and are carefully considering our technology options with a strong focus on minimising exposure to fossil gas – ensuring that any additional required gas assets are fit to be powered by fossil-free hydrogen or biogas when these renewable fuels become feasible.

Our country-specific CO_2 reduction roadmaps are based on a broad mix of sustainable technologies, including geo- and aqua-thermal heat sources, heat pumps, e-boilers, (seasonal) storage options, and hydrogen. We are also partnering with major industry players to integrate third-party excess heat from industries and data centres. In Berlin and in the Netherlands, we are investigating the feasibility of lowering network temperatures. This would minimise heat losses and enable the integration of more renewable third-party heat sources as most excess heat is supplied at lower temperatures compared to conventional power plants. We also have an ambition to increase third-party sources in our district heating networks in Sweden. In addition, our Swedish operations are to be 100% fossil free by 2025.

We aim to grow our customer base by connecting more new and existing buildings to our heat grids, by developing new heat grids (such as in the UK), and by implementing smart hybrid and decentralised heating and cooling solutions. To do this, we are working on further digitalising our core processes and developing digitally enabled propositions.

Planned activities

- Create a biodiversity roadmap for our Berlin operations to generate further biodiversity-enhancing initiatives and monitoring campaigns (see page 76)
- Explore opportunities to develop new local energy systems by linking heat networks to energy recovery facilities across the UK in partnership with waste management company Viridor
- Utilise excess heat from the cooling water of existing and future data centres in Amsterdam
- Enable more customers to sell excess heat to the district heating network (such as SamEnergi in Sweden)
- A carbon capture and storage project in Sweden in operation by 2030.

In focus

District heating – a hot topic in the UK

Interviewed for this article

Bindi Patel
Head of Customer Experience, Heat UK

THE EDIT

Read what our guest writer Kevin McCloud has to say on the topic of district heating in The Edit.

Read The Edit

Heat networks have been identified as key enabling technology in the UK. Vattenfall is proactively shaping the UK heat network market by thinking beyond the status quo and a clear goal of fossil-free living within one generation.

In 2008, the UK government set legally binding targets for reducing greenhouse gas emissions by 80% compared to 1990 levels. "This was a turning point for the UK," explains Bindi Patel, Head of Customer Experience at Heat UK, in the Business Area Heat.

"It was a milestone for UK policy makers in securing a binding target with an independent advisor – the Committee on Climate Change (CCC) – tasked with setting five-yearly carbon budgets to guide progress. In 2019, the UK Government accepted a revised target of net zero by 2050, again legally binding."

With a clear ambition established, the proportion of renewable power generation has increased. In 2020 40% of all power generation was renewable. "However, with heat provision, we have a long way to go to transition away from fossil fuels. The real challenge in delivering net zero by 2050 is decarbonisation of heat provision," notes Bindi Patel.

Currently, in the UK, 48% of the energy demand goes towards heating buildings, accounting for 30% of all carbon emissions. Of this, 15% of comes from residential properties and 86% of all 28 million UK households use individual gas boilers for space heating and hot water. Reaching net zero carbon will require an overhaul of how buildings are heated in the UK – that is upgrading the heating systems of 19,000 homes each week.

District heating in the UK

There is no silver-bullet solution for heat decarbonisation. Different solutions will suit different parts of the UK, taking advantage of different heat sources from air and water source heat pumps, waste heat from data centres, industrial processes and energy recovery facilities. There is even opportunity to use waste heat from the London Underground.

This ability to draw in a diverse range of heat sources helps heat networks provide resilience to customers. Analysis from the CCC shows that heat networks can meet 18% of the UK's heat demand by 2050 – a significant increase from 3% today. In terms of households, this equates to approximately five million homes served by heat networks, up from 500,000 today.

This calls for bold vision and a long-term strategic outlook to develop heat networks that can transform cities. Bindi Patel believes that this is where Vattenfall has an advantage:

"Vattenfall has demonstrable experience in designing, constructing and operating city-wide heat networks in Amsterdam, Uppsala and Berlin. The scale of these networks have not been seen in the UK, but they are exactly what is needed to achieve net zero".

To encourage enabling market conditions, Vattenfall has been advocating for a number of policy changes, including the creation of heat network zones. This is where an area is designated a heat network zone, requiring new buildings in the zone to connect to the heat network. This will lower the investment risk for heat networks and accelerate their deployment. The Government has also recognised the potential by confirming funding support to establish heat network zones and introducing statutory regulation for heat networks.

Strong foundations

The nascent state of the heat network sector in the UK provides Vattenfall with excellent long-term and stable investment opportunities. Since entering the UK market in 2018, Vattenfall has delivered strong progress in securing long-term heat network partnerships.

As energy partner for the Brent Cross Town development, Vattenfall will operate a heat network that will serve over 6,000 residential customers. Vattenfall's heat network is key to delivering on the property developer Argent's commitment for the north London development to be net zero carbon by 2030.

Different solutions are needed for different regions to take advantage of local heat sources and accommodate new delivery models. With Midlothian Council in Edinburgh, Vattenfall has formed a 50–50 joint-venture partnership to develop a heat network using waste heat from an energy recovery facility. The ambition is to expand north into the City of Edinburgh and integrate other heat sources as the network expands.

In a partnership with the waste management company Cory, their energy recovery facility provides Vattenfall with a secure and reliable long-term heat source as part of a long-term vision for a city-wide heat network across south-east London, connecting 75,000 homes and supporting four London boroughs in their transition to a low-carbon energy system. The approach with Cory is different, with the heat source secured we can confidently approach developers who need a route to decarbonise their projects.

Making it work for customers

Technology and infrastructure are only part of the picture. Bindi Patel explains that achieving the net zero ambition requires a change in mindset and culture for many UK households.

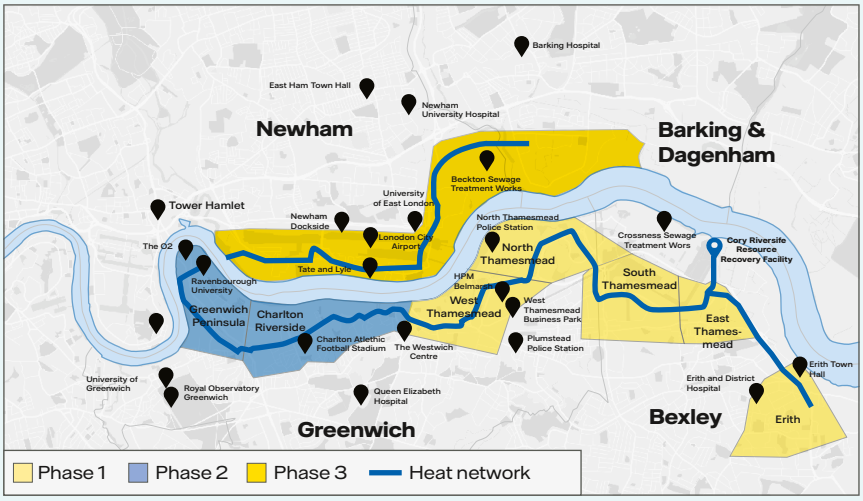
They are accustomed to individual gas central heating, which belongs to the homeowner. This is the legacy of an energy market that relied on North Sea gas distributed through a national gas network. Switching to low-carbon and renewable sources of heat provision involves shifting to new delivery models.

"For a large proportion of customers, we are asking them to move away from what they are familiar with. We know district heating offers better service, both in terms of reliability, comfort and cost. On average a UK customer's annual heating and hot water bill is GBP 100 cheaper on a heat network."

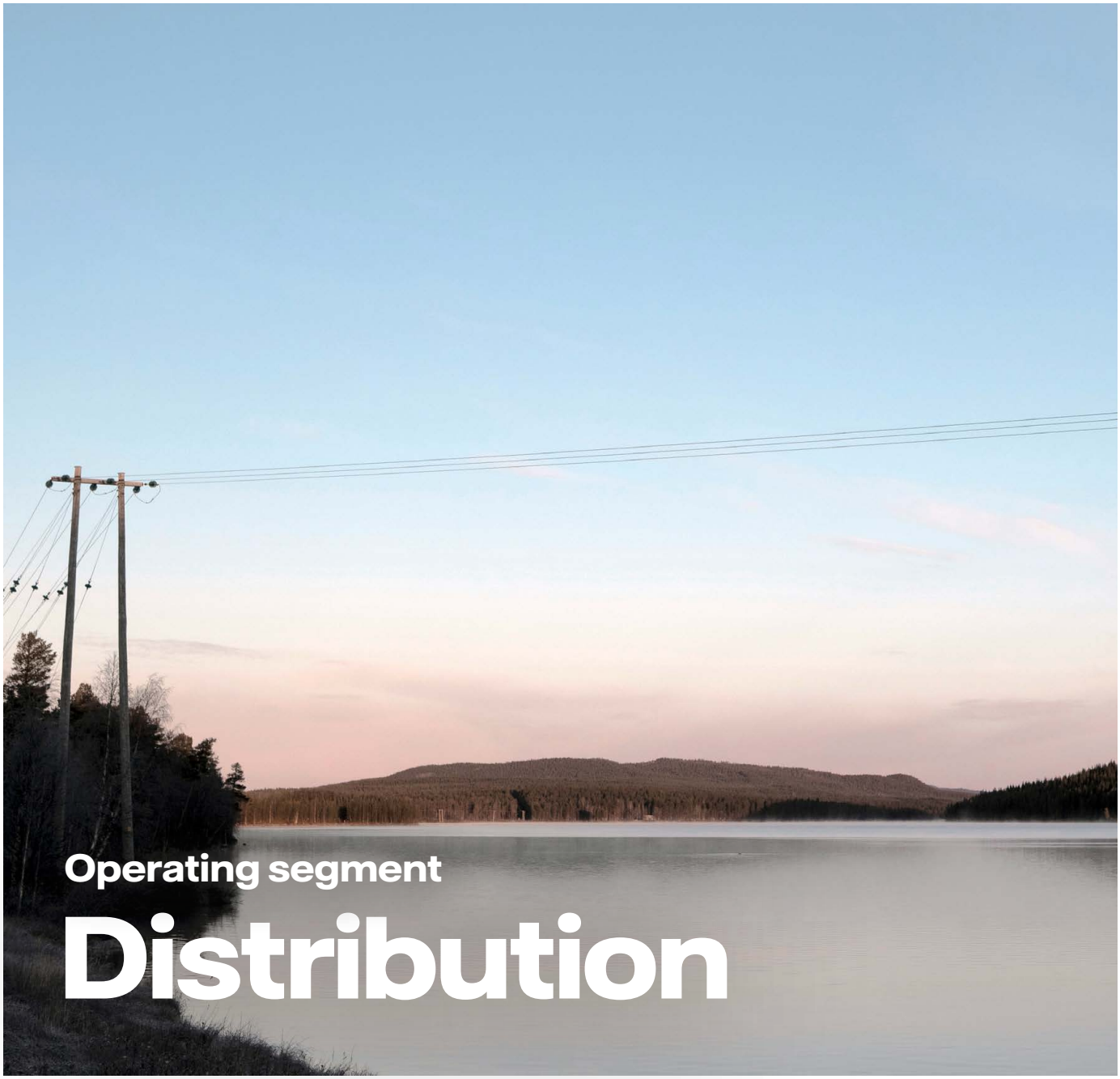
The customer experience is central to a successful heat network. Once installed, the legacy of a heat network will be determined by whether customers are happy. This is why Vattenfall is looking at customer experience even before a customer moves into a home. Our preference is to engage early with clients to ensure customers are provided with the right information and supported at each touchpoint.

> "The real challenge in delivering net zero by 2050 is decarbonisation of heat provision."

Bindi Patel explains that this is part of Vattenfall's approach to partnering with clients. "The projects we are involved in have ambitions to revitalise parts of cities that have been neglected. Yes, we provide the enabling infrastructure in the form of a future-proofed heat network – but it is part of a much bigger vision to facilitate vibrant places that nurture healthy, happy communities." ■



A long-term vision for a city-wide heat network across south-east London, connecting 75,000 homes.



Operating segment
Distribution

Operations

Vattenfall's Distribution business owns and operates electricity distribution grids in Sweden, has approximately 1,000,000[1] business and household customers and over 132,000 km of electricity grids. Vattenfall is the largest owner and operator of regional electricity distribution grids and has a top-three position in local grids in Sweden. A business unit for operation and ownership of new grids has been established in the UK, where Vattenfall is one out of 14 established Independent Distribution Network Operators (IDNOs).

Electricity distribution is primarily a regulated business supervised by regulators in the respective countries.

Recent forecasts indicate more than doubled electricity demand in Sweden in the coming 15 years and 90% of the additional demand as well as a large share of new wind power connections are estimated to end up in areas where our grid is located.

[1] Excluding the Berlin grid business that was sold on 1 July, 2021.

Business environment

The energy transition means rapid operating changes for the energy landscape and electricity disitribution business enables this by connecting more renewables and customers to the system as well as by a robust and sustainable electricity infrastructure. Recent years of market growth have resulted in a shortage of grid capacity. In addition, dramatic growth of electricity demand is expected in the coming decades due to the electrification of primarily industry and transport, but also the establishment of electricity-intensive businesses such as data centres and battery factories. Recent forecasts[1] indicate more than doubled electricity demand in Sweden, from around 140 TWh in 2020 to approximately 300 TWh by 2045. At the same time, new renewable electricity production, mainly wind and solar power, needs to be connected to the grid and existing grid assets are increasingly in need of reinvestments. Hence, this calls for large grid investments in the coming decades.

[1] https://www.energiforetagen.se/globalassets/dokument/fardplaner/scenario-2045-april-2021/scenarioanalys-efterfragan-fossilfri-el-2045-slutrapport.pdf

Key data

	2021	2020
Net sales (SEK million)	17,262	21,644
External net sales (SEK million)	14,643	16,970
Underlying operating profit[1] (SEK million)	3,152	5,325
Investments (SEK million)	5,992	7,610
SAIDI[2] (minutes/customer)	112	148
SAIFI[3] (number/customer)	1.8	2.0

[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.

Net sales decreased by 20%, and underlying operating profit decreased by 41% compared to 2020. The sale of Stromnetz Berlin affected net sales by SEK 4.8 billion and the underlying operating profit negatively by SEK 0.6 billion. In addition, underlying operating profit was affected by a lower gross margin in the Swedish operations, mainly owing to price reductions in the local grid, higher costs for the transmission network as well as an increase in network losses caused by higher electricity prices. This was partly countered by higher distributed volume due to colder weather.

Developments in 2021

On 1 July, the sale of Stromnetz Berlin – Vattenfall's electricity distribution business in Germany – to the State of Berlin was finalised. The purchase price was EUR 2.1 billion (SEK 21.2 billion).

The inflow of connection requests remains high, both for the regional and local grids. For instance, demand for new connections to the regional grid increased four-fold compared to 2020, mainly driven by increasing demand from the consumption-side. The regional grid is also being expanded; a major project that began in 2018 to connect Microsoft's first fossil-free data centre in Gävleborg County passed a milestone when three transformer stations were completed and put into operation. The project will be completed in 2024.

Long lead times and permitting processes for building electricity grids are a major challenge for the energy transition in Sweden. During the spring the Swedish government decided in favour of the Council on Legislation's legislative proposal "Modern Permitting Processes for Electricity Grids" which leads to improvements in several areas. However, more radical measures are needed to expand and reinforce the electricity grid at a pace that meets societal and customer expectations.

Flexibility solutions can assist in alleviating bottlenecks in the electricity grid and complement grid investments. Vattenfall participates in several flexibility projects. SthlmFLEX is a R&D project to test a flexibility market where market actors can offer capacity flexibility in the Stockholm area. In CoordiNet, electricity consumers and electricity generators contribute to more efficient use of the grid by adjusting their electricity consumption or generation in exchange for compensation.

In February 2021, the Administrative Court in Linköping ruled in favour of the electricity grid companies in the ongoing legal process concerning revenue regulation for the current regulatory period (2020–2023). The verdict was appealed by the Energy Markets Inspectorate (Ei) and the Court of Appeals approved the appeal in November. Meanwhile, Vattenfall strives to manage uncertainties with potentially low revenue frameworks and urgent need for grid investments, at the same time as the customers need predictable grid tariffs. To adapt to the new regulation, Vattenfall reduced grid tariffs for private and business customers in the local grid by ~5%, as of 1 January 2021.

With the unregulated offering Power-as-a-Service (PaaS), Vattenfall can enable electrification of industry and heavy transport sectors by designing, building, owning, and operating necessary electrical infrastructure. PaaS is an established business in Sweden and the UK and Vattenfall entered the Dutch and Danish markets in early 2021.

Public-private collaboration is making the build out of the regional grid in Gävleborg County and other projects possible and enabling the energy transition.

Strategy and targets

A robust and cost-efficient electricity grid is a precondition for fossil-free living. One of our strategic ambitions is to enable the distribution of twice as much electricity in our grid by 2030 with a goal of 99.99% quality of delivery. This requires that we work at an even faster pace.

First, we need to accelerate the expansion and renewal of the grid. Major investments are necessary to maintain quality of delivery and enable the energy transition. To succeed in this, we need to influence the market conditions to support the energy transition, primarily regarding regulation, permit processes and contractors.

It is also important that we manage and develop our existing assets, systems, information and not least our relationships with customers and stakeholders.

Minimising the environmental impact of our operations is important for gaining broad support for grid expansion. In the coming years the focus of our environmental activities will be on proactive management of biodiversity in maintenance and construction activities, responsible handling of equipment to avoid oil spills and initiatives for emissions reduction from transportation.

In addition, it is necessary to develop new solutions and services to meet new customer demands. To do so, securing access to competence by being an attractive employer, developing our people and encouraging new ways of working will be key.

Planned activities

- Major investments (up to SEK 7 billion per year until 2030) in the coming decades to increase quality of delivery and connect new customers, both in the regional and local electricity grids in Sweden
- Expand solutions for more efficient grid usage, such as regional marketplaces for grid flexibility, new types of grid capacity tariffs and load steering to ease pressure on the grid
- Expand Power-as-a-Service offerings with near-term focus to grow in Sweden, the UK, the Netherlands and Denmark
- Continue roll-out of new smart meters for Swedish electricity grid customers
- Adopt new insulation technologies for high-voltage breakers to avoid the use of the greenhouse gas SF_6.

In focus

Fossil-free electricity – a scarce resource for large businesses

Interviewed for this article

Catarina Grenemark
Head of Customer Relations B2B, Vattenfall Distribution

Many businesses want to contribute to the energy transition and electrify their processes. But in Sweden they are often faced with challenges to get the power they need when they need it.

Electrification is high on the climate agenda and, with its large and growing fossil-free electricity capacity, Sweden is in a unique position to drive further electrification of industry. Foreign and domestic companies with ambitions to cut their climate footprint therefore look to Vattenfall for fossil-free electricity to run their new or expanding activities. This development is presently seriously challenged by extremely long lead times to obtain sufficiently large grid connections, a situation that threatens to slow down the whole Swedish energy transition.

"A few years ago, a connection of 100 MW supply or consumption to the grid was regarded as a considerable size and took five to eight years to complete, but from 2019 the number of requests for connection and inquiries for capacity has quadrupled. 100 MW is not seen as considerable anymore; now we're talking about thousands of megawatt instead, and these connections require entirely different kinds of physical equipment that also involves the transmission system operator (Svenska kraftnät, SvK). And with the present procedure that can take 10–15 years. It is obvious that customers cannot wait that long," explains Catarina Grenemark, Head of Customer Relations B2B in Vattenfall Distribution.

A serious challenge to the energy transition

For many large industries such as manufacturers of fossil-free steel, investments and time to market are important, and they may instead choose to relocate to other countries, where the journey to get connected to the grid is faster. Mining companies, on the other hand, are not able to relocate and have to wait or give up their expansion or electrification entirely.

"The situation slows down society's whole climate effort and means that industries that want to change and be part of the energy transition might not be able to fulfil their ambitions," Catarina Grenemark says. "An additional challenge is Sweden's electricity law. As a distribution system operator, we must run a strict queue system for allocating new capacity, but this has societal implications as not all new connections will result in deacarbonisation. An alternative would be, if an authority assessed and undertook the allocation of the available capacity."

Power lines, transformer stations and the route to grid connection

If a manufacturing company for instance needs a large amount of electricity for expansion or start-up, it will often involve new regional high-voltage power lines, establishing a transformer

station and finally a physical connection to the manufacturing company. As distribution system operator (DSO), Vattenfall is responsible for the process and physical connection as well as consulting with the customer to get connected as efficiently as possible. For example, it might be advising a customer to locate the plant near existing transformer stations and power lines which could cut lead times down from the current 8–11 years.

"When we receive a request from a customer for a new connection, we study our existing grid in the area to determine whether we need a new line and transformer station and then submit a request for increased capacity to the Swedish Transmission System Operator, Svenska Kraftnät," Catarina Grenemark explains. "They return with a first indication of the expected time horizon for the connection, which in the worst case could be up to 10–15 years."

Once Vattenfall has received the answer to its request (see illustration below), the pre-study and preparation process starts with consultations and meetings with all stakeholders who have an interest in the land such as landowners, county administrative boards, municipalities and maybe the armed forces, etc. This part takes 1 to 2 years. A detailed environmental impact assessment of the power line is also prepared at this stage and must be concluded before a concession application can be submitted to the Energy Markets Inspectorate (Ei).

The regulatory process at Ei of granting concession typically lasts some two years, during which time Vattenfall is only allowed to carry out planning work. Once the concession is granted, Vattenfall restarts the project and carries out the construction, land acquisition and line building activities over a period of 2–4 years.

In addition to the lead times of the authorities and the grid company, the customer applying for connection will already have spent a lot of time preparing their own environmental and other applications to establish or expand their business. In the present sequential system, Vattenfall has to wait until it is certain that these permits will be granted before starting physical work on the connection.

Hillevi Priscar

OX2 is the biggest developer of onshore wind farms in Sweden, and Vattenfall Distribution has connected several of their large wind farms to the grid. **OX2 country manager Hillevi Priscar** comments on the grid connection situation in Sweden: – We need to cut lead times for grid connections and stress the importance of building out our grids so that renewable energy and industry can enable the transition to a fossil-free society. For the process to change into a more flexible way of working, a dialogue with the authorities is necessary.

The biggest challenge for wind farms now is the interpretation of the environmental law where projects are stopped or delayed because the authorities have, for the past 10 years, been saying that individual species are to be protected. That is a serious problem for the wind business that has to be solved. We definitely want to find solutions for improved biodiversity, if we get the chance and opportunity to do that.

In connection with applications for connection, the argument against wind farms from people living nearby is often that the farms are better situated somewhere else, but now also municipalities use the same argument, and they in fact have a veto. That causes postponed projects and delays and can also cancel projects altogether. Development is difficult when legislation is neither adapted to the purpose nor predictable.

Serious hurdles to electrification

It is generally agreed that it is in the interest of all parties that this process is shortened. SvK has published their ambition to cut the lead time by half and Vattenfall is working together with SvK to speed up the processes, among other things by trying to work in parallel processes instead of sequentially. Vattenfall plans to implement a new smoother process in spring 2022.

"One of the things that can drag out application times is the many different stages of appeals, especially in the process for a concession. We have stakeholder meetings and consultations in the pre-study process where it is possible for anyone with an interest in the land to express an opinion, and we try to incorporate as much as possible," says Catarina Grenemark. "It is typically objections to overhead power lines, environmental protection issues or alternative use of the land. If stakeholders are not satisfied and also disagree with the terms of the concession issued by Ei, they may take the decision to the environmental court, which will prolong the process by 2–5 years or more."

Society's demand to use underground cables is currently a big issue causing long delays for both Vattenfall and SvK. Not only because of all the appeals it creates, but it also takes a considerable amount of time to investigate an option that generally is not viable.

Technically, it is extremely challenging to build with underground cables, especially for long distances and at high voltage levels, and if these are widely applied, it also affects the reliability of the power system. The Norwegian government last year decided that power grids above 130 kV should only use overhead lines, and a corresponding rule in Sweden would cut lead times significantly in many places.

> "To lose momentum and engagement now could become a challenge for Sweden in the future."

Electrification at stake

"The present backlog of connections to the Swedish grids can prove to be a serious threat to the country's and businesses' climate targets and discourage companies from contributing to the energy transition by electrifying their processes. To lose momentum and engagement now could become a challenge for Sweden in the future," Catarina Grenemark concludes.

A connection process to the regional grid typically takes 8–11 years

3-6 months	→	0.5-1 year	→	1-2 years	→	2-3 years	→	2-4 years
Request from customer for a new connection. Vattenfall sends a request to SvK on increasing subscription to be able to connect the customer		Answer from SvK – takes around one year, sometimes longer		Pre-study and preparation of the application for concession. One important part is the environmental impact assessment.		Concession process at Energy Markets Inspectorate (Ei)		Construction, purchasing and building lines/stations

Our people

Having the right people with the right competencies and skills, both today and in the future, is crucial for Vattenfall's success. That is why we need to strive tirelessly to empower our people. We also work to ensure diversity in all aspects to achieve a breadth of ideas and experiences, so that our people can have an open dialogue and learn from each other.

Strategy
Our employees are key to Vattenfall's success and all of us work towards our purpose to power climate smarter living and our goal to enable fossil-free living within one generation. We work actively to ensure that employees feel empowered, engaged and that they are growing continuously to be able to perform at their peak, while ensuring a safe, inspiring, inclusive and caring work environment.

Vattenfall has four guiding principles to support employees in their daily work and to create a culture that empowers everyone to achieve their best:

- We work **actively** to achieve our purpose
- We are **open** and collaborate with colleagues and other partners
- We are **positive** about development and see solutions rather than problems
- We never compromise on **safety**.

Attract, retain and develop diverse competencies
Our people strategy encompasses all stages of an employee's experience and focuses on attracting, retaining and developing employees. This contributes to securing the relevant, diverse competencies we need, which is key for delivering on our strategy.

Attract
Vattenfall cooperates with schools and universities to attract the right people with the specific skill sets that Vattenfall needs today and in the future, and we have several partnerships to increase the interest in energy and technology among young people in order to secure our long-term competence pipeline.

Vattenfall's International Trainee programme attracted almost 5,800 candidates for 20 trainee positions of which more than two-thirds were filled by women. During a one-year period the trainees learn about different parts of the company, build their professional networks, get acquainted with various business units and have a chance to find their career paths to better equip them and Vattenfall for the future.

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 security vetting of all employees as part of our recruitment processes.

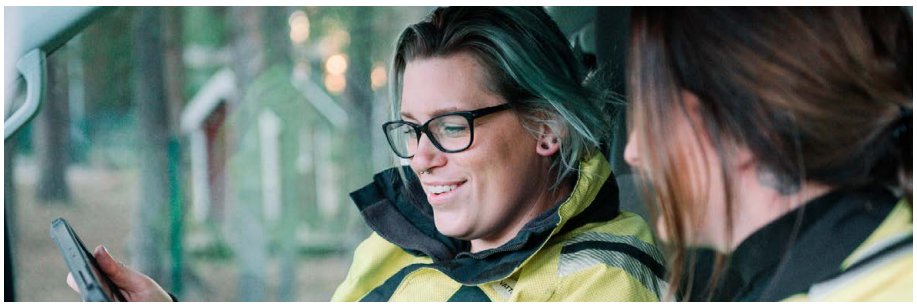
Retain and develop
Vattenfall offers an informal and supportive environment where we encourage smart working and celebrate success. We believe that a positive balance between personal and professional life benefits everyone; and to promote this we offer flexible work options. We strive to find a balance between working in the office and working from home with a maximum of 49% remote work for employees where this does not interefere with the needs of the business and work tasks. To adopt to new ways of working, we are increasing efforts to make our offices more flexible, and give our employees the mental and physical support they need as well as support on

how to lead and collaborate efficiently in the hybrid office environment.

At Vattenfall we conduct many initiatives to retain people with key competencies and to provide support for employees to continuously develop their strengths and feel empowered. With a rapidly changing market that is also becoming more diversified, work descriptions as well as necessary capabilities and skills of our people must evolve as well. We have identified critical roles and at-risk activities in order to implement and develop targeted here-and-now re- and upskilling measures with tailored training measures, exchange and learning concepts as well as job rotation programmes.

Leaders at Vattenfall are role models and pillars of our work culture. We therefore support them with tools to empower and engage their teams. The Leadership Focus Programme aims to give managers at all levels guidance for their leadership. The programme is centred around the focus areas Accelerate Learning, Connect People and Drive Innovation and offers managers an opportunity to gain a deeper understanding of effective leadership as desired within Vattenfall. The programme is virtual and by year-end 2021, more than 500 managers have started or completed this journey, corresponding to approximately one-fourth of all managers. The intention is to extend this with an additional 300 people in 2022.

Additionally, Vattenfall conducts an annual programme called Top Talent that is targeted at a group of employees seen as potential successors for management functions. The programme includes workshops, training sessions and interactive sessions for the participants to exchange, learn and prepare for the next step in their development while also allowing Vattenfall to develop a strong internal leadership pipeline. In 2021, the group consisted of 59 talents in various countries.



Renumeration, including variable pay programmes, is also an important means to retain employees and position Vattenfall as a fair and competitive employer. See more details on page 82.

A safe, inspiring and inclusive work environment underpins our strategy

Ensuring employee health and safety (H&S) – both physical and mental – is one of our guiding principles, and we have a goal of zero accidents and work-related illnesses. To ensure that employees can perform, we strive for a safe, inspiring and inclusive environment where a clear focus is maintained on H&S leadership as well as organisational and social health aspects. See more details on pages 81–83.

In order to tackle the complex challenges of decarbonising society, Vattenfall needs a multitude of perspectives and a culture that enables an exchange of these perspectives. Our Diversity and inclusion (D&I) strategy is based on the conviction that D&I create added value for Vattenfall, its employees and managers, and for society in general. It rests on three pillars:

- Embed D&I in everything we do by living our principles
- Think broadly and drive all dimensions of diversity
- Include everyone; our managers will lead by example.

See more details on pages 81–82.

Measuring our success in empowering and engaging our people

One of the ways we use to measure the success of our efforts is our annual employee survey, MyOpinion. The survey tracks how well our employees feel connected to Vattenfall's purpose, how each individual feels about their contribution and identifying opportunities to make everyone feel more empowered, included and engaged. The 2021 survey incorporated an expanded demographic section to gain insights into important D&I aspects.

The most recent survey shows that Vattenfall is a high performing organisation in many areas. The Engagement Index reached 75%, which means that we reached the strategic target for 2025. The Enablement Index also increased to 78%, which is 2 percentage points above the average for high-performing companies.

Our employees rank Vattenfall highly on teamwork, and fair treatment. Improvement areas include more clarity of goals, roles and responsibilities on departmental level as well as increasing adaptability to market conditions and customer focus.

Employer awards

SWEDEN	1st place, most attractive employers in our industry among students, young professionals and senior professionals within engineering (Universum) Winner in the category "Best Career Site" during the event Career Day 2021 (Karriärföretagen)
GERMANY	Improved ranking, most attractive employers among engineering students at our eight target universities: From #29 (2020) to #18 (2021) (Trendence) Improved ranking, most attractive employers among engineering students (all engineering universities Germany) From #87 (2020) to # 71 (2021) (Trendence)
NETHERLANDS	1st place, most attractive employers in the energy sector (Randstad) Improved ranking, most attractive employer among engineering, IT and natural science students, from 36 (2020) to 26 (2021) (Universum)

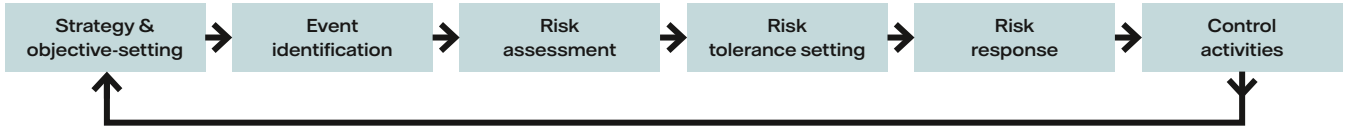
Risks and risk management

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 strategy and achieving our long-term 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 our risks and acceptable risk exposure.

Enterprise Risk Management

The aim 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 96).

ERM process



Risks and risk management are part of the financial statements in accordance with International Financial Reporting Standards (IFRS). See pages 107–170.

ERM process

Vattenfall's strategy serves as the basis for setting objectives for the respective business units in the business planning process. When setting these objectives, risks that could 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 environment, including climate change and other sustainability aspects, and reputation). These risks are assessed against the company's risk tolerance, and a decision is made on suitable risk measures. The business areas' 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 achieved. The potential financial impact is linked to financial key data that is used for the steering of the company. Information is provided on a regular basis to the Executive Group Management and the Board of Directors.

Risk Culture

Over the last couple of years, we have emphasised the risk culture within Vattenfall. We define our risk culture by an encouraging tone from the top, well understood and implemented risk governance, a central risk inventory of key risks as well as established risk-based decision-making practices.

At Vattenfall, discussion of risks is valued at all levels of the organisation. This inviting tone by all management levels makes it natural for employees to identify risks and to make them transparent. Complementary to this, the risk governance manifested in the Enterprise Risk Management (ERM) framework and process does not just provide guidance for effective risk management on paper. It is also well understood and implemented throughout the organisation and fosters openness to take risk perspectives seriously across the entire group. This is further assisted by ensuring good risk data quality in the risk inventory. All this supports risk-based decision making at all levels of the organisation and is an established practice.

Risk structure

With 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, our risk/return profile is changing. However, these developments involve not only risks but also opportunities. Both influence our operational as well as strategic activities. However, 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 risk is described on page 68). Additionally, the relative importance of market price risk is increasing for Vattenfall due to significant changes in support schemes – especially within offshore wind. To mitigate this risk, we are seeking to find an optimal long-term balance between the various portfolio components.

In 2021, the Group's overall risk portfolio posed no threat to the company's continued existence based on a single risk or aggregated risk position. Nor are such risks discernible for 2022 with high probability.

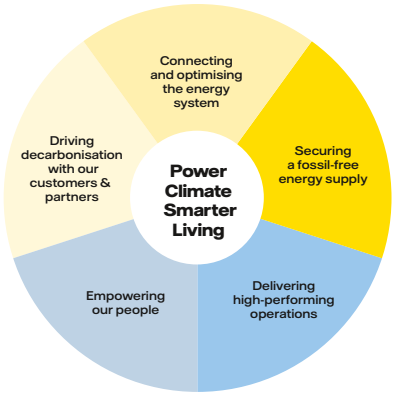
Climate change is a risk to society and to Vattenfall. As concluded in the report by the Intergovernmental Panel on Climate Change (IPCC)[1] in 2021, temperatures are rising faster than previously expected and to preserve a liveable climate, it is important to act now. As a response to the increased urgency, Vattenfall doubled the emissions reduction target for 2030 (see pages 10–13). We are also considering impacts of a changing climate on our operations, to ensure safe operations and security of supply.

During 2021, both electricity prices and volatilities increased steadily, particularly in the final quarter, and reached record- levels just before Christmas to then retreat again in the last week of the year. Lower wind speeds and low hydrological balance as well as high prices in Europe on gas, coal and CO_2 are all factors that affected the price of electricity in addition to demand levels. In Sweden, the disconnect between northern and southern price areas became very prominent with electricity prices in demand areas in the south considerably higher than supply areas in the north. A key driver of this disconnect is transmission capacity limitations in central Sweden. The main drivers of electricity prices on the continent were multiple bullish factors in the gas market, as well as increasing emissions prices.The unprecedented price levels in combination with extreme volatility have increased liquidity and credit risks.

[1] AR6 Climate Change 2021: The Physical Science Basis – IPCC

Strategic risks

In the below sections, we have categorised our risks based on our strategic focus areas (see definitions on page 24). The main strategic risks are presented as well as the way in which we manage them. Many of the risks connect directly to corresponding opportunities. For example, a failure to decarbonise our asset portfolio in the pace required by stakeholders is a risk as it could 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.

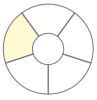


Vattenfall is in a good position at the epicentre of the energy transition. Opportunities are plentiful, and our integrated utility strategy and diversified portfolio enable us to have a holistic approach and be a strong ally to our partners and customers.

In an age of increasing interconnection among economic, digital and political factors, a triggering event, such as extreme weather, a political shift, a new technology or a sudden change in public opinion, has the potential to disrupt or radically impact the world we live in. This can introduce new risks and opportunities in the general business environment.

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 offtake offers a natural hedge. Furthermore, parts of our revenues comes from stable, regulated income from, for example, electricity distribution, which improves the overall risk picture even further.

However, we have not chosen this strategy solely for the purpose of risk minimisation. Rather, we believe that our expertise across the electricity value chain makes Vattenfall an attractive counterpart in partnership dialogues, as we can provide in-depth knowledge on the electricity market and ensure delivery of various value chain steps crucial to electrification of society. Another benefit is the ability to leverage synergies across the value chain. This could be energy-trading competence, sales and marketing channels or technical skills, which can increase cross-selling and create a competitive advantage within the various businesses.



Risks related to Driving decarbonisation with our customers & partners

We promote electrification and climate-smart energy solutions in areas where we have a competitive advantage. And 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)
- Inability to secure our market share in e-mobility services, resulting in a loss of potential customers and growth potential.

Risk management activities during the year

- Reduction of our cost to serve and maintaining economies of scale through digitalisation and by growing our commodity sales business
- Supply large customers with renewable energy and support them in achieving their sustainability goals, e.g. part of HKZ wind farm sold to BASF (see pages 3 and 14). Vattenfall is also offering Corporate Power Purchase Agreements (PPAs) (see page 43)
- Partnering with industries to electrify and decarbonise industrial processes, for example HYBRIT (see pages 3 and 14), production of sustainable biofuel in collaboration with Preem and aviation fuel together with Shell, LanzaTech and SAS (see pages 3 and 15)
- Developing energy solutions, such as charging solutions (see pages 38–41) and other digital offerings. An example is the development of a sustainable logistics system for long-distance transportation by electric trucks for Kaunis Iron. Expansion in e-mobility charging solutions in Germany and the Netherlands (see page 39). Here we cooperate with Honda to introduce home-charging solutions and flexible-energy contracts specifically tailored for e-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 39).

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

- Failure to ensure satisfactory security of supply due to 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 page 57)
- Risk of failing to automate our processes to account for the increasing share of intermittent electricity generation
- Risk of not being able to secure the necessary human capital to be able to expand electricity grids at the pace required for the energy transition.

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 57)
- Flexibility contracts with large-scale industrial customers, such as Nobian's chlorine plant in Rotterdam, contributes to grid stability (see page 43)
- Influencing work on changing regulation to speed up permitting processes (see pages 58–59)
- Further development and implementation of algorithms to support physical planning, optimisation and dispatch areas to support management of flexibility (see page 43–45)
- As part of a long-term investment in competence and to broaden its skill base, Vattenfall has started a programme for newly graduated academics.

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 due to insufficient speed in developing the renewable portfolio and 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 due to lack of required permits.

Risk management activities during the year

- New, more stringent emission reduction targets (see pages 10–13)
- CO_2 emissions from our suppliers to be cut by half from 2020 to 2030 (see page 77) and sustainability criteria to be used in tenders (see page 86)
- Closure of coal-fired power plant Moorburg in Hamburg and Wilmersdorf CHP plant in Berlin
- Revised sourcing strategy for woody biomass, to use only domestically sourced, low-value by-products (see page 87)
- Cooperation with Siemens Energy for the construction of a industry-scale and high-temperature heat pump, "EnEff:Qwark^3", (see page 53)
- Inaugurated Kriegers Flak and Nieuwe Hemweg wind farms, received permit to build a solar farm in Almere as well as start of the construction of a new warehouse for wind turbines at the Danish Port of Esbjerg to supply our wind farms with critical main components
- Investment in technologies such as solar power and battery storage as well as new business models
- Investigating possibilities to deploy Small Modular Reactor (SMR) technology, see pages 46–47
- Influencing work addressing the need to shorten permitting processes (see pages 58–59)
- Final investment decision for the Vesterhav-projects in Denmark (see pages 15 and 49).

Risks related to Delivering high performing operations

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

Risks

- Political risks, like changes in climate-related policies or environmental regulations, e.g. long permit processes for electricity grids and wind farms
- Operational asset risks – such as power availability, dam failure or environmentally hazardous emissions – could have significant negative financial and non-financial consequences. With increased globalisation and digitalisation our operations are becoming more vulnerable to disruption
- 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 could disrupt operations, have negative impact on people and environment. This could also harm our brand, 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, work to counter attacks and implement protection measures
- Robust time plan- and cost control on large construction projects. Keeping Levelised Energy Cost (LEC) competitive is an important focus
- Pathway to improved sustainability performance, including human rights action plan, environmental plan and sustainable supply chain roadmap
- 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 is being undertaken to increase awareness and ensure compliance with the Code of Conduct and Integrity, for example through training, see page 88
- 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

- An inability to attract and retain people with key competencies
- Lower employee engagement for Vattenfall when outsourcing and/or cost cutting
- Work environment risks relating to accidents and incidents as well as risks regarding mental health situation of employees
- Pandemic risk.

Risk management activities during the year

- Attract new talent and competence, retain people with critical capabilities and enhance and develop the skills of our employees (see pages 60–61)
- Diversity & Inclusion (D&I) activities (see pages 81–82)
- Annual employee survey conducted to monitor important aspects from employees' perspective and contribute to guiding development of Vattenfall as a workplace
- Offer a more flexible work situation and adapt to changing work habits as well as our employees' needs (e.g. remote working and smarter working concepts). In London for instance, we moved into a new centrally located office with a focus on sustainability and post-covid 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 81–82)
- 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 risks

Climate change affects our operations and activities

There is increasing urgency linked to climate change, and there is a need to accelerate efforts to reduce emissions. There is also a need to adapt to a changing climate. Climate change affects Vattenfall by physically impacting our assets and operations, and through changes associated with the transition to a fossil-free society. We are committed to our goal of enabling fossil-free living within one generation and maintain 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. 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 175. Vattenfall is increasing its focus on climate-related risks and opportunities in our projects and processes. Climate change risks are explicitly included in our Enterprise Risk Management (ERM) process as well as in investment decisions for large projects. In 2020 and 2021 an analysis of how key climate parameters are projected to change according to different climate scenarios1 was conducted, to further strengthen our work with scenario analyses for our activities and markets. IPCC's Representative Concentration Pathway (RCP) scenarios 4.5 and 8.5 were considered. RCP4.5 is an intermediate climate scenario based om limited emissions and international climate policies, where the global temperature stabilises at an increase of just below 2°C by 2100. RCP8.5 is a high-end scenario, where emissions continue to accelerate and where the temperature stabilises at just below 4°C by 2100.

Physical risk drivers	Key risks	Examples of risk mitigation
• Temperature • Precipitation • Extreme weather • Fires	• Infrastructure damage from extreme weather • Flooding caused by high river flows • Reduced production due to increased cooling water temperatures • Supply chain disturbances	• Measures to strengthen the electricity grid and infrastructure • Adjusted flow regulation and investments in dam safety • Alternative cooling solutions • Diversification of the supply chain

Transitional risk drivers	Key risks	Examples of risk mitigation
• Legal • Market • Technology • Reputation • Policy	• Changed customer preferences • Stranded assets due to new demands and requirements • Brand damage • Not meeting stakeholder expectations	• New products and fossil-free energy solutions • Climate target in line with science • High focus on sustainable operations and production • Clear targets and purpose

Investments in the electricity grid reduce vulnerability to climate change

Climate change is expected to increase the frequency and severity of extreme weather events, while at the same time, electricity demand is set to grow due to electrification and new electricity-intensive businesses. To respond to this, we invest in modernising and weatherproofing the electricity network, for example by:

- Burying overhead lines
- Clearing trees, adjusting maintenance intervals and increasing the width of power line corridors
- Improving insulation and corrosion protection
- Strengthening our organisation to manage critical situations

Over the period 2020–2030, we plan to invest up to SEK 7 billion per year in our electricity grids (see page 57).

Aligning climate ambitions with a 1.5-degree scenario

Lost opportunities and the risk of stranded assets due to not transforming the portfolio fast enough are among Vattenfall's most important transitional risks. To ensure that the emission intensity of the portfolio declines rapidly enough, Vattenfall doubled its overall climate ambitions in 2021 to align its climate target with a 1.5 degree scenario. The target is externally approved by the Science Based Targets initiative, a joint initiative between CDP, the UN Global Compact, the World Resources Institute and WWF (see pages 10–13).

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Market risk – commodities including electricity

Market risk for electricity and commodities refers to the risk of adverse change in electricity or commodity prices and is monitored daily.

Risk management activities
Through our asset ownership and sales activities, we are exposed to electricity, fuel and CO_2 emission allowance prices, which are in turn 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. Vattenfall's price hedging strategy is primarily focused on the Nordic generation assets but we also conduct hedging of continental thermal assets.

The Vattenfall Risk Committee (VRC) decides how much of the generation is to 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 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 exposures between electricity and used fuel/emissions 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
The table below shows the average indicative Nordic hedge prices and the estimated Nordic hedge ratio as per 30 December 2021. 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 scenarios and the volume risk associated with hydro power generation.

Average indicative Nordic hedge prices and hedge ratio as per 30 December 2021

	2022	2023	2024
Nordic, EUR/MWh	29	28	28
Nordic hedge ratio, %	72	50	23

Continental market
The table below shows the individual impact of changes in commodity prices on expected future profit before tax as well as the observed annualised volatility of the commodity prices. For example, a movement of +10% in the price of electricity in 2022 would have an impact on profit before tax of SEK 1,270 million. Observed annualised volatilities during 2021 are shown in the far right column in the table.

The sensitivity analysis reflects both expected production and hedge levels. However, it does not include the effect of changes in expected generation in response to price changes nor the interrelationship between fuel and power prices. Both factors tend to reduce the impact of price changes on profit. The analysis is based on the assumption that price movements are independent of each other and that there are 252 trading days in a year. Prices and positions are stated as per 30 December 2021.

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.

Market-quoted risks

	+/–10% impact on future profit before tax, SEK million[1]			Observed annualised volatility[2], %
	2022	2023	2024	
Electricity	+/– 1,270	+/– 977	+/– 555	24% – 53%
Coal	–/+ 43	–/+ 42	–/+ 27	39% – 51%
Gas	–/+ 455	–/+ 1,681	–/+ 964	21% – 64%
CO_2	–/+ 78	–/+ 561	–/+ 503	42% –43%

[1] The denotation +/– entails that a higher price affects profit before tax favourably, and –/+ vice versa

[2] Observed annualised volatility in 2021 for daily price movements for each commodity, based on forward contracts for the period 2021–2023. Volatility normally declines the further ahead in time the contract pertains to.

Volume risk

Volume risk pertains to the risk of deviations between anticipated and actual delivered volume.

Risk management activities
In hydro power generation, volume risk is managed by analysis and forecasts based on historical weather data, including factors such as precipitation and snowmelt. District heating volumes are managed by improving and developing forecasts for heat consumption. There is a correlation between electricity prices and generated electricity volume. Volume risk also arises in the sales activities as deviations in anticipated volumes against actual volumes delivered to customers. Hedging activities take these correlation effects into account. Improved monitoring and forecasting capabilities are the most efficient risk management instruments also in this case.

Liquidity risk

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

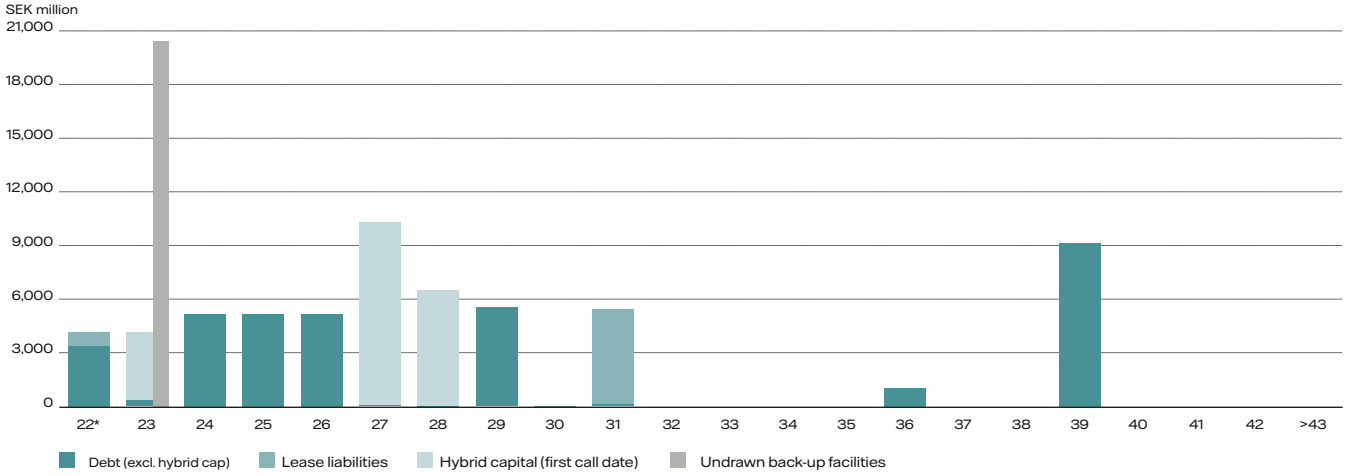
Short-term financing
The Group target for short-term accessibility to capital is that funds corresponding to no less than 10% of consolidated net sales, or the equivalent of 90 days stressed liquidity needs of the business (whichever is higher) shall be available. As per 31 December 2021, available liquid assets and/or committed credit facilities stood at 104% (2020: 47%) 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 company's long-term targets for its capital structure. On 6 July 2021, Moody's affirmed Vattenfall's long-term A3 and short-term P-2 ratings, and 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 the BB+ rating for hybrid bonds. The rating outlook was changed from stable to positive.

One senior bond was issued in 2021: a EUR 500 million green bond with an 8-year tenor. Vattenfall also issued three green hybrid bonds; SEK 3 billion and SEK 500 million, in floating and fixed notes, respectively, and a GBP 250 million (fixed) bond, all with first call date in 2028. The bonds were issued to refinance the outstanding SEK 6 billion hybrid bond with first call date in March 2022. Therefore, the amount of outstanding hybrid capital remains unchanged.

Maturity profile for Vattenfall's loans as per 31 December 2021[1]



[1] Excluding loans from minority owners and associated companies.

Borrowing programmes and committed credit facilities

		Maximum aggregated amount, in millions		Maturity		Used portion, %		Reported external liabilities, SEK million	
	Currency	2021	2020	2021	2020	2021	2020	2021	2020
Borrowing programmes									
Commercial paper	SEK	–	–	–	–	–	–	–	–
Euro Commercial paper	EUR	4,000	4,000	–	–	67	34	26,541	12,414
Euro Medium Term Note	EUR	10,000	10,000	–	–	30	41	37,732	44,636
Committed credit facilities									
Revolving Credit Facility[1]	EUR	2,000	2,000	2024	2023	–	–	–	–
	SEK	–	3,000	0					

[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 2024.
The maturity structure pertains to the debt portfolio excluding loans from minority owners and associated companies, which amounted to SEK 12,163 million for 2021 (11,618). Further information about the maturity structure of loans is provided in Note 29 to the Consolidated accounts, Interest-bearing liabilities and related financial derivatives.

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.

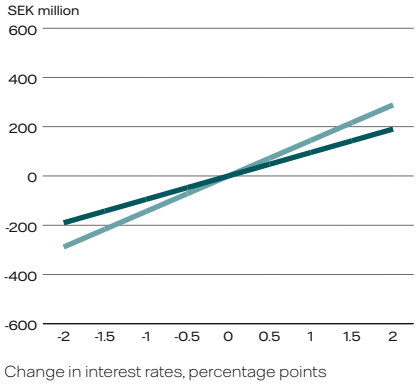
Risk management activities
We quantify interest rate risk in our debt portfolio in terms of duration, which describes the average term of fixed interest. The target duration of 3-to-7 years is based on the company's current financing need and desired interest rate sensitivity in net interest income/expense. The duration of the Group's debt portfolio at year-end was 4.76 years (3.83) including hybrid capital. See the table for the remaining fixed rate term in our debt portfolio.

Remaining fixed rate term in debt portfolio

	Debt		Derivatives		Total	
SEK million	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
< 3 months	49,214	19,028	9,133	10,797	58,347	29,825
3 months–1 year	1,109	15,020	-1,669	-1,684	-560	13,336
1–5 years	19,440	19,678	-889	-2,393	18,551	17,285
> 5 years	38,147	30,919	-6,604	-6,374	31,543	24,545
Total	**107,910**	**84,645**	**-28**	**346**	**107,882**	**84,992**

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 due to currency effects. Figures are exclusive of loans from minority owners and associated companies, totalling SEK 12,163 million for 2021 (11,618). The average financing rate as per 31 December 2021 was 2.95% (3.37%). All figures in nominal amounts.

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



Change in interest rates, percentage points

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 –76 million (–115), including derivatives and hybrid capital, but excluding loans from minority owners and associated companies. All figures are in nominal amounts.

Currency risk

Currency risk refers to the risk of negative impact from changed exchange rates on 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 in the revaluation of net assets in foreign subsidiaries (translation or balance sheet exposure). Currency exposure in borrowing is limited by using 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 should be hedged immediately when it arises. The target for hedging translation exposure is to, over time, 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 142,006 million (59,794). Of this amount, 17% (41%) 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 6.9 billion (2.5), where an appreciation of the currencies shown in the table in Note 38 to the consolidated accounts, Specifications of equity, would result in a positive change in equity. 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	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
DKK	0	12	–	–	0	12
EUR	79,944	51,303	5,243	5,705	85,187	57,008
GBP	14,694	10,665	-3,050	0	11,644	10,665
JPY	1,572	1,587	-1,572	-1,587	0	–
NOK	0	524	0	-524	0	–
PLN	0	0	–	–	0	–
SEK	8,079	15,628	2,971	23	11,050	15,652
USD	3,620	4,927	-3,620	-3,271	0	1,656
Total	**107,910**	**84,645**	**-28**	**346**	**107,882**	**84,992**

The table shows currency risk in the debt portfolio and the currencies that Vattenfall is exposed to. Figures above are exclusive of loans from minority owners and associated companies, totalling SEK 12,163 million (11,618). All figures in nominal amounts.

Consolidated operating income and expenses by currency, %

	Income		Expenses	
Currency	**2021**	**2020**	**2021**	**2020**
EUR	84%	69%	89%	82%
SEK	12%	26%	6%	14%
GBP	2%	3%	2%	1%
DKK	2%	3%	1%	2%
Other	0%	0%	1%	1%
Total	**100%**	**100%**	**100%**	**100%**

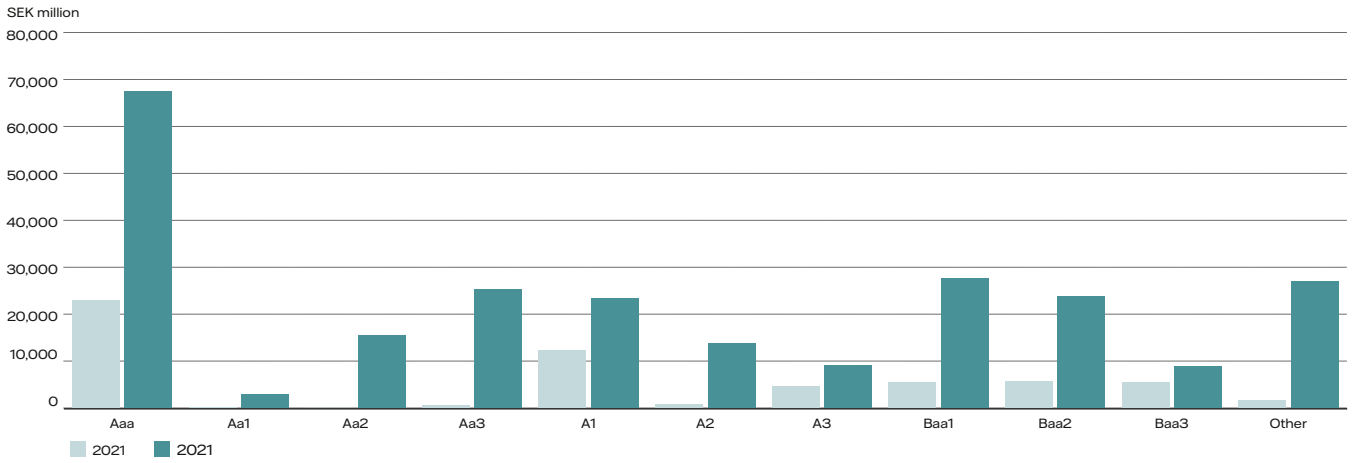
The values are calculated based on external operating income and expenses. Changes in inventories and investments are excluded.

Credit risk

Credit risk is the risk that a counterparty cannot or will not meet its obligations to Vattenfall and 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 exposure per rating class in SEK million is shown in the chart below.

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. The values for "Others" in the chart include mostly counterparties covered by policy and limit exceptions, mainly pertaining to long-term sales contracts and those in connection with the divestments that occurred in the financial year 2016. Counterparty exposure increased across all rating classes this year as higher market prices resulted in significant increases in mark-to-market exposures. For higher rating classes there was an additional effect from activites related to the high inflow of cash from our margining agreements.

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 communities we work in.

At Vattenfall, one of our core beliefs is that sustainability is the business: a fundamental and fully integrated part of our operations and strategy. In practice, this means that our Business Areas and Staff Functions are directly responsible for their sustainability performance and therefore include material social and environmental topics in their respective strategies and business plans. This comes together at the Group level, where our most important social targets (employee engagement and LTIF) and environmental target (CO_2 emissions) are given equal weight with the financial targets.

The Strategy and Operating Segments chapters describe how our Business Areas contribute to fossil-free living while focusing on sustainability throughout the energy value chain. The following sections provide complementary details, examples, deep-dives and key figures.

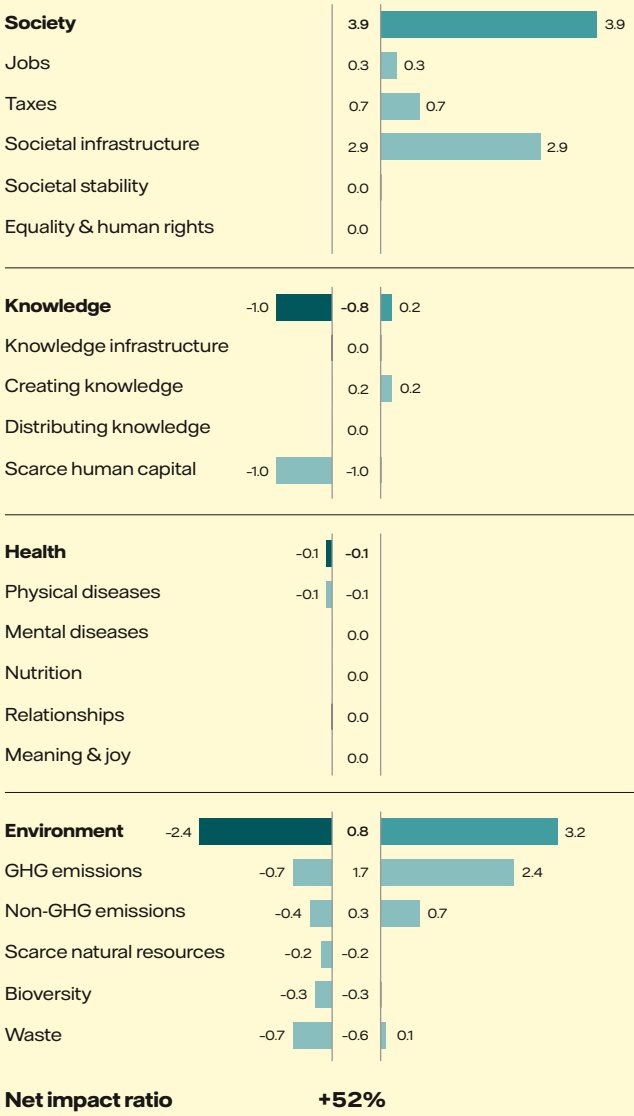
Net Impact

After a number of years of attempting to quantify Vattenfall's total value creation in monetary terms, we have instead opted for a third-party assessment of our holistic value creation. We believe the net impact methodology (see page 175 for methodological notes) captures the impact of our business in a more comprehensive way, adopting an unbiased approach with a greater level of sophistication than we could achieve internally.

The consulting firm Upright's net impact assessment quantifies both the positive and negative impacts of a company's products and services by using scientific knowledge as its main source of information. The modelling is less focused on how a company operates internally, e.g. governance and compliance, but rather assesses the impact of a company's business activities across the value chain.

Vattenfall's holistic impact on its surrounding world is clearly positive. The quantified positive impacts are 52% higher than the resources used to achieve these positive impacts, which places Vattenfall in the top 26% of Upright's modelled company universe[1]. Vattenfall's net impact across the four main dimensions – Society, Knowledge, Health and Environment – is assessed in more detail below.

[1] Upright's modelled company universe includes 5,000+ companies at the time of the analysis.



Societal impact
Vattenfall's largest impact comes from its societal contribution, particularly from providing essential societal infrastructure. The positive contribution to societal infrastructure is mainly driven by power generation, heat production and distribution businesses, as these activities are crucial for keeping societies running. In addition, Vattenfall contributes positively to society through taxes paid (SEK 10.1 billion in 2021), employment (18,835 people employed on average in 2021) and dividend paid to the Swedish state (SEK 23.4 billion).[2]

Knowledge impact
To create its positive impacts, one of the largest resources Vattenfall uses is scarce human capital through employing a highly talented and educated workforce. Vattenfall also has a minor, positive contribution to knowledge creation through innovation and R&D activities in the energy sector.

Health impact
Vattenfall's impact on human health is relatively limited compared to its impacts in other dimensions. The negative impact Vattenfall does have is related to physical diseases from particulate matter emissions from burning fossil fuels.

Environmental impact
As a major energy utility, Vattenfall has a significant impact on the environment. The positive impacts related to both greenhouse gas (GHG) and non-GHG emissions are driven by non-fossil power generation – mainly hydro, nuclear and wind power – replacing the use of fossil energy sources. On the negative side, the impacts on GHG and non-GHG emissions are driven by power and heat production with fossil fuels – coal and natural gas. Vattenfall's activities, mainly those related to nuclear power production, such as natural resource use in terms of uranium or nuclear waste generation, are visible on the negative environmental side. The impacts on biodiversity are mainly driven by hydro, among other activities.

[1] The scores are relative scores, depending on the magnitude of the overall impact category and Vattenfall's impact intensity in the category. The net impact ratio is calculated as the difference between positive and negative impacts divided by positive impacts – similarly as profit ratio.
[2] Dividend proposed by the Board of Directors.

Moving forward
At Vattenfall we will use this methodology and the underlying data to study our holistic impact and to learn how we can improve. Importantly, our investments in distribution, non-fossil generation and e-mobility aim to increase our positive contributions to societal infrastructure and environment. We are also gradually decreasing our negative impacts on the environment and health as we decarbonise our power and heat production on our path to make fossil-free living possible within one generation. While driving these changes in our businesses, we will also continue to drive improvements in our internal processes not directly considered in Upright's assessment of the impact of Vattenfall's products and services, in areas like diversity & inclusion and human rights.

Materiality analysis

In 2020, nearly 3,000 stakeholders – representing all of Vattenfall's various stakeholder groups and core markets – participated in surveys or dialogues to share what they consider to be our most important focus areas and where Vattenfall has the greatest influence. The results helped us shape our strategic focus areas to ensure our stakeholders' expectations are met moving forward.

The main takeaway of the stakeholder analysis is that our strategy and prioritised Global Sustainable Development Goals (SDGs) remain in line with stakeholder expectations, and that the pandemic is no excuse for slowing down or reducing our strategic ambition. The three most material topics remain unchanged and are closely related to our business ambitions (see page 24), while topics related to empowering our people and delivering high-performing operations are considered necessary for achieving our business goals, albeit secondary to the goals themselves. In-depth interviews also highlighted that engaging with stakeholders to gain local acceptance will be critical for us to make the energy transition a success. Our stakeholder dialogues in 2021 suggest that our 2020 materiality analysis is still valid.

Materiality matrix

- Driving decarbonisation with our customers & partners
- Connecting and optimising the energy system
- Securing a fossil-free energy supply
- Delivering high-performing operations
- Empowering our people

Top material topics

1. Reducing CO_2 emissions and phasing out fossil fuels
2. Investing in renewable energy
3. Providing affordable energy
4. Minimising emissions of pollutants into air, water and land
5. Protecting nature and biodiversity
6. Providing affordable, stable, and flexible grid infrastructure for future needs
7. Developing innovative and sustainable services and solutions for customers
8. Employee well-being, including proper working conditions (health and safety), and fair pay
9. Ensuring sustainable use of resources of own operations
10. Fair and ethical business practices, including anti-corruption and bribery
11. Sustainable suppliers and supply chain
12. Investing in energy storage
13. Safe nuclear decommissioning and waste management
14. Sustainability in investment and divestment decisions
15. Continued operation of our Swedish nuclear plants, and potential expansion under the right conditions
16. Employee competence development and retention
17. Contributing to the circular economy
18. Openness and transparency, including on topics like tax management
19. Engaging with local communities, including through local collaborations and dialogue on project development
20. Employee engagement
21. Promoting diversity and gender equality, including among special groups such as disabled, youths, and immigrants
22. Developing innovative solutions in the field of e-mobility

Material top 3[1]	Description	Page reference
Reducing CO_2 emissions and phasing out fossil fuels	In 2021 Vattenfall continued the coal phase-out and supported partners in reducing their CO_2 emissions. Since 2017, Vattenfall has reduced its absolute CO_2 emissions by 55% .	10-13, 52-53
Investing in renewable energy	Investments totalling approximately SEK 23 billion are planned for development and construction of new wind farms, and nearly SEK 2 billion will be invested in renewable energy growth in areas such as solar and heat energy solutions.	28-29
Providing affordable energy	Besides building subsidy-free large scale solar and wind farms to provide clean and affordable energy, Vattenfall also participates in the Energy Poverty Initiative to ensure that customers with financial hardship are not left without heat and electricity.	39, 49

[1] For more information read the Materiality Analysis 2020 Report: https://bit.ly/3a6DFuT.

Stakeholders

We regularly map out 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 have on our stakeholders throughout our value chain. Stakeholders include – among others – employees, local communities, NGOs and civil society, private and business customers, partners, investors, authorities, our owner and the general public.

We have local impacts through our offices and operations, for example on our employees, customers and local communities, as well as global impacts, for example via our supply chain. We are constantly striving to better understand and manage these impacts – maximising the positive and minimising the negative – and we view dialogue with our stakeholders as crucial to our success in this regard.

Stakeholder engagement approach

Vattenfall believes that public acceptance is crucial to ensure the success of the energy transition. With such a diverse range of stakeholders, it is important that we are engaged in regular dialogues with all groups, in order to make the best decisions possible. The Vattenfall Project Governance Principles, which apply throughout the Group, ensure that the various local interests are considered, represented and addressed in our projects. Our stakeholder engagement takes many forms including dialogues, surveys, direct customer satisfaction feedback and many direct lines of communication with people throughout our organisation. Vattenfall places particular importance on engagement with its local communities. This means that land owners, representatives of the local community and the immediate environment, and the neighbours are explicitly consulted through various process consultations and informed by establishing transparent and clear communication channels based on the needs of the local stakeholders. We recognise that each location and project will be unique, and thus this local engagement approach is designed to be flexible to suit the situation and context. For example, in December 2021, we published a whitepaper[1] specifically for local stakeholders near our solar and wind farm sites in the Netherlands.

Feedback

While our materiality analysis confirmed that our strategy is in line with our stakeholders' expectations, priorities among certain stakeholders may vary. We must therefore strive to achieve a balance between sometimes conflicting priorities. On page 34, we provide a detailed case study on the importance of striking this balance when proposing energy infrastructure projects locally, despite the general support for Vattenfall's ambitious renewable energy growth.

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.[2]

[1] https://bit.ly/3BJHPpS

[2] For the latest ESG rating assessement information please visit https://bit.ly/3HfuB5s

Rating firm	Evaluation	Latest assessment
EcoVadis	Vattenfall received a platinum rating, the highest possible rating, which places us in the top 1% of all rated companies and the top 3% in the energy sector.	February 2021
Sustainalytics	Vattenfall scored in the top 13% of the electric utilities category and received an ESG risk rating of "medium" based on a strong risk management score and high risk exposure.	January 2022
CDP	Vattenfall scored an A- (on a scale of A to F), which confirms Vattenfall as a leader and places us in the top 26% of all rated companies.	December 2021
ISS ESG	Score B "Prime": highest decile of companies assessed in the sector.	May 2021
MSCI	Vattenfall scored AA and among the top 29% of companies assessed in the utilities sector.	September 2021

Stakeholder perspectives

Åke Lignell,
R&D director of AstaReal

AstaReal is the first company in the world to commercially cultivate microalgae for production of natural astaxanthin for use in nutritional supplements. "AstaReal is committed to a new paradigm of health management where microalgae and astaxanthin plays a central role in daily healthcare and illness prevention," says Åke Lignell, R&D Director at AstaReal and responsible for optimising the Gustavsberg microalgae production facility in Sweden.

"Microalgae require very specific conditions for large scale cultivation, such as a 25-degree water temperature. The production, which takes place in proprietary bioreactors, produces excess heat, warming the production facility over time. It has reached the point that so much heat was produced that it couldn't be absorbed by the facility and other options needed to be explored." explains Åke Lignell.

"Vattenfall was already providing our facility with renewable energy, so it was natural to discuss potentially connecting our excess heat to the district heating grid," says Åke Lignell. "Together, we realised that by installing a new, more efficient cooling pump and connecting our facility to the local district heating grid, we could not only make our facility more productive, efficient and sustainable, but also provide heat to our community. We're proud to know that, starting as early as April 2022, our facility will provide heat to our neighbourhood, and our collaboration with Vattenfall really enables that."

Prof. Dr. Sascha Buchholz, Urban Biodiversity Scientist University of Münster
In April 2021, Vattenfall together with Prof. Dr. Sascha Buchholz, Head of the Animal Ecology working group at University of Münster, started the Stadtwärme Berlin Biodiversity programme. "Urbanisation tends to reduce the natural spaces for animals, plants and insects, which is why I am particularly interested in finding ways to serve and protect biodiversity in urban areas. I believe there is huge potential for understanding the role that industrial areas can play in promoting biodiversity," Sascha Buchholz explains.

"It is crucial to partner with businesses on urban biodiversity projects because they have the properties and resources to put academia's theories into practice. Hence, when Vattenfall reached out to me to work together on this Berlin Biodiversity programme, I was thrilled. Vattenfall's exit from coal means there are 21 coal storage and processing sites in transformation throughout Berlin and together we wanted to find out if there was a way to enhance biodiversity at these sites," says Sascha Buchholz.

The preliminary results of the programme produced a ranking of these sites that would benefit the most from biodiversity measures. "A prominent example of a biodiversity measure was simply taking a more lenient approach to site management which entailed less mowing of the grass as well as leaving clippings on the ground. Not only would this save maintenance costs, it would dramatically increase the well-being of the grasslands and insects like wild bees who are extremely important to our local ecology. We will continue our collaboration to gather more scientific evidence and optimise the biodiversity measures per site. Vattenfall's team in Berlin has been very open-minded and motivated to make urban biodiversity a priority. I believe that only with companies like Vattenfall, we can reconcile the needs of business and of the environment. The project's findings can be applied more generally, so I hope that other businesses will follow and realise that cities are not a hostile, but resource-rich environments for enabling biodiversity."

Environmental governance

Vattenfall's Environmental management system is part of the Vattenfall management system (see page 96). Our environmental activities are governed by our environmental policy and operational instructions, which describe the principles for environmental governance and management.

Electricity and heat production from certified facilities (according to ISO 14001 or EMAS)[1]

	2021	2020	2019
Heat	99.1	99.2	99.1
Electricity	99.9	99.9	99.9

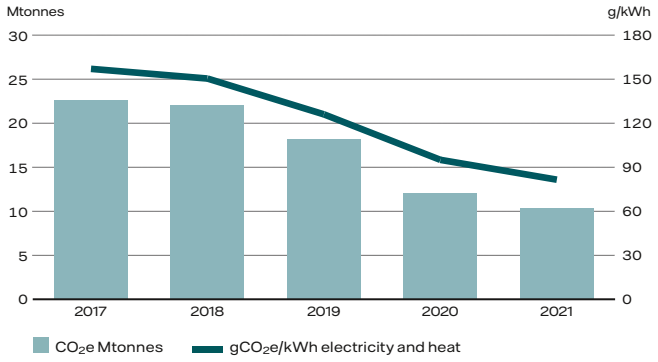
[1] Non-certified facilities are mainly back-up installations.

Certification is an important part in ensuring external validation of our environmental performance and practices, gaining authorities' trust and delivering on customers' requirements. Vattenfall's transparency regarding environmental governance and activities is also assessed by independent rating companies that provide investors and customers with information (see page 75).

To protect the environment and reduce our environmental impact, we put special emphasis on assessing environmental risks, including climate change, associated with our operations. Another important issue involves monitoring relevant legislative changes in order to act quickly to ensure compliance with new legislation.

Environmental Action Plan Reported Progress
Our Environmental Action Plan (EAP) outlines the direction forward for our three focus areas: Reduce climate impact, Protect nature and biodiversity, and Sustainable use of resources. In the EAP we have defined our 2030 ambition and targets, which are followed-up annually in our Environmental Management Review and together with Vattenfall's CEO. More information and follow-up on specific targets can be found in respective sections below.

Vattenfall Scope 1 + 2 CO_2e absolute emissions and intensity



Reduce Climate impact

Reducing our climate impact is Vattenfall's number one sustainability focus. We want to take responsibility and reduce our full footprint across our value chain. This is reflected in our targets to reduce the climate impact linked to our own operations, our suppliers and customers, and in partnerships. We assess our activities from a full life cycle perspective with the goal of being transparent about the challenges associated with climate change and how we work strategically to phase out fossil fuels and capture climate-related business opportunities. 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 page 67, and the table, page 175.

Our total Scope 1 and Scope 2 emissions continue to decrease progressively, declining to 81.5 gCO_2e/kWh in 2021 from 97 in 2020. The reduction is primarily due to the final closure of the hard coal-fired power plant Moorburg which eliminated approximately 1.5 million tonnes CO_2. However, a reduction in fossil-based production following high fuel and CO_2 prices and an increase in renewable electricity generation resulting from a good hydro balance also contributed. Though our CO_2 intensity is below our 2025 target of 86 gCO_2e/kWh, it is possible that external factors like a cold winter, low winds or gas market conditions will cause our CO_2 intensity to increase again, even as we continue to grow in renewables and transition away from fossil fuels.

Emissions to air

Vattenfall is taking concrete steps towards its ambition of enabling fossil-free living within one generation. Already in 2020, we achieved our 2° Science Based Targets Initiative (SBTi) target of reducing absolute Scope 1 + 2 CO_2 emissions by nearly 40% from 2017, ten years ahead of schedule. In 2021, we have set up a more ambitious 1.5° SBTi target (see infographic on page 12).

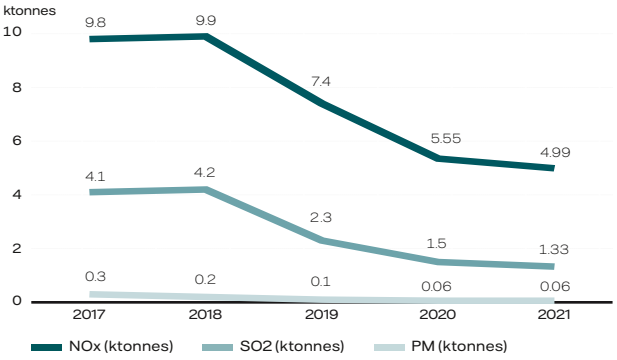
Emissions resulting from sold products include only the emissions from the use of fossil fuels sold. We have reduced these emissions by 9% compared to the baseline year. In 2021, we have increased our SBT ambition to reduce absolute Scope 3 emissions from the use of fossil fuels sold from 20% to 33% by 2030.

We also commit to a Net Zero by 2040 target, meaning we will achieve net zero emissions in our full value chain by 2040. We aim to reduce all the impacts associated with our footprint beyond our operational boundaries. In 2021 we have also set a 50% emission intensity reduction target for our suppliers of goods and services (see page 86).

Our business air travel-related emissions remained low due to the continued effects of the pandemic on business travel. For the travel that does occur, we compensate through CO_2 certificates in the UN's Clean Development Mechanism system.

Besides CO_2, we focus specifically on reducing emissions of sulphur dioxide (SO_2), nitrogen oxides (NO_X) and particulate matter (PM) resulting from the combustion in our power plants. During construction, operation and dismantling of our power plants and networks, we take necessary measures to reduce noise and emissions.

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

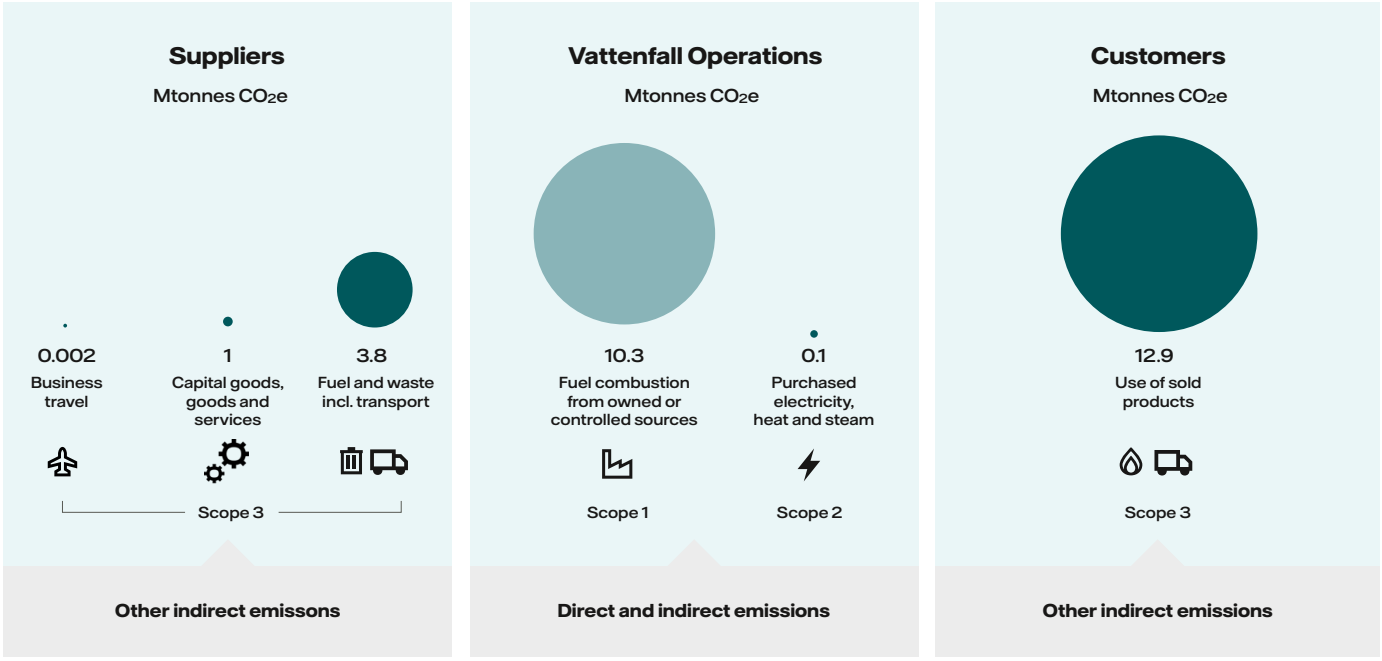


Lifecycle assessments and Environmental Product Declarations

In spring 2021, we published the updated Environmental Product Declaration (EPD) for electricity from hydro power.[1] Lifecycle data is used for different purposes and has, for example, laid the foundation for identifying which procurement streams to prioritise when setting targets to reduce greenhouse gas emissions in our supply chain. Read more about our supply chain targets on page 86. Apart from hydro power, Vattenfall publishes EPDs for electricity from the full wind portfolio, Nordic hydro power and Swedish nuclear power generation. The 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.

[1] This report together with those from other energy sources can be found on www.environdec.com

CO_2 emissions along the value chain



Targets for suppliers
Business travel : -50% by 2025
Capital goods, goods and services: -50% by 2030

Target for use of sold products
Sales of e.g. natural gas: -33% by 2030

Base year for the travel target is 2019 and for the science-based targets 2017. For further details on Scope 1, 2, and 3 emissions data, please see page 178.

Protect nature and biodiversity

As part of our Environmental Action Plan, we have set a 2030 ambition to be a recognised leader in biodiversity management. A core component of this work is to adopt a Net Positive Impact approach. This means we will further safeguard biodiversity by going beyond the "no net loss" approach and implementing biodiversity-enhancing measures (see page 76 for an example). We assess our biodiversity impacts throughout the entire value chain and have integrated these assessments in our business processes. Biodiversity issues are also assessed when doing due diligence as a part of our merger and acquisition processes (including divestments). When assessing biodiversity impacts from new projects, we always strive to avoid and minimise biodiversity impacts according to the mitigation hierarchy. For impacts that cannot be fully avoided or mitigated, compensation measures are often considered in discussions with authorities and other stakeholders.

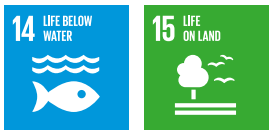
During 2021, we made significant progress in our biodiversity work. We finalised a corporate-wide biodiversity footprint assessment using the Global Biodiversity Score tool which has enabled us to quantify the biodiversity impacts of our economic activities along the value chain. Our work has been aligned with the Science Based Target for Nature (SBTN) framework and the results will enable us to prioritise relevant sites and value chains for target setting. We have also engaged in other multi-stakeholder initiatives, e.g., the Taskforce on Nature-related Financial Disclosures (TNFD) where we have been a part of the Observer Group, and Business@Biodiversity Sweden of which Vattenfall is one of the founding members.

Progress on selected biodiversity targets

In 2021, we had biodiversity targets across many areas. For power line corridors, for example, we established a target to have biodiversity plans for 100% of all biodiversity hotspots. We have reached that target. In the coming phase until 2025, focus will be on implementing enhancing measures in at least 70% of all identified hotspots. At Vattenfall, our ambition is to ensure that our offices, as much as possible, function as an extension of and link between various natural environments. Our target is to implement biodiversity-enhancing measures at all office premises by 2025.

During the year, we have therefore mapped and analysed the office properties that Vattenfall owns in Sweden in GIS. Based on this, five office pilot sites have been chosen, where we currently develop biodiversity management plans, which was one of our biodiversity targets for 2021.

We have furthermore completed a biodiversity hotspot analysis of our biomass and uranium supply chain and which has, for example, resulted in incorporating biodiversity criteria in a new tender for nuclear fuel. This type of biodiversity-related criteria for tenders have also been included in Vattenfall's internal sustainability requirements library as a best practice (more information on page 86).



Our various ongoing biodiversity projects and initiatives have several positive effects, both on life on land and life below water. See below for selected biodiversity projects.

Environmental foundation in Germany

In Germany, Vattenfall manages an environmental foundation that was established by Hamburgische Electricitäts-Werke (HEW) in 1994. The foundation is an independent nonprofit association under civil law. Vattenfall provides administrative support to the foundation, which means that all earnings from the foundation's capital can be used to fund environmental projects. One of the 2021 projects, supported by the foundation, is a Berlin housing cooperative where a large courtyard was transformed into a natural habitat with insect-friendly planting. One challenge in such a project is to convince the residents that a cut lawn does not provide enough food variety for the insects. Encouraging this new thinking where ecological needs are in focus is one of the core messages of the Vattenfall Umweltstiftung.

Selected biodiversity projects[1]

Conservation project lesser white-fronted goose

The areas where Vattenfall has many of its hydro operations, are home to EU's only breeding population of the lesser white-fronted goose. For 2021–2022, Vattenfall supports the Swedish conservation project for lesser white-fronted goose by sponsoring specially designed transmitters used to follow the individual geese that have been raised in captivity and released in the wild. The transmitters are charged by solar cells. Movement mapping is a very important piece in evaluating the effectiveness that the measures have on the population. The project is led by the Swedish Hunter's Association in collaboration with the foundation Nordens Ark and the Ornithological Society in Norrbotten. The work to prevent the extinction of the species has been active since the mid-1970s.

Biodiversity enhancement in industrial landscape

Vattenfall has many office and generation assets in urban areas. In many cities, especially in industrial areas, there is a lack of good habitats for many species. At the same time there is often potential for creating different types of smaller biotopes and take measures targeted specific species. Connected to our heat generation sites in Berlin, we have therefore developed a biodiversity programme as a way to incorporate a net positive approach to the biodiversity work. Read more in our interview with Prof. Dr. Sascha Buchholz (see page 76). There are also locations where we are close to protected areas and where we collaborate with local stakeholders to perform conservation actions. In Diemen, one of our power plants in the Netherlands, we work with the foundation FREE Nature (Foundation for Restoring European Ecosystems), that manages three nature reserves around the power plant in Diemen on behalf of Vattenfall. Together with FREE, we are continuously looking for possibilities to support the existing nature, and we monitor insects, plants and birds in the area on an annual basis.

[1] More examples at https://bit.ly/3HGfxxD

Peatland restoration
In 2021 we have been carrying out habitat restoration work at two of our sites in the UK. At both sites this comprises forest to bog restoration, which means restoring land that was previously under commercial conifer plantation to open peatland habitats. The relatively small scale (approx. 35 ha) work at Clashindarroch was near completion in 2021 and will be completed early 2022. The much larger scale (up to 1400 ha) work at Pen y Cymoedd began in late 2021 and will continue for several years to come. Both schemes aim to increase biodiversity and restore functioning peatland ecosystems, which can provide multiple ecosystem service benefits in addition to biodiversity increase. Both schemes are required as part of our permits, but in addition to this we have voluntarily provided substantial funding to Swansea University to undertake a three-year research programme to help understand the risks and opportunities of wind farm development and associated peatland restoration on forested peatlands.

Ensure sustainable use of resources

Vattenfall takes an active role in the development towards a circular economy. We do this by providing renewable energy, developing new business models that enable our customers, partners and suppliers to improve their resource footprint, and by rethinking our internal processes to minimise our own use of resources. In our operations, we use many different types of resources, such as electricity, fuel, water, construction materials and chemicals, and our activities also generate effluents, emissions, waste and by-products. We also work continuously to phase out hazardous substances. In 2021, glyphosate use was phased out in all operations with a complete ban from 2022 and onwards.

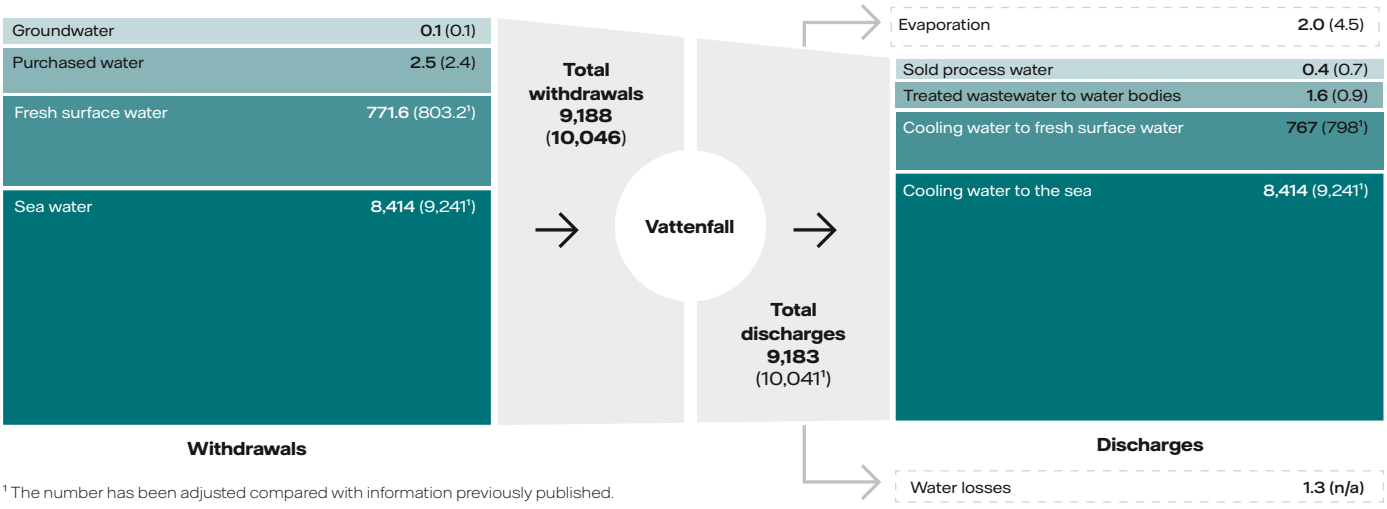
Water management

Water is a key resource for Vattenfall. We use it to run our hydro power operations and as cooling water in our nuclear and thermal power plants, and it is an integral part of the environment surrounding us. Vattenfall is sharply focused on sustainable management of water resources. This means, for example, 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.

More than a quarter of Vattenfall's total electricity generation comes from hydro power. Hydro power operations affect the landscape, water flows and natural habitats in the area surrounding a dam. Vattenfall works to reduce impacts and strengthen local biodiversity values 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. Vattenfall's nuclear and heat plants mainly use "once-through" cooling systems at locations where large volumes of water, like river or sea water, are available. After its use, the cooling water is returned to the water bodies in a chemically unaltered state, but with a higher temperature. If the cooling water source is too warm, the water cannot be used for cooling, and the plant's output must be reduced or the plant temporarily shut down. The threshold temperature depends on the technical characteristics of the plant and permit-imposed conditions in order to protect downstream aquatic ecosystems. Alternative solutions such as cooling towers, which have closed cooling cycles, are used for some plants to reduce water use.

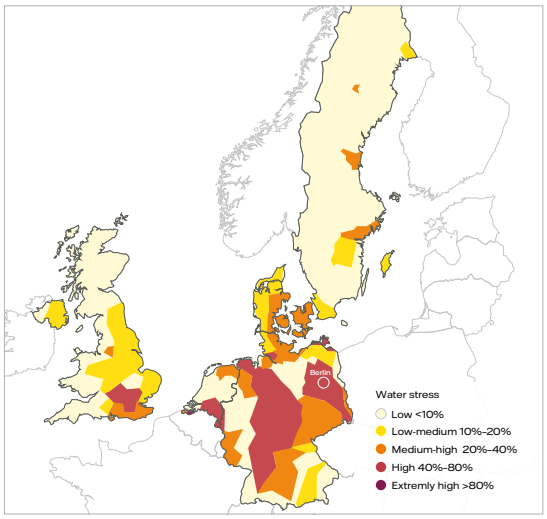
Total withdrawals and discharges of water (million m³)



[1] The number has been adjusted compared with information previously published.

Reducing our water footprint

Vattenfall uses 774 million m³ of water, the majority of which is used for cooling. The transition of Vattenfall's portfolio to align with the 1.5 degree science based climate target, related fuel switches and power plant upgrades contribute to reduced water requirements for thermal operations. This includes, for example, the



shut-down of the coal power plants Hemweg in the Netherlands in 2019 and Moorburg in Hamburg in 2020, and the commissioning of more modern and efficient CHP-plants, Lichterfelde and Marzahn in 2019 and 2020, respectively.

Total freshwater withdrawal and the water intensity (defined as the freshwater withdrawal divided by total production of electricity and heat) have been continuously decreasing over the past five years. In 2021, the water intensity was 6.1 m³/MWh.

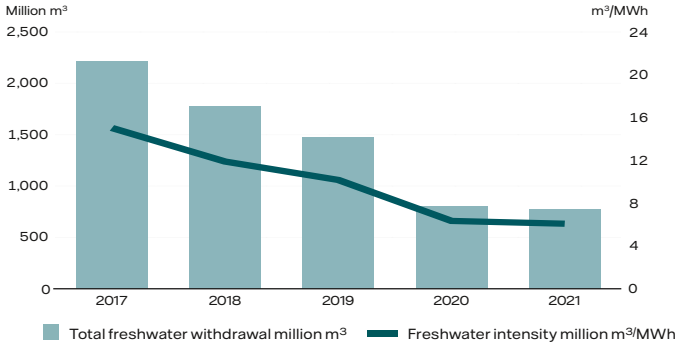
The northeast of Germany, where Vattenfall owns[1] and operates several heat and CHP plants, is classified as an area under high water stress.[2] Vattenfall's plants in this region use and discharge approximately 208 million m³ of freshwater[3], equivalent to 27% of Vattenfall's total freshwater use. Vattenfall works to reduce water use and limit impacts on aquatic ecosystems. Examples of projects include conducting thermographic aerial surveys to detect water leaks and measures to reduce pressure on the storm water system in situations with heavy rain. An in-depth analysis of the water balance of the Berlin plants and district heating network was conducted in 2021, in order to improve water measurements and identify areas for improvement.

[1] Vattenfall owns several thermal plants in Berlin and one in Rostock

[2] Vattenfall considers extremely high and high water stress according to WRI's definition to be material. For more information see: https://bit.ly/3HL7D6e

[3] Water withdrawals relating to hydropower production are not included

Total freshwater withdrawal and freshwater intensity



Waste management

Waste is generated during the operation and maintenance of power plants, electricity and heating networks as well as during construction and dismantling of power generation systems. Vattenfall is increasingly working to make resource use more efficient, preserve resources and avoid waste. 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 as the least preferred option and should be avoided to preserve material values in the system. Waste is identified, classified and managed within the framework of applicable national laws. At the local level, various activities are conducted to prevent and reduce waste as well as to optimise reuse and recycling rates as far as possible.

In combustion plants, residual products such as ash, slag and gypsum are produced. The volumes produced are related to how much fuel is used. More than 99% of residual products are sold to mainly the construction industry for reuse as secondary raw material for cement, concrete or asphalt production.

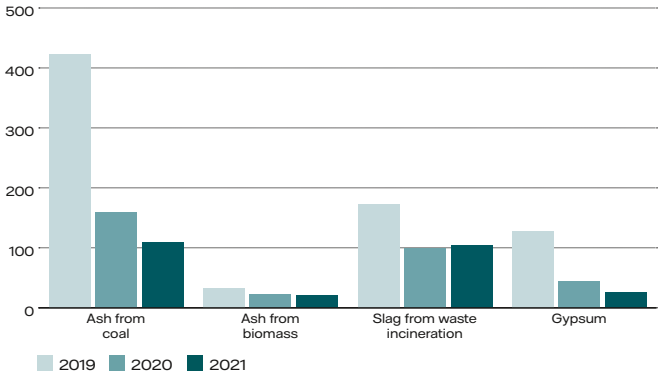
Vattenfall operates nuclear power plants in Sweden. It is the operator's responsibility to have reliable solutions for managing nuclear waste. All of Vattenfall's facilities that handle radioactive waste have operating guidelines and procedures for management and disposal. High-level, long-life radioactive waste, consisting primarily of spent nuclear fuel and core components, must be carefully shielded during handling and transportation. When the waste is stored, it is encapsulated to prevent the spread of contamination. The type and location of storage depends on the radioactive level of the waste. The entire waste handling process is strictly regulated and monitored. At Vattenfall's nuclear power plants, all employees who have access to radiologically controlled areas complete training in radiation protection. In addition, decommissioning activities are currently being conducted in Germany and Sweden.

Vattenfall is growing in renewables, and in the coming years we will also see a growing number of assets reaching end-of-life. Ensuring a sustainable lifecycle and practices is a key focus for Vattenfall and for the industry as a whole. For wind turbines for example, 85%–90% of the total mass of a wind turbine, such as the foundation, tower and components in the nacelle, have established recycling practices. Recycling the composite material of the blades is more challenging. In 2021, Vattenfall made a commitment to an immediate landfill ban on decommissioned wind turbine blades and to actively work on increasing the recycling rate of wind blade components with the target of reaching 100 % recycling by 2030 at the latest (for more details and milestones, see page 49). To achieve the target, Vattenfall is supporting research into material recycling of composite waste and working together with partners and the industry to find new solutions for recycling and reuse.

ktonnes	Hazardous waste[1]	Non-hazardous waste
2021	50	40
2020	37	39
2019	72	75

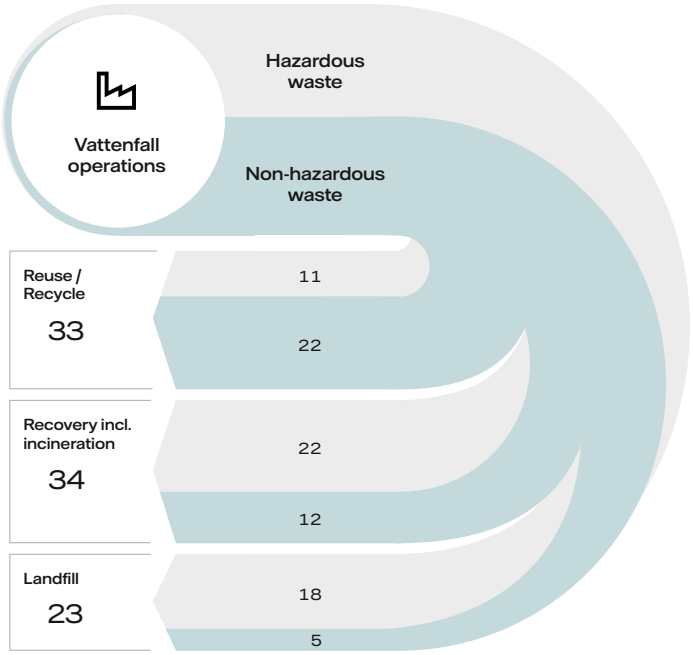
[1] Includes fly ash from waste incineration.

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
2021	110/0	20/0	105/0	26/0
2020	160/0	22/22	100/0	45/45
2019	423/0	33/33	173/0	128/128

Waste generated in operations[1]



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

Employee health and well-being

Ensuring a safe, inspiring and caring work environment

World-class health and safety can be achieved only by improving our Health & Safety (H&S) culture. The work environment has been in flux over the past year, H&S leadership has seen the need to be flexible to adapt to a hybrid working environment where employees divide their time between working remotely and in the office. Vattenfall has continued to support managers and employees with tools to address these challenges and H&S culture has taken a central position in the work place as well as in discussions about the future of work at Vattenfall.

The organisational and social aspects of health were addressed in online workshops and podcasts about working from home, stress, and work/life balance. Other initiatives included online coaching, such as "Flow", a tool for mental health, self-assessment and support, or "Mystery Coffee", where employees are randomly paired up to foster connectivity. Meanwhile, we are working to counteract all forms of harassment. Routines for reporting and managing these incidents have been in place for many years.

The frequency of accidents leading to absences from work (LTIF) decreased by 5.6% in 2021 from 1.8 to 1.7 per one million hours worked. The frequency, while decreasing marginally, is not at a desired level due to the difficulty of developing culture, maintaining routines of physical safety and health leadership, audits and supervision during the pandemic. In 2021, 141 (138) accidents resulting in absence from work were reported to Vattenfall. The most common form of accidents include strains, cuts, lacerations, punctures and fractures. The number of workdays of absence due to accidents among employees were 931 (891). Tragically in 2021, Vattenfall had one employee work-related fatality and one contractor work-related fatality. Extensive investigations are being conducted to gain insights into the causes and to determine follow-up measures. It is of the utmost importance that similar incidents are prevented in the future.

We continue to work relentlessly and focus on improving the H&S culture and maturity level of the entire organisation, including top management. Vattenfall's operations contains large number of work activities that pose risks of personal injury and ill health. Focus is therefore on active hazard reporting to detect and mitigate serious hazards and risks before result in becomes incidents. Incidents are followed up with a Root Cause Analysis, continuous assessment, risks identification and training and safe operating procedures developed and implemented accordingly as well as preventive and corrective actions. In 2021, employees and contractors submitted 11,161 and 4,413 hazard reports, respectively, of which the most common types were slips, trips and falls, being hit by object/equipment/material and electricity.

At Vattenfall, hazards are defined and documented in instructions. Risks are identified locally via different risk assessment processes, after investigations of 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, the management systems are implemented and run by Vattenfall internal resources. Hierarchy of controls is stated in Code of Conduct and in Intelex for managing risks. Intelex's IT system is used to report safety, health, security, environmental and quality incidents and hazards, and 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. All notifications are aggregated monthly and included in a complete overview that is reviewed by the Executive Group Management.

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

Diversity & Inclusion (D&I) at Vattenfall

Our D&I strategy is founded on the conviction that diversity and inclusion creates value for Vattenfall, its employees, and society in general. The work is led by a dedicated D&I Officer, on a two-year rotation among members of the Executive Group Management. Our commitment, according to the three pillars of our strategy:

Embedding D&I by living our principles.

- Workshops are in development for all employees to attend by 2023. We aim to create understanding of why D&I matters, the challenges to D&I, and how we can make a difference.
- In May 2021, we joined European Diversity Month, a commitment to promoting diversity and inclusion and combatting discrimination. Activities included highlighting various dimensions of diversity and the structural change taking place to include and empower employees.

Thinking broadly and driving all dimensions of diversity.

- Our commitment to, and engagement in, Equal by 30, a global commitment to equal pay, equal leadership, and equal opportunities for women in the energy sector by 2030.
- The "Vidga Normen" project, a series of seminars aimed at increasing awareness of racism in the labour market, with a focus on skin colour and Afrophobia, had 150 employees attend from departments like Recruitment and Communications.
- Our "Diverse Energy" employee networks have grown in size, and expanded their reach and activities such as lectures.

Including everyone; our managers will lead the way.

- D&I is part of the business planning process and reqires a solid understanding of the business needs from a D&I perspective, target setting and an action plan to achieve the targets.
- Leadership Toolbox offers managers a resource for driving behavioural change with their team.

Measuring our success

Vattenfall has a target that 35% of all managers hired should be female. It was achieved with a result of 39% for 2021, with the total number of female managers growing from 27% in 2020 to 30% (compared to 26% of employees company-wide in 2021).

Vattenfall's employee survey measures commitment to diversity, sense of inclusion as well as the extent to which managers drive diversity and inclusion. The D&I Index, which directly measures the extent to which managers drive diversity and inclusion, has increased from 75% to 78%.

Developing competent and engaged employees

We encourage our employees to develop their skills as part of our work on building a high-performance culture. Employee development is key to Vattenfall's success, and we rely on our people to take personal initiative for their continuous development.

We place an emphasis on developing people's strengths and potential to be fit for future. Therefore, we are striving to enable sufficient manager support and tools to drive individual learning and open up stretched opportunities and assignments.

In line with our strategic direction to accelerate digitalisation, we offer a wide range of training opportunities and e-learning courses. We also offer tools like mentoring and coaching to strengthen both professional and personal skills. Covid-19 has been a catalyst to drive and accelerate our digital transformation. Hence, we have succeeded in offering more than 1,000 digital and classroom trainings. Furthermore, we provide the possibility to select from over 100 mentors and coaches to support employee development.

Vattenfall's remuneration policy

Vattenfall's remuneration policy supports the Group's strategic direction and the Vattenfall People Strategy. It aims to foster equal pay and to drive an engaging and high-performance culture, while securing critical competence and talent. The remuneration policy outlines the general guidelines for compensation programmes and benefits at Vattenfall and has been developed in line with the guidelines for Swedish state-owned companies. Beginning with the 2020 financial year, Vattenfall has produced an external, publicly available remuneration report on paid and outstanding remuneration for the senior executives.

Remuneration objectives and structure

Remuneration at Vattenfall should be fair, sustainable and reflect local labour laws (i.e. compliant), in line with the market and collective labour agreements. It provides recognition for individual performance that meet Group objectives and acknowledges professional competence. Variable Pay programmes strengthen the connection between performance and reward and help to attract, retain and motivate employees at all levels below the senior executive level.[1] Remuneration at Vattenfall consists of base salary, short-term and long-term variable incentives based on individual as well as company performance, pension and other statutory or voluntary benefits in accordance with local law and market conditions. Therefore, it may differ from country to country. For more information, see Note 42.

[1] The levels that are eligible to variable pay is outlined by the Swedish policy for state owned companies: https://bit.ly/3glGADj

LTIF[1] – Lost Time Injury Frequency for employees

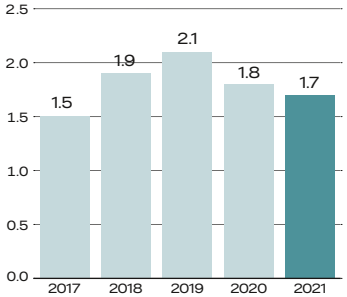
	Sweden	Germany	Netherlands	Total[2]
LTIF internal employees	2.0	1.9	1.1	1.7
Fatal accidents	1	0	0	1
High consequence LTI[3]	0	0	1	1
Total LTI	31	17	7	55
TRIF[4]	3.9	3.7	2	3.4
Severity rate[5]	0,034	0,013	0,042	0,028
Worked hours (million)	16.0	9.1	6.1	33.3
External (contractors)[6]				
Fatal accidents	1	0	0	1
High consequence LTI	1	0	0	1
Total LTI	51	23	6	86
TRI	108	25	6	165
Sick leave per country				
Men	2.2%	3.6%	4.8%	3.0%
Women	4.0%	3.8%	6.4%	4.2%
Total	**2.7%**	**3.6%**	**5.2%**	**3.3%**

[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 absence 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.

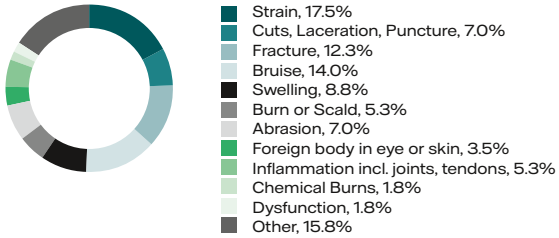
10 REDUCED INEQUALITIES

Equal by 30, a global commitment to equal pay, equal leadership, and equal opportunities for women in the energy sector by 2030, is one of the commitments Vattenfall has made to reduce inequaities.

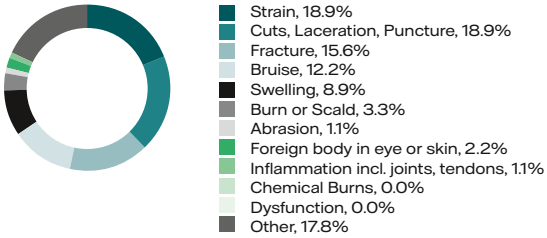
LTIF internal employees 2017-2021



Types of injuries (LTI) – employee



Types of injuries (LTI) – contractors



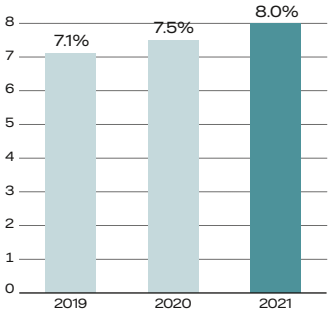
Tracking injury type allows us to identify problem areas and prioritise initiatives that will have the greatest impact on reducing injuries.

Employee key ratios[1]

	No. of employees	Women	Men	-29	30-49	50-
Managers	1,704	30%	70%	1%	57%	42%
Country						
Sweden	9,516	27%	73%	10%	51%	39%
Finland	76	51%	49%	8%	63%	29%
Denmark	455	24%	76%	7%	60%	32%
Germany	4,417	25%	75%	14%	44%	42%
Netherlands	3,652	25%	75%	11%	54%	36%
UK	384	31%	69%	8%	73%	20%
Poland	289	23%	77%	21%	75%	4%
France	42	48%	52%	7%	74%	19%
Norway	5	20%	80%	0%	100%	0%
Total	**18,835**	**26%**	**74%**	**10%**	**51%**	**38%**
Of which, part-time	1,444	21%	5%			
Of which, temporary	686	4%	4%			

[1] Gender composition of the Board of Directors is 33% female, 67% male. See page 100–101 for details.

Employee turnover, %



Human rights

Our commitment

We are committed to respecting internationally recognised human rights throughout our value chain. We base our work on the UN Global Compact, the International Labour Organization's (ILO) eight fundamental conventions, the OECD's guidelines for Multinational Enterprises (OECD), and the UN's Guiding Principles for Business and Human Rights (UNGPs).

Our approach

Based on our commitments, Vattenfall has multiple policies and measures to identify, prevent and mitigate any human rights risks:

- Our human rights policy[1] outlines the values, standards and practices that Vattenfall promotes and clearly defines our stance on the importance of human rights.
- Vattenfall's Code of Conduct and Integrity[2] defines how we are to act with integrity within the company when doing business.
- Our Code of Conduct for Suppliers[3] defines the company's basic requirements and expectations for our suppliers with respect to sustainability.
- Our statement on responsibility towards indigenous peoples[4] 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 violations of human rights (or any other irregularity)[5]. 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.
- The "11 Steps to 2022" human rights action plan[6] outlines the company's journey to implementation of a robust approach to human rights.

Managing our human rights impacts and risks

We monitor our value chain for human rights impacts and risks, and periodically engage third parties to conduct assessments of human rights risks throughout our complete value chain. Vattenfall's most recent assessment identified a number of salient risks, including community engagement, livelihoods, and cultural heritage; environmental impacts; grievance mechanisms and access to remedy; indigenous peoples; just transition and responsible decommissioning; occupational health, safety and security; sourcing from conflict-afflicted or high-risk areas; and supplier and contractor labour conditions.

As our portfolio composition shifts, so might our impacts and risks. Our due diligence processes and strategic supply chain work enable us to foresee and manage the changing landscape. For more information, please see the sustainable supply chain section on page 85.

[1] New version available Q2 2022. For latest version, see https://bit.ly/3tp6qwd
[2] Code of Conduct and Integrity: https://bit.ly/3to2cVL
[3] New version available Q2 2022. For latest version, see https://bit.ly/3IBbUKF
[4] https://bit.ly/3HCdAmb
[5] https://report.whistleb.com/en/vattenfall
[6] https://bit.ly/35DW1ES

Human rights case studies

Case 1: Updating our understanding of our human rights impacts and practices
In 2021, we engaged a third-party to conduct a large-scale assessment of human rights risks throughout our value chain. The risk assessment took the rightsholders' perspective and provided Vattenfall with an updated overview of where we potentially have adverse human rights impacts (see the section Managing our human rights impacts and risks). Additionally, this third party evaluated Vattenfall's human rights policies, processes and commitments against the two most widely accepted standards, the UNGPs and the OECD Guidance for Responsible Business Conduct. One overarching recommendation was to formalise our efforts and to improve documentation and reporting for our work. Other key recommendations included establishing clearer responsibilities throughout the company, conducting more in-depth human rights risk analyses, and aiming for continuous improvement on grievance and remediation. These recommendations will be addressed in an update of the 11 Steps to 2022 human rights action plan.

Case 2: Just transition
Just transition is, in essence, the concept of leaving no one behind when transitioning to a decarbonised society. Vattenfall's ambition to enable fossil-free living within one generation, and the steps we will take to achieve this, make just transition relevant for Vattenfall.

As we shut down or transform fossil-based assets, we make two things clear. First, the concerns of impacted employees are equally important to the concerns of the business; and second, we aim to design a personal plan for every affected employee. Starting from this premise, we enter into personal dialogues with every impacted employee to understand their wishes and begin working towards mutually beneficial solutions, whether that be continued employment with Vattenfall, early retirement, or something else. In December 2019, we closed the Hemweg 8 coal-fired power plant, where we were able to retain almost all staff who continued their employment at other Vattenfall premises near Hemweg in the Netherlands. In July 2021, we closed our Moorburg coal-fired power plant in Hamburg again starting with a personal plan for every employee. A part of the workforce will remain to work on decommissioning, whereas other colleagues continue working with other companies in Hamburg or the area around. We are proud to say that with all of our employees, we have reached a mutually agreed-upon solution.

We recognise that each plant closure occurs in a unique context and requires a flexible approach to safeguard that our people are treated fairly, with dignity, and are set up to succeed.

Supporting our human rights action plan, we have conducted a number of key activities in 2021:

Topic	Activities conducted in 2021	Planned activities
Improving due diligence	Completed internal gap analysis of our due diligence processes against the OECD Due Diligence Guidance for Responsible Business[1] highlighting the need for a third-party assessment (see Case 1 above).	Harmonise and enhance auditor due diligence practices to provide improved insights and data into our value chain.
Reviewing governance processes & policies	Updated our Human Rights Policy by further defining key stakeholders, salient risks and governance processes as well as strengthened our commitments. Evaluated by a third party in a human rights assessment (see Case 1 above).	Elaborate how we manage salient risks and a more in-depth description of human rights governance Follow-up on the recommendations from the human rights assessment (see Case 1 above)
Building capacity & competence	Made a high-level training available to all employees. Conducted training sessions on specific topics with targeted employees. Created a training targeting employees working in areas where Vattenfall might impact indigenous peoples.	Launch a human rights e-learning for employees and consultants
Collaborating with relevant stakeholders	Continued participation in several forums for best practice sharing, like the Swedish Network on Business & Human Rights, CSR Sweden, Bettercoal and WindEurope. Created a task force on forced labour (see page 86)	Maintain an open dialogue and collaboration with indigenous people who live and work in Sweden. Continue participating in knowledge sharing forums to expand our horizons in respecting human rights

[1] http://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf

Sustainable supply chain

We are committed to responsible business practices throughout our supply chain and with counterparties at large. By setting environmental, social and governance requirements, we promote sustainability and contribute to a positive change in society while gaining long-term competitive advantages. We strive to spread good practices through all our interactions with suppliers, sub-contractors, and to strengthen relationships with our counterparties to improve sustainability performance.

Fundamental supply chain instruments

The foundation of our sustainable supply chain work is a system of supplier due diligence instruments. Our approach is grounded in Vattenfall's Code of Conduct for Suppliers, defining our sustainability requirements. Compliance is evaluated, as illustrated below for Goods and Services, in two separate workstreams. The screening stream is triggered by an initial risk assessment of potential suppliers and initiates an investigation and corrective action depending on the finding. In the audit stream, initial risk is determined by country and can result in a sustainability audit and follow-up activities. In the final step, monitoring, we encourage our suppliers to continuously improve by providing guidance and support.

	Initial risk assessment	Investigation	Corrective action	Monitoring
Audit Stream	Suppliers are assessed by country risk. For high-risk suppliers, a sustainability audit is required.	During 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.	Our suppliers' sustainability performance is being monitored and followed up to ensure continuous improvement.
Screening Stream	Potential suppliers are screened against sanction lists and adverse media entries.	If records are found during screening, sustainability experts evaluate the finding.	Follow-up actions and an investigation may result depending on the finding.	

Compliance with Code of Conduct for Suppliers

Our approach is grounded in the Vattenfall's Code of Conduct for Suppliers, which defines our requirements and expectations to safeguard that our counterparties share our values. The Code is based on, among others, the UN Global Compact, the UN Guiding Principles, and the OECD Guidelines, and is guided by the UN Sustainable Development Goals.

Implementing our environmental policy in Real Estate & Facility Management

Supported by the knowledge of our suppliers, new technologies and effective knowledge sharing, Vattenfall's Real Estate and Facility Management department is developing solutions related to our environmental focus areas of climate, biodiversity and sustainable use of resources. Vattenfall's purpose and sustainability targets are reflected in an effort to provide climate smarter offices for all employees.

Vattenfall's facility targets are part of the Environmental Action Plan 2030. This means that we work on reducing the energy consumption in our offices, for example by implementing energy management systems. In September, we conducted the yearly dialogue with our largest service providers to discuss the way forward to reduce CO_2 in the supply chain. In addition, we continue having regular dialogues with internal subject matter experts and set sustainability requirements for our services and buildings in line with corporate ambitions.

To enhance biodiversity, Vattenfall continues to set up the concrete biodiversity action plans for our offices in all regions. Some examples are locations like the Dutch power plants in Diemen and Velsen, in the Hexham and Penzance offices in the UK as well as offices in Uppsala, Trollhättan and the Älvkarleby R&D facility.

To ensure sustainable use of resources, our catering vendors provide more organic and vegetarian food and work on avoiding wet waste in our canteens. For the new Berlin office, whose construction is progressing, we held an international sustainability challenge together with the project developer and looked for creative and innovate start-up solutions to make the building even more environmentally friendly and circular.

In order to measure and steer the activities and impact related to waste, energy, water and biodiversity, we have set up environmental KPIs for certain offices. Beginning of 2022 will be the first time to report on the data on office level.

Sustainable supply chain insight

Human rights and Uyghur forced labour
The situation of the Uyghurs and the potential link between several international companies and forced labor in the Xinjiang region gained global attention. There are strong indications of forced labor connected to several industries, including solar cell manufacturers. Forced labor in any form is unacceptable. It is of the utmost importance to ensure that the products we buy are manufactured responsibly, which is why we screen all new suppliers and, in non-covid times, conduct audits on all new high-risk suppliers, which includes suppliers from China. After the emergence of notable reports, Vattenfall formed an internal working group to identify how to best have a positive impact on the topic and we set up an information hub to gather information about the Uyghur situation. We are working on parallel tracks to approach the issue: we have brought up the topic in several initiatives, including in dialogues with the Swedish Ministry of Foreign Affairs and the Ambassador for Sustainable Business in Sweden, webinar with CSR Sweden, CSR Europe round table discussions and in the ASF sustainability forum, as we try to find a way to improve the Uygur situation. With peers facing the same challenge, we initiated Share and Learn sessions to understand their approach and explore collaborative solutions. Within the solar industry, we actively participate in industry initiatives to maintain momentum on this topic and are striving for enhanced dialogue on human rights. This includes a collaboration with Solar Power Europe and national initiatives such as Svensk Solenergi and Holland Solar. Additionally, we used the Uyghur case to spur on more general discussion about our role and responsibility in the energy transition both internally and with our suppliers.

Key Improvements in Supply Chain Sustainability
We are continuously improving our processes to increase sustainability performance in our supply chain. Several ongoing initiatives in 2021, including the development of a supplier risk assessment tool and a library for sustainability requirements, build on achievements from past years. Other initiatives are new, focusing on human rights and GHG reduction in the supply chain.

The development of the Supplier Risk Assessment Tool (SRAT) Light facilitates the initial risk assessment of new suppliers based on spend, product category, and country risk. The tool's multi-dimensional assessment will gradually be replacing assessments solely based on country risk. SRAT Light provides a more precise risk picture of new suppliers and enables us to take targeted mitigation measures. Therefore, the option of tailored-scope audits will be added to the audit workstream. A pilot of the SRAT Light was applied to existing suppliers with high-risk product categories and/or high spend to test the applicability of the tool. The results of the heat map corresponded to the expected risk picture and helped to select a more precise risk response based on identified sustainability criteria.

To deliver positive impact throughout the value chain, we developed the "Candy Shop", an online user-driven platform, that encourages our procurement community to integrate sustainability requirements in tenders. It provides guidance and shares best practices on different sustainability focus areas, including circularity, CO_2, human rights, and utilises cross-fertilisation between different parts of the organisation.

Our activities planned for 2022
- Rollout of updated Code of Conduct for Suppliers
- Implement relevant actions resulting from the human rights assessment and gap analysis (see Case 1 on page 84)
- Start supplier training sessions as a way to build capacity and deliver sustainable impact in the supply chain
- Produce a new supplier-risk heat map using a wider supplier segment.

Our 2030 ambition to reduce CO_2 emissions in the supply chain of goods and services by 50% underlines our commitments to net zero and takes the next step towards a fossil-free future. The target takes a 2020 baseline and covers all supplier tiers. It will be measured on an annual basis by collecting data from suppliers through CDP's supply chain programme. All parts of Vattenfall that procure goods and services are now responsible for identifying opportunities to make climate-smart decisions in their procurement processes. We will work towards the target through dialogues with suppliers and by making climate-smart decisions when we procure. For example, we will include climate metrics and awarding schemes in selected tenders; we will investigate alternative solutions with lower carbon footprint's and optimise our resource use. And we will push for electrification of production processes to both reduce our own supply chain emissions and that of wider society.

	Goods and services	Waste & biomass	Coal	Nuclear fuel
Number of suppliers	20,200	200	10	10
Number of site audits conducted	3	5	3	0
Share of new suppliers that have undergone social/ environmental assessments	100%	100%	No new suppliers	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	No new suppliers from high-risk countries	No new suppliers from high-risk countries

Goods and services

- Main sourcing countries are Sweden, Germany and the Netherlands, and a small number of suppliers in Asia
- All suppliers >SEK 3,000 are subject to a screening against sanction lists, while all suppliers >SEK 100 million are screened against sanction lists and adverse media
- Sustainability audits are a requirement for suppliers from high-risk countries with contracts >SEK 100 million; due to COVID-19 only very few audits were conducted
- Comprehensive review and update of the Code of Conduct for Suppliers to accurately reflect Vattenfall's values and legislative landscape with major updates on climate impact, gender equality and broadening the scope to include partners
- The Supplier Risk Assessment Tool (SRAT) has created a risk heat map in 2020 with 51 high-risk suppliers that was validated by conducting internal and external dialogues in 2021, resulting in several follow-up measures, including sustainability requirements for tenders and supplier awareness raising sessions
- Sustainability requirements are being implemented in a wider range of tenders, e.g. connected to our heat business and e-mobility infrastructure, covering CO_2-footprint, end-of-life and supply chain transparency to create a positive impact in our supply chains.
- Two sustainable supply chain trainings for new employees in procurement were conducted together with integrity and compliance training and was attended by more than 160 participants.

Coal

- Vattenfall has continuously reduced its consumption of coal in recent years and will remain at less than 1 million tonnes from year 2021 onwards until the complete phase out.
- The main sourcing countries for coal delivered to Vattenfall plants remained stable in 2021: Russia (85%) and USA (15%).[1]
- Vattenfall decided to stop trading physical coal and instead signed an agreement with a third party for coal supply activities. We have accordingly divested Ensted Bulk terminal, which was used for coal delivery purposes.
- Nevertheless, Vattenfall remains a Bettercoal member to continue to drive for improvements in the coal supply chain.

[1] As of March 2022, Vattenfall intends to not make any new hard coal purchases from Russia until further notice.

Nuclear fuel

- Uranium suppliers are spread among Canada, Australia, Kazakhstan and Russia. Depending on the current contractual situation, we may receive deliveries from several of these countries in a single year.
- All uranium suppliers are regularly audited (every three to six years) and are continuously assessed if deviations or other events are reported or discovered during the contract period.
- All deliveries from nuclear fuel suppliers in 2021 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.
- A number of audits were planned for 2021 but postponed due to covid-19 restrictions.
- Management systems were generally at a high standard at nuclear fuel production facilities.
- No sanctions are currently affecting the nuclear supply chain.[1]
- A sustainability training was conducted for relevant employees and this will be repeated when appropriate.

[1] In February 2022 Vattenfall voluntarily stopped accepting deliveries of uranium from Russia and will not place new orders until further notice.

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, the main origin is Sweden and Germany, and a small share comes from the UK. Recycled wood waste is sourced either from Sweden or other northern European countries.
- The woody biomass that we use for our CHPs and heat-only boilers in Germany, the Netherlands and Sweden is low value by-product, and domestically sourced. Thus the sourcing countries for the woody biomass for internal use in 2021 were: Sweden (41%), Germany (36%), Norway (12%); the rest of Europe accounted for 11%. Vattenfall's heat business adheres fully to relevant EU regulations, well-known certifications schemes and/or local requirements for woody biomass.
- The woody biomass that we purchase for third parties on the international market is 100% certified by the Sustainable Biomass Program, where Vattenfall is one of the founding members, and/or the Forestry Stewardship Council (FSC) and is sourced from within the EU, mainly originating from the Baltic states.
- A small share of biomass used in our Swedish operations constitutes bio-oils (low-value residual or waste products which are collected and mixed in the Netherlands) and biogas (landfill gas, produced close to our plants and transported short distances through pipelines).

Gas

- In 2021, Vattenfall sourced around 95.8 TWh of gas, both for own needs and for our customers.
- As Vattenfall does not hold any direct contract with 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.
- Vattenfall continues to look into several opportunities to address sustainability risks associated with gas suppliers, e.g. we welcomed the EU Methane Strategy, and we constantly monitor the development of the initiatives which address sustainability issues of gas and oil majors, such as the Corporate Human Rights Benchmark, Carbon Disclosure Project, Methane Guiding Principles, and others.
- As Vattenfall has committed to reaching net zero along its full value chain by 2040, we are looking into opportunities to address emissions in our supply chains including gas supply chain, e.g. sourcing, and delivering fossil-free gas instead of natural gas where possible.

Integrity

Operating our business with integrity is essential for ensuring that we live up to our stakeholders' expectations. 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 Transparency International Sweden. We require that all employees take personal responsibility to act 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. 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. Read more about Vattenfall's integrity organisation in the Corporate Governance Report on page 90.

The Code of Conduct and Integrity

The Vattenfall Code of Conduct and Integrity applies to all employees worldwide as well as temporary staff (such as consultants and contractors) acting on behalf of Vattenfall. It describes the behaviour we expect of all representatives of Vattenfall. Every employee is required to complete an e-learning on the Code. Additionally, all members of the Executive Group Management and all managers three levels below, as well as other relevant employees (such as those with external contacts on a regular basis), are required to participate in the Vattenfall Integrity Programme (VIP). 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, ensure that all employees understand our integrity standards and ensure a common compliance culture throughout the Group. In 2021, 1,494 managers and other relevant staff (2020: 1,143; 2019: 760) completed the instructor-led VIP training.

Awareness and monitoring

It is the responsibility of every manager to lead by example and to ensure their team members understand our way of working. About 400 managers complete the Vattenfall Integrity Survey every year. Based on the survey responses and follow-up interviews, a range of activities may be initiated, such as monitoring compliance with our governing rules or providing tailormade trainings.

Incidents

Suspected misconduct in Vattenfall should be reported to the employee's immediate manager or to the Whistleblowing Function, for example via the online Whistleblowing Channel. Incident investigations are led by appointed auditors, for example from Vattenfall's Group Internal Audit unit, the HR department or the Corporate Security & Resilience unit. A total of 67 integrity-related incidents were reported in 2021 (2020: 66; 2019: 53), of which 12 (2020: 14; 2019: 13) led to employment law measures, 8 (2020: 15; 2019: 9) to recommended corrections or improvements (such as updates of steering documentation or additional training). No action was taken for 18 reported cases (2020: 19; 2019: 14) due to no confirmed misconduct after initial review. Currently there are no pending integrity-related cases against Vattenfall in court. Reported incidents and improprieties are investigated and subject to a lessons-learned process to ensure continuous improvement within the company.

Integrity risks

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 competition law and corruption incidents, including breaches of our procurement and conflict of interest policies. Accordingly, Vattenfall will continue its work to raise awareness within the company through training and communication to ensure compliance with the rules in these areas.

Integrity with counterparties

Our integrity work is not just an internal issue; we also have strict requirements for our suppliers and counterparties. We require our suppliers to comply with the Vattenfall Code of Conduct for Suppliers, or an equivalent standard agreed together with us. In the integrity area, the Code of Conduct for Suppliers puts special emphasis on business integrity, anti-corruption, conflicts of interest and competition law as well as information on how to use the whistleblowing function. Additionally, Vattenfall has a process for managing counterparties where we seek to actively identify, manage and prevent the transaction risk with counterparties that may be involved in money laundering, tax fraud and terrorist financing, may be subject to EU sanctions or have a poor performance on environment, social and governance issues.

The Whistleblowing process at Vattenfall

1. An individual submits a report to the Whistleblowing Function, for example through the online Whistleblowing Channel.
2. The national Whistleblowing Coordinator of Vattenfall confirms receipt of the report. If the reported concern needs to be investigated, an investigation team is appointed. Investigations are typically carried out by auditors from Vattenfall's Group Internal Audit unit, the HR department, Vattenfall's Staff Function Legal or the Corporate Security & Resilience unit.
3. The auditors gather and analyse relevant information, for example by seizing documents and conducting interviews.
4. If misconduct or deficiencies are confirmed, relevant follow-up measures are taken such as improvements to internal working procedures, employment law measures in relation to an individual or to termination of contracts.

Right to remain anonymous

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

Taxes

Taxes are a key issue for us and for our stakeholders. We regard taxes as an important component of our commitment to grow in a sustainable, responsible, and socially-inclusive way. As a business we are subject to taxation in the countries in which we are active. We strive to pay the correct amount of tax on the profits we earn and in the countries where we create the value that generates those profits. Vattenfall has 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 Vattenfall 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. The Audit Committee receive quarterly updates on the tax position of the Group.

Tax trends

In recent years we have seen a positive trend toward a more tax-transparent landscape, which Vattenfall supports. Vattenfall's Tax function participates in various CSR and tax-transparency projects and networks. Vattenfall has submitted the country-by-country reporting that is required by law in all of the countries where Vattenfall operates. Vattenfall reports from 2021 according to the GRI 207 tax standards which for the Group does not imply any large changes compared to what has been reported previously on a voluntary basis. The new GRI 207 tax standards in GRI contains sections regarding the Group's approach to tax with strategy, policy, compliance with tax laws etc and are covered in the sections "Vattenfall's Tax policy" and "Vattenfall as a tax payer". The section regarding Tax governance, control and risk management are covered under "Taxes". The section regarding stakeholders engagement and management of tax issues, (with e.g. tax authorities, other stakeholders, etc) are covered under the section "Vattenfall's tax policy". And the final section related to country-by-country reporting is covered in the tables below. The change in relation to previous years is that the category "other countries" has been split up and reported for each jurisdiction. Vattenfall is positive to the proposal for a public country-by-country reporting in addition to the GRI 207 tax standards requirement in this area. Vattenfall was also certified under the Fair Tax Foundation (FTF) using the new Global Multinational Business Standard that was launched during the fourth quarter. This Fair Tax Mark accreditation compliments the new GRI tax reporting standard.

Vattenfall's tax policy

Vattenfall's tax policy is approved by its Board of Directors on a yearly basis. The tax policy focuses on compliance and efficiency. Vattenfall conducts tax planning to the extent required to ensure the efficient handling of taxes within the constraints of tax law. 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 of a direct contact in the local tax authority, higher tax certainty, and no tax audit risks or exposures.[1]

Vattenfall as a taxpayer

Vattenfall's business generates considerable tax revenue for the national, regional, and local authorities in the countries in which we are active. 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 respective countries' tax revenues. In the income statement they are reported as operating expenses, which means that corporate income taxes are only part of the total taxes paid by Vattenfall. Total taxes reported in Vattenfall's income statement for 2021 amounted to SEK 10.1 billion and are outlined below. Corporate income taxes amounted to SEK 6.4 billion.

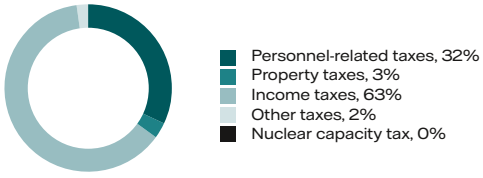
Effective tax rate

Vattenfall's effective tax rate in 2021 was 19.1% , expressed as a percentage of consolidated profit before tax. This corresponds to SEK 11.4 million. See Note 13 to the consolidated accounts, Income taxes, for more information.

[1] For more details about the tax strategy and policy, see http://corporate.vattenfall.com/about-vattenfall/strategy-and-objectives/

Total taxes 2021

SEK 10.1 billion, shown per tax type



Total taxes paid by region

Tax history by country

SEK million	Sweden	Germany	Netherlands	Other	Total
2021	4,700	2,640	2,024	776	10,140
2020	4,134	1,347	781	280	6,542
2019	5,165	2,527	442	101	8,235
2018	5,232	721	527	398	6,878

Total taxes paid by type

Taxes reported in the 2021 income statement, SEK 10.1 billion

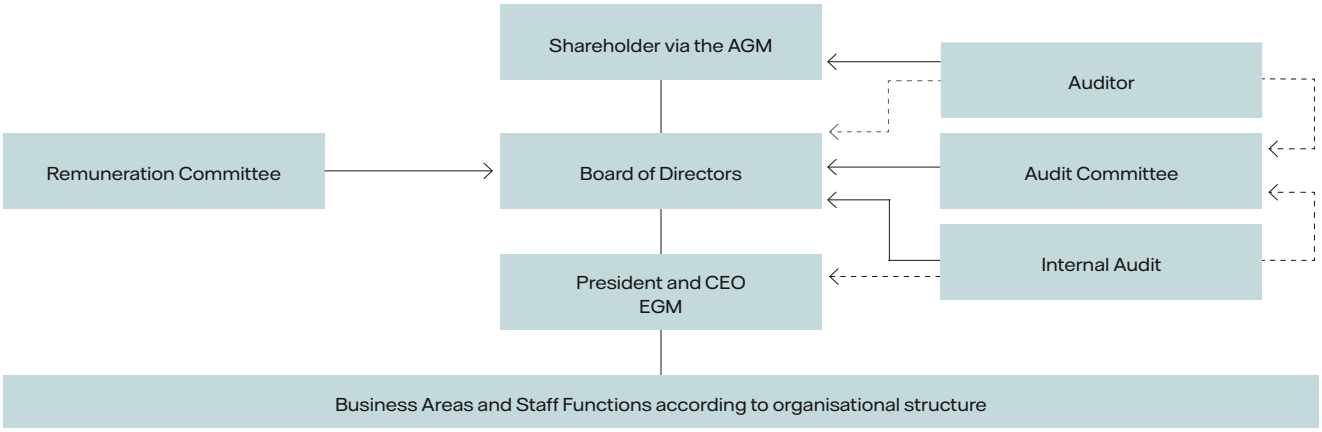
SEK million	Sweden	Germany	Nether-lands	UK	Denmark	Finland	France	Norway	Poland	Total
Personnel-related taxes[1]	2,133	716	319	37	-1	2	29	1	22	3,258
Property tax	123	32	37	66	-4	8	0	0	0	262
Income tax[2]	2,304	1,828	1,636	602	-19	27	0	0	6	6,384
Other taxes	140	64	32	0	0	0	0	0	0	236
Nuclear taxes	0	0	0	0	0	0	0	0	0	0
Total taxes paid	**4,700**	**2,640**	**2,024**	**705**	**-24**	**37**	**29**	**1**	**28**	**10,140**

[1] Including social security costs.
[2] Does not include deferred taxes.

Corporate Governance Report

This report includes information on corporate governance during the 2021 financial year, as prescribed by law and the Swedish Corporate Governance Code. Supported by good corporate governance – with effective organisational structure, internal control and risk management – Vattenfall's business can be driven towards the set targets and in accordance with Vattenfall's principles. 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.

Governance and reporting structure



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.

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 board members' independence, regulated in points 4.4 and 4.5, among other things, is not applied.

Also, due to its ownership structure, 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 and on London Stock Exchange
- 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 document

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, the Swedish Corporate Governance Code and Vattenfall's Code of Conduct and Integrity and other internal policies.

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. Through a general meeting resolution on the content of the Articles of Association, the shareholder makes decisions on the company's operations. The Swedish state's ownership policy and principles for state-owned companies are decided on at the general meeting. In accordance with the Swedish state's ownership policy, the company's financial targets are also decided on by a general meeting. The current financial targets were decided at an extraordinary general meeting on 12 December 2017 and are found in the Annual and Sustainability Report on page 20.

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.

Annual General Meeting 2021

Vattenfall held its 2021 AGM on 28 April. The company's owner, the Swedish state, participated at the AGM through its owner representative. Due to the spread of Covid-19 (the coronavirus), participation at the AGM was limited, in accordance with the Swedish Corporate Governance Board's temporary rules on application of Code rules 1.1–1.3. Members of Parliament were given the opportunity to ask questions on-site during the AGM, and an open Q&A session was arranged after the meeting, in accordance with the Swedish state's ownership policy. The AGM was not open to the general public but was aired live via webcast. The general public however had the opportunity to ask questions for the Q&A session via phone or the internet.

The 2022 AGM will be held on 28 April in Solna, Sweden.

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

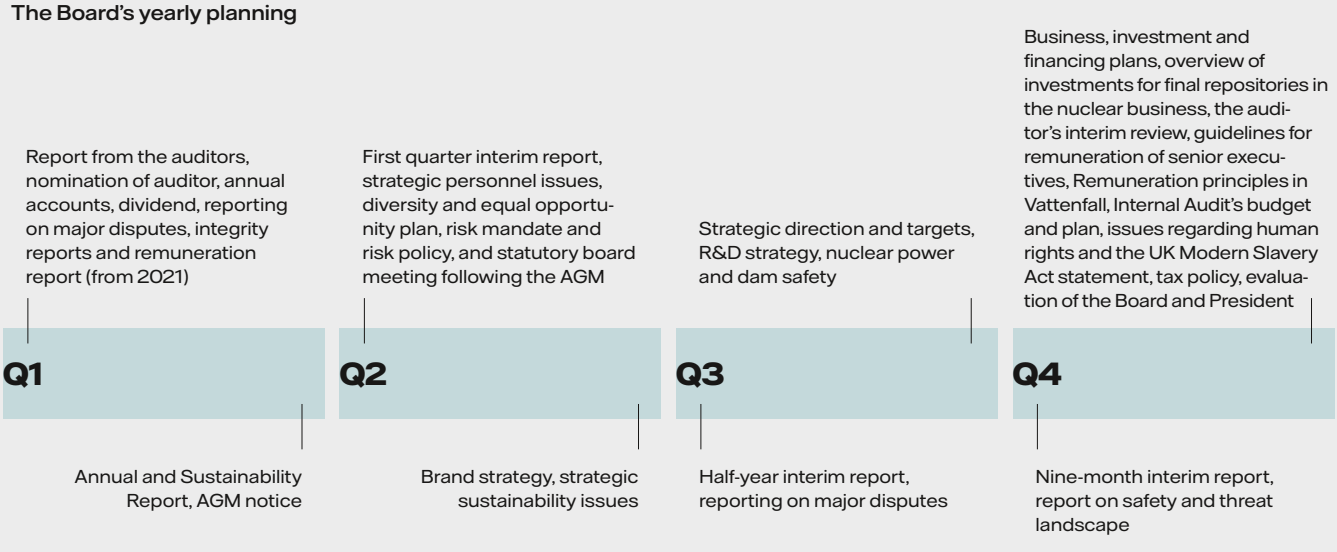
The Board's duties

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, delegation 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 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. Also, the Board shall approve certain important contracts, including contracts between Vattenfall and the President and other senior executives.

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

The Board's yearly planning



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 more detail at an annual board seminar where the Executive Group Management participates.

The Board met ten times in 2021, including the statutory meeting. From January until July, meetings were held with attendance both on-site at the head office and via video or phone, due to the Covid-19 pandemic. The board members' attendance is found on pages 100–101.

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 in the Swedish Government Offices is coordinated by 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 in the board nomination process, the Government Offices also conduct their own ongoing evaluation of the board. 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 2021 AGM, the owner's representative presented a reasoned statement on the Board's composition. In summary, the Board's composition – in respect of the company's operations, stage of development and other circumstances – was deemed to be appropriate, characterised by versatility and breadth with regard to directors' expertise, experience and background. The composition also met the Government's goal of gender balance, 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 2021, no member of the Executive Group Management (EGM) was a director on the Board. 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 100–101.

The Board's work on sustainable business

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.

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 identified by the owner. 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. Also, 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 main items of business in 2021

- Items according to the Rules of Procedure
- 1.5 degrees Science Based Targets (SBTi) by 2030 and net zero emissions by 2040
- Impact of Covid-19 (the coronavirus) on personnel, operations and financials
- Acquisitions and divestments
- Strategy, bidding, partnership and investments with regard to new on- and offshore wind farms
- Compensation for nuclear decommissioning in Germany
- Investments connected to nuclear decommissioning
- District heating investments and sustainable district heating
- Financing

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 2021 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 evaluates its own work and the President's work once a year as part of efforts to develop the Board's work forms and effectiveness. This evaluation is conducted under the direction of the Chairman and is reported to the Board and the owner.

During a succession of years, the Board has carried out extensive evaluations with a consistent methodology and mostly with the support of external consultants. Evaluations have contributed to the continuous development of board work both in terms of content and composition. In 2021, like in 2019, the Board conducted a less comprehensive evaluation. Reason for this was, among others, that the composition of the board was unchanged and that the average of previous evaluations had been high. The evaluation was based on a number of key issues and an open discussion in the board. As a follow-up to the written evaluation, the Chairman held discussions individually on a voluntary basis with each of the directors elected by a general meeting and jointly with the employee representatives.

Board committees

The Board has established two committees and has established 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 100–101.

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.

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 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

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 applicable legal provisions for rotation meant that Vattenfall had to elect a new accounting firm in 2021. At the 2021 AGM, PricewaterhouseCoopers AB was elected as new 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 2021 AGM the auditor reported on the audit work in 2020 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 2021 to the entire Board at the board meeting in February 2022 (without the presence of any person from the Executive Group Management), and also reported on its observations at the board meeting in December 2021. In addition, the auditor performed a review of the half-year interim report.

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 2021. 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 102–103.

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.

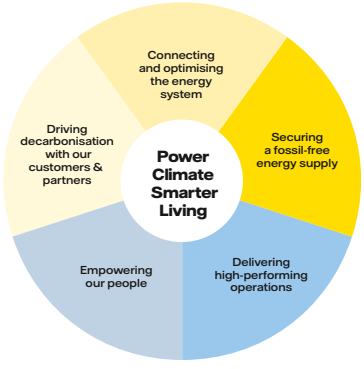
Vattenfall has five strategic focus areas, according to a strategy wheel, which visualises Vattenfall's way forward to ensure profitability and be a leader in the energy transition. In addition to this are the financial targets, decided on by the general meeting. The targets are further described in the Annual and Sustainability Report on pages 20–21. 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'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.

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 strategy wheel



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 88.

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 88. 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 171.

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. The model secures the principle of segregation of duties and includes different roles for risk ownership, independent monitoring and control as well as assurance.

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

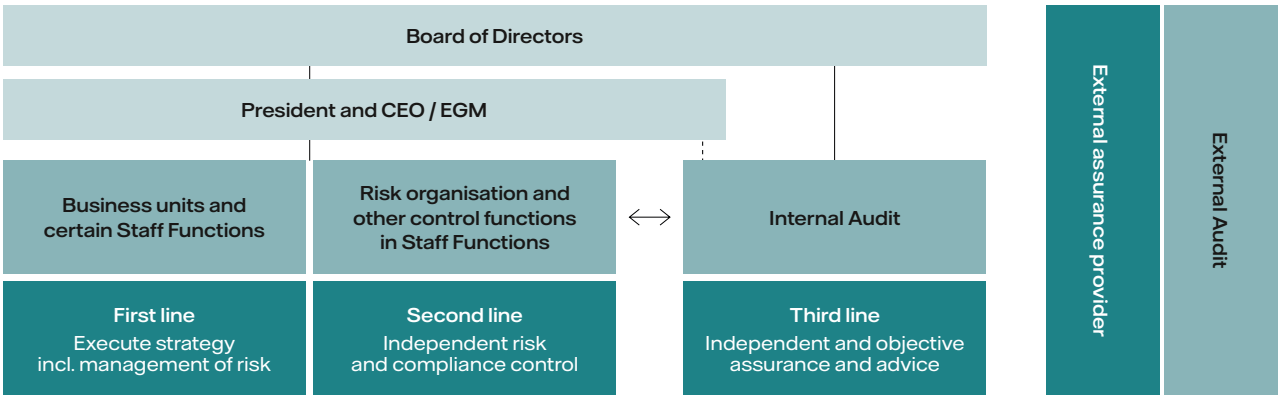
The most important internal rules for governing Vattenfall are found in the Vattenfall Management System (VMS). The VMS is the Group framework that ensures that Vattenfall adheres to formal requirements as well as to requirements made by the Board, the President, the business operations and the Staff Functions. It covers the necessary overall governance, while local management systems cover specific business governance. The VMS is documented in binding policies and instructions. The VMS is an integrated management system that applies for the entire Vattenfall Group, with the limitations that may arise from legal requirements.

The policies lay out the company's direction and exist 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 62–71 in the Annual and Sustainability Report, and
- 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
- Also, the Board approves Vattenfall's tax policy.

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.

Three lines model



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, in case needed, updated.

Vattenfall's Environmental Management System is integrated in the VMS. At year-end 2020 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. Several business units have certificates on energy management in accordance with ISO 50001.

Organisation

Vattenfall's 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. The central Staff Functions support and direct the business activities. The organisational structure has been formed to reflect Vattenfall's overall strategy. For further information see pages 20–29.

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

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 pages 62–63) 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.

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:

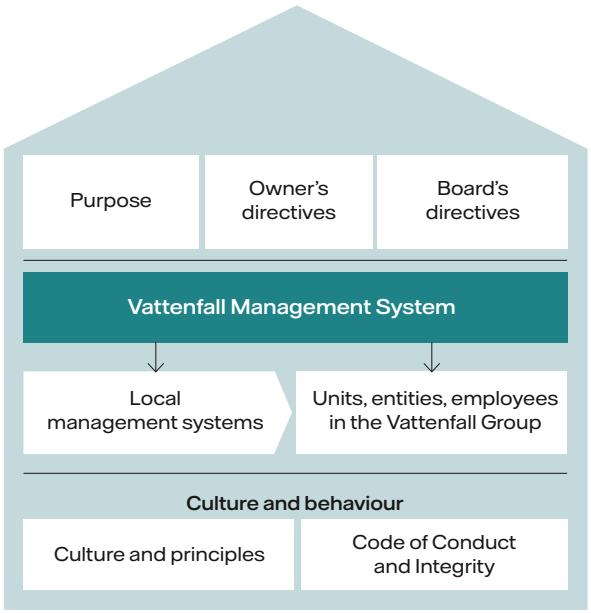
1. Ownership: The line organisation, which is responsible for compliance with laws and regulations within the unit
2. Control and advice: The integrity organisation, with reporting to the Group's General Counsel
3. Quality assurance: The Internal Audit unit.

The Integrity organisation's area of responsibility covers antitrust matters, anti-bribery and anti-corruption, conflicts of interest, inside information, awareness of Vattenfall's Code of Conduct and Integrity, and coordination of Vattenfall's whistleblowing function.

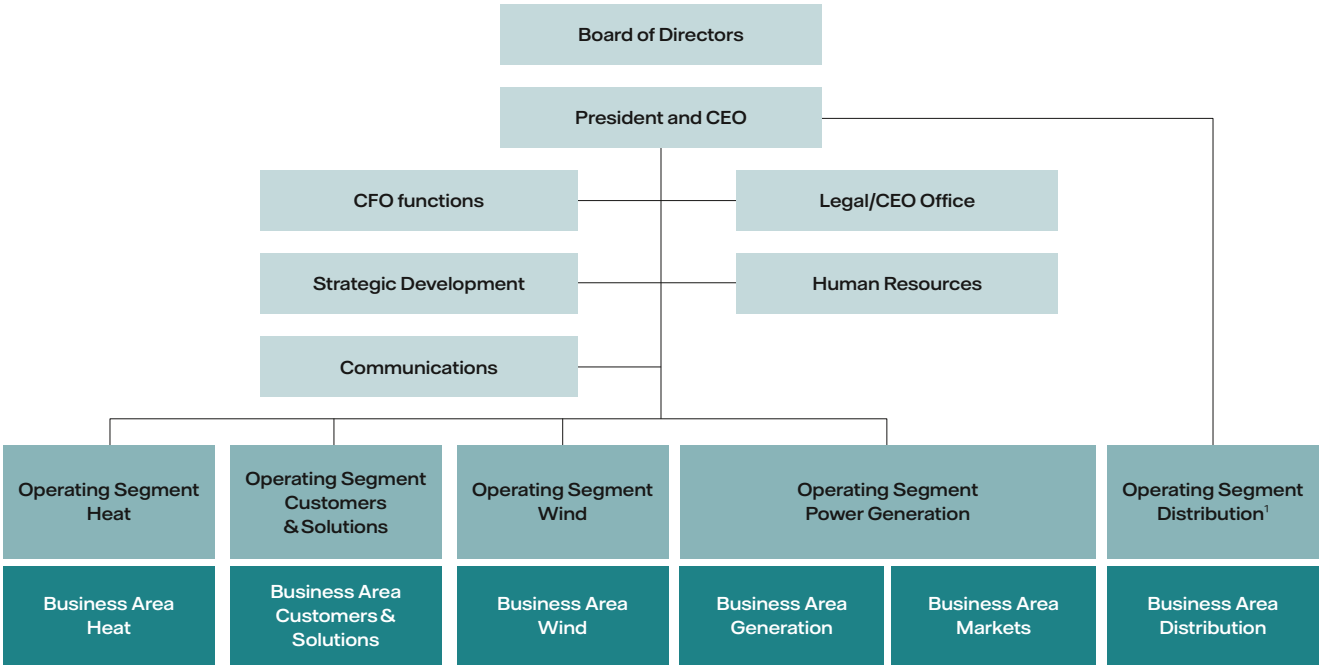
Within its scope, the Integrity organisation supports Vattenfall in identifying, mitigating, managing and monitoring the risk of non-compliance with laws, regulations, rules, standards and codes of conduct, relevant to its activities. Work is carried out in accordance with an annual plan and regular follow-ups are performed. The annual integrity work is summarised in an integrity report to the Board.

Current integrity issues in 2021 are described in more detail in the Annual and Sustainability Report on page 88.

Structure of the VMS and other governing rules



Organisation



[1] Vattenfall's electricity distribution operations are unbundled from other operations, in accordance with Swedish and UK legislation.

Guidelines for remuneration of senior executives

The 2021 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 2020 Annual and Sustainability Report, page 88. The Swedish Government Offices' principles are available on the Government Offices' website, www.regeringen.se.

Actions taken in 2021 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. 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 2022 AGM are shown on pages 104–105.

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 COSO framework "Internal Control – Integrated Framework" from 2013, which has been developed by the Committee of Sponsoring Organizations of the Treadway Commission. 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 62–71.

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 96) contains steering rules for all identified material areas, including roles and respon-

sibilities, 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 non-financial 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.

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 96) 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 is part of these processes.

Information and communication

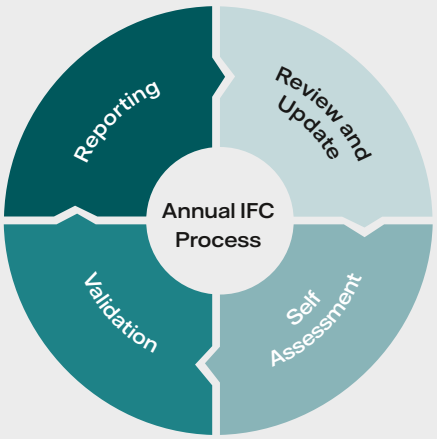
The Group's steering documents are accessible via Vattenfall's intranet. The forms for handling internal and external communication are documented in a VMS instruction which aims to ensure that Vattenfall is in compliance with legal as well as stock exchange rules, the state's ownership policy (including 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 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

Reporting
Quarterly IFC status reporting and half-year/year-end report to the Audit Committee.



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.

Validation
Complementary evaluations of IFC control points, e.g. via on-site validations.

Self Assessment
A yearly questionnaire used to evaluate the status of the IFC control points and identify the need for corrective action.

Board of Directors

LARS G. NORDSTRÖM[1] (1943)
Chairman of the Board
Education: Law studies
Other assignments: Chairman of the Finnish-Swedish Chamber of Commerce. Board member of Viking Line Abp and the Swedish-American Chamber of Commerce. Member of the Royal Swedish Academy of Engineering Sciences (IVA). Honorary Consul for Finland in Sweden.
Previous positions: Board member of TeliaSonera (2006–2010). Chairman of the Royal Swedish Opera (2005–2009). President and CEO of Posten Norden AB (2008–2011). Various executive positions with Nordea Bank (1993–2007), including as President and Group CEO (2002–2007), also Board member (2002–2019) and Deputy Chairman (2017–2019). Various positions with Skandinaviska Enskilda Banken (1970–1993), including as Executive Vice President (1989–1993).
Elected: 2011
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 10/10
Committee attendance: 2/4

VIKTORIA BERGMAN (1965)
Board member
Education: Communication Executive Programme at Stockholm School of Economics. Berghs School of Communication.
Other assignments: Chairman of the Board of Galber AB. Board member of Trianon AB and Cinis Fertilizer AB. Deputy chairman of WaterAid Sweden.
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 in Trelleborg Group (2002–2011), member of Group Management and Senior Vice President Corporate Communications Trelleborg Group (2005–2011). Various positions in Falcon Breweries/ Unilever (1989–1996), Cerealia Group (1987–1989).
Elected: 2015
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 10/10
Committee attendance: 4/4

ANN CARLSSON (1966)
Board member
Education: Bachelor's degree in Personnel, Work and Organisation at the Stockholm School of Economics.
Current position: CEO Systembolaget AB
Other assignments: Vice Chairman of the Board of SNS.
Previous positions: CEO Apoteket AB, Several positions within ICA, most recently as SVP Store Sales Division at ICA Sverige AB.
Elected: 2019
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 8/10
Committee attendance: 4/4

HÅKAN ERIXON (1961)
Board member
Education: B.Sc. International Business Administration and Economics.
Other assignments: Chairman of the Board of Hemnet Group AB. Board member of Tjitall AB.
Previous positions: Chairman of the Board of TransferGalaxy AB (2020–2021). 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). Various positions with UBS Investment Bank Ltd, London (1997–2007), including Vice Chairman of the Investment Banking Division.
Elected: 2011
Committee assignment: Member of the Audit Committee
Board meeting attendance: 10/10
Committee attendance: 4/5

MATS GRANRYD[2] (1962)
Board member
Education: MSc Engineering, KTH
Other assignments:Board Member of SVT(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). Various roles within the Ericsson Group (1995–2010).
Elected: 2020
Committee assignment: Member of the Audit Committee
Board meeting attendance: 8/10
Committee attendance: 5/5

TOMAS KÅBERGER (1961)
Board member
Education: M.Sc. Engineering Physics. Ph.D. Physical Resource Theory. Associate Professor (Docent), Environmental Science.
Other assignments: Professor in Industrial Energy Policy and Director of the Energy Area of Advance at Chalmers University of Technology. Executive Board Chairman of Renewable Energy Institute, Tokyo. Chairman of the Board in Johannebergs Science Park AB. Board member in Persson Invest AB, Tanke och Möda AB and The Research Council of Norway. Senior Advisor GEIDCO, Beijing. 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: 10/10
Committee attendance: 5/5

JENNY LAHRIN (1971)
Board member
Education: Master of Laws. Executive MBA.
Current position: Investment Director and Head of Group, Department for State-Owned Enterprises, Ministry of Enterprise.
Other assignments: Board member of AB Göta kanalbolag and V.S. VisitSweden AB.
Previous positions: Board member of SOS Alarm Sverige AB (2015–2016). Board member of Swedavia AB (2012–2015). Board member of RISE Research Institutes of Sweden AB (2012–2013), Legal Counsel at the Division for State-Owned Enterprises, Ministry of Enterprise/Ministry of Finance (2008–2012). Legal Director at Veolia Transport Northern Europe AB (2003–2008) and admitted to the Bar Association (2001–2002).
Elected: 2013
Committee assignment: Member of the Audit Committee
Board meeting attendance: 10/10
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: Executive Vice President and 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. Various positions in the Electrolux Group (1989–1998), including as Vice President and Head of Mergers & Acquisitions (1996–1998), Director of Mergers & Acquisitions (1995–1996) and Managing Director of Svensk Inkassoservice, an Electrolux finance company (1992–1994).
Elected: April 2017
Committee assignment: Audit Committee chair
Board meeting attendance: 10/10
Committee attendance: 5/5

[1] Lars G Nordström has announced that he will step down at the Annual General Meeting on 28 April 2022.
[2] Mats Granryd has been proposed by Vattenfall's owner as the new Chairman of the Board of Directors.

ÅSA SÖDERSTRÖM WINBERG (1957)
Board member
Education: B.Sc. Econ.
Other assignments: Board member of Skanska AB, OEM International AB, Delete OY and Fibo AS. Fellow to the Royal Swedish Academy of Engineering Sciences (IVA).
Previous positions: President of SWECO Theorells AB (2001–2006) and Ballast Väst AB (1997–2001). Marketing Manager NCC Industry (1994–1997), and Communications Manager NCC Bygg AB (1991–1993).
Elected: 2013
Committee assignment: Remuneration Committee chair
Board meeting attendance: 10/10
Committee attendance: 4/4

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: 9/10

ROLF OHLSSON (1961)
Employee representative
Education: Mechanical M.Sc., KTH Royal Institute of Technology.
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: 10/10
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. Currently head of customer service/office services for Gotlands Energi AB.
Elected: 2011
Board meeting attendance: 9/10

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 Facket för Service och Kommunikation. Vattenfall employee since 1979, currently as IT technician.
Elected: April 2018
Board meeting attendance: 10/10

ANDERS BOHLIN (1965)
Employee representative (deputy)
Education: Energy Engineer from Polhemsskolan, Gävle.
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: 10/10

CHRISTER GUSTAFSSON (1959)
Employee representative (deputy)
Education: Four-year education in technology.
Current position: Employee representative for Ledarna (the Association of Management and Professional Staff). Employed at Vattenfall since 1986, currently in the staff function for the engineering department, Forsmarks Kraftgrupp AB.
Other assigments: Representative for Energy & Technology, Confédération Européenne des Cadres (for energy issues). Chairman of Ledarna in Vattenfall. Chairman of European Works Council in Vattenfall
Elected: 2013
Board meeting attendance: 10/10

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), Various management positions in Strategy, Business Development, Project Management and Trading, Vattenfall (1999–2009).
Other assignments: Board member of FAM AB.

In 2021 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. Engineering
Previous positions: Vice President Human Resources (2015–2020) Head of Finance Region Nordic (2014–2015), Vice President Controlling and Continuous Improvement BD Production (2012–2014), Head of Project Management Office (2010–2012) as well as 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). Division Production and Region Nordic.
Other assignments: No other assignments.

CHRISTIAN BARTHÉLÉMY (1971)
from 1 January 2021
Senior Vice President, Head of Human Resources
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), Programme Manager Optimisation Programme Vattenfall Service Unit Germany (2009–2011), Manager, KPMG Advisory (2001–2009).
Other assignments: Chairman of the Management Board of Vattenfall GmbH.

HELENE BISTRÖM (1962)
Senior Vice President, Head of Business Area Wind
Vattenfall employee since: 2021 as well as 1983–2000 and 2002–2010
Education: MSc in Mechanical Engineering, Royal Institute of Technology, Stockholm
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
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 "Aktiemarknadens Självregleringskommitté."

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.

ULRIKA JARDFELT (1974)
Senior Vice President, Head of Business Area Heat
Vattenfall employee since: 2018 and 1999–2004
Education: MSc Aquatic & Environmental Engineering
Previous positions: Vice President, Business Unit Heat Sweden, Vattenfall, Head of District Heating Distribution at E.ON Heat Sweden, Managing director of the Swedish District Heating Association, Head of Real Estate Development at SABO (the Swedish municipal housing organisation), Head of section Energy and Climate Policies at the Ministry of Industry, Desk officer International energy and climate politics at the Swedish Energy Agency, consultant at Swedpower (Vattenfall), international trainee Vattenfall.
Other assignments: Member of the Board at Sweden Green Building Council.

KARIN LEPASOON (1968)
Senior Vice President, Group Communications
Vattenfall employee since: 2021 and 2016–2020
Education: LL.M and a Master of EU Law
Previous positions: Head of Global Marketing and Communication, SEB (2020–2021). Senior Vice President, Group Communications, Vattenfall (2016–2020). Director of Sustainability, Communications and HR, Nordic Capital (2015–2016). Executive Vice President, Head of Strategy and Chief of Staff, Skanska (2006–2015). Vice President Group Communications, Gambro (1999–2006).
Other assignments: No other assignments.

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: Board member of Svevia AB and Chairman of the Board of HYBRIT Development AB and member of RISE Research Council. 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, Head of 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). 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 Henley Business School
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 is therefore not a member of the EGM.

Persons who left the EGM in 2021:

- Gunnar Groebler

AGM proposal

The Board's proposed guidelines for remuneration to senior executives

These guidelines cover the President and other members of the Group management. 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 2022 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, review 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 2021 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 profits
The Annual General Meeting has at its disposal retained profits, including the profit for the year, totalling SEK 66,222,813,944. The Board of Directors proposes that the profits be distributed as follows:

To be distributed to the shareholder:	SEK 23,414,000,000
To be carried forward:	SEK 42,808,813,944

The proposed distribution corresponds to a dividend of SEK 177.78 per share. The dividend is proposed for payment on 3 May 2022.

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 23,414,000,000 to be carefully considered and justified, and that the proposal adheres to the principles of the adopted dividend policy (page 20).

The Board of Directors' and the President's assurance upon signing the Annual and Sustainability Report for 2021
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 172–175, have been prepared in accordance with the GRI Standards, and have been adopted by the Board of Directors.

Solna, 22 March 2022

Lars G. Nordström, Chairman of the Board

Viktoria Bergman Ann Carlsson Håkan Erixon Mats Granryd

Tomas Kåberger Jenny Lahrin Robert Lönnqvist

Rolf Ohlsson Jeanette Regin Fredrik Rystedt Åsa Söderström Winberg

Anna Borg, President and CEO

Our auditor's report was submitted on 25 March 2022
PricewaterhouseCoopers AB

Eva Carlsvi
Auditor-In-Charge, Authorised Public Accountant

Aleksander Lyckow
Authorised Public Accountant

Financial information

Contents

Vattenfall's financial performance

Underlying operating profit amounted to SEK 31.2 billion in 2021, an increase of SEK 5.4 billion compared with 2020. Higher earnings contributions from the Power Generation and Wind operating segments had a positive effect on underlying operating profit. A lower contribution from the Distribution and Heat operating segments had a countering effect.

Amounts in SEK million	2021	2020
Net sales	180,119	158,847
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[1]	75,790	46,507
Underlying operating profit before depreciation, amortisation and impairment losses[1]	48,584	44,041
Operating profit (EBIT)[1]	60,271	15,276
Underlying operating profit[1]	31,181	25,790
Profit for the year	48,013	7,716
Funds from operations (FFO)[1]	46,096	35,024
Net debt[1]	-44,703	48,178
Adjusted net debt[1]	26,922	121,480
Electricity generation, TWh	111.4[6]	112.8
– of which, hydro power	40.9[6]	39.7
– of which, nuclear power	40.4	39.3
– of which, fossil-based power	18.4[6]	22.7
– of which, wind power	11.2[6]	10.8
– of which, biomass, waste	0.5[6]	0.3
Sales of electricity, TWh[2]	168.9	164.1
Sales of heat, TWh	15.6	13.8
Sales of gas, TWh	57.1	56.8
CO_2 emissions, Mtonnes	10.3[4]	12.2[4]
Work-related accidents, number (LTIF)[3]	1.7	1.8
Number of employees, full-time equivalents	18,883	19,859
Key ratios[1]		
Return on capital employed, %	22.2[5]	5.8[5]
Net debt/equity, %	-22.7	43.3
FFO/adjusted net debt, %	171.2	28.8
Adjusted net debt/EBITDA, times	0.4	2.6

[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] 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.

[4] Pro rata values, corresponding to Vattenfall's share of ownership.

[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 16–17, 21, 30, 63–67, 74–88, 95–97 and 171 of this printed document, pertains to Vattenfall and its subsidiaries.

Wholesale price trend
Average spot prices in Germany and the Netherlands were 318% and 319% higher, respectively, than in 2020, mainly owing to higher prices for gas and CO_2 emission allowances. Average Nordic electricity spot prices were 569% higher in 2021 than in 2020, and was in addition to the development on the Continent affected by cold and dry weather.

Futures prices for electricity for delivery in 2022 and 2023 were 78%-140% higher than in 2020. Average prices for coal and gas were 241% and 496% higher, respectively, than in 2020, while the average price for CO_2 emission allowances was 215% higher than in 2020.

Electricity generation
Total electricity generation in 2021 was 111.4 TWh (112.8).

Hydro power generation amounted to 40.9 TWh (39.7). Nordic reservoir levels were at 65% (82%) of capacity at year-end, which is 6 percentage points above the normal level.

Nuclear power generation increased to 40.4 TWh (39.3), despite the closure of Ringhals 1 at year-end 2020. Combined availability for Vattenfall's nuclear power plants for 2021 was 84.8% (76.4%). Forsmark had an availability of 89.7% (83.3%) and generation of 25.5 TWh (22.7). Ringhals had an availability of 77.7% (67.5%) and generation of 14.8 TWh (16.5).

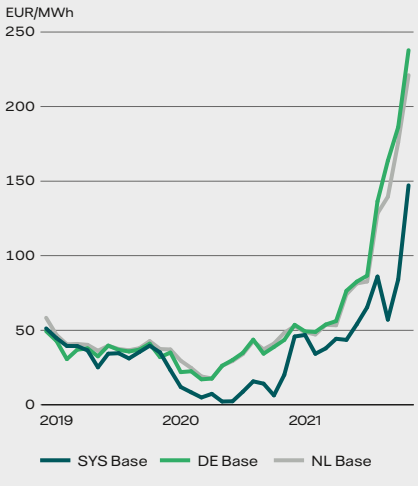
Electricity generation from wind power amounted to 11.2 TWh (10.8) in 2020. The inrease was due to new capacity, mainly the onshore wind farm Princess Ariane (301 MW) in the Netherlands and the offshore wind farm Kriegers Flak (604 MW) in Denmark.

Fossil-based power generation totalled 18.4 TWh (22.7).

Sales of electricity, heat and gas
Sales of electricity, excluding sales to Nord Pool Spot and deliveries to minority shareholders, decreased by 2.3 TWh to 120.5 TWh (118.2). Sales of gas increased by 0.3 TWh to 57.1 TWh (56.8) as a result of colder weather in the Netherlands and Germany. Sales of heat increased by 1.8 TWh to 15.6 TWh (13.8).

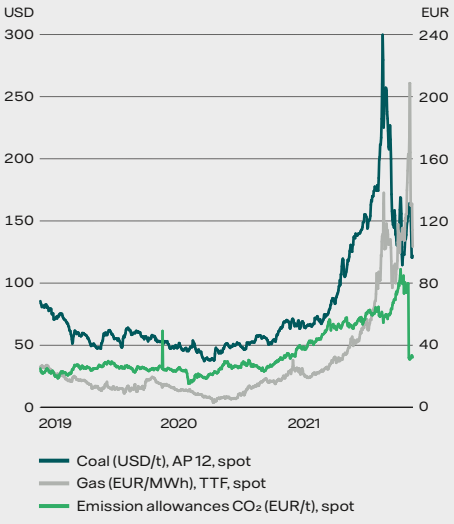
Vattenfall's price hedging
Vattenfall continuously hedges its future electricity generation through sales in the forward and futures markets. Spot prices therefore have only a limited impact on Vattenfall's earnings in the near term. With the current portfolio structure, Vattenfall's dominant risk exposure is coupled to Nordic nuclear and hydro power base load generation. In addition to this, Vattenfall's operations generate a high share of regulated revenue from electricity distribution, heat and (partly) subsidised wind power, which diversifies the total risk exposure. However, Vattenfall continues to have some price exposure between electricity and used fuel/emissions on the Continent. Such exposure has a lower risk profile than the open electricity price exposure in the Nordic countries. The wholesale price risk for Vattenfall's production assets and hedging transactions for electricity, fuel prices and emissions as well as the underlying price risks in the market are monitored daily.

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



Comments on the consolidated income statement

Sales

	External net sales		Internal net sales		Total net sales	
	2021	2020	2021	2020	2021	2020
Customers & Solutions	**102,300**	**84,661**	**4,260**	**1,637**	**106,560**	**86,298**
Power Generation	**40,312**	**36,597**	**86,006**[2]	**53,536**[2]	**126,318**	**90,133**
Wind	**7,791**	**6,901**	**13,081**	**6,664**	**20,872**	**13,565**
Heat	**14,655**	**13,538**	**20,104**	**9,790**	**34,759**	**23,328**
Distribution	**14,643**	**16,970**	**2,619**	**4,674**	**17,262**	**21,644**
– of which, Distribution Germany	3,203	5,464	2,061	4,107	5,264	9,571
– of which, Distribution Sweden	11,310	11,377	586	597	11,896	11,974
Other[1]	**418**	**180**	**5,751**	**5,737**	**6,169**	**5,917**
Eliminations	**–**	**–**	**-131,821**	**-82,038**	**-131,821**	**-82,038**
Total	**180,119**	**158,847**	**–**	**–**	**180,119**	**158,847**

[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 21.3 billion (of which, negative currency effects of SEK 4.2 billion) compared with 2020. The increase is mainly attributable to higher electricity prices and higher sales volumes in the Nordic countries and Germany.

Underlying operating profit

Amounts in SEK million	2021	2020
Operating profit (EBIT)	60,271	15,276
Depreciation, amortisation and impairment losses	15,519	31,231
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	**75,790**	**46,507**
Items affecting comparability excl. impairment losses and reversed impairment losses	-27,206	-2,466
Underlying operating profit before depreciation, amortisation and impairment losses	**48,584**	**44,041**
Operating profit (EBIT)	60,271	15,276
Items affecting comparability[1]	-29,090	10,514
Underlying operating profit	**31,181**	**25,790**

[1] See Definitions and calculations of key ratios for definition of this Alternative Performance Measure.

The underlying operating profit increased by SEK 5.4 billion, which is mainly explained by the following:

- A higher earnings contribution from the Power Generation operating segment (SEK +4.7 billion) primarily as a result of increased nuclear and hydro power generation, higher contributions from pumped storage in Germany thanks to favourable prices and higher realised earnings contribution from the trading business
- A higher earnings contribution from the Wind operating segment (SEK +3.9 billion) mainly owing to higher electricity prices in the UK and on the Continent, as well as new capacity, which was offset in part by lower wind speeds
- A lower earnings contribution from the Distribution operating segment (SEK -2.2 billion) mainly due to the sale of Stromnetz Berlin as well as lower gross margin in the Swedish operation
- A lower earnings contribution from the Heat operating segment (SEK -1.3 billion) attributable to higher prices for gas and CO_2 emission allowances, which led to lower clean spark spreads

Operating segments

	Operating profit (EBIT)		Underlying operating profit	
	2021	**2020**	**2021**	**2020**
Customers & Solutions	**2,446**	**1,882**	**2,349**	**2,146**
Power Generation	**39,502**	**18,984**	**19,334**	**14,670**
Wind	**7,919**	**2,401**	**7,866**	**3,970**
Heat	**-91**	**-12,149**	**-343**	**978**
Distribution	**3,150**	**5,313**	**3,152**	**5,325**
– of which, Distribution Germany	665	1,081	666	1,093
– of which, Distribution Sweden	2,515	4,225	2,516	4,225
Other[1]	**7,333**	**-1,146**	**-1,189**	**-1,290**
Eliminations	**12**	**-9**	**12**	**-9**
Total	**60,271**	**15,276**	**31,181**	**25,790**

	2021	**2020**
Underlying operating profit	31,181	25,790
Items affecting comparability (for specification, see Income statement)	29,090	-10,514
Financial net	-898	-3,270
Profit before income taxes	**59,373**	**12,006**

[1] "Other" pertains mainly to all Staff functions including treasury activities, Shared Service Centres and material capital gains and -losses.

Underlying operating profit for the Customers & Solutions operating segment increased by SEK 0.2 billion compared with 2020, mainly owing to customer growth and lower average temperatures in the Netherlands and Germany. Underlying operating profit for the Power Generation operating segment increased by SEK 4.7 billion primarily as a result of increased nuclear and hydro power generation, higher contributions from pumped storage in Germany thanks to favourable prices and higher realised earnings contribution from the trading business. Underlying operating profit for the Wind operating segment increeased by SEK 3.9 billion mainly owing to higher electricity prices in the UK and on the Continent, as well as new capacity, which was offset in part by lower wind speeds. Underlying operating profit for the Heat operating segment decreased by SEK 1.3 billion, mainly due to lower clean spark spreads. Underlying operating profit for the Distribution operating segment decreased by SEK 2.2 billion mainly due to the sale of Stromnetz Berlin as well as lower gross margin in the Swedish operation. 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	**2021**	**2020**
Capital gains	8,960	301
Capital losses	-199	-241
Impairment losses	-38	-12,980
Reversed impairment losses	1,922	–
Provisions	-3,785	-3,488
Changes in the fair value of energy derivatives	8,715	4,753
Changes in the fair value of inventories	1,313	476
Restructuring costs	–	-854
Other infrequent items affecting comparability	12,202	1,519
Total	**29,090**	**-10,514**

Items affecting comparability amounted to SEK 29.1 billion (–10.5), of which most pertains to compensation for the closure of nuclear power operations in Germany (SEK 12.5 billion), changes in market value for energy derivatives and inventories (SEK 10.0 billion), and the capital gain from the sale of Stromnetz Berlin (SEK 8.4 billion).

Items affecting comparability amounted to SEK –10.5 billion in 2020, of which most pertain to impairment losses in the Heat (SEK –11.3 billion) and Wind (SEK –1.6 billion) operating segments. Provisions, mainly related to nuclear power, also affected negatively. This was partly countered by changes in market value for energy derivatives and inventories (SEK 5.2 billion) and the sale of nuclear power production rights in Germany (SEK 2.8 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 2.8 billion in 2021, compared with SEK 3.2 billion in 2020.

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 2021 Vattenfall invested SEK 488 million (449) in R&D. For further information on Vattenfall's R&D activities, see page 26.

Financial items
Financial items amounted to SEK –0.9 billion. In 2020, the corresponding figure was SEK –3.3 billion.

Taxes
The Group reported a tax expense of SEK 11.4 billion for 2021 and an effective tax rate of 19.1%. The effective tax rate is mainly explained by the divestment of Stromnetz Berlin, where the capital gain was 95% tax-free, and the use of previously unvalued loss carryforwards. For 2020 the Group reported a tax expense of SEK 4.3 billion and an effective tax rate of 35.7%. 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 2021	31 December 2020
Intangible assets: current and non-current	21,931	16,716
Property, plant and equipment	252,828	249,120
Participations in associated companies and joint arrangements	6,110	4,347
Deferred and current tax assets	11,622	14,104
Non-current noninterest-bearing receivables	3,563	3,853
Contract assets	375	416
Inventories	41,539	16,828
Trade receivables and other receivables	41,219	23,812
Prepaid expenses and accrued income	12,402	6,935
Unavailable liquidity	3,446	5,374
Other	643	483
Total assets excl. financial assets	**395,678**	**341,988**
Deferred and current tax liabilities	-36,331	-18,455
Other noninterest-bearing liabilities	-2,018	-1,994
Contract liabilities	-8,635	-8,752
Trade payables and other liabilities	-39,241	-24,912
Accrued expenses and deferred income	-18,460	-14,558
Other	-899	-232
Total noninterest-bearing liabilities	**-105,584**	**-68,903**
Other interest-bearing provisions not related to adjusted net debt[1]	-9,213	-10,619
Capital employed[2]	**280,881**	**262,466**
Capital employed, average	**271,674**	**265,639**

[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.

Total assets increased by SEK 319.1 billion compared with the level at 31 December 2020, to SEK 782.4 billion (463.2). Short-term derivative assets increased by SEK 110.7 billion. Cash and cash equivalents increased by SEK 42.1 billion.

Financial position

Amounts in SEK million	2021	2020
Cash and cash equivalents, and short-term investments	170,882	56,222
Committed credit facilities (unutilised)	20,501	23,069

Cash and cash equivalents, and short-term investments increased by SEK 114.7 billion compared with the level at 31 December 2020.

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires in November 2024. As per 31 December 2021, available liquid assets and/or committed credit facilities amounted to 104.3% 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	2021	2020
Hybrid Capital[1]	-20,421	-19,304
Bond issues and liabilities to credit institutions	-37,732	-49,642
Short-term debt, commercial papers and repo	-46,189	-13,268
Liabilities to associated companies	-1,452	-688
Liabilities to owners of non-controlling interests	-10,747	-10,931
Other liabilities	-9,867	-10,942
Total interest-bearing liabilities[1]	**-126,408**	**-104,775**
Cash and cash equivalents	68,176	26,074
Short-term investments	102,706	30,148
Loans to owners of non-controlling interests in foreign Group companies	229	375
Net debt[1]	**44,703**	**-48,178**

[1] See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.

Net debt decreased by SEK 92.9 billion compared with the level at 31 December 2020, mainly attributable to a positive cash flow after investments (SEK 94.2 billion), which is largely explained by the change in working capital (SEK 54.0 billion). Significantly increased electricity and gas prices resulted in higher margin calls received but also an increased credit risk for Vattenfall.

Adjusted gross and net debt as per 31 December

Amounts in SEK million	2021	2020
Total interest-bearing liabilities	-126,408	-104,775
50% of Hybrid Capital[1]	10,211	9,652
Present value of pension obligations	-40,328	-43,824
Provisions for gas and wind operations and other environment related provisions	-11,687	-10,599
Provisions for nuclear power (net)[2]	-40,233	-37,794
Margin calls received	3,340	4,081
Liabilities to owners of non-controlling interests due to consortium agreements	10,747	10,931
Adjusted gross debt	**-194,359**	**-172,328**
Reported cash and cash equivalents and short-term investments	170,882	56,222
Unavailable liquidity	-3,446	-5,374
Adjusted cash and cash equivalents and short-term investments	**167,436**	**50,848**
Adjusted net debt[3]	**-26,923**	**-121,480**

[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 decreased by SEK 94.6 billion and was, in addition to the decrease in net debt, also affected by reduced pension provisions (SEK 3.5 billion) and higher provisions for nuclear power (SEK 2.4 billion).

Equity

The Group's equity increased by SEK 86.0 billion. The increase is mainly attributable to the profit for the year and increase in other comprehensive income.

Comments on the consolidated statement of cash flows

Cash flow from operating activities

Amounts in SEK million	2021	2020
Funds from operations (FFO)	46,096	35,024
Cash flow from changes in operating assets and operating liabilities (working capital)	54,036	6,668
Cash flow from operating activities	100,132	41,692

Funds from operations (FFO) increased by SEK 11.1 billion in 2021 to SEK 46.1 billion (35.0), primarily as a result of higher underlying operating profit before depreciation, amortisation and impairment losses (EBITDA).

Cash flow from changes in working capital amounted to SEK 54.0 billion. The largest contributing factors were changes related to the net change in margin calls received (SEK 88.0 billion), an increase in inventories (SEK -23.1 billion), an increase in operating receivables in the Customers & Solutions operating segment SEK -4.4 billion) and CO_2 emission allowances (SEK -3.4 billion).

Cash flow from investing activities

Amounts in SEK million	2021	2020
Maintenance/replacement investments	11,012	12,539
Growth investments	14,545	8,808
Total investments	**25,557**	**21,347**
Total divestments	**22,060**	**1,237**
– of which, shares	21,378	536

Investments are specified in the table below.

Specification of investments

Amounts in SEK million	2021	2020
Hydro power	795	920
Nuclear power	1,263	1,877
Coal power	–	22
Gas	64	192
Wind power	11,157	7,709
Biomass, waste	73	295
Total electricity generation	**13,352**	**11,015**
Fossil-based power	1,053	1,261
Heat networks	1,511	1,400
Other	483	933
Total CHP/heat	**3,047**	**3,594**
Electricity networks	5,758	7,435
Total electricity networks	**5,758**	**7,435**
Purchases of shares, shareholder contributions	400	-137
Other	1,557	1,690
Total investments	**24,114**	**23,597**
Changes in accrued, non-paid liabillities	1,443	-2,250
Total investments with cash flow effect	**25,557**	**21,347**

Cash flow from financing activities

Cash flow from financing activities amounted to SEK 19.0 billion (3.0) in 2021.

Consolidated income statement

Amounts in SEK million, 1 January–31 December	Note	2021	2020
Net sales	6, 7, 8	180,119	158,847
Cost of purchases		-87,474	-76,225
Other external expenses	10	-18,450	-20,732
Personnel expenses	42	-19,801	-19,535
Other operating income and expenses, net	47	21,454	3,882
Participations in the results of associated companies	19	-58	270
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	7	**75,790**	**46,507**
Depreciation, amortisation and impairments		-15,519	-31,231
Operating profit (EBIT)[1]	7, 8, 9, 14, 15	**60,271**	**15,276**
Financial income[4]	11	783	558
Financial expenses[2, 3, 4]	12	-5,906	-5,886
Return from the Swedish Nuclear Waste Fund	20	4,225	2,058
Profit before income taxes		**59,373**	**12,006**
Income taxes expense	13	-11,360	-4,290
Profit for the year		**48,013**	**7,716**
Attributable to owner of the Parent Company		46,828	6,489
Attributable to non-controlling interests		1,185	1,227
Supplementary information			
Underlying operating profit before depreciation, amortisation and impairment losses[5]	7, 8	48,584	44,041
Underlying operating profit[5]	7, 8	31,181	25,790
Financial items, net excl. discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund		-3,090	-3,163
[1] Including items affecting comparability.[5]		29,090	-10,514
[2] Including interest components related to pension costs.		-439	-538
[3] Including discounting effects attributable to provisions.		-2,033	-2,165
[4] Items affecting comparability recognised as financial income and expenses, net.		-6	-1

[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	2021	2020
Profit for the year	**48,013**	**7,716**
Other comprehensive income		
Items that will be reclassified to profit or loss when specific conditions are met		
Cash flow hedges – changes in fair value	82,259	3,023
Cash flow hedges – dissolved against income statement	-31,553	4,310
Cash flow hedges – transferred to cost of hedged item	16	-43
Hedging of net investments in foreign operations	-1,414	w1,808
Translation differences, divested companies	697	-5
Translation differences	3,218	-4,084
Income taxes related to items that will be reclassified	-15,420	-2,587
Total Items that will be reclassified to profit or loss when specific conditions are met	**37,803**	**2,422**
Items that will not be reclassified to profit or loss		
Remeasurement pertaining to defined benefit obligations	-670	-1,505
Income taxes related to items that will not be reclassified	226	392
Total Items that will not be reclassified to profit or loss	**-444**	**-1,113**
Total other comprehensive income, net after income taxes	**37,359**	**1,309**
Total comprehensive income for the year	**85,372**	**9,025**
Attributable to owner of the Parent Company	83,915	8,260
Attributable to non-controlling interests	1,457	765

Consolidated balance sheet

Amounts in SEK million	Note	31 December 2021	31 December 2020
Assets			
Non-current assets			
Intangible assets: non-current	16	17,070	16,524
Property, plant and equipment	17	252,828	249,120
Participations in associated companies and joint arrangements	19	6,110	4,347
Other shares and participations		313	304
Share in the Swedish Nuclear Waste Fund	20	52,772	48,270
Derivative assets	36	35,240	9,449
Deferred tax assets	13	8,905	13,824
Other non-current receivables		6,118	5,529
Total non-current assets		**379,356**	**347,367**
Current assets			
Inventories	21	41,539	16,828
Intangible assets: current	22	4,861	192
Trade receivables and other receivables	23	41,219	23,812
Contract assets	6	375	416
Advance payments paid	24	8,362	1,046
Derivative assets	36	120,645	9,962
Prepaid expenses and accrued income	25	12,402	6,935
Current tax assets	13	2,717	280
Short-term investments	26	102,706	30,148
Cash and cash equivalents	27	68,176	26,074
Assets held for sale	28	–	188
Total current assets		**403,002**	**115,881**
Total assets	7	**782,358**	**463,248**
Equity and liabilities			
Equity attributable to owners of the Parent Company			
Share capital		6,585	6,585
Reserve for cash flow hedges		36,968	1,970
Translation reserve		4,163	1,606
Retained earnings incl. profit for the year		132,994	87,563
Total equity attributable to owners of the Parent Company	38	**180,710**	**97,724**
Equity attributable to non-controlling interests		**16,472**	**13,468**
Total equity		**197,182**	**111,192**
Non-current liabilities			
Hybrid Capital	29	20,421	19,304
Other interest-bearing liabilities	29	50,839	49,091
Pension provisions	30	40,328	43,824
Other interest-bearing provisions	31	116,637	108,665
Derivative liabilities	36	30,307	7,924
Deferred tax liabilities	13	33,913	17,617
Contract liabilities	6	8,635	8,752
Other noninterest-bearing liabilities	32	2,018	1,994
Total non-current liabilities		**303,098**	**257,171**
Current liabilities			
Trade payables and other liabilities	33	39,241	24,912
Advance payments received	34	62,790	5,794
Derivative liabilities	36	99,511	8,901
Accrued expenses and deferred income	35	18,460	14,558
Current tax liabilities	13	2,418	838
Other interest-bearing liabilities	29	55,148	36,380
Interest-bearing provisions	31	4,510	3,462
Liabilities associated with assets held for sale	28	–	40
Total current liabilities		**282,078**	**94,885**
Total equity and liabilities		**782,358**	**463,248**

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	2021	2020
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		75,790	46,507
Tax paid		-6,725	-2,719
Capital gains/losses, net		-8,760	-62
Interest received		523	183
Interest paid		-3,226	-2,808
Other, incl. non-cash items	37	-11,506	-6,077
Funds from operations (FFO)[1]		**46,096**	**35,024**
Changes in inventories		**-23,067**	**-1,315**
Changes in operating receivables		-31,816	-1,344
Changes in operating liabilities		25,491	-3,726
Margin calls		88,036	12,588
Other changes		-4,608	465
Cash flow from changes in operating assets and operating liabilities		**54,036**	**6,668**
Cash flow from operating activities		**100,132**	**41,692**
Investing activities			
Acquisitions in Group companies	4	-122	-86
Investments in associated companies and other shares and participations		-278	223
Other investments in non-current assets	37	-25,157	-21,484
Total investments		**-25,557**	**-21,347**
Divestments	37	22,060	1,237
Changes in short-term investments[2]		-71,351	-8,926
Cash and cash equivalents in acquired companies		8	20
Cash and cash equivalents in divested companies		-2,481	-80
Cash flow from investing activities		**-77,321**	**-29,096**
Cash flow before financing activities		**22,811**	**12,596**
Financing activities			
Changes in loans to owners of non-controlling interests in foreign Group companies		153	-185
Loans raised[3]		51,150	21,471
Repayment of debt pertaining to acquisitions of Group companies		–	-27
Repayment of other debt		-35,870	-12,156
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		-5,190	-5,298
Contribution to/from non-controlling interest		1,185	-829
Cash flow from financing activities		**18,993**	**2,976**
Cash flow for the year		**41,804**	**15,572**
Cash and cash equivalents			
Cash and cash equivalents at start of year		26,074	10,604
Cash flow for the year		41,804	15,572
Translation differences		298	-102
Cash and cash equivalents at end of year		**68,176**	**26,074**

[1] See Definitions and calculations of key ratios for the definition of this Alternative Performance Measure.

[2] Change from Financing activities to Investing activities.

[3] 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	2021	2020
Cash flow before financing activities	**22,811**	**12,596**
Changes in short-term investments	**71,351**	**8,926**
Financing activities		
Divestment of shares in Group companies to owners of non-controlling interests	4,025	–
Dividends paid to owners	-5,190	-5,298
Contribution to/from owners of non-controlling interests	1,185	-829
Cash flow after dividend	**94,182**	**15,395**
Cash flow from operating activities	100,132	41,692
Maintenance investments	-11,012	-12,539
Free cash flow[1]	**89,120**	**29,153**
Analysis of change in net debt		
Net debt at start of year	-48,178	-64,266
Cash flow after dividends	94,182	15,395
Changes as a result of valuation at fair value	660	-171
Change in interest-bearing liabilities for leasing	-1,442	-2,837
Interest-bearing liabilities/short-term investments acquired/divested	-13	24
Translation differences on net debt	-506	3,677
Net debt at end of year	**44,703**	**-48,178**

[1] See Definitions and calculations of key ratios for the definition of this Alternative Performance Measure.

	Liquid funds bank overdraft	Short-term invest-ments	Financial leasing agreements	Current liabilities	Non-current liabilities	Total
Net debt as at 1 January 2020	**10,604**	**22,757**	**-5,172**	**-23,652**	**-68,803**	**-64,266**
Cashflow	15,572	9,110	990	-14,312	4,035	15,395
Change in interest-bearing leasing liabilities	–	–	-2,837	–	–	-2,837
Translation differences on net debt	-102	-1,344	992	2,319	1,812	3,677
Assets held for sale	–	–	24	–	–	24
Other non-cash items	–	–	–	-2	-169	-171
Net debt as at 31 December 2020	**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**

Consolidated statement of changes in equity

Amounts in SEK million	Attributable to owner of the Parent Company					Attributable to non-controlling interests	Total equity
	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**[1]	**197,182**

[1] Of which, reserve for hedges SEK 0 million (-5).

Amounts in SEK million	Attributable to owner of the Parent Company					Attributable to non-controlling interests	Total equity
	Share capital	Reserve for hedges	Translation reserve	Retained earnings	Total		
Balance brought forward 2020	**6,585**	**-3,147**	**3,874**	**86,319**	**93,631**	**14,891**	**108,522**
Profit for the year	**–**	**–**	**–**	**6,489**	**6,489**	**1,227**	**7,716**
Cash flow hedges - changes in fair value	–	3,023	–	–	**3,023**	–	**3,023**
Cash flow hedges - dissolved against income statement	–	4,344	–	–	**4,344**	-34	**4,310**
Cash flow hedges - transferred to cost of hedged item	–	-43	–	–	**-43**	–	**-43**
Hedging of net investments in foreign operations	–	–	1,808	–	**1,808**	–	**1,808**
Translation differences, divested companies	–	–	-5	–	**-5**	–	**-5**
Translation differences	–	–	-3,684	–	**-3,684**	-400	**-4,084**
Remeasurement pertaining to defined benefit obligations	–	–	–	-1,465	**-1,465**	-40	**-1,505**
Income taxes related to other comprehensive income	–	-2,207	-387	387	**-2,207**	12	**-2,195**
Total other comprehensive income for the year	**–**	**5,117**	**-2,268**	**-1,078**	**1,771**	**-462**	**1,309**
Total comprehensive income for the year	**–**	**5,117**	**-2,268**	**5,411**	**8,260**	**765**	**9,025**
Dividends paid to owners	–	–	–	-3,623	**-3,623**	-1,675	**-5,298**
Group contributions from (+)/to (–) owners of non-controlling interests	–	–	–	–	**–**	-1	**-1**
Contribution to/from minority interest	–	–	–	–	**–**	-829	**-829**
Changes as a result of changed ownership	–	–	–	–	**–**	-227	**-227**
Other changes	–	–	–	-544	**-544**	544	**–**
Total transactions with equity holders	**–**	**–**	**–**	**-4,167**	**-4,167**	**-2,188**	**-6,355**
Balance carried forward 2020	**6,585**	**1,970**	**1,606**	**87,563**	**97,724**	**13,468**[1]	**111,192**

[1] Of which, reserve for hedges SEK -5 million (22).

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 2022. 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 2022. 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 2020
No recalculations were made.

Presentation of financial statements
Starting 2021 one of the pension plans in Berlin is classified as a defined benefit plan instead of a defined contribution plan due to changed actuarial assumptions, for details see Note 30.

Cash flow from changes in short-term investments are now presented within cash flow from investments in order to be consistent with the objective of the underlying assets.

Note 3 Accounting policies

Conformity with standards and regulations
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 2021
None of the amendments to the existing accounting standards effective from 2021 have had a material impact on the Vattenfall Group's financial statements.

New IFRSs and interpretations effective as from 2022 and later
A number of 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.

Amendments to IAS 16 Property, Plant and Equipment
The change amends the standard to prohibit deducting from the cost of an item of property, plant and equipment any proceeds from selling items produced while bringing that asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Instead, an entity recognises the proceeds from selling such items, and the cost of producing those items, in profit or loss. The effect is expected to be marginal at the Group level, however, the effect on the cost of future individual assets may be significant.

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

Influences of market volatilities

A historical high price volatility for electricity and fuels in 2021 led to an increased credit default and fulfilment risk from Vattenfall's trading partners. This volatility is expected to continue due to the Russian invasion of Ukraine which started in 2022, even though the effects cannot yet be estimated. In the light of these uncertainties, special attention has been paid to the estimation of expected credit losses for financial instruments. Risk mitigation measures such as existing collateral and security agreements were hereby taken into account. For a description of risks, uncertainties and risk management, please refer to pages 62–71.

Note 4 Acquired and divested operations

Acquired operations

Acquisitions 2021

On 1 July 2021 Vattenfall acquired the remaining shares in Enwell AB, and as a result, as from that date the company has 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 is SEK 328 million, of which SEK 179 million consists of intangible non-current assets.

Acquisitions 2020

In 2020, no major acquisitions of operations were made by Vattenfall.

Divested operations

Divestments in 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.

	2021
Intangible assets: non-current	46
Property, plant and equipment	16,283
Deferred tax assets	1,030
Inventories	217
Trade receivables and other receivables	2,734
Cash and cash equivalents	2,408
Borrowings	-107
Pension provisions	-4,152
Other interest-bearing provisions	-1,004
Deferred tax liabilities	-435
Trade payables and other liabilities	-3,972
Current tax liabilities	-214
Total net assets	**12,834**
Proceeds from sales/Cash flow for the year	**21,248**
Capital gain (+)/loss (-) recognised in the income statement	**8,414**

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.

Divestments in 2020

On 20th of February 2020, Vattenfall signed an agreement to sell its 55% shareholding in the waste incineration plant Müllverwertung Rugenberger Damm GmbH (MVR), to the co-shareholder Stadtreinigung Hamburg, a subsidiary of the City of Hamburg. The transaction received approval from the cartel office and was closed in the beginning of May. The consideration received amounted to SEK 506 million and the capital gain amounted to SEK 207 million. In addition to this some further small divestments were made with a total consideration received amounting to SEK 30 million and capital loss amounting to SEK 26 million.

Note 5 Exchange rates

Key exchange rates applied in the accounts of the Vattenfall Group:

		Average rate		Balance sheet date rate	
	Currency	2021	2020	31 December 2021	31 December 2020
Euro countries	EUR	10.1469	10.4789	10.2503	10.0343
Denmark	DKK	1.3644	1.4056	1.3784	1.3485
UK	GBP	11.7820	11.8334	12.1987	11.1613
USA	USD	8.5687	9.1718	9.0502	8.1773

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 recognized as the performance obligation is satisfied at a point of time or over time. Most material develop to sell projects sold are listed below:

- Windpark Wieringermeer Extension B.V.
- Grönhult Wind AB
- Vattenfall Kogel Leizen Solar GmbH

Vattenfall recognises revenues from contracts with customers and other revenues through profit or loss.

	2021	2020
Sales of electricity	113,332	98,366
Sales of gas	17,935	15,723
Sale of heat and steam	11,702	10,918
Distribution	14,908	16,882
Sale of service and consulting services	4,316	4,516
Revenue from Develop to sell projects	3,548	–
Total revenues from contracts with customers	**165,741**	**146,405**
Other revenues	14,378	12,442
Total	**180,119**	**158,847**

Revenue from contracts with customers is recognised when the performance obligation is satisfied, but the payment recognised may not match the revenue for the period. This results in the recognition of contract assets and contract liabilities.

Contract balances	2021	2020
Contract assets	375	416
– amortization of contact assets as cost during the year	839	412
Contract liabilities	8,635	8,752
– release of contract liabilities as revenue during the year	888	659

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 Generation and Markets Business Areas. 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	
	2021	2020	2021	2020	2021	2020
Customers & Solutions	**102,300**	**84,661**	**4,260**	**1,637**	**106,560**	**86,298**
Power Generation	**40,312**	**36,597**	**86,006**[2]	**53,536**[2]	**126,318**	**90,133**
Wind	**7,791**	**6,901**	**13,081**	**6,664**	**20,872**	**13,565**
Heat	**14,655**	**13,538**	**20,104**	**9,790**	**34,759**	**23,328**
Distribution	**14,643**	**16,970**	**2,619**	**4,674**	**17,262**	**21,644**
– of which, Distribution Germany	3,203	5,464	2,061	4,107	5,264	9,571
– of which, Distribution Sweden	11,310	11,377	586	597	11,896	11,974
Other[1]	**418**	**180**	**5,751**	**5,737**	**6,169**	**5,917**
Eliminations	**–**	**–**	**-131,821**	**-82,038**	**-131,821**	**-82,038**
Total	**180,119**	**158,847**	**–**	**–**	**180,119**	**158,847**

	Operating profit before depreciation, amortisation and impairment losses (EBITDA)		Underlying operating profit before depreciation, amortisation and impairment losses	
	2021	2020	2021	2020
Customers & Solutions	**3,241**	**2,832**	**3,230**	**3,083**
Power Generation	**42,053**	**23,144**	**23,714**	**18,796**
Wind	**13,534**	**9,482**	**13,451**	**9,426**
Heat	**2,842**	**2,644**	**2,590**	**4,462**
Distribution	**5,911**	**8,713**	**5,913**	**8,725**
– of which, Distribution Germany	1,008	2,162	1,009	2,174
– of which, Distribution Sweden	4,873	6,505	4,874	6,505
Other[1]	**8,197**	**-299**	**-326**	**-442**
Eliminations	**12**	**-9**	**12**	**-9**
Total	**75,790**	**46,507**	**48,584**	**44,041**

	Operating profit (EBIT)		Underlying operating profit	
	2021	2020	2021	2020
Customers & Solutions	**2,446**	**1,882**	**2,349**	**2,146**
Power Generation	**39,502**	**18,984**	**19,334**	**14,670**
Wind	**7,919**	**2,401**	**7,866**	**3,970**
Heat	**-91**	**-12,149**	**-343**	**978**
Distribution	**3,150**	**5,313**	**3,152**	**5,325**
– of which, Distribution Germany	665	1,081	666	1,093
– of which, Distribution Sweden	2,515	4,225	2,516	4,225
Other[1]	**7,333**	**-1,146**	**-1,189**	**-1,290**
Eliminations	**12**	**-9**	**12**	**-9**
Total	**60,271**	**15,276**	**31,181**	**25,790**

	2021	2020
Underlying operating profit	31,181	25,790
Items affecting comparability (for specification, see Income statement)	29,090	-10,514
Financial net	-898	-3,270
Profit before income taxes	**59,373**	**12,006**

	Investments		Assets	
	2021	2020	2021	2020
Customers & Solutions	**706**	**759**	**66,941**	**49,381**
Power Generation	**2,262**	**3,030**	**598,798**	**295,854**
Wind	**12,654**	**5,810**	**103,901**	**88,028**
Heat	**1,548**	**4,326**	**96,381**	**89,751**
Distribution	**5,992**	**7,610**	**54,005**	**71,536**
– of which, Distribution Germany	822	1,860	-688	20,934
– of which, Distribution Sweden	5,073	5,546	53,763	49,737
Other[1]	**7,528**	**3,530**	**341,132**	**202,755**
Eliminations	**-5,133**	**-3,718**	**-478,800**[3]	**-334,057**[3]
Total	**25,557**	**21,347**	**782,358**	**463,248**

[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.

[3] Chiefly concerns Tradings' liquid assets and financial receivables from other operating segments.

Note 8 Information about geographical areas

	External net sales		Internal net sales		Total net sales	
	2021	2020	2021	2020	2021	2020
Sweden	50,613	45,869	7,600	12,157	**58,213**	**58,026**
Germany	84,613	77,318	58,771	36,537	**143,384**	**113,855**
Netherlands	33,185	26,310	36,378	12,616	**69,563**	**38,926**
Other countries	11,708	9,350	8,271	5,277	**19,979**	**14,627**
Eliminations	–	–	-111,020	-66,587	**-111,020**	**-66,587**
Total	**180,119**	**158,847**	**–**	**–**	**180,119**	**158,847**

	Operating profit (EBIT)		Underlying operating profit		Intangible assets: non-current, property, plant and equipment and investment property	
	2021	2020	2021	2020	2021	2020
Sweden	10,715	13,712	11,632	15,725	141,882	133,745
Germany	35,195	-2,729	7,234	5,525	40,954	55,270
Netherlands	9,008	2,683	7,183	2,354	44,413	38,798
Other countries	5,353	1,612	5,133	2,154	42,649	37,800
Eliminations	–	-2	–	-2	–	31
Total	**60,271**	**15,276**	**31,182**	**25,756**	**269,898**	**265,644**

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:

	2021		2020	
	Before tax	After tax	Before tax	After tax
Discount rate Distribution SE, %	5.0	4.0	5.3	4.0
Discount Rate Wind, %	6.0-6.7	4.3-5.3	5.5-6.6	4.3-5.2
Discount Rate Heat, %	5.8-8.6	4.2-6.5	5.3-8.6	4.5-6.8
Discount Rate C&S, %	6.6-6.8	4.7-5.3	6.7	5.2
Discount Rate Power Generation, %	6.7-8.6	5.3-6.8	6.7-8.6	5.2-6.8

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 gas fired assets in the Netherlands of approximately 33% but would not lead to any impairment. For non-subsidized wind assets in the Nordics, the corresponding figure would range from 7% to 11%. The latter would lead to recognition of impairment losses of approximately SEK 0.1 billion (all else equal). For other wind assets, such a decrease in electricity prices would lead to additional impairment needs of SEK 0.1 billion. All other assets would not have any 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. During 2021 a split has been implemented relating to cash generating units within business area C&S whereby cash generating units now are split into Germany & France, the Netherlands, the Nordic region and E-mobility.

Vattenfall closely monitors market developments on a continuous basis and their impact on operations.

Goodwill is not amortized but is instead tested annually for impairment. Impairment testing of goodwill is included in the impairment testing process described above. 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 2021
The impairment test process in 2021 resulted in no impairment needs on assets in the Cash Generating Units.

Impairment losses 2020
During 2020, impairment losses recognized in operating profit amounted to SEK 12,980 million. The predominant part, SEK 11,337 million, pertained to the power plant Moorburg within the business area Heat. Within the business area Wind, impairments of SEK 1,627 million were made, of which SEK 812 million pertained to land-based units in Sweden, SEK 438 million to offshore units in Sweden, SEK 330 million to land-based units in Denmark and SEK 29 million offshore units in the United Kingdom. The remaining amount referred to other minor write-downs.

Reversal of previously recognized impairment losses 2021
Two reversals of previously recognized impairment losses, equaling SEK 1,922 million, have been realized during 2021 as significant and lasting improvements of the recoverable amount have been identified in two Cash Generating Units, Hydro Germany within business area Power Generation and Feenstra within business area C&S. The predominant part pertains to the pumped storage plants in Germany.

Note 10 Other external expenses

	2021	2020
Purchased services	7,674	8,326
IT expenses	1,960	1,982
Consulting expenses	2,748	3,371
Non-capitalised lease expenses	494	506
Marketing and selling expenses	1,412	1,515
Expenses related to provisions	4,073	4,565
Other	89	467
Total	**18,450**	**20,732**

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

	2021	2020
Interest income attributable to investments	492	138
Net change in value from remeasurement of derivatives	218	304
Dividends	66	73
Exchange rate differences, net	–	37
Capital gains from divestments of shares and participations	7	6
Total	**783**	**558**

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

	2021	2020
Interest expenses attributable to loans	3,356	3,182
Interest effects attributable to provisions	2,033	2,165
Interest expenses for the net of pension provisions and plan assets	438	538
Exchange rate differences, net	73	–
Capital losses from divestments of shares and participations	6	1
Total	**5,906**	**5,886**

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. 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 the reported income tax

	2021	2020
Current tax expense (-)/ tax income (+)		
Current taxes pertaining to the period:		
Sweden	-2,225	-1,517
Germany	-1,671	-468
Netherlands	-1,688	-427
Other countries	-610	-134
Adjustment of current tax for prior periods:		
Sweden	-78	-10
Germany	-157	-19
Netherlands	51	6
Other countries	-6	8
Total current tax	**-6,384**	**-2,561**
Deferred tax expense (-)/ tax income (+)		
Sweden	-74	-1,004
Germany	-3,774	-547
Netherlands	-418	23
Other countries	-710	-201
Total deferred tax	**-4,976**	**-1,729**
Total income tax expense	**-11,360**	**-4,290**

The difference between the nominal Swedish tax rate and the effective tax rate

	2021		2020	
	%		%	
Profit before tax		59,373		12,006
Swedish income tax rate at 31 December	20.6	-12,231	21.4	-2,569
Difference in tax rate in foreign operations	6.1	-3,632	-2.0	237
Tax adjustments for previous periods	0.3	-178	0.1	-12
Utlization of previously not recognized losses	-3.0	1,763	0.0	–
Revaluation of previously non-valued losses and other temporary differences	-0.8	460	1.5	-183
Tax-loss carryforwards from current year that are not valued	0.1	-52	18.6	-2,238
Capital gains	-4.4	2,613	-4.3	522
Participations in the results of associated companies	-0.1	74	1.4	-167
Non-deductible impairment losses	0.0	-21	-0.3	40
Changed tax rates	0.5	-284	-0.1	13
Non-deductible interest	0.0	–	0.0	–
Other non-deductible expenses	0.2	-133	-0.6	67
Other non-taxable income	-0.4	261	0.0	–
Effective tax rate	**19.1**	**-11,360**	**35.7**	**-4,290**

Based on the profit before tax and the theoretical tax rate, which are the Swedish income tax rate of 20.6 % and the difference in tax rate in foreign operations 6.1 %, the reported income tax should for 2021 amount to 15,863 MSEK (59,373 MSEK* 26.7%).

The reported income tax amounts to 11,360 MSEK and the difference of 4,503 MSEK lower reported income tax are mainly due to material positive one off effects. There are for 2021 two main items with a combined positive 4,376 MSEK effect. The first item relates to tax exempt capital gains regarding the sale of companies in Germany, mainly Stromnetz Berlin and in the Netherlands. The second main item relates to tax loss utilization of previously not recognized losses mainly in Germany. This is due to material increased taxable result mainly from the Nuclear compensation that means that the tax loss carry forward now could be utilized.

Balance sheet reconciliation of current tax

	2021	2020
Balance brought forward net asset (+)/ net liability (-)	-558	-339
Translation differences, acquisitions, disposals and assets held for sale	287	–
Interest and discounting effects on non-current tax items	1	13
Change via income statement	-6,384	-2,561
Tax effect through equity[1]	228	-390
Taxes paid, net	6,725	2,719
Balance carried forward net asset (+)/ net liability (-)	**299**	**-558**

[1] Of which, equity hedge amounts to SEK 242 million (-391).

The net taxes paid increased compared to 2020 mainly because of higher tax payments in Sweden, Germany, UK and the Netherlands.

Break down of the deferred tax

	2021	2020
Non-current assets	-31,862	-28,100
Current assets	-39,228	-5,836
Provisions	23,266	21,326
Other non-current liabilities	1,743	2,399
Current liabilities	37,607	6,700
Cash flow hedges	-17,331	-1,411
Tax losses carried forward	797	1,129
Total	**-25,008**	**-3,793**

The deferred taxes illustrate timing differences between the treatment of costs under accounting and tax rules. The net deferred tax postion changed with MSEK -21,215 during 2021, mainly caused by the change in cash flow hedges and other unrealized derivatives.

Accumulated tax-loss carryforwards

	2021	2020
Sweden	146	179
Germany	10,022	18,451
Netherlands	14	17
Other countries	1,051	979
Total	**11,233**	**19,626**

The tax-loss carryforwards fall due as follows:

	2021
2022	–
2023-2026	19
2027 and beyond	53
No time limit	11,161
Total	**11,233**

The tax-loss carryforwards correspond to a potential deferred tax asset of SEK 2,136 million, of which SEK 797 million is booked on the balance sheet as of 31 December 2021. Tax-loss carryforwards not included in the computation of deferred tax represent a tax value of SEK 1,339 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	3,853	1,281	409	323	**5,866**
Additions to the right-of-use-asset during the year	152	396	153	511	**1,212**
Depreciation for the year	-168	-477	-177	-164	**-986**
Other changes to the right-of-use-asset during the year	-427	144	-20	-68	**-371**
Translation differences	230	19	4	9	**262**
Balance carried forward	**3,640**	**1,363**	**369**	**611**	**5,983**

Lease liability development	
Balance as of 1 January	5,271
Additions to the liability	1,212
Repayment of the liability	-1,091
Other changes	-328
Translation differences	277
Balance carried forward	**5,341**

Total leasing related cash-outflows amounted to 1,091 MSEK in 2021 of which 116 MSEK is related to interest expenses.

Maturity analysis - contractual undiscounted cash flows	
< 1 year	885
1 - 5 years	2,245
> 5 years	4,210
Total as of 31 December 2021	**7,340**

Lease payments amounting to 494 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 2021, Vattenfall has signed contracts, which have yet not commenced with a corresponding lease liability amounting to 1,066 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 2021, cost of assets leased out amounted to SEK 5,411 million (5,305). Accumulated depreciation amounted to SEK 4,039 million (3,697) and accumulated impairment losses amounted to SEK 88 million (196). As a lessor Vattenfall has only operating leases.

Future payments for this type of facility are broken down as follows:

	Operating leasing
2022	989
2023	967
2024	929
2025	900
2026	51
2027 and beyond	90
Total	**3,926**

Note 15 Auditors' fees

	2021	2020
	PwC	EY
Annual audit assignment	38	43
Audit-related activities besides the annual audit assignment	2	5
Tax consulting	1	–
Other assignments	5	9

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 (0) is invoiced by Pricewaterhouse-Coopers Sweden for the statutory audit. Of total other fees, SEK 3 million (0) is invoiced by PricewaterhouseCoopers Sweden (the statutory auditors of Vattenfall AB (publ.)) and are mainly related to compliance and IT-security related matters.

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

	2021					
	Develop-ment 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**

	2020					
	Develop-ment 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	2,547	45,542	19,871	1,791	170	**69,921**
Investments	220	–	162	509	2	**893**
Transfer from development projects in progress	-44	–	44	–	–	**–**
Divestments/disposals	-123	-91	-448	-406	-3	**-1,071**
Reclassifications	–	–	-1,188	–	–	**-1,188**
Assets held for sale	–	–	-121	–	–	**-121**
Translation differences	-46	-1,837	-757	-68	-3	**-2,711**
Accumulated cost carried forward	**2,554**	**43,614**	**17,563**	**1,826**	**166**	**65,723**
Amortisation according to plan						
Amortisation brought forward	-1,837	–	-14,229	-1,010	-40	**-17,116**
Amortisation for the year	-77	–	-362	-589	-3	**-1,031**
Divestments/disposals	123	–	304	400	1	**828**
Assets held for sale	–	–	103	–	–	**103**
Translation differences	46	–	544	50	2	**642**
Accumulated amortisation according to plan carried forward	**-1,745**	**–**	**-13,640**	**-1,149**	**-40**	**-16,574**
Impairment losses						
Impairment losses brought forward	-212	-31,537	-2,209	-36	-76	**-34,070**
Impairment losses for the year	–	–	-12	-13	-39	**-64**
Divestments/disposals	–	91	–	6	–	**97**
Translation differences	–	1,284	124	2	2	**1,412**
Accumulated impairment losses carried forward	**-212**	**-30,162**	**-2,097**	**-41**	**-113**	**-32,625**
Residual value according to plan carried forward	**597**	**13,452**	**1,826**	**636**	**13**	**16,524**

Contractual commitments for acquisitions of non-current intangible assets amounted to SEK 0 million (1) as per 31 December 2021.

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

	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	-1,426	-1,250	2	**-3,387**
Other reclassifications	208	-45	-65	-75	**23**
Divested companies	-3,474	-40,681	-555	-1,608	**-46,318**
Translation differences	808	8,126	165	382	**9,481**
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**

Financial information

	2020				
	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]	61,778	497,695	13,270	25,820	**598,563**
Investments[4]	2,094	2,051	725	20,149	**25,019**
Advance payments capitalised	–	–	–	52	**52**
Capitalised/reversed future expenses for decommissioning, restoration	23	4,176	–	563	**4,762**
Transfer from construction in progress	2,685	15,868	63	-18,616	**–**
Divestments/disposals	-301	-3,363	-2,646	-49	**-6,359**
Other reclassifications	908	5,992	138	-873	**6,165**
Assets held for sale	-907	-1,167	-50	-2	**-2,126**
Translation differences	-1,386	-13,519	-321	-696	**-15,922**
Accumulated cost carried forward	**64,894**	**507,733**	**11,179**	**26,348**	**610,154**
Depreciation according to plan					
Depreciation brought forward	-26,856	-231,608	-9,426	–	**-267,890**
Depreciation for the year	-1,553	-14,666	-1,019	–	**-17,238**
Divestments/disposals	88	2,796	2,574	–	**5,458**
Other reclassifications	-652	-5,938	66	–	**-6,524**
Assets held for sale	531	1,067	47	–	**1,645**
Translation differences	652	6,375	214	–	**7,241**
Accumulated depreciation according to plan carried forward	**-27,790**	**-241,974**	**-7,544**	**–**	**-277,308**
Impairment losses					
Impairment losses brought forward	-3,676	-69,293	-509	-568	**-74,046**
Impairment losses for the year	-1,327	-11,421	-37	-113	**-12,898**
Divestments/disposals	194	172	14	–	**380**
Assets held for sale	–	-109	–	–	**-109**
Translation differences	165	2,625	20	25	**2,835**
Accumulated impairment losses carried forward	**-4,644**	**-78,026**	**-512**	**-656**	**-83,838**
Residual value according to plan carried forward	**32,460**	**187,733**	**3,123**	**25,692**	**249,008**
Advance payments to suppliers					**112**
Total					**249,120**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 11,890 million (12,287), 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 (60) for the year. The average interest rate for 2021 was 1.94% for borrowings in SEK, 2.54% for borrowings in EUR and 5.06% for borrowings in GBP.

[3] Government grants received, balance brought forward, amount to SEK 7,904 million (7,789).

[4] Government grants received during the year amounted to SEK 195 million (183).

At 31 December 2021, contractual commitments for the acquisition of property, plant and equipment amounted to SEK 16,525 million (19,991).

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 2021	Participation in % 2021	Carrying amount Parent Company 2021	Carrying amount Parent Company 2020
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	181	
Forsaströms Kraft AB Likviderat[1]	556010-0819	Åtvidaberg	–			48
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]	556815-4214	Stockholm	30,500	100	3	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	Köpenhamn	10,040,000	100	33	33
Vattenfall Energy Trading A/S[3]	310 811 81	Köpenhamn	500	100	49	49
Vattenfall Network Solutions A/S[6]	31894522	Köpenhamn	5,000	100	7	
Vattenfall Vindkraft A/S[4]	31597544	Kolding	150,000	100	4,870	
Vindstød A/S[1]	340 451 43	Århus	1,333,333	90[9]	179	179
Finland						
Vattenfall Sähkömyynti Oy[1]	1842073-2	Helsingfors	85	100	5	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						
Parc Eolien En Mer des Bancs de Flandre SAS[4]- Liquidated	2018B02593	Boulogne Billancourt	58,680		–	1
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	200
Vattenfall Network Ltd[6]	2731769	London	15,000,002	100	176	176
Vattenfall Network Solutions Ltd[6]	2692708	London	2,000	100	–	–
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					**166,144**	**160,878**

[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 2022.

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 % 2021
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 Business Services 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 Nuclear Energy GmbH	Hamburg	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 Heizkraftwerk Moorburg GmbH	Hamburg	100
Vattenfall Wasserkraft GmbH	Berlin	100

	Registered office	Participation in % 2021
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 Power Generation Netherlands 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%). Fortum 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 2021 amounted to 25.5TWh (22.7), and the average availability for Forsmark was 89.7% (83.3%).

Ringhals
Ringhals conducts nuclear power operations from four nuclear reactors on the Swedish west coast in Varberg municipality. 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 2021 amounted to 14.8 TWh (16.5), and the average availability for Ringhals was 77.7 % (67.5 %).

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 megawatts. 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 megawatts. 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".

Following is condensed financial information for Forsmarks Kraftgrupp, Ringhals and DanTysk Sanbank Offshore Wind:

	2021			2020		
	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind
Income statements in summary						
Net sales	6,131	5,615	4,646	5,766	6,091	5,399
Profit for the year	907	918	1,520	438	508	2,112
– of which allocated to non-controlling interests	288	37	745	77	276	1,035
Balance sheets in summary						
Non-current assets	71,759	55,922	13,953	65,910	51,936	15,073
Current assets	5,305	3,788	697	4,619	4,207	898
Total assets	**77,064**	**59,710**	**14,650**	**70,529**	**56,143**	**15,971**
Equity	14,300	2,455	13,375	13,221	1,590	14,606
Liabilities	62,764	57,255	1,275	57,308	54,553	1,365
Total equity and liabilities	**77,064**	**59,710**	**14,650**	**70,529**	**56,143**	**15,971**
Statement of cash flows in summary						
Cash flow for the year	78	87	171	37	-961	-69

Note 19 Participations in associated companies and joint arrangements

Shares and participations owned by the Parent Company Vattenfall AB or by other Group companies

	Corporate Identity Number	Registered office	Participation in % 2021	Carrying amount Group		Carrying amount Parent Company	
				2021	2020	2021	2020
Associated companies and joint ventures owned by the Parent Company Vattenfall AB							
Sweden							
Enwell AB[1]	556813-3846	Stockholm	0	–	52	–	72
Hybrit Development AB	559121-9760	Stockholm	33	262	276	477	359
Norway							
NorthConnect KS	996625001	Kristiansand	33	48	44	51	50
NorthConnect AS	995878550	Kristiansand	30	12	6	10	5
Associated companies and joint ventures owned by other Group companies than the Parent Company Vattenfall AB							
Sweden							
Blakliden Fäbodberget Wind Holding AB	559148-3408	Solna	30	176	154	–	–
V[2] Plug-In Hybrid Vehicle Partnership HB[2]	969741-9175	Gothenburg	0	–	132	–	–
UK							
East Anglia Offshore Wind Ltd[2]	06990367	Hexham	50	49	45	–	–
Germany							
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	HRA 200395	Oldenburg	26	6	46	–	–
GASAG AG	HRB 44343	Berlin	32	4,988	3,326	–	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	HRA 99143	Hamburg	20	–	–	–	–
Kernkraftwerk Stade GmbH & Co. oHG	HRA 99146	Hamburg	33	–	–	–	–
SOLYTIC GmbH	HRB 190395 B	Berlin	24	25	29	–	–
Vattenfall Eurofiber GmbH[2]	HRB 202647 B	Berlin	50	87	–	–	–
E & V Windfeld Birkhorst GmbH[2]	HRB 13342 NP	Neuruppin	50	2	2	–	–
Netherlands							
B.V. Nederlands Elektriciteit Administratiekantoor	09018339	Arnhem	23	–	74	–	–
C.V. Windpoort[2]	34122462	Heemskerk	40	1	1	–	–
Molenrak B.V.[2]	82937230	Amsterdam	58	214	–	–	–
NoordzeeWind C.V.[2]	34218377	Ijmuiden	0	–	-21	–	–
OSwinT B.V.	74311883	Swifterbant	23	6	–	–	–
V.O.F. Windpark Oom Kees[2]	09210903	Amsterdam	13	2	2	–	–
Westpoort Warmte B.V.[2]	34121626	Amsterdam	50	232	179	–	–
Total				**6,110**	**4,347**	**538**	**486**

[1] During 2021 Enwell AB is reclassified and will be reported as a subsidiary of the Vattenfall Group.

[2] Joint ventures.

Financial information

	2021	2020
Balance brought forward	4,347	4,829
Assets held for sale	23	6
New share issues and shareholders' contributions	467	257
Withdrawals/Repaid shareholders' contributions	-132	-481
Divested companies	-12	-14
Reclassifications from other shares and participations	-34	–
Impairment losses	-30	-18
Changes in other comprehensive income	1,435	-147
Profit participations and dividends	-63	83
Translation differences	109	-168
Balance carried forward	**6,110**	**4,347**

Participations in the results of associated companies

	2021	2020
Sweden		
Blakliden Fäbodberget Wind Holding AB	-9	-6
Enwell AB	-7	-3
Hybrit Development AB	-133	-72
V2 Plug-In Hybrid Vehicle Partnership HB	–	307
Norway		
NorthConnect KS	5	-27
NorthConnect AS	1	-4
UK		
East Anglia Offshore Wind Ltd	–	–
Germany		
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	-10	-17
GASAG AG	279	115
Kernkraftwerk Brokdorf GmbH & Co. oHG	–	–
Kernkraftwerk Stade GmbH & Co. oHG	–	–
SOLYTIC GmbH	-5	-4
Vattenfall Eurofiber GmbH	-34	3
E & V Windfeld Birkhorst GmbH	–	–
Netherlands		
B.V. Nederlands Elektriciteit Administratiekantoor	-74	-1
C.V. Windpoort	–	3
Molenrak B.V.	–	3
NoordzeeWind C.V.	-138	-69
OSwinT B.V.	-2	–
V.O.F. Windpark Oom Kees	–	–
Westpoort Warmte B.V.	49	44
Windpark Hoofdplaatpolder B.V.	18	1
V.O.F. Noordpier Wind	2	5
Vliegasunie B.V.	–	-2
Total	**-58**	**270**

Note 20 Share in the Swedish Nuclear Waste Fund

	2021	2020
Balance brought forward	48,270	45,691
Payments	1,608	1,627
Disbursements	-1,274	-1,106
Returns	4,168	2,058
Balance carried forward	**52,772**	**48,270**

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 81,259 million (72,271 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. Theese are valued at the lower of their cost and net realisable value. Inventory sold through develop to sell transactions in 2021 amounts to 2,781 MSEK (0), of which the major part pertains to the sale of Windpark Wieringermeer Extension B.V.

The value of the energy stored in the form of water in reservoirs is not reported as an asset.

Financial information

	2021	2020
Inventories held for own use		
Nuclear fuel	5,975	6,178
Materials and spare parts	3,130	3,068
Fossil fuel	1,094	404
Biological assets	20	16
Other	397	376
Total	**10,616**	**10,042**
Inventories held for trading		
Fossil fuel	2,458	1,330
CO_2 emission allowances/certificates	25,680	1,802
Biomass	81	99
Total	**28,219**	**3,231**
Inventories under construction		
Development projects, wind power	2,551	3,480
Development projects, solar power	153	75
Total	2,704	3,555
Total inventories	**41,539**	**16,828**

Inventories recognised as an expense in 2021 amount to SEK 11,556 million (4,316). Impairment losses for inventory for own use amounted to SEK 16 million (111) during the year. Reversed impairment amounted to SEK 32 million (25).

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	
	2021	2020	2021	2020	2021	2020
Balance brought forward	150	–	42	135	**192**	**135**
Purchases	12,553	10,825	44	223	**12,597**	**11,048**
Received free of charge	–	–	–	27	**–**	**27**
Sold	-5,439	-7,281	-28	-47	**-5,467**	**-7,328**
Redeemed	-2,459	-3,382	-41	-296	**-2,500**	**-3,678**
Disposals	-11	-6	–	–	**-11**	**-6**
Translation differences	50	-6	–	–	**50**	**-6**
Balance carried forward	**4,844**	**150**	**17**	**42**	**4,861**	**192**

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

	2021	2020
Accounts receivable – trade	33,536	18,117
Receivables from associated companies	411	192
Other receivables	7,272	5,503
Total	**41,219**	**23,812**

Age analysis

The collection period is normally between 10 and 30 days.

	2021			2020		
	Receivables, gross	Impaired receivables	Receivables, net	Receivables, gross	Impaired receivables	Receivables, net
Accounts receivable – trade						
Not due	32,403	351	32,052	16,579	26	16,553
Past due 1–30 days	959	23	936	816	19	797
Past due 31–90 days	289	118	171	462	112	350
Past due >90 days	1,019	642	377	1,150	733	417
Total	**34,670**	**1,134**	**33,536**	**19,007**	**890**	**18,117**
Receivables from associated companies						
Not due	411	–	411	188	–	188
Past due 1–30 days	–	–	–	3	–	3
Past due 31–90 days	–	–	–	1	–	1
Past due >90 days	–	–	–	2	2	–
Total	**411**	**–**	**411**	**194**	**2**	**192**
Other receivables						
Not due	7,270	–	7,270	5,499	–	5,499
Past due 1–30 days	–	–	–	–	–	–
Past due 31–90 days	–	–	–	–	–	–
Past due >90 days	13	11	2	19	15	4
Total	**7,283**	**11**	**7,272**	**5,518**	**15**	**5,503**

Note 24 Advance payments paid

	2021	2020
Margin calls paid, energy trading	7,872	661
Other advance payments	490	385
Total	**8,362**	**1,046**

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

	2021	2020
Prepaid expenses and accrued income, electricity	10,350	4,914
Prepaid expenses, other	688	1,421
Accrued income, other	1,364	600
Total	**12,402**	**6,935**

Note 26 Short-term investments

	2021	2020
Interest-bearing investments	101,063	26,805
Margin calls paid, financing activities	1,643	3,343
Total	**102,706**	**30,148**

Note 27 Cash and cash equivalents

	2021	2020
Cash and bank balances	41,306	14,426
Cash equivalents	26,870	11,648
Total	**68,176**	**26,074**

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 2020 refer to assets in Business Area Wind.

	2021	2020
Property, plant and equipment	–	166
Other non-current assets	–	22
Total assets	**–**	**188**
Other interest-bearing provisions	–	–
Other non-current liabilities	–	–
Trade payables and other liabilities	–	40
Total liabilities	**–**	**40**

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 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 2022 for the two SEK-denominated bonds, 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 financial risks section on pages 68–71.

Hybrid Capital is reported as follows:

	2021	2020
Balance brought forward	19,304	20,164
Redemption of Hybrid Capital	-2,941	–
Issue of Hybrid Capital	6,481	–
Effects from hedge accounting	1	2
Reclassification to other interstbearing debt	-3,057	–
Translation differences	633	-862
Balance carried forward	**20,421**	**19,304**

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	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Bond issues	15,672	10,541	18,801	18,582	**34,473**	**29,123**	3,259	15,512	**37,732**	**44,635**
Commercial paper	–	–	–	–	**–**	**–**	46,189	13,268	**46,189**	**13,268**
Liabilities to credit institutions	–	3,000	–	–	**–**	**3,000**	–	2,007	**–**	**5,007**
Liabilities pertaining to acqusitions of subsidiaries	1	–	–	–	**1**	–	–		**1**	
Liabilities to owners of non-controlling interests	–	–	10,648	10,839	**10,648**	**10,839**	100	92	**10,748**	**10,931**
Liabilities to associated companies	–	–	–	–	**–**	**–**	1,452	688	**1,452**	**688**
Lease liability	–	–	5,341	5,271	**5,341**	**5,271**	809	732	**6,150**	**6,003**
Other liabilities	217	218	159	640	**376**	**858**	3,339[1]	4,081[1]	**3,715**	**4,939**
Total interest-bearing liabilities excl. Hybrid Capital	**15,890**	**13,759**	**34,949**	**35,332**	**50,839**	**49,091**	**55,148**	**36,380**	**105,987**	**85,471**
Hybrid Capital	3,639	9,271	20,421	10,034	**20,421**	**19,304**	–	–	**20,421**	**19,304**
Total interest-bearing liabilities	**19,529**	**23,030**	**55,370**	**45,366**	**71,260**	**68,395**	**55,148**	**36,380**	**126,408**	**104,775**
Derivatives (swaps) attributable to the above interest-bearing liabilities	219	485	-1,848	-2,404	**-1,629**	**-1,919**	-29	-2	**-1,658**	**-1,921**

[1] Of which, margin calls within financing activities SEK 3,340 million (4,081).

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	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Interest-bearing liabilities	30,567	25,163	75,302	50,875	**105,869**	**76,038**	85,546	41,781	**191,415**	**117,819**
Derivatives (swaps)	-218	-96	-2,062	-2,307	**-2,280**	**-2,403**	-151	-147	**-2,431**	**-2,550**
Trade payables and other financial liabilities	384	395	1,634	1,599	**2,018**	**1,994**	39,241	24,912	**41,259**	**26,906**
Total	**30,733**	**25,462**	**74,874**	**50,167**	**105,607**	**75,629**	**124,636**	**66,546**	**230,243**	**142,175**

The table below shows the largest benchmark bond issues by Vattenfall:

Type	Issued	Currency	Nominal amount	Coupon %	Maturity
Euro Medium Term Note	2004	EUR	500	5.375	2024
Euro Medium Term Note	2020	EUR	500	0.05	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 2021 was changed to 1.75% (1.50%). 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 2021 was also changed to 1.25% (0.75%).

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 0.2414%, while Vattenfall's share of the total number of actively insured in Alecta is 1.30002%. Alecta's surplus can be distributed among the policyholders and/or the insured. At the end of 2021, Alecta's surplus in the form of its so-called collective funding amounted to 169% (148%). 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 was previously classified as a defined contribution plan, starting 2021 it is classified as a defined benefit plan due to changed actuarial assumptions regarding the risk for future deficits. The pension which is dependent on employment time could amount to maximum 50% of the monthly salary. The effect on fully or partly funded obligations is SEK 9,860 million and on plan assets SEK 7,380 million.

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

	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**

	2020			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	15,099	507	21,022	**36,628**
Present value of fully or partly funded obligations	–	15,413	99	**15,512**
Present value of obligations	**15,099**	**15,920**	**21,121**	**52,140**
Fair value of plan assets	–	8,204	112	**8,316**
Net defined benefit liability	**15,099**	**7,716**	**21,009**	**43,824**

Changes in obligations

	2021	2020
Balance brought forward	52,140	52,732
Benefits paid by the plan	-2,264	-2,465
Service cost	763	870
Contributions by plan participants	12	4
Actuarial gains (–) or losses (+) due to changes in financial assumptions	-2,084	1,411
Actuarial gains (–) or losses (+) due to plan experience	-682	480
Actuarial gains (–) or losses (+) due to reclassifications	9,860	–
Current interest expense	536	623
Divested companies	-5,608	–
Translation differences	804	-1,515
Balance carried forward	**53,477**	**52,140**

Changes in plan assets

	2021	2020
Balance brought forward	8,316	8,706
Benefits paid by the plan	-512	-538
Contributions by employer	50	17
Contributions by plan participants	12	3
Interest income	98	85
Difference between calculated and actual return	20	385
Reclassification of pension plan	7,380	–
Divested companies	-2,441	–
Translation differences	226	-342
Balance carried forward	**13,149**	**8,316**

Plan assets consist of the following

	2021	2020
Shares and participations	7,822	4,760
Interest-bearing instruments	2,570	1,709
Property	2,444	1,493
Other	313	354
Total	**13,149**	**8,316**

Pension costs

	2021	2020
Defined benefit plans:		
Current service cost	741	658
Interest expenses	536	623
Interest income	-98	-85
Past service cost	22	212
Total cost for defined benefit plans	**1,201**	**1,408**
Cost for defined contribution plans	867	928
Total pension costs	**2,068**	**2,336**

In calculating pension obligations, the following actuarial assumptions have been made (%):

	Sweden		Germany	
	2021	2020	2021	2020
Discount rate	1.75	1.50	1.25	0.75
Future annual salary increases	3.00	3.00	2.50	2.50
Future annual pension increases	2.00	1.75	0–2.25	0–2.0

Sensitivity to key actuarial assumptions

	Sweden				Germany			
	2021		2020		2021		2020	
		%		%		%		%
Impact on the defined benefit obligation at 31 December of a:								
Increase by 50 basis points in the discount rate	-1,274	-8.5	-1,306	-8.7	-2,670	-6.9	-2,544	-6.6
Decrease by 50 basis points in the discount rate	1,444	9.7	1,484	9.8	3,011	7.8	2,854	7.4
Increase by 50 basis points in the annual pension increases	1,433	9.6	1,491	9.9	1,543	4.0	2,182	5.7
Decrease by 50 basis points in the annual pension increases	-1,328	-8.9	-1,343	-8.9	-1,415	-3.7	-1,999	-5.2

At 31 December 2021 the weighted duration of pension obligations was 14.1 (14.1) years for Germany and 16.8 (16.7) 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 2.25% (2.50%) and in Germany to 0% (0.25%) compared with the preceding year. Each reduction of the discount rate with 25 base points will lead to an increase of the provisions of approx. SEK 4,000 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 2.25% (2.50), Germany 2.00% (2.25) Netherlands 0–2.00% (0.25–2.25), Denmark 1.75% (2.00) and the UK 2.75% (2.75).

Financial information

	Non-current portion		Current portion		Total	
	2021	2020	2021	2020	2021	2020
Provisions for future commitments of nuclear power operations	98,304	88,938	1,944	1,972	**100,248**	**90,910**
Provisions for future commitments of gas and wind operations and other environmental measures/undertakings	11,239	10,194	448	405	**11,687**	**10,599**
Personnel-related provisions for non-pension purposes	3,762	4,863	836	1,026	**4,598**	**5,889**
Provisions for legal disputes	582	2,272	1,008	18	**1,590**	**2,290**
Other provisions	2,750	2,398	274	41	**3,024**	**2,439**
Total	**116,637**	**108,665**	**4,510**	**3,462**	**121,147**	**112,127**

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 SVAFO and the Swedish Radiation Safety Authority 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 52,772 million (48,270). 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	72,271	18,639	90,910
Provisions for the period from the income statement	2,627	2,077	4,704
Interest effects	1,747	47	1,794
Revaluations versus non-current tangible assets	6,767	–	6,767
Reversed provisions	–	-469	-469
Provisions used	-2,153	-1,706	-3,859
Translation differences	–	401	401
Balance carried forward	**81,259**[1]	**18,989**[2]	**100,248**

[1] Of which, approximately 36% (36) pertains to the dismantling of nuclear power plants and approximately 64% (64) to the handling of spent radioactive fuel.

[2] Of which, approximately 69% (65) pertains to the dismantling of nuclear power plants and approximately 31% (35) 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	10,599	5,889	2,290	2,439
Provisions for the period from the income statement	665	729	4	780
Interest effects	174	23	41	–
Reclassified to/from other provision	3	-13	–	–
Revaluations	564	-39	-410	–
Provisions used	-253	-1,048	-17	-50
Provisions reversed	-353	-99	-352	-127
Divested companies	-44	-948	–	-37
Translation differences	332	104	34	19
Balance carried forward	**11,687**	**4,598**	**1,590**	**3,024**

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	5,386	1,841	1,810	12	2,556	11,605
6–10 years	7,689	4,630	927	570	194	14,010
11–20 years	3,970	3,446	970	–	–	8,386
Beyond 20 years	–	1,322	55	–	–	1,377
Total	**17,045**	**11,239**	**3,762**	**582**	**2,750**	**35,378**

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 noninterest-bearing liabilities (non-current)

Of total liabilities of SEK 2,018 million (1,994), SEK 1,634 million (1,599) falls due after more than five years. Of the total liabilities, SEK 1,652 million (1,673) pertains to deferred income and SEK 366 million (321) to other liabilities.

Note 33 Trade payables and other liabilities

	2021	2020
Accounts payable - trade	26,135	16,571
Liabilities to associated companies	16	360
Other liabilities	13,090	7,981
Total	**39,241**	**24,912**

Note 34 Advance payments received

	2021	2020
Margin calls received, energy trading	61,891	5,561
Other advance payments	899	233
Total	**62,790**	**5,794**

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

	2021	2020
Accrued personnel-related costs	2,746	2,577
Accrued expenses, CO_2 emission allowances	4,814	2,972
Accrued nuclear power-related fees and taxes	220	289
Accrued interest expense	1,338	1,620
Other accrued expenses	5,693	3,353
Deferred income and accrued expenses, electricity	3,252	3,397
Other deferred income	397	350
Total	**18,460**	**14,558**

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.

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 68–71 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.

	2021		2020	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	6,118	6,151	5,529	5,563
Short-term investments	2,472	2,472	4,190	4,190
Financial liabilities at amortised cost				
Hybrid Capital, non-current interest-bearing liability	20,421	21,603	19,304	21,002
Other non-current interest-bearing liabilities	50,839	55,982	49,091	55,094
Current interest-bearing liabilities	55,148	55,482	36,380	37,188

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 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.

Assets 31 December 2020

				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	5,780	–	5,780	1,862	3,847	71
Derivatives, commodity contracts	49,821	36,993	12,828	–	5,779	7,049
Total	**55,601**	**36,993**	**18,608**	**1,862**	**9,626**	**7,120**
Derivatives, not subject to offsetting	803	–	803	–	–	803
Total derivative assets			**19,411**			**7,923**

[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 2021

				Related amounts not set off on the balance sheet		
	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	Financial assets, not intended to be settled net[1]	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**

Liabilities 31 December 2020

				Related amounts not set off on the balance sheet		
	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	Financial assets, not intended to be settled net[1]	Cash collateral pledged	Net amount
Derivatives, financial operations	4,970	–	4,970	1,862	3,005	103
Derivatives, commodity contracts	48,157	36,993	11,164	–	650	10,514
Total	**53,127**	**36,993**	**16,134**	**1,862**	**3,655**	**10,617**
Derivatives, not subject to offsetting	691	–	691	–	–	691
Total derivative liabilities			**16,825**			**11,308**

[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.

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**

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2020

	Level 1	Level 2	Level 3	Total
Assets				
Share in the Swedish Nuclear Waste Fund	48,270	–	–	**48,270**
Derivative assets	–	18,911	500	**19,411**
Short-term investments, cash equivalents, other shares and participations	29,900	8,011	–	**37,911**
Total assets	**78,170**	**26,922**	**500**	**105,592**
Liabilities				
Derivative liabilities	–	16,825	–	**16,825**
Total liabilities	**–**	**16,825**	**–**	**16,825**

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 2021 of +/–10% would change the fair value of Vattenfall's electricity and fuel derivatives by +/– SEK 1,371 million (+/–939) in other comprehensive income (hedge-accounted derivatives) and –/+ SEK 1,555 million (+/–1,494) 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 2021 has been calculated at SEK 1,141 million (500) 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 104 million (+/–23).

Financial instruments: Effects on income by category

Net gains (+)/losses(–) and interest income and expenses for financial instruments recognised in the income statement:

	2021			2020		
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	-4,368	4,359	-43	8,278	2,207	-16
Financial assets measured at amortised cost	15	–	–	26	–	–
Financial liabilities at fair value through profit or loss	-69	343	–	185	–	-44
Financial liabilities measured at amortised cost	-1,234	–	-2,839	805	–	-2,870
Total	**-5,656**	**4,702**	**-2,882**	**9,294**	**2,207**	**-2,930**

[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	
	2021	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
Financial contracts	453	612	3,977	4,841	**4,430**	**5,453**	678	327	**5,108**	**5,780**
Commodity and commodity-related contracts	30,866	4,014	-56	-18	**30,810**	**3,996**	119,967	9,635	**150,777**	**13,631**
Total	**31,319**	**4,626**	**3,921**	**4,823**	**35,240**	**9,449**	**120,645**	**9,962**	**155,885**	**19,411**

Derivative liabilities

	Non-current portion, maturity 1–5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2021	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
Financial contracts	528	1,205	2,129	2,437	**2,657**	**3,642**	530	1,328	**3,187**	**4,970**
Commodity and commodity-related contracts	26,419	2,942	1,231	1,340	**27,650**	**4,282**	98,981	7,573	**126,631**	**11,855**
Total	**26,947**	**4,147**	**3,360**	**3,777**	**30,307**	**7,924**	**99,511**	**8,901**	**129,818**	**16,825**

Note 37 Specifications of the cash flow statement

Other, including non-cash items

	2021	**2020**
Undistributed results from participation in associated companies	110	-30
Unrealised foreign exchange gains/losses	43	-199
Unrealised changes in values related to derivatives	-8,743	-4,723
Changes in the Swedish Nuclear Waste Fund	-35	-394
Changes in provisions	-1,627	-274
Other	-1,254	-457
Total	**-11,506**	**-6,077**

Dividends received totalled SEK 140 million (211).

Other investments in non-current assets

	2021	**2020**
Investments in intangible assets: non-current, including advance payments	-822	-893
Investments in property, plant and equipment, including advance payments	-24,335	-20,591
Total	**-25,157**	**-21,484**

Divestments

	2021	**2020**
Divestments of shares and participations	21,378	536
Divestments of intangible assets: non-current	-7	1
Divestments of property, plant and equipment	689	700
Total	**22,060**	**1,237**

Note 38 Specifications of equity

Share capital

As of 31 December 2021 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:

	2021		2020	
	Cash flow	**Income statement**	**Cash flow**	**Income statement**
Within 1 year	16,128	44,472	2,210	2,482
Between 1–5 years	5,748	10,692	1,106	1,678
Beyond 5 years	–	–	215	215
Total	**21,876**	**55,164**	**3,531**	**4,375**
Other	707	–	-727	–
Total	**22,583**	**55,164**	**2,804**	**4,375**

The change in the reserve for hedges relating to Cash flow hedges – dissolved against income statement amounted to SEK 31,554 million (-4,309), of which SEK 31,599 million (-4,393) 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	2021	2020	2021	2020	2021	2020	2021	2020
EUR	142,006	59,794	24,339	24,464	117,667	35,330	76,026	35,567
DKK	8,120	5,847	–	–	8,120	5,847	6,590	6,014
GBP	16,127	12,694	4,843	4,431	11,284	8,263	9,398	8,310
Total	**166,253**	**78,335**	**29,182**	**28,895**	**137,071**	**49,440**	**92,014**	**49,891**

Note 39 Collateral

	2021	2020
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	19,527	160
Total	**26,822**	**7,455**

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 2021 this security amounted to SEK 7,872 million (SEK 661 million) for energy trading and SEK 1,643 million (SEK 3,343 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 2021 amounted to SEK 61,891 million (SEK 5,561 million) for energy trading and SEK 3,340 million (4,081) 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 2021, such compensation deliveries amounted to 0.8 TWh (0.9), for a value of approximately SEK 359 million (140).

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 2021 totalled SEK 7 million (SEK 11 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 other partners 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 2021 is as follows:

	Share %	Total liabilities	Of which reported in Vattenfall's consolidated statements
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	66.7	12.220	12.220
Kernkraftwerk Krümmel GmbH & Co. oHG	50.0	14.950	6.442
Kernkraftwerk Stade GmbH & Co. oHG	33.3	2.100	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	20.0	20.100	–

Commitments related to Swedish Nuclear Power

Nuclear liability in Sweden is strict and unlimited. Pursuant to the Swedish Act on Nuclear Liability (Atomansvarighetslagen (1968:45)), the owner of a nuclear power reactor shall have insurance that covers 1,000 million Special Drawing Rights (SDRs) (rate 12.7593), corresponding to SEK 12,759 million. The obligatory nuclear liability insurance for this amount is issued by Nordic Nuclear Insurers and by the mutual insurance company ELINI (European Liability Insurance for the Nuclear Industry). As policyholders of the mutual insurance companies ELINI and EMANI (European Mutual Association for Nuclear Insurance), Vattenfall's Swedish nuclear power plants Forsmark and Ringhals have an obligation to cover any deficits in insurance reserves in these insurance companies.

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 2021, 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 7.2 GW 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 67 million per 31 December 2021.

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 costs

Number of employees at 31 December, full-time equivalents:

	2021			2020		
	Men	Women	Total	Men	Women	Total
Sweden	6,943	2,611	**9,554**	6,921	2,555	**9,476**
Denmark	336	102	**438**	283	85	**368**
Germany	3,374	1,111	**4,485**	4,441	1,312	**5,753**
Netherlands	2,696	922	**3,618**	2,633	911	**3,544**
UK	262	118	**380**	221	105	**326**
Other countries	282	126	**408**	277	115	**392**
Total	**13,893**	**4,990**	**18,883**	**14,776**	**5,083**	**19,859**

Average number of employees during the year, full-time equivalents:

	2021			2020		
	Men	Women	Total	Men	Women	Total
Sweden	6,882	2,568	**9,450**	6,851	2,486	**9,337**
Denmark	308	94	**402**	269	82	**351**
Germany	4,187	1,276	**5,463**	4,488	1,325	**5,813**
Netherlands	2,670	914	**3,584**	2,647	900	**3,547**
UK	246	110	**356**	272	135	**407**
Other countries	280	119	**399**	279	107	**386**
Total	**14,573**	**5,081**	**19,654**	**14,806**	**5,035**	**19,841**

Personnel costs:

	2021	2020
Salaries and other remuneration	14,267	13,984
Social security costs[1]	5,534	5,551
Total	**19,801**	**19,535**

[1] Pension costs are specified in Note 30 to the Consolidated accounts, Pension provisions.

Benefits for board members of Vattenfall AB and senior executives of the Vattenfall Group

	2021			2020		
Amounts in SEK thousands	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension and severance costs	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension and severance costs
Board of Directors						
Lars G. Nordström, Chairman of the Board	869	–	–	835	–	–
Viktoria Bergman, board member	428	–	–	416	–	–
Ann Carlsson	428	–	–	415	–	–
Håkan Erixon, board member	461	–	–	445	–	–
Mats Granryd	461	–	–	300	–	–
Tomas Kåberger, board member	461	–	–	445	–	–
Jenny Lahrin, board member	–	–	–	–	1	–
Fredrik Rystedt, board member	485	–	–	461	–	–
Åsa Söderström Jerring, board member	443	–	–	430	–	–
Fredrik Arp, board member (until April 28th, 2020)	–	–	–	156	–	–
Total, Board of Directors	**4,036**	**–**	**–**	**3,903**	**1**	**–**

	2021			2020		
Amounts in SEK thousands	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension and severance costs	Directors' fees and base salary including vacation pay	Other remuneration and benefits	Pension and severance costs
Executive Group Management						
Anna Borg, CEO	16,217	102	4,763	7,848	90	2,491
Kerstin Ahlfont, CFO	6,957	94	2,058	4,823	22	1,426
Christian Barthélémy, Head of Staff Function HR (from Jan 1st, 2021)	5,632	365[2]	1,126	–	–	–
Helene Biström, Head of Business Area Wind (from May 1st, 2021)	3,886	131	1,165	–	–	–
Anne Gynnerstedt, Head of Legal & CEO Office Staff Function and Secretary to the Board of Directors	5,153	77	1,529	5,119	67	1,476
Martijn Hagens, Head of Customers & Solutions Business Area	7,894	45	1,376	7,876	42	1,323
Ulrika Jardfelt, Head of Business Area Heat	6,429	69	1,850	512	5	154
Karin Lepasoon, Head of Communications (until Oct 31st, 2020; from Oct 1st, 2021)	1,276	12	381	4,411	51	1,121
Andreas Regnell, Head of Strategic Development	4,868	91	1,439	4,686	78	1,389
Anna-Karin Stenberg, Head of Business Area Markets (from Apr 1st, 2021)	4,286	3	1,243	–	–	–
Torbjörn Wahlborg, Head of Business Area Generation	7,739	86	2,285	7,411	72	2,206
Other senior executives						
Björn Linde, Head of Business Unit Nuclear Generation	4,134	106	1,176	3,600	90	1,071
Annika Viklund, Head of Distribution Business Area	5,884	49	1,679	5,190	39	1,513
Former senior executives						
Magnus Hall, former CEO (employed until Jan 20th, 2021)[3]	3,072	18	387	15,716	68	4,643
Gunnar Groebler, former Head of Business Area Wind (employed until May 15th, 2021)[4]	2,443	51	591	6,987	127	1,397
Tuomo Hatakka, Head of Business Area Heat (until Nov 30th, 2020)	–	–	–	13,681	96	2,882
Niek den Hollander, Head of Business Area Markets (until May 30th, 2020)	–	–	–	3,117	59	561
Total Executive Group Management and senior executives	**85,870**	**1,299**	**23,048**	**90,977**	**906**	**23,653**
Total Board of Directors, Executive Group Management and other senior executives	**89,906**	**1,299**	**23,048**	**94,880**	**907**	**23,653**

[1] For a description of how Vattenfall defines senior excutives please refer to the Corporate Governance section on page 98.

[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 January 20th 2021.

[4] Gunnar Groebler was formally employed until May 15th 2021.

Board of Directors
The Annual General Meeting on 28 April 2021 resolved in favour of increased fees with 6.3% respectively 5.4%, entailing that directors' fees for the period until the end of the next Annual General Meeting shall amount to SEK 840 thousand for the Chairman of the Board and SEK 390 thousand for each of the other directors elected at the Annual General Meeting. In addition, it was resolved that for service on the Audit Committee, a fee of SEK 103 thousand shall be paid to committee chair and SEK 78 thousand to the other committee members, and that for service on the Remuneration Committee, a fee of SEK 60 thousand shall be paid 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 100–101.

President and Chief Executive Officer
Anna Borg, President and CEO, received a salary of SEK 16,217 thousand in 2021. The value of other benefits in 2021 amounted to SEK 102 thousand pertaining to a car benefit and health insurance. Anna Borg's pension is a defined contribution solution. Premiums paid in 2021 totalled SEK 4,763 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 10 individuals (10), the sum of salaries and other remuneration for 2021, including the value of company cars and other benefits, was SEK 54,121 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 2021, including the value of company cars and other benefits, was SEK 10,172 thousand.

Retirement benefits
Kerstin Ahlfont, Christian Barthélémy, Helene Biström, Anne Gynnerstedt, Ulrika Jardfelt, Karin Lepasoon, 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 thousands	Payment 2021	Payment 200
Type of programme:		
Profit-sharing	172,628	204,087
Short-term incentive programmes	291,513	293,928
Long-term incentive programmes	67,152	76,854

[1] Based on new guidelines from the government. 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, %	
	2021	2020	2021	2020
Gender distribution among board members	33	33	67	67
Gender distribution among other senior executives	60	56	40	44

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 major associated companies in 2021 and associated receivables and liabilities as per 31 December 2021 are described below.

Kernkraftwerk Brokdorf GmbH & Co. oHG
This is a nuclear power plant from which Vattenfall purchases electricity. Purchases amounted to SEK 194 million (1,056). Operating revenue from the company amounted to SEK 0 million (0). Vattenfall's interest expense to the company amounted to SEK 7 million (6). Loan liabilities amounted to SEK 1,199 million (472).

GASAG Berliner Gaswerke AG
The company sells, distributes and stores natural gas in the Berlin area. Operating revenue from the company amounted to SEK 294 million (403) and purchases from the company totalled SEK 25 million (18). Trade liabilities amounted to SEK 0 million (0). Vattenfall's part of contingent liabilities of the company amounted to SEK 41 million (44).

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 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).

	2021	2020
Other operating income	22,307	5,011
Other operating expenses	-852	-1,129
Total	**21,454**	**3,882**

Parent Company Vattenfall AB

Condensed review of 2021

A condensed income statement and balance sheet for the Parent Company are presented below.

- Vattenfall AB consists of business areas Customers & Solutions, Heat, Markets, Treasury and Staff functions.
- Net sales amounted to SEK 40,045 million (41,969).
- Profit before appropriations and income taxes was SEK -4,219 million (10,786).
- Lower operating profit are attributable to changes in market value for energy derivates.
- Dividend received from subsidiaries amounted to SEK 2,231 million (408), mainly from Vattenfall B.V.
- Lower financial income due to exchange rate effects impacted earnings negatively.
- The balance sheet total was SEK 468,482 million (305,916).
- Investments during the period amounted to SEK 7,303 million (11,917), whereof 5,417 pertains to group internal asset transactions.
- Cash and cash equivalents, and Short-term investments amounted to SEK 145,743 million (53,043).
- The equity has been adjusted with SEK -900 million per January 1st of 2020 due to nuclear related commitments previously not accounted for. Profit before appropriations and income taxes 2020 has been adjusted with SEK -376 million for the same reason.
- Dividend paid to the owner of SEK 4,000 million (3,623).

Parent Company income statement

Amounts in SEK million, 1 January–31 December	Note	2021	2020[1]
Net sales	5, 6	40,045	41,969
Cost of purchases	6	-37,035	-23,929
Other external expenses		-5,250	-4,966
Personnel expenses	31	-2,247	-2,116
Other operating incomes and expenses, net		-52	170
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	14,15	**-4,539**	**11,128**
Depreciation, amortisation and impairments	7	-629	-596
Operating profit (EBIT)		**-5,168**	**10,532**
Result from participations in subsidiaries	8	2,231	408
Result from participations in associated companies	9	1	–
Other financial income	10	1,537	2,593
Other financial expenses	11	-2,820	-2,747
Profit before appropriations and income taxes		**-4,219**	**10,786**
Appropriations	12	5,086	-394
Profit before income taxes		**867**	**10,392**
Income taxes	13	445	-2,243
Profit for the year		**1,312**	**8,149**

[1] The period has been adjusted with SEK 130 million on cost of purchases, other external expenses with SEK 221 million and SEK -25 million on other financial expenses regarding provisions within nuclear according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for for additional information.

Parent Company statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2021	2020[1]
Profit for the year	1,312	8,149
Total other comprehensive income	–	–
Total comprehensive income for the year	**1,312**	**8,149**

[1] The period has been adjusted with SEK -376 million according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.for additional information.

Parent Company balance sheet

Amounts in SEK million	Note	31 December 2021	31 December 2020[1]
Assets			
Non-current assets			
Intangible assets: non-current	16	330	356
Property, plant and equipment	17	7,003	6,618
Shares and participations	18	166,802	161,474
Deferred tax assets	13	2,272	313
Other non-current receivables	19	71,123	69,078
Total non-current assets		**247,530**	**237,839**
Current assets			
Inventories		342	411
Intangible assets: current		9	38
Current receivables	20	13,791	5,547
Group receivables	20	59,366	9,038
Current tax assets	13	1,701	–
Short-term investments	21	101,877	29,301
Cash and cash equivalents	22	43,866	23,742
Total current assets		**220,952**	**68,077**
Total assets		**468,482**	**305,916**
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		1,370	1,492
Non-restricted equity			
Retained earnings		64,911	60,640
Profit for the year		1,312	8,149
Total equity		**112,167**	**114,855**
Untaxed reserves	12	**7,168**	**13,342**
Provisions	23	**5,621**	**5,376**
Non-current liabilities			
Hybrid capital	24	20,421	19,305
Other interest-bearing liabilities	24	39,475	36,544
Other noninterest-bearing liabilities	25	12,869	12,762
Total non-current liabilities		**72,765**	**68,611**
Current liabilities			
Other interest-bearing liabilities	24	252,315	95,706
Current tax liabilities	13	–	122
Other noninterest-bearing liabilities	26	18,446	7,904
Total current liabilities		**270,761**	**103,732**
Total equity, provisions and liabilities		**468,482**	**305,916**

[1] The period has been adjusted with SEK -1,276 million in the equity , SEK -238 million on the provisions and SEK -1,038 million on other interest-bearing liabilities according to IAS 8, please refer to the comments on the Parent Company income statement statement, balance sheet and Note 3 for additional information.

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	2021	2020[1]
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		-4,539	11,128
Tax paid		-3,337	-1,921
Interest received		1,779	1,549
Interest paid		-2,909	-2,477
Other, incl. non-cash items	34	1,423	-1,247
Funds from operations (FFO)		**-7,583**	**7,032**
Changes in inventories		69	-28
Changes in operating receivables		-54,782	2,716
Changes in operating liabilities		11,233	-3,384
Cash flow from changes in operating assets and operating liabilities		**-43,480**	**-696**
Cash flow from operating activities		**-51,063**	**6,336**
Investing activities			
Investments in subsidiaries	18	-5,237	-1,091
Investments in associated companies and other shares and participations	18	-134	-245
Other investments in non-current assets		-1,932	-1,969
Total investments		**-7,303**	**-3,305**
Divestments		129	49
Dividend received from subsidiaries[2]		2,196	703
Changes in short-term investments[2]		-72,576	-7,599
Cash flow from investing activities		**-77,554**	**-10,152**
Cash flow before financing activities		**-128,617**	**-3,816**
Financing activities			
Loans raised		197,241	65,964
Amortisation of other debts		-42,204	-42,313
Dividend paid to owner		-4,000	-3,623
Effect of early termination of swaps related to financing activities		-60	–
Amortisation received from subsidiaries		78	20
Group contributions received		-2,043	287
Group contributions paid		-271	352
Cash flow from financing activities		**148,741**	**20,687**
Cash flow for the year		**20,124**	**16,871**
Cash and cash equivalents			
Cash and cash equivalents at start of year		23,742	6,871
Cash flow for the year		20,124	16,871
Cash and cash equivalents at end of year		**43,866**	**23,742**

[1] The period has been adjusted according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

[2] Reclassified from financing activities to investing activities.

Parent Company statement of changes in equity

Amount in SEK million	Share capital	Revaluation reserve	Other reserves[1]	Non-restricted equity[2]	Total
Balance brought forward 2020	6,585	37,989[3]	1,480	65,175	**111,229**
Profit or loss previous year	–	–	–	-900	**-900**
Dividend paid to owner	–	–	–	-3,623	**-3,623**
Fund for development costs	–	–	12[4]	-12[4]	**–**
Profit for the year	–	–	–	8,149	**8,149**
Balance carried forward 2020	**6,585**	**37,989**	**1,492**	**68,789**	**114,855**
Dividend paid to owners	–	–	–	-4,000	**-4,000**
Fund for development costs	–	–	-121[4]	121[4]	**–**
Profit for the year	–	–	–	1,312	**1,312**
Balance carried forward 2021	**6,585**	**37,989**	**1,371**	**66,222**	**112,167**

[1] Other reserves consist of Statutory reserve SEK 1,286 million (1,286) and Fund for development costs SEK 85 million (206).

[2] Profit or loss previous year has been adjusted with SEK -900 million also profit of the year has been adjusted SEK -376 million according to IAS 8 and refers to nuclear related commitments, see Note 3 for additional information.

[3] 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.

[4] 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.

As of 31 December 2021 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 2021 Annual Report was approved in accordance with a decision by the Board of Directors on 22 March 2022. 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 28 April 2022.

Note 2 Proposed distribution of profits

The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 66,222,813,944. In accordance with the dividend policy adopted by the Annual General Meeting of Vattenfall AB, the Board of Directors and President propose, in view of the result for the year, that the profits to be distributed as follows:

To be distributed to the shareholder	23,414,000,000
To be carried forward	42,808,813,944
Total	**66,222,813,944**

For more information see Parent Company statement of changes in Equity.

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 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
The Balance sheet in the Parent company year 2020 has been corrected according to IAS8. Non-restricted reserves has decreased with SEK 900 millions. The result 2020 has been adjusted with SEK -376 millions, primary related to group company Svafo (SEK -130 millions on cost of purchase) and provisions for Ågestaverket SEK -221 as other costs. For year 2021 the balance has been adjusted in non-resitrcted reserves SEK 1,276 millions, thereof SEK 238 millions as provisions and SEK 1,038 millions as other interest-bearing liabilities. These corrections refers to agreements related to Nuclear. No changed accounting standards and interpretations valid from 2021 have had any material effect on the Parent Company's financial statements. The Parent Company does not report leasing in accordance with IFRS 16 as per the exception rule in RFR 2.

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.

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 derivatives, Note 30 Pension Provisions and Note 31 Other interest-bearing provisions in the consolidated accounts.

Significant accounting policies applicable as from 1 January 2021
As from 2021, 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	2021	2020
Nordic	32,896	30,758
Germany	6,804	10,670
Netherlands	330	241
Other countries	15	300
Total	**40,045**	**41,969**

Net sales for products and services	2021	2020
Sales of electricity	32,602	35,829
Sales of gas	49	–
Sale of heat and steam	2,028	1,818
Service and consulting	442	422
Total Revenues from contracts with customers	**35,121**	**38,069**
Other Revenues	4,924	3,900
Total	**40,045**	**41,969**

Contract balances	2021	2020
Contract assets	–	–
– of which, released as cost from opening balance during the year	–	–
Contract liabilities	255	235
– of which, released as revenue from opening balance during the year	-14	-14

Note 6 Intra Group transactions

Of the Parent Company's total income from sales and total purchase costs, transactions with subsidiaries account for 29% (33%) of sales and 51% (72%) of purchase costs.

Note 7 Impairment losses

No impairment was recognised of intangible non-current assets or of property, plant and equipment 2021 or 2020 financial years.

Note 8 Result from participations in subsidiaries

	2021	2020
Dividends	2,195	703
Impairment losses	–	-296
Capital gains/losses on divestments	36	1
Total	**2,231**	**408**

Note 9 Result from participations in associated companies

	2021	2020
Dividends	1	–
Total	**1**	**–**

Note 10 Other financial income

	2021	2020
Interest income from subsidiaries	1,408	1,395
Other interest income	129	228
Foreign exchange gains and losses, net	–	970
Total	**1,537**	**2,593**

Note 11 Other financial expenses

	2021	2020[1]
Interest expenses to subsidiaries	0	21
Other interest expenses	2,487	2,726
Foreign exchange gains and losses, net	333	–
Total	**2,820**	**2,747**

[1] The period has been adjusted SEK 25 million according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

Note 12 Appropriations and untaxed reserves

Appropriations

	2021	2020
Group contributions paid	-1,779	-1,672
Group contributions received	692	3,022
Provision/Dissolution of untaxed reserves, net	6,173	-1,744
Total	**5,086**	**-394**

Untaxed reserves

	Balance brought forward	Provision (+)/ dissolution (-)	Balance carried forward
Accelerated depreciation	2,145	183	2,328
Tax allocation reserves for 2015–2022 tax years	11,197	-6,357	4,840
Total	**13,342**	**-6,174**	**7,168**

Note 13 Income taxes

The reported tax income/tax expense is broken down as follows:

	2021	2020
Current tax	-1,514	-1,794
Deferred tax	1,959	-449
Total	**445**	**-2,243**

The difference between the nominal Swedish tax rate and the effective tax rate is explained as follows:

	2021		2020	
	%		%	
Profit before tax		867		10,767
Swedish income tax rate at 31 December	20.6	-179	21.4	-2,304
Current tax adjustment attributable to previous years	0.0	–	0.1	-11
Capital gains, non-taxable	-0.8	7	0.0	–
Dividend, non-taxable	-52.2	453	-1.4	150
Non-taxable income	-0.1	1	0.0	–
Impairment losses, non-deductible	0.0	–	0.6	-63
Interest expence, non-deductible	2.2	-19	0.1	-11
Other non-deductible expenses	9.3	-81	0.1	-13
Tax changes correction of previous year's result	-30.3	263	0.0	–
Tax rate change	0.0	–	-0.1	9
Effective tax rate in Sweden	**-51.4**	**445**	**20.8**	**-2,243**

The tax effect of the standard interest on tax allocation reserves amounts to SEK 11.5 million (10).

Balance sheet reconciliation – Deferred tax:

	Balance brought forward		Changes via income statement		Balance carried forward	
	2021	2020	2021	2020	2021	2020
Non-current assets	2	3	–	-1	2	2
Current assets	-1,500	-1,465	138	-35	-1,362	-1,500
Provisions	86	91	7	-5	93	86
Other non-current liabilities	453	630	223	-177	676	453
Current liabilities	1,272	1,503	1,591	-231	2,863	1,272
Total	**313**	**762**	**1,959**	**-449**	**2,272**	**313**

No deficit deduction exists in the company.

Note 14 Leasing

Leasing expenses

Future payment commitments, as of 31 December 2021 for leasing contracts and rental contracts are broken down as follows:

	Finance leases	Operating leases
2022	–	31
2023-2026	–	102
2027 and beyond	–	23
Total	**–**	**156**

Leasing expenses for the year amounted to SEK 25 million (624).

Note 15 Auditors' fees

Annual audit assignment:

Annual audit assignment	2021	2020
Pricewaterhouse Coopers	7	–
Ernst&Young	–	8
Total	**7**	**8**

Auditing activities besides the annual audit assignment	2021	2020
Ernst&Young	–	1
Total	**–**	**1**

Other assignments	2021	2020
Pricewaterhouse Coopers	3	–
Total	**3**	**–**

Note 16 Intangible assets: non-current

	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**
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**

	2020			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	535	1,041	–	**1,576**
Investments	78	103	–	**181**
Transfer from construction in progress	-44	–	–	**-44**
Divestments/disposals	–	–	–	**–**
Accumulated cost carried forward	**569**	**1,144**	**–**	**1,713**
Amortisation according to plan				
Amortisation brought forward	-198	-928	–	**-1,126**
Amortisation for the year	-9	-106	–	**-115**
Divestments/disposals	–	–	–	**–**
Accumulated amortisation according to plan carried forward	**-207**	**-1,034**	**–**	**-1,241**
Impairment losses				
Impairment losses brought forward	-116	–	–	**-116**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**246**	**110**	**–**	**356**

At 31 December 2021 there were no contractual commitments for the acquisition of intangible non-current assets.

Note 17 Property, plant and equipment

	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**
Reclassifications	–	–	–	–	**–**
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**

	2020				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,217	9,127	557	1,298	**12,199**
Investments	227	745	149	1,115	**2,236**
Transfer from construction in progress	42	299	21	-319	**43**
Divestments/disposals	-2	-54	-68	–	**-124**
Accumulated cost carried forward	**1,484**	**10,117**	**659**	**2,094**	**14,354**
Depreciation according to plan					
Depreciation brought forward	-746	-5,851	-326	–	**-6,923**
Depreciation for the year	-120	-697	-112	–	**-929**
Divestments/disposals	2	49	68	–	**119**
Accumulated depreciation according to plan carried forward	**-864**	**-6,499**	**-370**	**–**	**-7,733**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Accumulated impairment losses carried forward	**-1**	**-2**	**–**	**–**	**-3**
Residual value according to plan carried forward	**619**	**3,616**	**289**	**2,094**	**6,618**
Accumulated accelerated depreciation	–	-2,145	–	–	**-2,145**
Carrying amount	**619**	**1,471**	**289**	**2,094**	**4,473**

At 31 December 2021 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

	2021				2020			
	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	160,878	486	110	**161,474**	160,083	272	110	**160,465**
Investments	4,930	–	10	**4,940**	5	–	–	**5**
Shareholder contributions	307	124	–	**431**	1,086	245	–	**1,331**
Profit participations in associated companies	–	6	–	**6**	–	-31	–	**-31**
Reclassificarion	77	-77	–	**–**	–	–	–	**–**
Liquidation	-49	–	–	**-49**	–	–	–	**–**
Impairment losses	–	–	–	**–**	-296	–	–	**-296**
Balance carried forward	**166,143**	**539**	**120**	**166,802**	**160,878**	**486**	**110**	**161,474**

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

	2021					2020				
	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	62,375	38	6,913	-248	**69,078**	60,262	26	6,180	-273	**66,195**
New receivables	2,609	118	–	336	**3,063**	2,850	32	–	24	**2,906**
Payments received	–	-79	–	–	**-79**	–	-20	–	–	**-20**
Foreign exchange gains/losses	492	–	–	1	**493**	-737	–	–	–	**-737**
Derivative changes	–	–	-1,432[1]	–	**-1,432**	–	–	733[1]	–	**733**
Other changes	–	–	–	–	**–**	–	–	–	1	**1**
Balance carried forward	**65,476**	**77**	**5,481**	**89**	**71,123**	**62,375**	**38**	**6,913**	**-248**	**69,078**

[1] Net change and measurement at fair value.

Note 20 Current receivables

	2021	2020
Advance payments paid	134	134
Accounts receivable – trade	1,697	1,047
Receivables from subsidiaries	59,366	9,038
Other receivables	4,889	-690
Derivative assets	1,548	2,459
Prepaid expenses and accrued income	5,523	2,597
Total	**73,157**	**14,585**

Age analysis of current receivables
The collection period is normally 30 days.

	2021			2020		
	Receivables gross	Impaired receivables	Receivables net	Receivables gross	Impaired receivables	Receivables net
Accounts receivable – trade						
Not due	1,640	5	1,635	989	5	984
Past due 1–30 days	41	1	40	29	–	29
Past due 31–90 days	7	–	7	8	–	8
Past due >90 days	22	7	15	51	25	26
Total	**1,710**	**13**	**1,697**	**1,077**	**30**	**1,047**

Receivables from subsidiaries, Receivables from associated companies, and Other receivables include no receivables that are due for payment.

Note 21 Short-term investments

	2021	2020
Fixed-income investments	100,234	25,958
Margin calls, financing activities[1]	1,643	3,343
Total	**101,877**	**29,301**

[1] With respect to pledged assets, see Note 29 to the Parent Company accounts, Collateral.

Note 22 Cash and cash equivalents

	2021	2020
Cash and bank balances	16,997	12,094
Cash equivalents	26,869	11,648
Total	**43,866**	**23,742**

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.

Financial information

	2021	2020[3]
Pension provisions[1,2]	4,152	4,236
Personnel-related provisions for non-pension purposes	328	332
Provisions for environmental measures/ undertakings	8	20
Provisions for Nuclear	563	238
Other provisions	570	550
Total	**5,621**	**5,376**
[1] Of which, information registered by PRI	3,936	3,866
[2] Of which, covered by credit insurance with FPG/PRI	4,150	4,233

[3] The period has been adjusted SEK 238 million referring to Ågestaverket according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

The Parent Company owns, together with Svafo 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.

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	
	2021	2020	2021	2020[1]	2021	2020[1]	2021	2020	2021	2020[1]
Bond issues	16,237	11,452	17,775	17,784	**34,012**	**29,236**	22,879	16,585	**56,891**	**45,821**
Commercial paper	–	–	–	–	**–**	**–**	26,541	12,414	**26,541**	**12,414**
Liabilities to credit institutions	–	3,000	–	–	**–**	**3,000**	–	2,007	**–**	**5,007**
Liabilities to subsidiaries	2,991	14	1,038	1,038	**4,029**	**1,052**	197,355	57,503	**201,384**	**58,555**
Derivative debts	770	3,073	664	183	**1,434**	**3,256**	2,325	3,333	**3,759**	**6,589**
Other liabilities (margin calls within financing activities)[2]	–	–	–	–	**–**	**–**	3,215	3,864	**3,215**	**3,864**
Total interest-bearing liabilities excluding Hybrid capital	**19,998**	**17,539**	**19,477**	**19,005**	**39,475**	**36,544**	**252,315**	**95,706**	**291,790**	**132,250**
Hybrid capital[3]	13,871	9,271	6,550	10,034	**20,421**	**19,305**	–	–	**20,421**	**19,305**
Total interest-bearing liabilities	**33,869**	**26,810**	**26,027**	**29,039**	**59,896**	**55,849**	**252,315**	**95,706**	**312,211**	**151,555**

[1] The period has been adjusted SEK 1,038 million according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

[2] With respect to pledged assets, see Note 28 to the Parent Company accounts, Collateral.

[3] See Note 28 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives.

[4] 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. The parties are to finance the development efforts in proportion to their ownership interests.

Note 25 Other noninterest-bearing liabilities (non-current)

	2021	2020
Liabilities to subsidiaries	12,590	12,488
Contract debts	255	235
Other liabilities	24	39
Total	**12,869**	**12,762**

Liabilities to subsidiaries refer mainly to liabilities pertaining to Group contributions and to a non-current liability to Forsmarks Kraftgrupp AB for power charges. For this latter debt, in accordance with an agreement between the co-owners, no interest is payable on the debt. Of other liabilities, SEK 13 million (10) falls due after more than five years.

Note 26 Other noninterest-bearing liabilities (current)

	2021	2020
Accounts payable – trade	736	905
Liabilities to subsidiaries	4,261	3,318
Other liabilities	372	162
Derivatives debts	9,184	–
Accrued expenses and deferred income	3,893	3,519
Total	**18,446**	**7,904**

Breakdown of accrued expenses and deferred income:

	2021	2020
Accrued personnel-related costs	394	337
Accrued interest expenses	846	1,322
Other accrued expenses	2,323	1,726
Deferred income and accrued expenses, electricity	309	111
Other deferred income	21	23
Total	**3,893**	**3,519**

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.

	2021		2020	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	71,123	70,632	69,078	69,548
Short-term investments	101,877	101,877	29,301	29,301
Total	**173,000**	**172,509**	**98,379**	**98,849**
Financial liabilities at amortised cost				
Hybrid capital	20,421	21,603	19,305	21,002
Other non-current interest-bearing liabilities	39,475	39,557	36,544[1]	36,695[1]
Current interest-bearing liabilities	252,315	252,650	95,706	96,297
Total	**312,211**	**313,810**	**151,555**	**153,994**

[1] The period has been adjusted SEK 1,038 million according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information..

Note 28 Collateral

Collateral and pledged assets (given)

	2021	2020
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]	1,643	3,343
Blocked bank funds as security for trading on Nord Pool, ICE and EEX	–	8
Blocked bank funds as security for guarantees issued by bank	–	–
Total	**8,938**	**10,646**

Collateral and pledged assets (received)

	2021	2020
Pledged security from counterparties (derivative market)[2]	3,340	4,081

[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:

	2021	2020
Swedish Nuclear Waste Fund	19,748	23,935
Contractor guarantees provided by order of subsidiaries	40,727	31,725
Guarantees provided as collateral for the subsidiaries within Vattenfall Energy Trading's energy trading	25,193	10,832
Other contingent liabilities	12,102	12,289
Total	**97,770**	**78,781**

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 10 December 2010, the Swedish government set new guarantee amounts for the year 2021. 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 19,425 million (23,935). Two types of guarantees will be issued. The first guarantee – so-called Financing Security, totaling SEK 11,382 million (15,892) – 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 8,043 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 latter 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 2019the 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.

Contract guarantees provided by order of subsidiaries
As collateral for contractors' obligations, Vattenfall AB has issued guarantees amounting to SEK 40,727 million (31,275), 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 76,652 million (43,425) for energy trading conducted by the subsidiary Vattenfall Energy Trading. As per 31 December 2021 a total of SEK 25,193 million (10,832) of these guarantees had been utilised, which is included in the reported amount of contingent liabilities.

Other contingent liabilities
Other contingent liabilities SEK 12,102 million (12,289) 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 1,473 million (1,460).

In addition to the contingent liabilities mentioned above, Vattenfall has the following significant commitments
Nuclear liability in Sweden is strict and unlimited. Pursuant to the Swedish Act on Nuclear Liability (Atomansvarighetslagen (1968:45)), the owner of a nuclear power reactor shall have insurance that covers 1,000 million Special Drawing Rights (SDRs) (rate 12.7593), corresponding to SEK 12,759 million.

Vattenfall AB'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 2021, 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 Vattenfall AB's result of operations or financial position. As part of Vattenfall AB's business activities, in addition to the contingent liabilities stated here, guarantees are made for the fulfilment of various contractual obligations.

Note 30 Commitments under consortium agreements

See Note 41 to the consolidated accounts, Commitments under consortium agreements.

Note 31 Average number of employees and personnel costs

Average number of employees

	2021			2020		
	Men	Women	Total	Men	Women	Total
Sweden	1,190	610	**1,800**	1,160	583	**1,743**

Personnel costs

	2021	2020
Salaries and other remuneration	1,455	1,335
Social security expenses	792	781
– of which pension costs[1]	251	268
Total	**2,247**	**2,116**

[1] SEK 4.8 million (4.6) 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:

	2021			2020		
	Senior executives[1]	Other employees	Total	Senior executives[1]	Other employees	Total
Sweden	74	1,381	**1,455**	70	1,265	**1,335**

[1] For a description of how Vattenfall defines senior excutives please refer to the Corporate Governance section on page pages 90–105.

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 43 to the consolidated accounts, Related party disclosures.

Note 34 Specification of the cash flow statement

Other, including non-cash items

	2021	2020[1]
Realised foreign exchange gains/losses	1,729	-2,630
Changes in provisions	245	157
Other	-551[2]	1,226[2]
Total	**1,423**	**-1,247**

[1] The period has been adjusted according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

[2] Refers to unrealiased derivatives in operating profit before depreciation SEK 2,790 (-617) million, non-cash flow effects SEK -3,341 (1,384) million and investments SEK 0 (459) million.

Financial liabilities

	Current	Non-current[1]
Financial liabilities at 1 January 2020	**70,892**	**60,659**
Cashflow	8,586	14,462
Non-cash effecting currency effects	-3,149	-1,140
Other non-cash flow effecting items	19,377	-18,132
Financial liabilities at 31 December 2020	**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 30 December 2021	**252,315**	**59,896**

[1] The period has been adjusted according to IAS 8, please refer to the comments on the Parent Company income statement, balance sheet and Note 3 for additional information.

Note 35 Events after the balance sheet date

See Note 45 to the consolidated accounts, Events after the balance sheet date.

Auditor's Report

To the general meeting of the shareholders of Vattenfall AB, 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 2021 except for the corporate governance statement on pages 90–105. The annual accounts and consolidated accounts of the company are included on pages 4–5, 14–15, 20–21, 62–71 and 90–166 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 2021 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 2021 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 90–105. 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.

Other matter
The audit of the annual accounts and consolidated accounts for year 2020 was performed by another auditor who submitted an auditor's report dated 23 March 2021, with unmodified opinions in the Report on the annual accounts and consolidated accounts.

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 252 828 million, which corresponds to 32% 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 commitments for nuclear power, see Note 31. Vattenfall has significant commitments to handle existing and future decommissioning of nuclear power plants in Sweden and Germany, as well as nuclear waste. These provisions amount to SEK 100 248 million in the balance sheet for the group as of December 31, 2021. The majority of the cash outflow for this handling is far in the future. The calculation of the amount is also of a complex nature. This area requires management to make estimates and assessments regarding a number of parameters such as technical development, time horizon, cost estimate and discount rate. Hence, we have assessed the recognition of provision for future expenses of nuclear power operations as a key audit matter in the audit.	– We have assessed Vattenfall's process for reporting provisions for future commitments for nuclear power operations. – We have assessed Vattenfall's accounting principles regarding the reporting of provisions for future commitments for nuclear power operations. – We have obtained calculations and examined these with regard to mathematical accuracy, and when possible obtained calculations from third parties. – We have assessed the reasonableness of assumptions that management has applied in the calculations for the reporting of the provisions. – We have also assessed whether the information disclosed is appropriate.
Valuation of derivatives and hedge accounting within Markets For information regarding Market, volume and liquidity risks, see pages 70–72, 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 1-3, 6-13, 16-19, 22-61, 72-89 and 171-188. The remuneration report for the year 2021 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 2021 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 organization 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 organization 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: 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(a) of the Swedish Securities Market Act (2007:528) for Vattenfall AB (publ) (publ) for the financial year 2021.

Our examination and our opinion relate only to the statutory requirements.

In our opinion, the Esef report 15918a7c084d612f855d70690a4228971c05f7e7babea8f164ec16404cc226c8 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 ensuring that the Esef report has been prepared 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 form an opinion with 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 reasonable assurance engagement 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. The procedures selected depend on the auditor's judgment, 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 reasonable assurance engagement 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 technical validation of the Esef report, i.e. if the file containing the Esef report meets the technical specification set out in the Commission's Delegated Regulation (EU) 2019/815 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 Esef report has been marked with iXBRL which enables a fair and complete machine-readable version of the consolidated statement of financial performance, statement of financial position, statement of changes in equity and the statement of cash flow.

The auditor's examination of the corporate governance statement

The Board of Directors is responsible for that the corporate governance statement on pages 90–105 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, Torsgatan 21, SE-113 97 Stockholm, was appointed auditor of Vattenfall AB (publ) by the general meeting of the shareholders on 28 April 2021 and has been the company's auditor since then.

Stockholm 25 March 2022
PricewaterhouseCoopers AB

Eva Carlsvi
Auditor in charge
Authorized Public Accountant

Aleksander Lyckow
Authorized Public Accountant

GRI Content Index and supplementary disclosures

About this report
Vattenfall's Annual and Sustainability Report 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: Core option. This means that Vattenfall has identified the aspects that are material for the company and reports at least one indicator per aspect. Omitted information is reported in the GRI Index on pages 172–175. Certain aspects, such as water, effluents and waste, are most relevant at the local level and are not as material at the Group level. No Group targets are currently defined for these areas; 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 Annual and Sustainability Report (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 2021 financial year, unless indicated otherwise, and the figures provided pertain to the 2021 financial year. Vattenfall reports sustainability data annually in the ASR, and the preceding year's report was published on 29 March 2021.

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 unless indicated otherwise. While GRI Standards entail a greater focus on impacts along the entire value chain, the company cannot yet measure 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 14–15 and 97–98. Changes in Vattenfall's supply chain are described on pages 86–87. 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 86. 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 2021.

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 during the 2021 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 and water consumption 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 notes 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 21
- Business model and value creation, pages 16–17
- EU taxonomy reporting, page 30
- Integrity and risk management, pages 63–67, 88
- Internal governance, pages 95–97
- Materiality analysis and stakeholders, pages 74–76
- Human rights, page 83–84
- Sustainable supply chain, pages 85–87
- Human resources, pages 81–83
- Environment, pages 76–81

External assurance
The sustainability information in the ASR for 2021 has been reviewed by Vattenfall's auditor, PwC. 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, 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 Communication on Progress for the UN Global Compact (UNGC), and a cross reference between the UN Global Compact 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
- Fossilfritt Sverige (Fossil-free Sweden)
- Re-Source
- 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 number(s) and/or URL(s)	Notes and/or Omissions	UNGC Principle(s)
GRI 102: General Disclosure 2016					
	Organisational profile				
	102-1	Name of the organisation	Cover, Note 1		
	102-2	Activities, brands, products, and services	4-5	No markets in which Vattenfall operates are its products or services are banned.	8-9: Environment
	102-3	Location of headquarters	4, 91		
	102-4	Location of operations	4-5		
	102-5	Ownership and legal form	4, 91		
	102-6	Markets served	5		
	102-7	Scale of the organisation	4, 83		
	102-8	Information on employees and other workers	60- 61, 81-83		6: Labour
	102-9	Supply chain	85-87		
	102-10	Significant changes to the organisation and its supply chain	14-15, 85-87		
	102-11	Precautionary Principle or approach	63-66, 76		All principles
	102-12	External initiatives	171		
	102-13	Membership of associations	171		
	EU1	Installed capactiy	184-186		
	EU2	Energy production, net	184-186		
	EU3	Numbers of customers	4, 184-186		
	EU4	Length of transmission and distribution lines, based on voltage	184-186		
	EU5	Allocation of CO_2 emission allowances	184-186		
	Strategy				
	102-14	Statement from senior decision-maker	6-9		
	Ethics and integrity				
	102-16	Values, principles, standards, and norms of behaviour	60-61, 96-97, 81-89		All principles
	Governance				
	102-18	Governance structure	90-103		
	102-26	Role of highest governance body in setting purpose, values, and strategy	6-9, 95		
	Stakeholder engagement				
	102-40	List of stakeholder groups	75		
	102-41	Collective bargaining agreements	82		3: Labour
	102-42	Identifying and selecting stakeholders	75		
	102-43	Approach to stakeholder engagement	75		
	102-44	Key topics and concerns raised	75		
	Reporting practice				
	102-45	Entities included in the consolidated financial statements	Note 18, 171		
	102-46	Defining report content and topic boundaries	74, 171		
	102-47	List of material topics	74		
	102-48	Restatements of information	171		
	102-49	Changes in reporting	171		
	102-50	Reporting period	171		
	102-51	Date of most recent report	171		
	102-52	Reporting cycle	171		
	102-53	Contact point for questions regarding the report	III (189)		
	102-54	Claims of reporting in accordance with the GRI Standards	171		
	102-55	GRI content index	172-175		
	102-56	External assurance	94-95, 171		

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Notes and/or Omissions	UNGC Principle(s)
	Economic				
GRI 205: Anti-corruption 2016					
	103-1/2/3	Management approach, 205	88, 97		10: Anti-corruption
	205-2	Communication and training about anti-corruption policies and procedures	88	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 206: Anti-competitive behavior 2016					
	103-1/2/3	Management approach, 206	88, 97		10: Anti-corruption
	206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	88		
GRI 207: Tax 2019					
	207-1	Approach to tax	89		
	207-2	Tax governance, control, and risk management	89		
	207-3	Stakeholder en-gagement and management of concerns related to tax	89		
	207-4	Country-by-country reporting	89		
	Environmental				
GRI 302: Energy 2016					
	103-1/2/3	Management approach, 302	76, 96-97	Total consumption of electricity, heat, cooling and steam, and sold steam and cooling are not reported as data is not available at the Group level. Vattenfall will aim to correct this in the coming years.	8-9: Environment
	302-1	Energy consumption within the organisation	178	Page 178 under the heading Energy consumption we consider Biomass, waste (biogenic) as a renewable fuel consumption and the other fuels are non-renewable.	
GRI 303: Water and Effluents 2018					
	103-1/2/3	Management approach, 303	79-80, 96-97	Rain and wastewater from other organisations are not reported as this is not significant compared with other water flows.	8-9: Environment
	303-1	Interactions with water as a share resource	79-80	We disclose our water footprint from a value chain perspective in our Environmental Product Declarations and CDP Water Security response, where we also disclose how we work with stakeholder interactions. For more information, please see respective EPD document. www.environdec. com/library and our 2021 CDP Water Security response, www.cdp.net	
	303-2	Management of water discharge-related impacts	79-80		
	303-3	Water withdrawal	79-80		
	303-4	Water discharge	79-80		
GRI 304: Biodiversity 2016					
	103-1/2/3	Management approach, 304	78, 96-97		8-9: Environment
	304-2	Significant impacts of activities, products, and services on biodiversity	78-79		
GRI 305: Emissions 2016					
	103-1/2/3	Management approach, 305	76-77, 96-97	Focus on regulations and policies for CO_2 as this is most significant for Vattenfall.	7-9: Environment
	305-1	Direct (Scope 1) GHG emissions	76-77, 178	CO_2, CH_4, N_2O, and SF_6 are considered the most material gases and are included in the CO_2e-calculation	

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Notes and/or Omissions	UNGC Principle(s)
	Environmental, cont.				
	305-4	GHG emissions intensity	76-77, 178	Emissions of Scope 1 and Scope 2 (market based) are included in the intensity ratio.	
	305-7	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	77, 178	Emissions of POPs, VOC and HAP are not reported because they are not measured regularly since they are not significant for Vattenfall plants. There are no specific legal requirements associated with these emissions.	
Electric Utility Sector-Specific Environmental Social Indicators					
	EN21	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	77, 178		
GRI 306: Waste 2020					
	103-1/2/3	Management approach, 306	76, 80-81		8-9: Environment
	306-1	Waste generation and significant waste-related impacts	80-81		
	306-2	Management of significant waste related-impacts	80-81	Where waste is managed by third party, they need to follow our Code of Conduct for suppliers. Through our own environmental management systems, sample checks are done checking transport documentation. Contractors are required to be either ISO 14001 certified, or to have an environmental management system in place.	
	306-3	Waste generated	80-81		
Electric Utility Sector-Specific Environmental Performance Indicators					
	EN23	Waste by type and disposal method	80-81		
GRI 308: Supplier Environmental Assessment 2016					
	103-1/2/3	Management approach, 308	85-86		7: Environment
	308-1	New suppliers that were screened using environmental criteria	86		
	Social				
GRI 403: Occupational Health and Safety 2018					
	103-1/2/3	Management approach, 403	60-61, 81-83, 96-97		1-2: Human rights 4-6: Labour
	403-1	Occupational health and safety management system	81-83	Most parts of the organisation are certified according to OHSAS 18001 or ISO45001 based on a risk analysis, which is a way to ensure legal compliance.	
	403-2	Hazard identification, risk assessment, and incident investigation	81-83	For the European countries Vattenfall operates in, reprisals are not considered to be an issue.	
	403-3	Evaluation of the management approach	81-83		
	403-4	Worker participation, consultation, and communication on occupational health and safety	81-83	Local forums for worker participation are set up according to OHSAS/ISO. Meeting frequency and detailed roles may vary depending on location.	
	403-5	Worker training on occupational health and safety	81-83	We put demands on our contractors regarding health & safety conduct and competence.	
	403-6	Promotion of worker health	81-83		
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	81-83	We intend to start investigating H&S topics through a data-driven approach to consolidate data sources and enhance availability.	
	403-9	Work-related injuries	81-83	Data is collected locally to a central reporting system. We are not able to report LTI frequency for contractors due to lack of reliable worked hours. We anticipate to have an estimation of that during end of 2023.	

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Notes and/or Omissions	UNGC Principle(s)
GRI 405: Diversity and Equal Opportunities 2016					
	103-1/2/3	Management approach, 405	61, 82	No reporting per minority group, as this is prohibited by rules in certain markets.	6: Labour
	405-1	Diversity of governance bodies and employees	82, 100–103		
GRI 414: Supplier Social Assessment 2016					
	103-1/2/3	Management approach, 414	85–86		
	414-1	New suppliers that were screened using social criteria	86		
Electric Utility Sector-Specific Social Indicators					
	EU28	Power outage frequency	178		
	EU29	Average power outage duration	178		

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.	90–103	Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.	62–71	Describe the organisation's processes for identifying and assessing climate-related risks.	62–63, 67	Disclose the metrics used by the organisation to assess climate related risks and opportunities in line with its strategy and risk management process.	21, 27–29, 76–77, 178
Describe management's role in assessing and managing climate-related risks and opportunities.	62–71, 90–103	Describe the impact of climate related risks and opportunities on the organisation's businesses, strategy and financial planning.	22–25, 27–29, 62–71	Describe the organisation's processes for managing climate-related risks.	22–25, 62–71	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	76–77, 178
		Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	10–12, 22–25, 21, 67	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management.	62–71	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	21

For more information on Vattenfall's Water and Climate reporting, see the CDP website: https://bit.ly/3oHyKpl.

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)	14–15, 22–25, 27–29, 32–33, 178–186
Exposure to regulatory changes or changing consumer and investor expectations (e.g.,expansion of renewable energy in the mix of energy supply)	22–25, 32–33, 72–76
Changes in investment strategies (e.g., opportunities for increased investment in renewable energy, carbon-capture technologies, and more efficient water use)	22–25, 27–29, 32–33

Net impact methodological notes

Vattenfall's net impact is quantified by Upright, a technology company that measures and models the net impact of companies. Their data-driven quantification model measures both the positive and negative impacts companies create, and summarises this information into comparable net impact profiles. Upright's quantification model is based on machine learning, open-source science, and the (revenue generating) products and services that companies produce and offer. Because the analysis is based on products and services, impacts here are defined strongly through "what" companies produce and offer, rather than "how" (i.e. governance and compliance). The scores are relative scores, depending on the magnitude of the overall impact category and company's impact intensity in the category. For further information on the methodology, see www.uprightproject.com/model

Auditor's Combined Assurance Report on Vattenfall AB's Sustainability Report and statement regarding the Statutory Sustainability Report

This is the translation of the auditor's report in Swedish. To Vattenfall AB, corp id 556036-2138

Introduction
We have been engaged by the Board of Vattenfall AB to undertake a combined assurance engagement of Vattenfall's Sustainability Report for 2021. The Company has defined the scope of its Sustainability Report on page 171. The Statutory Sustainability Report is also defined on page 171.

Responsibilities of the Board and Executive 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 171 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 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 ISQC 1 (International Standard on Quality Control) 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 AB 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 21:
- 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.

Conclusions
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, 25 March 2022
PricewaterhouseCoopers AB

Eva Carlsvi
Authorised Public Accountant

Karin Juslin
Expert member of FAR

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 Vattenfall AB, corp id 556036-2138

Introduction
We have been engaged by management by Vattenfall AB to undertake a limited assurance engagement of Vattenfall's Green bond investor report 2021 ("Investor Report"). The Investor Report is located on page 27 in Vattenfall's Annual and Sustainability Report 2021.

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 27 in the Annual and Sustainability Report 2021 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 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 ISQC 1 (International Standard on Quality Control) 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, 25 March 2022
PricewaterhouseCoopers AB

Eva Carlsvi
Authorised Public Accountant

Karin Juslin
Expert member of FAR

Ten-year overview of sustainability data

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Production and environment										
Electricity generation	178.9	181.7	172.9	173	119	127.3	130.3	129.3	112.8	111.4
– of which Hydro power	42.2	35.6	34.3	39.5	34.8	35.6	35.5	35.8	39.7	40.9
– of which nuclear power	48.9	51.9	49.9	42.2	46.9	51.9	55.0	53.4	39.3	40.4
– of which fossil power	81.7	87.9	82.7	84	30.8	31.9	31.6	30.2	22.7	18.4
– of which wind power	3.6	3.9	4.1	5.8	5.8	7.6	7.8	9.5	10.8	11.2
– of which biomass and waste	2.5	2.4	2.0	1.5	0.7	0.4	0.4	0.4	0.3	0.5
Energy consumption, TWh										
Gas	32.5	37.1	31.7	27.7	32.5	36.8	38.6	44.3	41.8	38.7
Hard coal	41.5	45.1	35.2	46.1	43.9	42.1	41.1	25.6	10.7	5.9
Lignite	152.8	157.0	153.5	152.7	3.2	1.5	–	–	–	–
Peat	0.6	0.7	0.4	0.5	0.5	0.4	0.6	0.2	–	–
Waste (non-biogenic)	2.9	3.2	2.9	2.6	1.9	1.2	1.2	1.2	0.7	0.8
Biomass, waste (biogenic)	10.5	9.8	7.1	4.3	4.6	3.7	3.9	4.1	3.5	4.0
Other fuels, including oil	5.9	5.7	5.7	1.9	1.5	1.5	1.7	1.6	0.3	0.4
Uranium (tonnes)	126	133	119	143	119.6	105.9	118	136.4	98.6	119
Emissions to air (Scope 1)[1]										
Carbon dioxide **equivalents (CO_2e)**[2], Mtonnes	83.5	86.9	82.7	84.3	23.7	23.2	22.6	18.4	12.2	10.3[3]
CO_2e intensity[4], g/kWh	400	412	421	426	170	158	152	128	97	81.5
Biogenic CO_2[5], Mtonnes	3.6	3.4	2.4	1.9	1.6	1.3	1.3	1.4	1.2	1.4
Nitrogen oxides(NOx), ktonnes	53.4	56.5	52.8	52.2	10.2	9.8	9.9	7.4	5.5	5.0
Specific NOx emissions, g/kWh	0.258	0.268	0.271	0.264	0.073	0.066	0.066	0.051	0.044	0.039
Specific NOx emissions (only combustion plants), g/kWh	0.46	0.458	0.474	0.475	0.196	0.187	0.194	0.161	0.148	0.142
Sulphur dioxide (SO_2), ktonnes	56.1	58.2	53.1	50.1	4.2	4.1	4.2	2.3	1.5	1.3
Specific SO_2 emissions, g/kWh	0.272	0.276	0.272	0.253	0.030	0.028	0.028	0.016	0.012	0.010
Specific SO_2 emissions (only combustion plants), g/kWh	0.483	0.472	0.476	0.455	0.081	0.078	0.082	0.051	0.040	0,038
Particulate matter (PM), ktonnes	1.9	2.1	1.7	1.5	0.3	0.3	0.2	0.1	0.1	0.1
Specific PM emissions, g/kWh	0.009	0.010	0.008	0.008	0.002	0.002	0.001	0.001	0.000	0.000
Specific PM emissions (only combustion plants), g/kWh	0.016	0.017	0.015	0.014	0.005	0.006	0.004	0.003	0.002	0.002
Carbon dioxide equivalents (CO_2e)[6], Mtonnes (Scope 2)	–	–	–	–	0.1	0.1	0.1	0.1	0.1	0.1
Carbon dioxideequivalents (CO_2e), Mtonnes (Scope 3)	–	–	–	–	19.9	19.6	20.7	19.0	17.0	17.6
Capital Goods, goods and services	–	–	–	–	0.4	0.4	0.2	0.5	1.1[7]	1.0
Fuel and waste incl. transports	–	–	–	–	5.0	5.0	5.1	5.0	4.1	3.8
Business travel	–	–	–	–	0.03	0.03	0.02	0.02	0.01	0.002
Use of sold products	–	–	–	–	14.4	14.2	15.4	13.5	12.2	12.9
Waste and by-products, ktonnes										
Hazardous waste	431	194	123	86	106	61	59	72	37	50
Non-hazardous waste	447	349	416	342	133	145	98	75	39	40
Ash from coal and lignite	5,997	6,126	5,912	6,219	775	671	579	423	160	110
Ash from biomass	64	67	42.3	38	41.3	37.4	38.4	32.9	21.6	20.8
Slag from waste incineration	317	330	245	229	237	168	170	173	100	105
Gypsum	3,154	3,219	3,000	3,048	208	169	185	128	45	26
Radioactive waste										
Low and medium radiactive operational waste, m^3	1,277	883	2,251	3,353	1,013	912	829	411	628	434
Core components, tonnes	18	18	10	7	17	15	31	13[3]	58	84
Spent nuclear fuel, tonnes	147	161	193	197	124	175	137	260	274	136
SAIDI (minutes/customer)										
Sweden	217	183	177	212	150	125	187	439	148	112
Germany	12	13	15	11	10	11	15	10	9	N/A[8]
SAIFI (number/customer)										
Sweden	2.6	2.1	2.4	2.2	2.1	1.8	2.9	2.4	2.0	1.8
Germany	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	N/A[8]

Ten-year overview of sustainability data, cont.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Our people										
Number employees, FTE,	32,794	31,819	30,181	28,567	19,935	20,041	19,910	19,814	19,859	18,835
– of which females	7,928	7,485	6,983	6,399	4,773	4,827	4,840	5,000	5,083	4,985
– of which temporary employed (not permanent contract)	1,234	1,154	882	761	550	609	618	664	723	686
Sick leave										
men %	–	3.8%	3.7%	4.1%	3.5%	3.6%	3.5%	3.2%	3.1%	3.0%
females %	–	5.3%	5.0%	5.8%	5.4%	5.7%	5.4%	5.1%	4.6%	4.2%
Working related accidents										
Internal LTIF (employees)	2.3	2.6	2.7	2.6	2.0	1.5	1.9	2.1	1.8	1.7
External LTI[9] (contractors)	–	–	–	133	101	80	71	88	78	86
Gender diversity										
Female managers %	19%	18%	18%	19%	22%	23%	24%	26%	27%	30%
Share of managers per age category total										
-29	1%	2%	2%	1%	1%	1%	1%	1%	1%	1%
30-49	55%	51%	54%	52%	56%	58%	56%	56%	57%	57%
50-	44%	47%	45%	46%	43%	40%	43%	43%	42%	42%

[1] Emissions are presented in accordance to financial accounting and consolidated.

[2] Before 2017 only CO_2

[3] Of the total greenhouse emissions 0.1 Mtonnes CO_2e consist of SF6, CH4 and N_2O emissions. Characterisation factors are obtained from the IPCC Sixth Assessment report.

[4] Includes scope 2 (before 2017 only CO_2 scope 1) and relates to electricity and heat production.

[5] CO_2 emissions from combustion of biomass.

[6] Market based

[7] The methodology has been revised for 2020 and 2021 and uses more comprehensive data

[8] Vattenfall's distribution business in Germany, Stromnetz Berlin, was divested in July and no value is available.

[9] As the Contractor LTIF calculation is not reliable enough, only LTI is reported.

Quarterly overview

	2021				2020			
Amounts in SEK million	**Q4**	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Income statement items								
Net sales	63,529	36,125	34,554	45,911	44,032	35,375	31,280	48,160
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	10,226	27,293	20,531	17,740	12,121	9,235	8,251	16,900
Operating profit (EBIT)	7,750	22,926	16,210	13,385	5,246	4,743	-7,027	12,313
Underlying EBIT	9,092	4,782	5,256	12,053	7,987	4,818	2,792	10,187
Financial net	-594	-744	568	-128	-693	-218	1,058	-3,418
Profit before income taxes	7,156	22,182	16,778	13,257	4,553	4,525	-5,969	8,895
Profit for the period	6,101	18,277	13,212	10,423	5,727	3,583	-8,495	6,900
– of which, attributable to owners of the Parent Company	5,774	18,178	13,002	9,875	5,132	3,595	-8,826	6,587
– of which, attributable to non-controlling interests	327	99	210	548	595	-12	331	313
Balance sheet items								
Cash and cash equivalents and short-term investments	170,882	131,447	56,962	47,509	56,222	49,221	42,634	31,706
Equity	197,182	191,134	139,860	127,513	111,192	107,862	103,383	122,277
– of which, attributable to owners of the Parent Company	180,710	176,034	126,855	113,486	97,724	94,705	90,160	107,008
– of which, attributable to non-controlling interests	16,472	15,100	13,005	14,027	13,468	13,157	13,223	15,269
Interest-bearing liabilities	126,408	84,428	89,734	91,825	104,775	108,529	114,768	113,845
Net debt	-44,703	-47,348	32,328	43,865	48,178	58,858	71,613	81,579
Adjusted net debt	26,923	21,270	104,503	112,225	121,480	126,299	140,319	148,322
Provisions	161,475	155,504	156,682	153,390	155,951	151,439	151,794	149,843
Noninterest-bearing liabilities	297,293	256,644	155,162	102,841	91,330	81,825	83,138	106,329
Capital employed, average	271,674	258,053	273,748	279,339	265,639	263,156	268,587	279,052
Balance sheet total	782,358	687,710	541,438	475,569	463,248	449,655	453,083	492,294
Cash flow items								
Funds from operations (FFO)	18,616	6,054	7,439	13,987	11,368	7,000	4,420	12,235
Cash flow from operating activities	4,130	60,836	24,041	11,124	14,854	19,447	15,924	-8,533
Free cash flow	334	57,309	22,629	8,847	10,199	17,161	12,656	-10,865
Key ratios								
In % unless otherwise stated. (x) means times.								
Operating margin	12.2	45.1	36.8	29.2	11.9	13.4	-22.5	25.6
Operating margin[1]	14.3	19.0	21.5	26.3	18.1	13.6	8.9	21.2
Pre-tax profit margin	11.3	44.8	37.3	28.9	10.3	12.8	-19.1	18.5
Pre-tax profit margin[1]	13.4	18.7	22.1	26.0	16.6	13.0	12.3	14.1
Return on equity	36.9	40.2	30.3	10.0	6.7	1.5	4.4	14.4
Return on capital employed	22.2	22.4	14.5	5.9	5.8	4.7	6.1	9.4
Return on capital employed[1]	11.5	11.7	11.0	9.9	9.7	9.9	9.2	9.2
EBIT interest cover, (x)	16.2	16.6	12.1	5.2	4.3	3.3	3.2	4.5
EBIT interest cover, (x)[1]	8.5	8.7	9.3	8.6	7.1	6.8	4.7	4.4
FFO interest cover, (x)	13.3	12.1	13.1	12.3	10.4	10.0	7.2	6.9
FFO interest cover, net, (x)	15.9	14.5	14.7	13.9	12.1	11.3	10.9	9.8
Cash flow interest cover after maintenance investments, (x)	27.9	33.4	22.0	18.8	10.2	6.4	3.3	2.0
FFO/gross debt	36.5	46.0	44.4	40.1	33.4	32.4	31.2	32.8
FFO/net debt	103.1	-82.1	123.1	83.8	72.7	59.8	49.9	45.8
FFO/adjusted net debt	171.2	182.7	38.1	32.8	28.8	27.9	25.5	25.2
EBITDA/net financial items, (x)	10.4	31.1	29.4	19.2	15.7	11.2	25.0	13.7
EBITDA/net financial items, (x)[1]	13.7	16.7	19.9	17.8	16.1	11.4	22.6	11.9
Equity/total assets	25.2	27.8	25.8	26.8	24.0	24.0	22.8	24.8
Gross debt/equity	64.1	44.2	64.2	72.0	94.2	100.6	111.0	93.1
Net debt/equity	-22.7	-24.8	23.1	34.4	43.3	54.6	69.3	66.7
Gross debt/gross debt plus equity	39.1	30.6	39.1	41.9	48.5	50.2	52.6	48.2
Net debt/net debt plus equity	-29.3	-32.9	18.8	25.6	30.2	35.3	40.9	40.0
Net debt/EBITDA, (x)	-0.6	-0.6	0.5	0.9	1.0	1.4	1.5	1.7
Adjusted net debt/EBITDA, (x)	0.4	0.3	1.8	2.4	2.6	2.9	3.0	3.2
Other information								
Investments	7,753	7,103	5,305	5,396	5,651	5,508	5,587	4,601
Electricity generation, TWh	30.5	21.8	26.0	32.9	30.5	25.0	24.1	33.1
Sales of electricity, TWh	45.6	37.8	40.0	45.4	44.0	37.9	36.7	45.5
Sales of heat, TWh	5.1	1.3	2.7	6.5	4.5	1.4	2.5	5.4
Sales of gas, TWh	17.3	5.3	10.8	23.6	18.9	5.9	9.3	22.7
Number of employees, full-time equivalents	18,835	18,883	19,957	19,915	19,859	19,773	19,755	20,009

[1] Based on Underlying operating profit, that is, Operating profit excluding Items affecting comparability.

Ten-year overview

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Income statement items										
Net sales	167,313	172,253	165,945	143,576	139,208	135,114	152,091	166,360	158,847	180,119
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	54,271	43,554	41,038	30,604	27,209	34,399	34,341	42,445	46,507	75,790
Operating profit (EBIT)	25,958	-6,218	-2,195	-5,069	1,337	18,524	17,619	22,141	15,276	60,271
Underlying EBIT	27,530	28,135	24,133	20,529	21,697	23,203	19,883	25,095	25,790	31,181
Financial net	-7,840	-9,037	-6,045	-4,776	-6,382	-5,755	-3,616	-3,819	-3,270	-898
Profit before income taxes	18,118	-15,255	-8,240	-9,845	-5,045	12,769	14,003	18,322	12,006	59,373
Profit for the year	17,047	-13,543	-8,284	-19,766	-26,004	9,484	12,007	14,861	7,716	48,013
– of which, attributable to owners of the Parent Company	16,759	-13,668	-8,178	-16,672	-26,324	8,333	10,157	13,173	6,489	46,828
– of which, attributable to non-controlling interests	288	125	-106	-3,094	320	1,151	1,850	1,688	1,227	1,185
Cash flow items										
Funds from operations (FFO)	34,419	31,888	32,131	29,009	28,186	26,643	23,275	34,949	35,024	46,096
Cash flow from operating activities	28,485	37,843	40,146	40,934	30,783	25,728	41,054	16,719	41,692	100,132
Free cash flow	12,619	23,579	23,234	25,013	19,217	13,091	27,575	1,571	29,153	89,120
Balance sheet items										
Cash and cash equivalents and short-term investments	46,495	27,261	45,068	44,256	43,292	26,897	40,071	33,155	56,222	170,882
Equity	149,372	130,718	128,462	115,956	83,800	92,332	103,597	108,522	111,192	197,182
– of which, attributable to owners of the Parent Company	140,764	120,370	115,260	103,984	68,272	77,085	88,096	93,631	97,724	180,710
– of which, attributable to non-controlling interests	8,608	10,348	13,202	11,972	15,528	15,247	15,501	14,891	13,468	16,472
Interest-bearing liabilities	160,261	126,488	125,928	110,585	96,667	87,154	88,275	97,627	104,775	126,408
Net debt	111,907	98,998	79,473	64,201	50,724	59,260	47,728	64,266	48,178	-44,703
Adjusted net debt	154,335	162,590	158,291	137,585	124,741	124,360	112,324	132,014	121,480	26,922
Provisions	103,832	118,166	138,567	138,263	138,344	131,680	136,642	149,792	155,951	161,475
Noninterest-bearing liabilities	114,899	110,112	104,252	97,513	90,449	88,200	134,094	94,839	91,330	297,293
Capital employed, average	313,124	302,743	293,992	279,435	248,640	240,778	250,283	260,190	265,639	271,674
Balance sheet total	528,364	485,484	497,209	462,317	409,260	409,132	462,608	450,780	463,248	782,358
Key ratios										
In % unless otherwise stated. (x) means times.										
Operating margin	15.5	-3.6	-1.3	-3.5	1.0	13.7	11.4	13.3	9.6	33.5
Operating margin[1]	16.5	16.3	14.5	14.3	15.6	17.2	12.9	15.1	16.2	17.3
Return on equity	12.3	-11.4	-6.9	-16.8	-33.4	11.1	11.9	14.0	6.7	36.9
Return on capital employed	8.3	-2.1	-0.8	-1.8	0.5	7.7	7.0	8.5	5.8	22.2
Return on capital employed[1]	8.8	9.3	8.2	7.3	8.7	9.6	7.9	9.6	9.7	11.5
EBIT interest cover, (x)	3.7	-0.7	-0.1	-0.8	0.5	3.3	4.3	5.3	4.3	15.8
EBIT interest cover, (x)1	3.9	4.1	5.0	4.8	4.6	4.1	4.9	6.0	7.1	8.3
FFO interest cover, (x)	5.7	5.4	7.3	6.5	6.5	5.4	6.5	9.3	10.4	12.9
FFO interest cover, net, (x)	6.6	6.2	10.1	9.4	7.7	6.9	7.8	10.3	12.1	15.9
FFO/gross debt	21.5	25.2	25.5	23.2	27.8	30.6	26.4	35.8	33.4	36.5
FFO/net debt	30.8	32.2	40.4	39.9	53.0	45.0	48.8	54.4	72.7	-103.1
FFO/adjusted net debt	22.3	19.6	20.3	18.6	21.6	21.4	20.7	26.5	28.8	171.2
Equity/total assets	28.3	26.9	25.9	25.1	20.5	22.6	22.4	24.1	24.0	25.2
Gross debt/equity	107.3	96.8	98.0	95.4	115.4	94.4	85.2	90.0	94.2	64.1
Net debt/equity	74.9	75.7	61.9	55.4	60.5	64.2	46.1	59.2	43.3	-22.7
Gross debt/gross debt plus equity	51.8	49.2	49.5	48.8	53.6	48.6	46.0	47.4	48.5	39.1
Net debt/EBITDA, (x)	2.1	2.3	1.9	2.1	1.9	1.7	1.4	1.5	1.0	-0.6
Adjusted net debt/EBITDA, (x)	2.8	3.7	3.9	4.5	4.6	3.6	3.3	3.1	2.6	0.4
Other information										
Dividend to owners of the Parent Company	6,774	–	–	–	–	2,000	2,000	3,623	4,000	23,414[2]
Investments	29,581	27,761	29,032	25,776	21,921	21,294	21,913	26,833	21,347	25,557
Electricity generation, TWh	178.9	181.7	172.9	117.4	119.0	127.3	130.3	130.3	112.7	111.4
Sales of electricity, TWh	205.5	203.3	199.0	197.2	193.2	157.3	174.1	169.4	164.1	168.9
Sales of heat, TWh	29.8	30.3	24.1	20.6	20.3	18.9	18.3	17.1	13.8	15.6
Sales of gas, TWh	52.4	55.8	45.5	50.7	54.8	56.3	60.7	59.2	56.8	57.1
Number of employees, full-time equivalents	33,059	31,819	30,181	28,567	19,935	20,041	19,910	19,815	19,859	18,883

[1] Based on Underlying operating profit, that is, Operating profit excluding Items affecting comparability.

[2] Proposed dividend.

Definitions and calculations of key ratios

The key ratios are presented as percentages (%) or times (x) and are based on full year 2021.

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 or very long-dated 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 of key ratios

Operating margin, %	= 100 x	EBIT	60,271	=	33.5
		Net sales	180,119		
Operating margin excl items affecting comparability, %	= 100 x	Underlying EBIT	31,181	=	17.3
		Net sales	180,119		
Pre-tax profit margin, %	= 100 x	Profit before income taxes	59,373	=	33.0
		Net sales	180,119		
Pre-tax profit margin excl items affecting comparability, %	= 100 x	Profit before income taxes excl items affecting comparability	30,289	=	16.8
		Net sales	180,119		
Return on equity, %	= 100 x	Profit for the period attributable to owner of the Parent Company	46,828	=	36.9
		Average equity for the period attributable to owner of the Parent Company excl the Reserve for cash flow hedges	126,811		
Return on capital employed, %	= 100 x	EBIT	60,271	=	22.2
		Capital employed, average	271,674		
Return on capital employed excl items affecting comparability, %	= 100 x	Underlying EBIT	31,181	=	11.5
		Capital employed, average	271,674		
EBIT interest cover, (x)	=	EBIT + financial income excl return from the Swedish Nuclear Waste Fund	61,054	=	15.8
		Financial expenses excl discounting effects attributable to provisions	3,873		
EBIT interest cover excl items affecting comparability, (x)	=	Underlying EBIT + financial income excl return from the Swedish Nuclear Waste Fund	31,964	=	8.3
		Financial expenses excl discounting effects attributable to provisions	3,873		
FFO interest cover, (x)	=	FFO + financial expenses excl discounting effects attributable to provisions	49,969	=	12.9
		Financial expenses excl discounting effects attributable to provisions	3,873		
FFO interest cover, net, (x)	=	FFO + financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	49,186	=	15.9
		Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	3,090		
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	92,554	=	27.0
		Financial expenses excl discounting effects attributable to provisions and interest components related to pension costs	3,434		
FFO/gross debt, %	= 100 x	FFO	46,096	=	36.5
		Interest-bearing liabilities	126,408		
FFO/net debt, %	= 100 x	FFO	46,096	=	-103.1
		Net debt	-44,703		
FFO/adjusted net debt, %	= 100 x	FFO	46,096	=	171.2
		Adjusted net debt	26,923		
EBITDA/net financial items, (x)	=	EBITDA	75,790	=	24.5
		Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	3,090		
EBITDA excl items affecting comparability/net financial items, (x)	=	EBITDA excl items affecting comparability	48,584	=	15.7
		Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	3,090		
Equity/total assets, %	= 100 x	Equity	197,182	=	25.2
		Balance sheet total	782,358		
Gross debt/equity, %	= 100 x	Interest-bearing liabilities	126,408	=	64.1
		Equity	197,182		
Net debt/equity, %	= 100 x	Net debt	-44,703	=	-22.7
		Equity	197,182		
Gross debt/gross debt plus equity, %	= 100 x	Interest-bearing liabilities	126,408	=	39.1
		Interest-bearing liabilities + equity	323,590		
Net debt/net debt plus equity, %	= 100 x	Net debt	-44,703	=	-29.3
		Net debt + equity	152,479		
Net debt/EBITDA, (x)	=	Net debt	-44,703	=	-0.6
		EBITDA	75,790		
Adjusted net debt/ EBITDA, (x)	=	Adjusted net debt	26,922	=	0.4
		EBITDA	75,790		

Facts about Vattenfall's markets 2021[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2021							
Hydro power[2]	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, 31 December 2021	**2,231**	**–**	**–**	**5,627**	**1,473**	**–**	**9,331**
Generated electricity, TWh							
Hydro power[2]	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[5]
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**[5]
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**
Sales of electricity, TWh	83.7[3]	2.3	5.4	55.7[4]	21.9	–	168.9
Sales of Heat, TWh	3.2	–	–	10.5	1.9	–	15.6
Sales of gas, TWh	–	–	–	16.3[4]	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[4]	6.3	–	22.9[5]
Electricity volume, TWh resellers	4.7	0.9	2.2	21.5	–	–	29.3[5]
Electricity volume, TWh businesses	24.0[3]	7.4	–	27.5[4]	9.5	–	68.3
Number of network customers	973,383	–	–	2,385,872	–	–	3,359,255
Number of gas customers	–	–	–	656,642[4]	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							19,859
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] Rounding differences may be present for certain items.

[2] In Germany mainly pumped-storage power plants.

[3] Including sales in Norway.

[4] Including sales in France.

[5] The value has been adjusted compared with information previously published in Vattenfall's financial reports.

Facts about Vattenfall's markets 2020[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2020							
Hydro power[2]	8,526	136	–	2,807	6	–	11,475
Nuclear power	6,345	–	–	–	–	–	6,345
Fossil-based power	699	–	–	3,863	3,405	–	7,967
– of which, gas	*–*	*–*	*–*	*1,556*	*3,405*	*–*	*4,961*
– of which, hard coal	*–*	*–*	*–*	*2,296*	*–*	*–*	*2,296*
– of which, oil and other	*699*	*–*	*–*	*11*	*–*	*–*	*710*
Wind power	358	–	713	588	524	1,077	3,260
Biomass, peat, waste	189	–	–	52	2	–	243
Solar power	–	–	–	10	13	5	28
Total	**16,116**	**136**	**713**	**7,320**	**3,950**	**1,082**	**29,318**
Installed capacity heat, MW, 31 December 2020	**2,141**	**–**	**–**	**6,001**	**1,352**	**–**	**9,494**
Generated electricity, TWh							
Hydro power[2]	35.4	0.5	–	3.8	–	–	39.7
Nuclear power	39.3	–	–	–	–	–	39.3
Fossil-based power	–	–	–	8.0	14.7	–	22.7
– of which, gas	*–*	*–*	*–*	*4.3*	*14.7*	*–*	*19.0*
– of which, hard coal	*–*	*–*	*–*	*3.6*	*–*	*–*	*3.6*
– of which, oil and other	*–*	*–*	*–*	*0.1*	*–*	*–*	*0.1*
Wind power	1.1	–	2.7	2.5	1.0	3.5	10.8
Biomass, peat, waste	0.1	–	–	0.2	–	–	0.3
Solar power	–	–	–	–	–	–	–
Total	**75.9**	**0.5**	**2.7**	**14.5**	**15.7**	**3.5**	**112.8**
Production of heat, TWh							
Fossil-based heat	0.1	–	–	9.2	1.6	–	10.8
– of which, gas	*–*	*–*	*–*	*7.2*	*1.6*	*–*	*8.8*
– of which, hard coal	*–*	*–*	*–*	*1.9*	*–*	*–*	*1.9*
– of which, oil and other	*0.1*	*–*	*–*	*–*	*–*	*–*	*0.1*
Biomass, peat, waste	3.0	–	–	0.4	–	–	3.3
Total	**3.0**	**–**	**–**	**9.6**	**1.6**	**–**	**14.2**
Sales of electricity, TWh	78.9[3]	2.5	3.5	54.7[4]	18.1	0.2	164.1
Sales of Heat, TWh	2.6	–	–	9.6	1.7	–	13.8
Sales of gas, TWh	–	–	–	13.3[4]	42.9	0.6	56.8
Number of retail customers	845,830	308,762	93,761	3,529,116	1,997,411	–	6,774,880
Electricity volume, TWh retail customers	7.3	2.1	–	9.8[4]	6.6	0.2	26.0
Electricity volume, TWh resellers	5.6	0.8	1.6	18.0	–	–	26.0
Electricity volume, TWh businesses	18.2[3]	6.9	–	31.8[4]	8.7	–	60.6
Number of network customers	970,513	–	–	2,379,422	–	–	3,349,935
Number of gas customers	–	–	–	–[4]	1,729,986	–	2,337,151
Electricity network							
Transited volume, TWh	70.3	–	–	12.3	–	–	82.6
Distribution network, km	121,670[5]	–	–	35,281	–	–	156,951[5]
Number of employees (full-time equivalents)							
Per country	9,475	77	367	5,753	3,545	327	19,544
Group total							19,859
CO_2 emissions per country, Mtonnes	0.2	–	–	6.1	5.8	–	12.1
CO_2 emission allowances received, Mtonnes CO_2/year	0.2	–	–	0.5	0.1	–	0.8

[1] Rounding differences may be present for certain items.

[2] In Germany mainly pumped-storage power plants.

[3] Including sales in Norway.

[4] Including sales in France.

[5] The value has been adjusted compared with information previously published in Vattenfall's financial reports.

Pro rata[1]

2021	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 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, 31 December 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

2020	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2020							
Hydro power[2]	8,317	136	–	2,807	6	–	11,267
Nuclear power	4,324	–	–	282	–	–	4,606
Fossil-based power	699	–	–	3,861	3,405	–	7,965
– of which, gas	–	–	–	*1,556*	*3,405*	–	*4,961*
– of which, hard coal	–	–	–	*2,296*	–	–	*2,296*
– of which, oil and other	*699*	–	–	*9*	–	–	*708*
Wind power	287	–	711	322	536	1,004	2,860
Biomass, peat, waste	189	–	–	41	2	–	232
Solar power	–	–	–	10	13	5	28
Total	**13,816**	**136**	**711**	**7,323**	**3,963**	**1,009**	**26,958**
Installed capacity heat, MW, 31 December 2020	**2,032**	**–**	**–**	**5,898**	**1,352**	**–**	**9,282**
Generated electricity, TWh							
Hydro power[2]	34.2	0.5	–	3.8	–	–	38.5
Nuclear power	26.7	–	–	2.0	–	–	28.7
Fossil-based power	–	–	–	8.0	14.7	–	22.7
– of which, gas	–	–	–	*4.3*	*14.7*	–	*19.0*
– of which, hard coal	–	–	–	*3.6*	–	–	*3.6*
– of which, oil and other	–	–	–	*0.1*	–	–	*0.1*
Wind power	0.9	–	2.7	1.3	1.0	3.2	9.2
Biomass, peat, waste	0.1	–	–	0.2	–	–	0.3
Solar power	–	–	–	–	–	–	–
Total	**61.9**	**0.5**	**2.7**	**15.3**	**15.7**	**3.2**	**99.4**
Produced heat, TWh	**2.9**	**–**	**–**	**9.6**	**1.6**	**–**	**14.0**
CO_2 emissions per country, Mtonnes	0.2	–	–	6.1	5.8	–	12.1

[1] Rounding differences may be present for certain items.

[2] In Germany mainly pumped-storage power plants.

Glossary

APX – Amsterdam Power Exchange. An energy exchange for the Netherlands, the UK and Belgium.

Availability – Refers to technical availability, which is the percentage of planned production time for an asset without unexpected technical difficulties or maintenance needs.

Biomass – Renewable fuel, such as forest residues, bark and pine oil.

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.

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.

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.

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.

EPD – Environmental Product Declaration – a third-party environmental declaration in accordance with ISO 14025 (www.environdec.com).

EPEX –The spot market of EEX. Since 2009 part of EPEX Spot SE, Paris.

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.

Fauna passage – A fauna passage in water is, for example, a drum or bridge that allows water from a natural watercourse to pass through a road or railway.

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.

Global Compact – The United Nations' (UN's) ten principles for companies surrounding human rights, labour issues, the environment and anti-corruption.

GRI – Global Reporting Initiative – a global standard for sustainability reporting. (see https://www.globalreporting.org/)

Gross capacity – The electric output delivered directly from a plant's generator. Measured in MW (Megawatt).

HOB (Heat only boiler) – A plant that produces heat for district heating as its sole output.

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.

Microgrids – A local self-sufficient energy system that can distribute, consume and store energy. It can work on its own or be connected to the main grid.

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.

NO_X – 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.

OHSAS 18000 – A series of standards that can be used as a basis for an occupational health and safety management system.

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).

OTC (Over the Counter) – Trading outside of exchanges (directly or via brokers) in physical and financial contracts.

Power-as-a-service (PaaS) – A business model which provides major energy users with guaranteed power services in exchange for a fixed monthly fee.

Peer-to-peer – Two or more individuals or customers can connect and transact directly, without going through a company.

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.

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).

Prosumer – Someone who both produces and consumes electricity.

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.

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.

SF_6 – 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.

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.

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.

White label – A product or service that is provided to customers who then brand the product themselves and resell it as their own.

For definitions of **financial key ratios**, see pages 182–183.

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)

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Financial calendar

28 April 2022	Annual General Meeting
29 April 2022	Interim report January–March
22 July 2022	Interim report January–June
27 October 2022	Interim report January–September
2 February 2023	Year-end report for 2022 (preliminary)

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 2021 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.

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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.

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