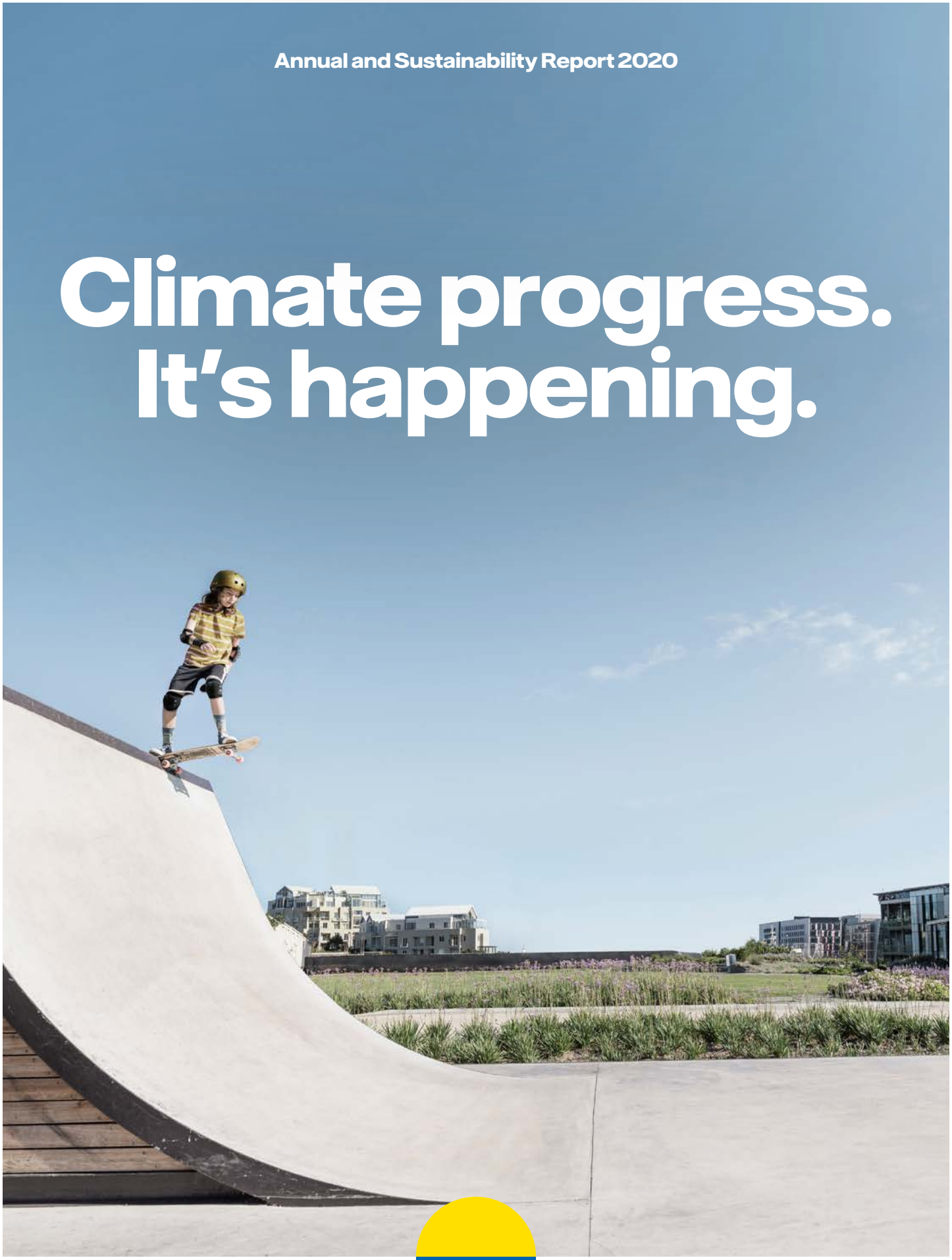
Annual and Sustainability Report 2020

Climate progress. It's happening.



VATTENFALL

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About the report

The 2020 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 4–9, 12–13, 64–150 and are assured by our auditors. Pages 14–15, 25–26, 65–69, 79–81, and 156–171 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 for 2019 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: **vattenfall.com/sustainability**.

Humanity faces a huge climate challenge that defines our work at Vattenfall. We recognise that we play a leading role in tackling this challenge and are committed to a clear goal – to enable fossil-free living within one generation.

To make it happen we will:

Phase out remaining fossil-based production according to our clear roadmap

Invest heavily in renewable energy as well as develop new technology to aid the energy transition

Collaborate with our partners to phase out fossil fuels in sectors like industry and transport by using fossil-free electricity.

We recognise that we are just one player among many and openly invite everyone to join us on the journey towards fossil-free living.

Positive progress for the climate is happening

It's happening on land and at sea

We live in a time of change. Driven by this need to tackle climate change, the market for renewable energy generation continues to grow. For instance, wind power now accounts for 14% of Europe's electricity generation. The energy industry is approaching a tipping point. Today, wind and solar power are the cheapest forms of electricity generation, and wind power has become one of the most important energy sources for driving decarbonisation. During 2020 Vattenfall commissioned 334 MW of renewable energy generation, and over 3 000 MW is under construction.

It's happening in your neighbourhood

Heating up your home fossil free is now a reality. In Berlin, for instance, Vattenfall has connected Europe's largest power-to-heat facility to the district heating grid at its Reuter West power plant, allowing it to produce and store heat generated from excess electricity from renewable energy sources. This enables fossil-free heating for up to 360,000 homes in Berlin.

Milestones

2023

We provide electric charging for 1 billion fossil-free kilometres annually.

→

2024

750 MW of additional, flexible hydro capacity enables more renewable generation.

→

2025

We reduce CO_2 intensity by >40% from 2017.

We generate fossil-free electricity to power 30 million homes.

We provide 7 TWh of renewable energy through corporate PPAs.

→

It's happening at completely new places

At Vattenfall we are committed to electrifying society as a way to help turn the tide on climate change. Part of this entails speeding up the transition to electric vehicles. Together with our partners we have built one of northern Europe's largest networks of EV charging stations: InCharge. Today InCharge is established in Sweden, Germany and the Netherlands and further markets will soon be added.

It's happening while you do what you love

Coking coal has been an essential component in steel production for more than a thousand years. A collaboration between steel producer SSAB, mining company LKAB and Vattenfall has now led to a joint venture: HYBRIT. The goal is to produce fossil-free steel in 2026. A pilot plant was inaugurated in August where tests will be conducted on using fossil-free hydrogen gas in the direct reduction of iron ore. If implemented at full scale, HYBRIT has the potential to reduce Sweden's CO_2 emissions by 10% and Finland's by 7%.

2026 →

Our HYBRIT partnership produces fossil-free steel.

2030 →

We reduce CO_2 intensity by nearly 70% from 2017.

We have completely phased out coal.

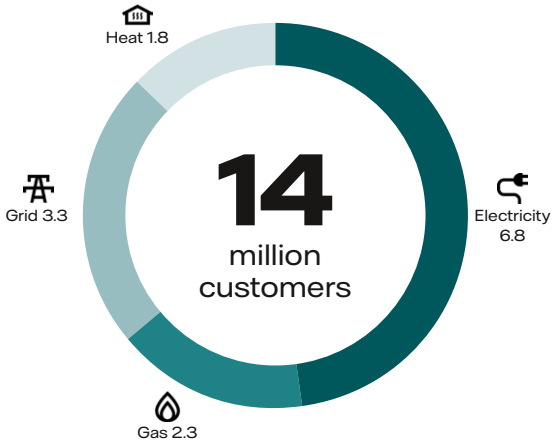
We operate a bio-carbon capture and storage (bio-CCS) plant.

2035 →

We are not done, more to come ...

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 20,000 employees. The Parent Company Vattenfall AB is 100%-owned by the Swedish state, and its headquarters are in Solna, Sweden.

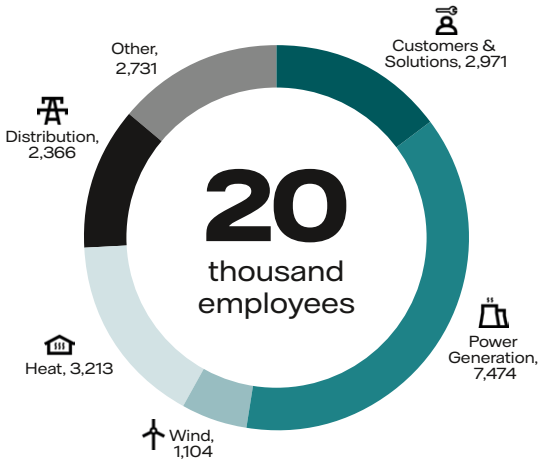


"Collaborating with customers strengthens the energy transition"

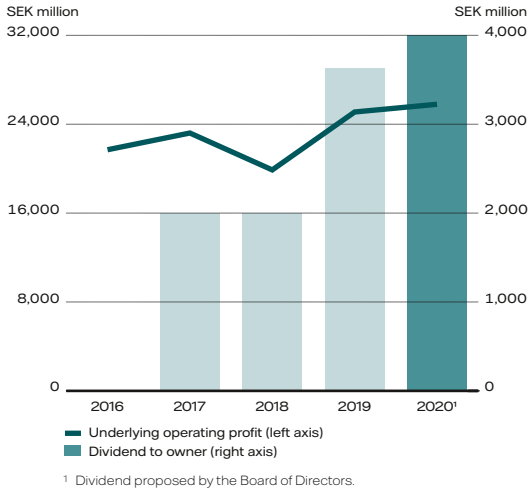
– Customer quote from materiality analysis

"We need to be a leader in the energy transition"

– Employee quote from materiality analysis



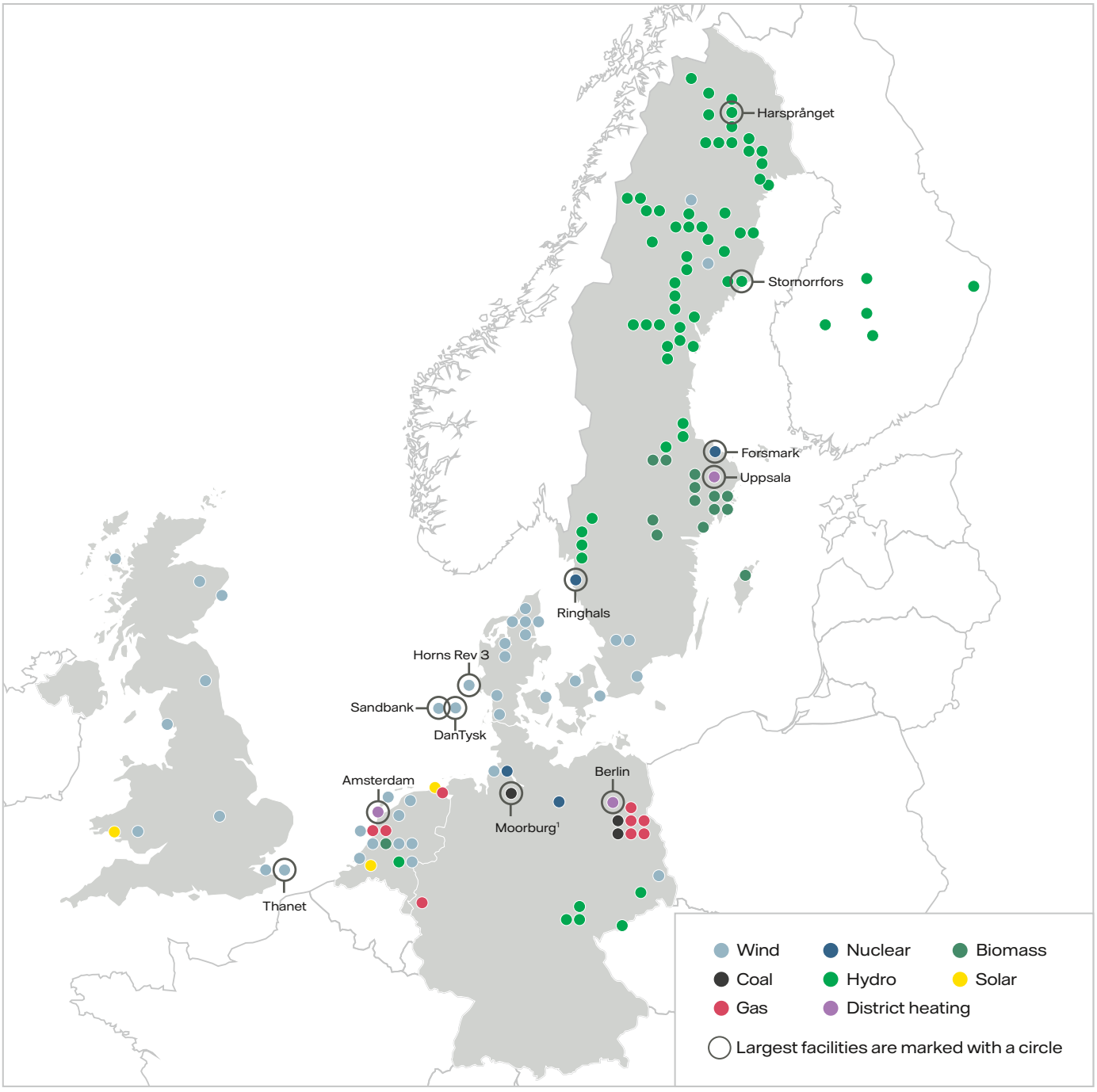
Underlying operating profit and dividend



¹ Dividend proposed by the Board of Directors.

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 2020, the underlying operating profit was almost SEK 26 billion and the proposed dividend to our owner is SEK 4 billion.

Overview of Vattenfall's assets and production plants



Largest plants

Wind farms

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, 3,952 MW
Forsmark nuclear power plant, 3,271 MW
Moorburg[1] CHP plant: electricity capacity 1,654 MW, heat capacity 30 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 Belgium, Finland, France, Norway and Poland

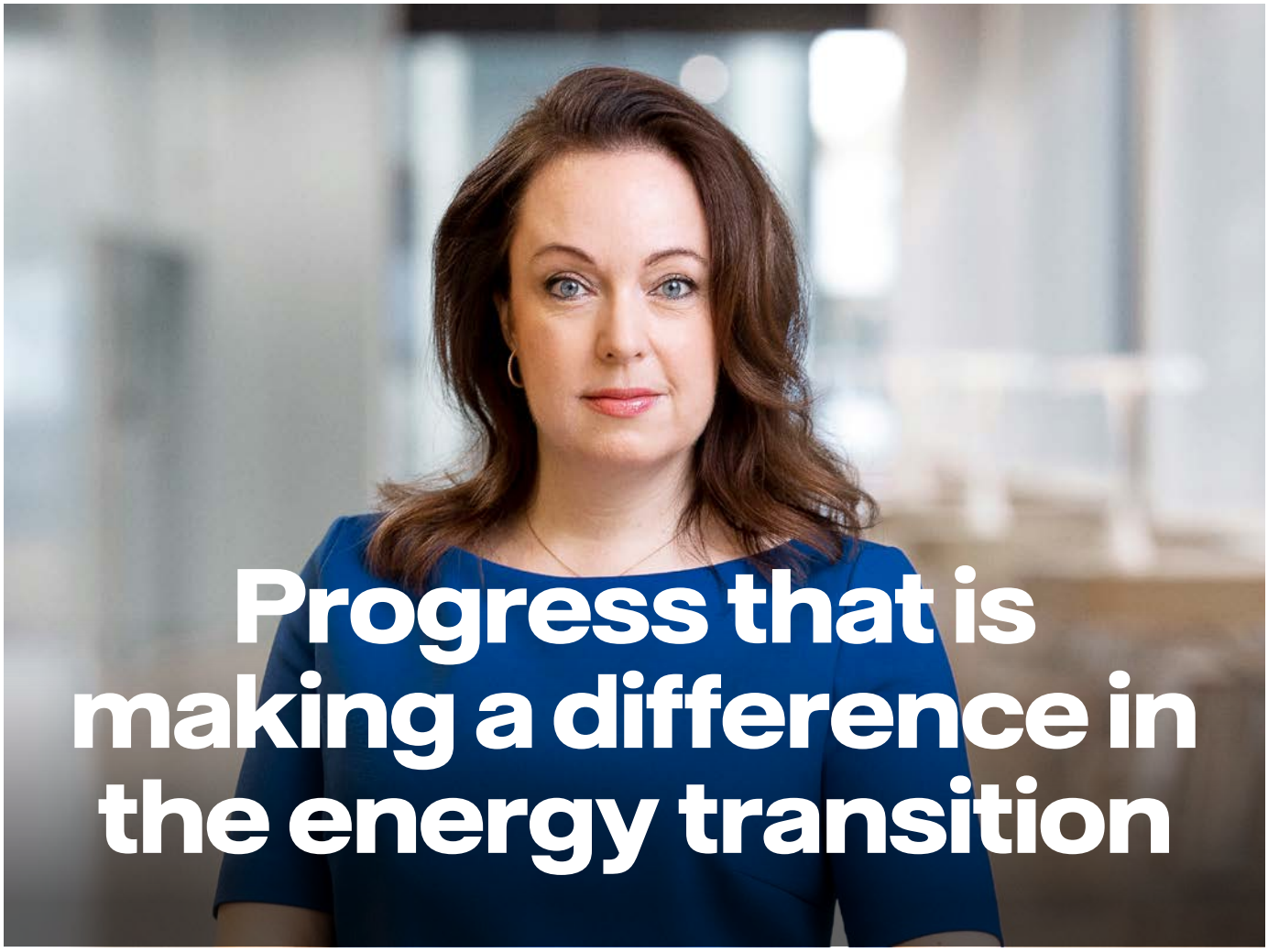
Other operations

Distribution
Operations in Sweden and Germany

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

EV charging solutions
Vattenfall operates 22,400 charging points throughout Sweden, Germany, Norway and the Netherlands

[1] Coal-fired generation at Moorburg has been discontinued as of year-end 2020.



Progress that is making a difference in the energy transition

Despite a tough and exceptional market situation, 2020 was a year marked by a faster pace in the energy transition. For Vattenfall the trend has been clear. That we talk about climate progress is no coincidence.

The 1st of November I took office as CEO of Vattenfall. It has been a challenge in a time when most employees are working from home, it is not suitable to travel and electricity prices in the Nordic countries are at their lowest levels in 20 years. 2020 was however a year with significant progress. Our development of renewable generation reached new milestones and is benefiting from steadily decreasing costs for technological development. We received support for our early phase-out of coal-fired power in Germany. Electrification of industrial processes is accelerating and contributed to a record-high number of requests for new connections. From this perspective we see – despite a challenging year in general – the continuation of a positive development that also serves as the foundation of our strategy.

I feel secure that Vattenfall's strategic direction – to enable fossil-free living within one generation – is right. This is not our sustainability strategy, it is our business strategy. And it is sustainable. It is in line with this direction that we will find and create the business models of tomorrow. As we now report on the outcome of our strategic targets for 2020 and continue to work towards the new targets for 2025, I look forward to working together with my colleagues on building a company that is future-oriented, sustainable and profitable.

Strong resilience in a turbulent market

Owing to good preparedness and outstanding efforts by our employees, the impact of the pandemic on Vattenfall's operations has been limited. Operation of our facilities has been stable, whilst deliveries to customers have continued with a sustained high level of service. Demand was affected to some extent by restrictions that in turn affected our customers' operations. The driving forces behind the low electricity prices in the Nordic countries, which are decisive for Vattenfall's earnings, have been different, however. The situation has been dramatic, with historically low price levels and extreme differences between price areas in Sweden. Mild weather and a high level of precipitation impacted the development, with large inflows to reservoirs in Norway and northern Sweden. During brief periods we also saw for the first time negative electricity prices in the Nordic countries when unusually high wind power generation further strengthened this trend.

Several factors have contributed to Vattenfall's resilience. We are a diversified company, both geographically and with respect to our portfolio of operations. Our hedging has served us well in a declining market. And we have drawn benefit from our market knowledge in the trading operations, where we reported a strong result for the year.

Vattenfall impacted by costs of the energy transition

We are phasing out coal-fired generation and gradually reducing our climate impact. Our absolute CO_2 emissions decreased by 38% compared with 2019. An expected and natural development of the energy transition is that the financial value of coal-fired assets is decreasing. This had a strong negative effect on Vattenfall's financial results in 2020. Net profit for the year was SEK 7.7 billion and was weighed down by large impairment losses mainly related to the Moorburg coal-fired power plant in Hamburg.

In Germany, the Parliament passed a law calling for the phase-out of coal-fired power by 2038 at the latest. At the end of the year our bid to handle the phase-out of Moorburg was accepted, and since year-end we are no longer generating coal-fired power from the plant.

One consequence of the impairment losses is that we did not achieve our target return on capital employed, which was 5.8% for the year. The corresponding figure based on underlying operating profit (excluding impairment losses) was 9.7%. Our priority key ratio for the capital structure, funds from operations/adjusted net debt, was 28.8%, which is higher than the target range of 22%–27%. The Board of Directors has proposed a dividend of SEK 4 billion.

Excellent starting point in crucial decade for the energy transition

The goal of a climate-neutral Europe by 2050 (based on the Paris Agreement) is an important and ambitious one. The energy transition during the coming decade will play a crucial role and is a major challenge. The entire energy system – including industries and thereby a large share of the national economy – needs to be rebuilt. The investment need is enormous – the EU has estimated it to be at least EUR 400 billion per year until 2030.

"As we now look forward we do so with a strong market position and a wealth of growth opportunities – far more than we can ever achieve. Continued success therefore requires a large measure of discipline. We need to be selective in making our choices and to build upon our strengths."

Together with other energy companies, Vattenfall finds itself in the centre of events for this development. Our goal to enable fossil-free living within one generation points in a clear direction and has strengthened relations between employees, customers and partners. As we now look ahead we do so with a strong market position and a wealth of growth opportunities – far more than we can ever achieve. Continued success therefore requires a large measure of discipline. We need to be selective in making our choices and to build upon our strengths. We find these in fossil-free production of electricity and heat, and in areas where we – together with our customers and partners – are working for climate-smart energy solutions.

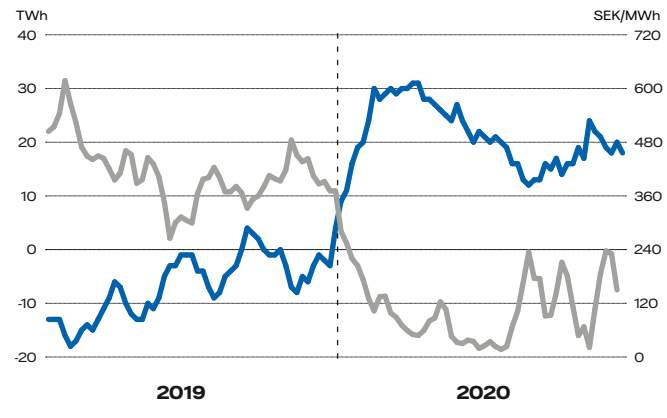
Vattenfall will continue to have considerable growth in renewable production, especially wind power. On top of this we are proceeding with our plans to phase out fossil fuels. Our district heating operation in Berlin plays a central role for us in achieving our emissions targets. We aim to lead development towards environmentally sustainable production of both electricity and heat. This is a clear part of our assignment from our owner, and it is a basic precondition for conducting profitable business at the heart of the energy transition in Europe.

Equally important is the development that is being conducted together with our customers. We want to help our customers reduce their carbon footprint and find their way in a complex energy landscape. With an accelerated pace of technological development, higher demand and support from the EU's Green Deal, we see attractive opportunities in areas such as electric transports, energy storage and solar power in the coming years – on top of offering fossil-free electricity and heat. Vattenfall's great breadth of operations and expertise across the entire value chain are helping us create relevant offerings with energy solutions that customers are looking for.

During the year the number of requests to connect to the distribution grid increased to a record-high level. It is clear that many actors want to build new electricity generation or increase the use of electricity in their operations. We are also seeing many requests to establish new operations. This trend will continue. During the year we made record-high investments in our electricity grid which, together with more generation and an expansion of distribution grids, is an important part of the new energy system that is emerging in Europe.

Hollandse Kust Zuid 1–4 In September 2020, TenneT successfully installed the jacket for the Hollandse Kust Zuid Alpha substation, using Heerema's semi-submersible installation vessel Sleipnir. A bubble curtain was created around the construction site to mitigate the impacts of underwater noise on marine life.

Nordic hydrological balance and system price (spot)



In 2020, progress on the path towards fossil-free living meant that we:

generated 112.8 TWh of electricity

without major disruptions throughout the pandemic

achieved a Net Promoter Score (NPS) of +2

with a high service level to our customers

increased our renewables capacity by 334 MW

as we continue to lead development forward in the sector

delivered a FFO/ adjusted net debt ratio of 28.8%

by prudently managing our risks and capital structure

Attractive business opportunities coupled to the transition in other sectors

Emissions need to be reduced also in other parts of society than the energy sector to achieve the goals of the Paris Agreement and the EU's goal for climate neutrality by 2050. At Vattenfall we see major potential in this development, both for new business opportunities and a positive climate impact. Our offering encompasses advanced services for supporting electrification of industries and transports. The number of queries is increasing steadily, and we are involved in numerous projects together with partners with the ambition to accelerate the transition in other sectors. This mainly concerns solutions in which indirect electrification with the help of hydrogen is enabling a transition in sectors such as steel, cement, oil refining, agriculture, chemicals and transport.

A prime example is HYBRIT, a joint initiative between SSAB, LKAB and Vattenfall aimed at developing a hydrogen-based process for fossil-free steel production. In this new process, hydrogen gas is used instead of coal to separate oxygen from iron. The by-product is water instead of carbon dioxide. In August 2020 a pilot plant was inaugurated in Luleå, and the goal is to deliver fossil-free steel to the market as soon as 2026. The project has immense potential for positive climate impact. The steel industry accounts for 10% of CO_2 emissions in Sweden and 7% globally. Demand for fossil-free electricity is expected to grow by 15 terawatt hours for conversion of Swedish steel production. Electrification of the reduction process for additional iron ore for export would lead to even larger growth in demand.

A company portfolio in change

Renewable energy production is growing exponentially, both in Europe and globally. This trend is explained by significantly lower costs and risks for wind and solar power. Vattenfall's assets in this area consist mainly of wind farms with total capacity of 3.6 GW. On top of this we have 3.2 GW under construction and over 4 GW in mature stage development. These investments, mainly in offshore wind projects, will change our generation mix at its very core. In just a few years our capacity in wind power will be roughly on par with our hydro power, which has been by far our largest generation source ever since Vattenfall was founded.

Investments in renewable generation are being made without subsidies in several areas around Europe, and Vattenfall is competitive in this development. In early summer 2020 we decided to invest in what will be the world's largest wind farm to be built without government support, Hollandse Kust 1-4 in the Netherlands. The project is now being built offshore the country's west coast with a future capacity of 1.5 GW, corresponding to the electricity consumption of more than two million households, and is expected to be completed in 2023. However, in most cases subsidies will continue to be a prerequisite in order for investments in Europe to be made to an extent and at a pace that will make it possible to achieve the goals of the Paris Agreement in time. The list of important milestones in 2020 for Vattenfall's growth in wind power can be made long. Aside from the Netherlands we are also expanding strongly in both Denmark and the UK.

The phase-out of fossil fuels needs to be done gradually to be able to manage the transition in a responsible way that the energy system can handle. Parallel with the closure of the Moorburg coal-fired power plant in Hamburg we are driving development forward with more climate-smart heat production. Natural gas, which has substantially lower CO_2 emissions than coal, is in many countries an important bridge for the path to a future system based on fossil-free energy sources. The goal of our joint climate agreement with the City of Berlin to halve emissions compared with 1990 was already reached in 2017, three years earlier than planned. In 2020 the gas-fired Marzahn combined heat and power plant was inaugurated. The plant is one of the most efficient of its kind in Europe and will be a cornerstone in the city's future energy supply.

> "Emissions need to be reduced also in other parts of society than the energy sector to achieve the goals of the Paris Agreement and the EU's goal for climate neutrality by 2050. At Vattenfall we see major potential in this development, both for new business opportunities and a positive climate impact."

In Berlin we decided during the year to offer the city to buy the electricity grid operation, Stromnetz Berlin. After evaluating several options we believe this is the best solution for all parties. The sale will bring an end to a long period of protracted litigation. This has been a strain on the company, which is a well-run and efficient operation and which needs long-term stable conditions to be able to continue as such.

The distribution business, with its lower risk profile, supports Vattenfall's growth in renewable energy. Our distribution business in Sweden is growing in pace with increased demand. This development is very positive for the energy transition,

HYBRIT The goal is to deliver fossil-free steel to the market as soon as 2026.

but is presenting the electricity system with an enormous challenge. Even as Vattenfall and other actors are now speeding up the pace of investment, we continue to have significant capacity challenges in the electricity grid. Now it is paramount that we put in place stable and long-term regulation and permitting processes that enable a faster pace in the energy transition. The bottlenecks we see in transmission capacity in Sweden today and the lengthy permitting processes that were created during a period when increased grid capacity was a marginal issue risk becoming one of the biggest obstacles to building more fossil-free electricity generation and the ability to reduce industrial emissions with the help of electrified processes.

Nuclear power is at the core of the Swedish electricity system with its fossil-free and plannable electricity generation. Together with hydro power and wind power it will play a crucial role for Sweden in managing the climate transition. At the end of the year we closed our oldest reactor, Ringhals 1, in accordance with a decision made five years ago. We are now focusing on safe and profitable operations for our remaining five reactors until the 2040s. We have invested billions in these to meet stricter safety standards and to enable long and stable operation. Vattenfall is Sweden's largest owner of nuclear power and we are proud of its contribution to society.

In March 2021, the German government announced cornerstones of an understanding for the nuclear phase out in the country. This implies a compensation of EUR 1.4 billion from the German government to Vattenfall. While this is a conservative implementation of the court decisions in Germany, we welcome the envisaged agreement as it puts an end to many years of costly and time consuming disputes. We will now focus on our core business in the country with continued phase-out of fossil fuels and investments in climate friendly heating and electricity production.

Global Sustainable Development Goals and respect for human rights

Vattenfall supports the UN's 17 Global Sustainable Development Goals (SDGs). Sustainability is the foundation of our strategy, which is also reflected in our contribution to these goals. For example, we are growing in wind power at the same time that we are lowering our project costs – a clear contribution to SDG 7 "Affordable and Clean Energy". In our heat operations, our joint climate agreement with the City of Berlin and the milestones we have reached with respect to lowering emissions to date are clear examples of SDG 13, "Climate Action". Our partnerships with the steel and automotive industries are reflected in SDG 17, "Partnerships for the Goals", which promotes partnerships as a tool for positive impact.

Similar couplings exist between all 17 of the Global Goals and our strategy, where our activities contribute mostly to SDGs 7, 9, 11, 12, 13 and 17 (see illustration below). As we now embark on what the UN has called the Decade of Action, implementation of our strategy, and thereby of our contribution to these goals, is more important than ever before.

Respect for human rights is a natural part of how we manage our business throughout the entire value chain at Vattenfall and also contributes to the UN Sustainable Development Goals. Human rights are an integral part of many of the goals; for example, we prioritise climate action, since the climate affects the lives of so many people. Our contributions to the biodiversity goals, SDGs 14 and 15, also affect human rights through food supply. In a more direct sense we are working with our suppliers in low-income countries to make sure that their employees have decent living and working conditions, which thereby contributes to the five first goals. In 2020 we introduced new tools and training that are helping us strengthen this work.

Vattenfall's employees, customers and partners are making the difference in the energy transition

In the current market situation Vattenfall's ambitions require not only greater focus and precision in what we take upon ourselves. They also put higher demands on engaged employees with the right competencies today and in the future. Driving change together with customers and partners also requires a keen understanding of what motivates people. Despite the pandemic, we know that the climate issue is at the top of the list of people's source of concern today. For many it can feel overwhelming and hopeless. There is therefore a great need to inspire people to action and show what is being done. And that is precisely what we hope to achieve with this year's report. I hope you enjoy reading it.

Anna Borg, President and CEO Vattenfall

How Vattenfall and its employees fulfilled an important role in society during the pandemic-ridden 2020.

The challenges of a global pandemic

On 9 January 2020 the World Health Organisation issued a statement about a mysterious coronavirus-related pneumonia found in Wuhan, China. The virus subsequently set off the global Covid-19 pandemic, forcing countries into lockdown to prevent further spread of the virus, while putting healthcare systems under immense strain and causing fatalities to soar.

In many countries, tough restrictions were put on ordinary life, and companies were forced to cut down or discontinue their activities altogether. With its critical infrastructure responsibility and important role in society, Vattenfall faced the challenge of delivering system-critical electricity and heat despite the many restrictions. The company succeeded in keeping its many production facilities running throughout 2020, while ensuring that its employees stayed safe and healthy.

As an organisation, Vattenfall has always had preparedness plans in place for a range of contingencies – including a pandemic. But this one developed differently from anything experienced since the Spanish flu, and all plans had to be reviewed and adapted to the emerging situation.

"Without any doubt, Covid-19 is one of the worst global crisis situations in recent history from a societal perspective. With that said, so far we have been able to function well and therefore not defined the situation as a crisis from a company perspective, but rather a long duration incident. Our Group, Country and Business area organisations are trained in crisis management and the same platform and principles could be used in this situation. The fact that we took some tough decisions early with a well-trained organisation meant the pandemic did not have the same initial impact on us as it did on some other organisations," says Fredrik Torp, Head of Corporate Security & Resilience and Chairman of Vattenfall's Pandemic organisation.

IT organisation put to the test

As employees all over the company were sent home in response to the authorities' recommendations and instructions, a challenging IT operation was launched to enable work from home. Thousands of employees needed to connect to the company's IT systems via home internet connections to be able to participate in video meetings and work on shared servers. Already early in February, to secure everyone's access to their systems and data, the bandwidth was increased and the number of VPN tunnels went from 1200–2000 employees connected via VPN each day to over 13,000 unique users per day, with around 9,500 concurrent users daily.

Lockdowns and closed borders

March saw country after country going into lockdown with various restrictions and the closing of borders. Vattenfall's local pandemic organisations followed country recommendations and instructions, such as asking people to work from home unless they had critical functions, and the business organisations activated their business continuity plans.

"To keep an overview of the complex situation, various weekly meetings were set up. Country pandemic groups met to exchange information about the situation and the regulations in force in the respective countries. Corporate Security & Resilience (CS&R) and local Health & Safety (H&S) met, and at Group level representatives of all countries, business areas, relevant staff functions and the Executive Group Management met to discuss input received from the countries and business areas," explains Marika Alpini, Incident Manager and Group Pandemic Coordinator.

Also in March, it was decided to stop all non-essential travel to protect employees from exposure to the virus and the risk of getting stranded far from home.

Keeping society running

The challenges experienced in Vattenfall's business were many and varied, as can be seen in the examples below from the nuclear and wind power operations.

The nuclear power plants quickly introduced the necessary measures such as social distancing, enhanced cleaning and reduced access to areas like control rooms with highly critical functions. And in general very few people at Vattenfall's nuclear power plants have contracted Covid-19 or other illnesses during the pandemic. One theory is that the deeply rooted safety culture at our nuclear plants – and the fact that staff there are used to working with an "invisible" potential hazard and wearing protective equipment, contributed to a safe approach to a common protection from the coronavirus.

Production at the nuclear power plants has not been affected. Even the

large revisions at Ringhals, which were carried out with external contractors from Sweden as well as other countries, were performed without problems. Special measures were necessary in certain situations, however, such as when flying in required international expertise.

Vattenfall's wind business is a highly international organisation, and logistics are a cornerstone in its activities. The pandemic has been a challenge for Vattenfall's operators as well as for contractors.

"Things are more difficult with face masks, social distancing, teams in isolated 'bubbles' and test requirements to get access to our vessels and accommodation platform, but the organisation has worked well and delivered. There have been no overall delays in time plans, but tasks may have been performed by other people and in other countries than planned," says Jakob Nielsen, Director of H&S Offshore, and Head of Pandemic Coordination in the Wind Business Area. "Our physical projects and sites have of course been challenged, as we normally have staff from many different countries working together. With operations and servicing of our German DanTysk and Sandbank offshore wind farms performed from Denmark, during certain periods our non-Danish staff needed to present a less than 48-hours-old, clean corona test every time they crossed the border to go to work. At the UK Ormonde offshore wind farm, we for instance decided to postpone some heavy lifting operations that inherently involve a higher risk as the local hospitals were under great strain and any accident would put them in a difficult situation. So we have had to adapt in many situations but have still been able to keep supplying electricity to society."

Our construction activities, such as at the Kriegers Flak offshore wind farm and the Blakliden Fäbodberget onshore wind farm, have also managed to overcome the challenges of Covid-19 and keep up with time schedules.

In Customers & Solutions, digital solutions were introduced early to keep contact with existing and potential customers (see page 42).

All this and similar efforts in other business areas meant that Vattenfall could ensure that supply of electricity and heat would be maintained, making that one less thing for our stakeholders and society to worry about.

Employee well-being

A critical factor in securing the supply of electricity and heat to society is the well-being of Vattenfall's employees. With a large number of people working permanently from home, both mental and physical health could be challenged, and numerous steps were taken by the company as well as at the initiative of the employees. On the mental health side, coaching from a distance and online support were made available to managers and employees in all countries, just as social interaction among employees through team sessions was encouraged to replace physical meetings. Supported by digital tools, creative solutions were developed to maintain social contact and encourage physical activities among colleagues.

On Vattenfall's intranet, inspirational interviews were posted with employees from all Vattenfall countries on how they were coping with, for instance, home schooling their children and maintaining a work/life balance when the entire family was home together all day.

To avoid the physical ill-effects from employees working on laptops at their dinner tables, arrangements have been made for employees, wherever possible, to borrow office equipment such as monitors, mouse and keyboards.

In spite of the challenges Vattenfall's employees have had to cope with, the annual employee survey showed a remarkable increase in the engagement score from 69 to 72 in 2020.

The reopening

On 11 May, Vattenfall reopened its first offices based on the recommendations from the local authorities, and other offices followed suit as the situation in Europe eased up. Office rules followed national recommendations, and the entire pandemic organisation remained active, which proved to be a prudent move when the second wave started to sweep over Europe and many restrictions were re-introduced, continued, and in some places even strengthened.

The second wave

"When the second wave hit in the autumn, some people had been working from home for almost eight months, maybe in a small flat with their partner and children home also for certain periods of time. The uncertainty of the situation is challenging for many employees," says Merlyn Esajas, policy advisor at H&S Netherlands/UK. "In the Netherlands we decided in mid-November to further increase our focus on remote working and the required support. This included the release of a comprehensive toolkit which, among other things, covered work/life balance, how to organise work and a check of home office ergonomics. With governments stimulating working from home, ergonomics also became a key topic in all countries."

Maturing through challenges

Vattenfall's organisational structure and employees have steadily matured in their approach to the ever changing conditions of the pandemic. They have proved to be able to meet the challenges they have faced and continue to deliver heat and electricity to stakeholders while never jeopardising employee health and safety in doing so.

Important events

2020 was an eventful and special year. Despite record-low electricity prices and a pandemic that quickly spread around the world, together with its customers and partners Vattenfall continued to make progress towards a fossil-free life.

Agreement to build one of Sweden's largest solar parks
In January Vattenfall signed an agreement to plan and build one of Sweden's largest solar parks in Uppsala commissioned by the property company Vasakronan. 11,000 solar panels will be installed on an area of approximately 7 hectares with planned output of 4.4 MW.

Final permit received for construction of the Kriegers Flak offshore wind farm in Denmark
In February the Danish Energy Agency (DEA) granted final approval for the Kriegers Flak offshore wind farm. Once completed in 2021, the wind farm will have a capacity of 605 MW, corresponding to the annual electricity consumption of 600,000 Danish households.

Final investment decision and agreement on future sale of the South Kyle onshore wind farm in Scotland
On 27 April Vattenfall entered into a partnership with the renewable infrastructure fund Greencoat UK Wind, which will acquire the South Kyle wind farm following its completion. Vattenfall will construct the wind farm and manage its operation on behalf of Greencoat for a minimum of ten years. Vattenfall will also purchase the power for a period of 15 years. South Kyle (240 MW) will be able to power some 170,000 UK homes with renewable electricity per year, saving close to 300,000 tonnes in CO_2 emissions annually.

Marzahn CHP plant in Berlin

240 ktonnes

reduced CO_2 emissions in the city

Marzahn CHP plant inaugurated
On 3 June the new gas-fired Marzahn CHP plant in Berlin was inaugurated. The plant has an installed capacity of 260 MW of electricity and 230 MW of heat and is expected to reduce annual CO_2 emissions in the city by 240,000 tonnes.

Final investment decision for Hollandse Kust Zuid 1-4 offshore wind farm in the Netherlands
On 4 June the final investment decision was taken on Hollandse Kust Zuid 1-4 in the Netherlands, which will be the world's largest offshore wind farm when commissioned in 2023. The wind farm will have an installed capacity of 1,500 MW, which is equivalent to the annual electricity consumption of more than two million Dutch households.

Agreement to operate Ringhals 1 to stabilise the electricity grid
In June Vattenfall reached an agreement with the Transmission System Operator (TSO) Svenska kraftnät to support stability in the Swedish electricity grid by operating Ringhals 1 during the period 1 July–15 September in exchange for approximately SEK 300 million in compensation. The reactor was previously planned to not be restarted until after the summer due to the market situation.

Government decision on national plan for modern environmental requirements for hydro power in Sweden
On 25 June the Swedish government announced its decision on the national plan for modern environmental requirements for hydro power, which caps production capacity losses resulting from environmental measures at 1.5 TWh.

The pilot plant for HYBRIT, a partnership project together with SSAB and LKAB in Luleå, Sweden, was inaugurated with both Swedish Prime Minister Stefan Löfven and former Deputy Prime Minister Isabella Lövin in attendance.

Magnus Hall, President and CEO, announces resignation - CFO Anna Borg named as successor
On 21 July Vattenfall's President and CEO Magnus Hall announced that he had decided to leave Vattenfall. On 10 September, Anna Borg was named as his successor, effective 1 November.

Inauguration of pilot plant for HYBRIT, a partnership project for fossil-free steel production
On 31 August a pilot plant for the HYBRIT partnership project together with SSAB and LKAB in Luleå, Sweden, was inaugurated with both the Swedish Prime Minister and Deputy Prime Minister in attendance. The plant will be used to perform tests in several stages of the use of hydrogen gas in the direct reduction of iron ore.

Inauguration of Princess Ariane wind farm in the Netherlands
The Princess Ariane onshore wind farm (formerly known as Wieringermeer and Wieringermeer Extension) was inaugurated on 30 September and is the largest of its kind in the Netherlands. With a total capacity of 301 MW, the wind farm will generate electricity corresponding to the annual electricity consumption of 370,000 Dutch households.

Offer to sell the electricity grid company Stromnetz Berlin to the State of Berlin
In September the tendering process for the electricity grid in Berlin was rejected by the Higher Regional Court. Despite the favourable ruling, Vattenfall decided on 23 October to offer its subsidiary for sale to the State of Berlin in order to end litigation over the grid concession at a time when major investments in the grid are needed. If the offer is accepted, the transaction can be completed during the first half of 2021.

Closure of Moorburg power plant in Hamburg

5 Mtonnes

reduced CO_2 emissions (based on 2019 emissions)

Tender accepted for early closure of Moorburg power plant in Hamburg
On 1 December Bundesnetzagentur, the German Federal Network Agency, announced the results of its first auction for the phase-out of coal power. Vattenfall had submitted a tender to shut down the Moorburg coal-fired power plant, which was accepted. As of year-end 2020 the plant has stopped generating coal-fired power.

Agreement on district heating partnership project in Scotland
On 12 February, Midlothian Council selected Vattenfall as a preferred partner for a project close to Edinburgh. The project is a 50/50 joint venture and pertains to development of a district heating network that will initially source heat from a waste and recycling plant to some 1,800 households.

Final permit received for construction of Vesterhav Syd and Nord offshore wind farms in Denmark
On 14 December the Danish Energy Agency approved the construction plans for the project, which is located 4–10 kilometres off the coast of Jutland. Once commissioned in 2024 the wind farms will have a combined capacity of 350 MW, equivalent to the annual electricity consumption of 380,000 Danish households.

Ringhals 1 taken out of service
In October Ringhals 1 went into a so-called coast-down phase, gradually reducing power as the fuel burnt out. The last electricity was generated on 31 December, and cold shutdown was reached after almost 45 years in operation and 220 TWh of generated electricty.

Ringhals 1 left the electricity grid on 31 December.

Business model

Vattenfall is an integrated energy company with the customer at the centre. Sustainability is at the core of our business as we drive work on combating climate change. 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, batteries 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 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 secure supply requires well-functioning distribution grids and development of smart 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 and Germany. 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 22,400 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

- 90 TWh of fossil-free electricity generated
- SEK 6.5 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 20,000 employees with an emphasis on inclusion, diversity and safety
- Dividend of SEK 4 billion proposed by the Board of Directors for our owner for 2020.

Values

~14 million
customers in distribution, electricity, gas, heat and energy solutions

~90 TWh
of fossil-free electricity generated

~50 %
decrease in CO_2 emissions since 2015

20,000
employees and ~SEK 20 billion in personnel costs

Outcomes

Economic value
SEK 7.7 billion
Page 156

Social value
SEK 22.7 billion
Page 156

Environmental value
SEK -3.8 billion
Page 156

The UN's Global Sustainable Development Goals

page 51

page 59

page 41

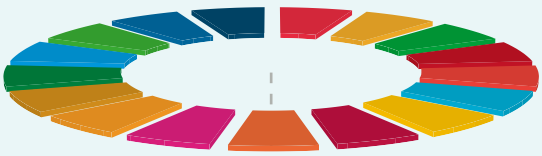
page 55, 162

page 69

page 45

The UN's Sustainable Development Goals

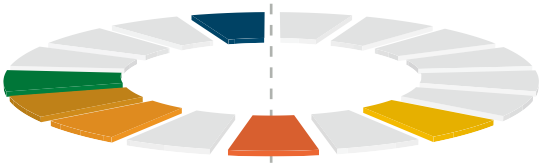
Vattenfall's activities contribute to the achievement of the UN's Global Sustainable Development Goals (SDGs), which are a collection of 17 global goals that were adopted in 2015 by more than 150 countries.



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

Vattenfall contributes to all 17 of the 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.

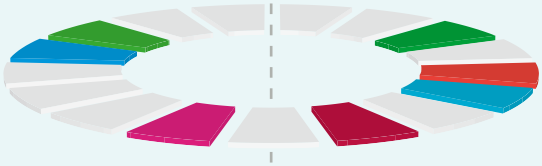
Global



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.

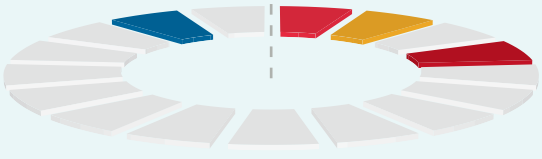
Local



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, as exemplified here.

In 2016 we identified the six SDGs that are most relevant for Vattenfall and where we can have the greatest global impact. These remain valid internally, as reflected in our strategy, as well as for our stakeholders, as confirmed by our updated materiality analysis (see page 156 for more information). Examples of our contributions to the most relevant sub-targets of the six goals are described below.

THE GLOBAL GOALS
For Sustainable Development

SDG	Target	Examples	Page
	**7.2** Substantially increase the share of renewable energy in the global energy mix by 2030.	In addition to commissioning an additional 334 MW of renewable energy, we took the decision to build the world's largest non-subsidised offshore wind farm.	51
	**9.4** Upgrade infrastructure and retrofit industries to make them sustainable by 2030.	Vattenfall's Power-as-a-Service offering enables industries to smoothly transition from fossil fuels to fossil-free electricity.	59
	**11.6** Reduce the adverse environmental impact of cities by 2030.	The 22,400 charging points we operate and that 90,000 of our customers have access to, combined with our partnerships with local city mobility providers, are helping reduce transport emissions in cities.	41
	**12.2** Achieve sustainable management and efficient use of natural resources by 2030. **12.5** Substantially reduce waste generation through prevention, reduction, recycling and reuse by 2030.	By integrating waste heat and heat pumps, Vattenfall's Heat operation in the UK will introduce a district heating system that will deliver low-carbon and low-cost heat. More than 90% of residual products from our combustion plants are sold to the construction industry for re-use.	55, 162
	**13.1** Strengthen resilience and adaptive capacity 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.	69
	**17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.	Together with seven other hydro power companies, Vattenfall has established an environmental fund that will invest SEK 10 billion over a 20-year period to improve the aquatic environment in Sweden.	45

Our beliefs about the future

Following an extreme year with a global pandemic, our beliefs about the future remain intact – certain trends have even accelerated. Below we summarise the most important aspects of the market trends around us. They underpin our strategy and represent our view of what is necessary to ensure Vattenfall's success, given the overall context in which we operate.

Sustainability is the foundation for our business, and leaders must have a positive track record that extends beyond climate action

Current development shows how customers as well as employees, partners and investors are drawn to companies that demonstrate environmental, social and governance responsibility. Companies that are regarded as being forward-thinking and sustainable can leverage these qualities and have a competitive advantage in the market. Expectations have been raised to include leadership in areas beyond climate action, and good sustainability performance alone will no longer be given a premium. Demonstrable maturity in areas such as biodiversity, human rights and circular economy will be the expectation and not a criterion for reward.

Customers want simple solutions, and decarbonising the industrial, transport and heating sectors represents a significant business opportunity

As customers demand more sophisticated solutions that support them in their decarbonisation efforts, they require help in navigating the complex energy landscape. With more decentralised and smart solutions, energy companies will be expected to help their customers optimise their use and manage the interplay between them. Since many solutions, like solar photovoltaic (PV), e-mobility and energy storage are available today, market growth is expected to accelerate. Fuelled by government subsidies, decarbonisation of the industrial, transport and heating sectors represents a significant business opportunity in the coming decade. Companies that can provide integrated solutions that truly focus on customers' needs by leveraging expertise across the full energy value chain will have a strong competitive advantage.

Thoughtful management of stakeholder relations is needed to enable the build-out of renewables and electricity grids
Demand for fossil-free electricity is growing as sectors continue to electrify. This will require a massive build-out of renewables as well as a strengthening and modernisation of the current electricity grid infrastructure – at an unprecedented pace. To do this successfully, it is necessary to gain public acceptance of these technologies and local support for land use, to avoid stalling of permitting processes. Companies with good stakeholder management and community engagement skills will be better positioned to receive permits and secure licence to operate. A coordinated and strategic approach will be necessary, and successful stakeholder management and dialogue will be fundamental enablers.

Digitalisation of the entire energy value chain is necessary and is a key enabler for energy system flexibility
With a growing reliance on renewables and successive electrification across various sectors, it is essential to make better use of existing infrastructure and assets along with the potential for flexibility to continue delivering an optimised and efficient energy system. This requires further digitalisation of the energy value chain, as the ability to extract insights from data will be a necessary precondition for staying competitive. Artificial intelligence, automation and data-driven programs and strategies will be a minimum requirement for staying in the game. Apart from the fact that this is relevant for managing assets and enabling flexibility, it will also provide customers with information and services they demand as part of a high-tech society.

New competencies are critical in the energy transition as companies compete for top talent
As the energy industry transitions to new ways of interacting with customers, technology and society, new skill sets and competencies will continuously be required. In pace with changes in the energy landscape and subsequent adaptation of business models, maintaining constant focus on identifying, attracting, enhancing and retaining key competencies will be necessary. In addition, having the right expertise in-house will be an important competitive advantage, as it will enable companies to deliver new products, develop more efficient processes and empower their people. Ensuring access to the skills needed now and in the future will required a targeted strategy.

Cost efficiency and competitiveness are paramount for being a winner in the energy transition
Efficient operations require high utilisation of people and assets, lean and digital processes and high cost consciousness. This will be crucial to deliver to customers the products and services that they value, and to do so while keeping costs in check. Furthermore, understanding the dynamics of each market and focusing on markets, business models, and customer segments where a competitive advantage can be achieved will be paramount. Continuous prioritisation and optimisation will be needed to deliver more and with higher quality. As the market is currently undergoing a sweeping transition, companies are defining their roadmaps going forward, and over the next decade it will be clear who will succeed.

Strategy

Vattenfall has formulated a strategy for achieving its purpose to Power Climate Smarter Living and the goal to enable fossil-free living within one generation. It is a commitment to our customers, employees and other stakeholders, and steers the company's direction, supports employee engagement and opens for significant business opportunities. Both our owner and our stakeholders expect that we will continue to be a leader in the energy transition, and we aim to do so by contributing where we can create value and be profitable.

Fossil-free living within one generation

2030 Ambition

We are on a path to 2030 in line with the Paris Agreement and are exploring how to go even further. We want to progress towards the 1.5 degrees target. And we want to help our customers, partners and all of society do the same.

2025 Strategic targets

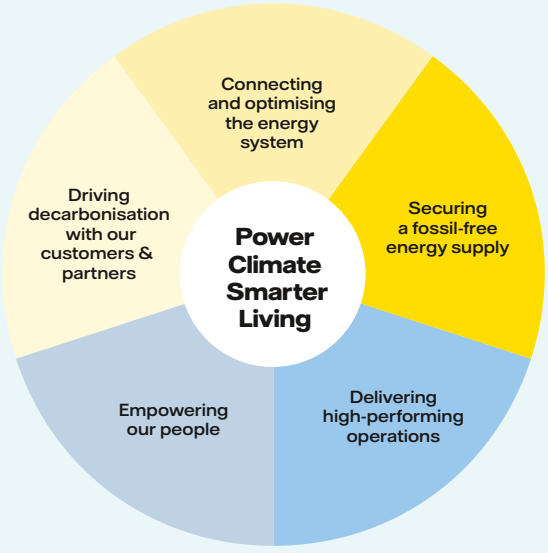
Vattenfall has set new strategic targets for 2025 for the company's financial and sustainability commitments.

See page 26

Our strategic focus areas

Vattenfall's Board of Directors has decided on 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



Our goal of enabling fossil-free living within one generation sets a clear direction for Vattenfall and guides our business decisions

The energy transition brings a wealth of growth opportunities that fit with our purpose and strategy. At the same time, we need to continue to invest in our existing businesses to adapt and modernise assets and operations in preparation for a fossil-free energy system. We have a clear trajectory to phase out coal, and our operations will be completely coal-free by 2030. We are also continuing to expand our renewable portfolio. At year-end we had over 3 GW of capacity under construction and over 4 GW of development projects in mature stages.

Our ability to invest depends on business risks. Lower business risk translates to a lower cost of capital

It is important to ensure that we focus on businesses that support our purpose and where sustainable value creation is possible. Our geographical focus continues to be within Europe, as this is where we believe we have our competitive advantage and we continue to see plenty of attractive growth opportunities in the region.

Our ability to invest strongly depends on what we invest in, as lower business risk translates to a lower cost of capital. Therefore, the risk profile of a business as well as the impact on the risk profile of Vattenfall as a whole are important considerations when assessing portfolio fit.

Broadly speaking, Vattenfall's portfolio can be divided into four categories:

1. Maintain and maximise value

Our portfolio consists partly of businesses in which viable growth options are limited. These include Swedish hydro and nuclear power, existing pumped hydro power in Germany and district heating in Sweden as well as market services (trading, optimisation and market access). These activites support both the energy transition and our strategy, and our objective is to maintain and maximise the value of these businesses.

2. Growth areas

We have an explicit growth strategy for businesses where we see profitable opportunities and have or think we can gain a sustainable, competitive advantage. These include businesses such as on- and offshore wind power, corporate Power Purchase Agreements (CPPAs), large B2B electrification contracts and e-mobility solutions.

3. Businesses where the scope is being assessed

Vattenfall should operate in businesses where a reasonable competitive advantage can be gained and maintained. For several businesses, aspects such as the appropriate business model, steps in the value chain and suitable customer segments are under review. These include more established businesses like batteries and large scale solar, but also businesses in early stages of development such as district heating in the UK, fossil-free gas, customer-based flexibility services, hydrogen production, and nuclear small modular reactors (SMRs).

4. Divestment or closure

Vattenfall is exiting from certain businesses, for example due to lack of strategic fit or the stakeholder environment. In 2020 we offered to sell the electicity grid company Stromnetz Berlin to the City of Berlin, and at year-end we stopped coal-fired power generation at the Moorburg power plant in Hamburg.

Partnerships enables electrification of society as a whole

Partnerships can be a way of sharing financial as well as non-financial risks in an uncertain environment. In addition to reducing CO_2 emissions in the energy sector and in Vattenfall's operations, emissions in sectors such as industry and transports will also need to be reduced in order to achieve the EU climate goals. Vattenfall sees both climate benefits and attractive business potential in being a driving force in this development (see pages 34–37).

We are an integrated utility

To remain an integrated utility – meaning that we are active throughout the entire energy value chain – is at the core of our strategy. This entails, in turn, that we can reduce our business risks through diversification. Having access to a customer base lowers our risk on the supply side, as we can secure stable revenues through corporate Power Purchase Agreements. In addition, access to renewable production volumes is a competitive advantage in our customer offering.

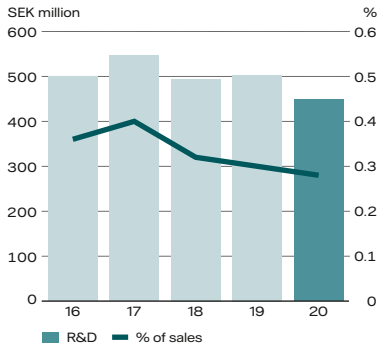
Another advantage of this strategy is that we can contribute to solving one of the major challenges in the energy transition – to match supply and demand at all places at all points in time. This requires robust grids, flexible generation and a well-functioning market for energy and capacity. As an integrated utility we are able to contribute across the board, and our ambition is to remain a net contributor of flexibility to the market.

Supporting innovation through R&D

Vattenfall conducts research and development (R&D) and technology-based innovation to provide new capabilities to serve our customers better, conduct high-performing operations and reduce the environmental impact of what we do. R&D is conducted in various parts of the organisation, and a substantial share is managed by our dedicated R&D unit, consisting of some 120 experts who collaborate with colleagues in the operations and thereby have expertise in a wide range of technologies. Three areas are currently in particular focus: steering of batteries, AI and machine learning and digital inspections. Most projects are conducted in partnership with customers, suppliers and other stakeholders. The R&D organisation is also heavily involved in several of our partnership projects focused on electrifying industrial processes, either through direct electrification or indirect electrification using hydrogen gas (see pages 34–37).

In 2020 we implemented a number of new solutions with customers and in our own operations. Work with data analytics is maturing and moving beyond proof-of-concept into production, such as forecasting for customer service and drone inspections in confined spaces. During 2020 Vattenfall spent the equivalent of SEK 449 million on R&D.

Costs for research and development



Maturing data analytics solutions

Development of analytical tools is making it possible for us to leverage our technical knowledge and data in many different ways. For example, insights from data can help experts and technicians find anomalies that could be an early sign of need for maintenance or refurbishment. We also support our customers with energy-steering solutions (see smart battery example below).

Predictive Digital Service

In 2020 a pilot project that allows technicians to detect faults remotely in district heating substations was completed. Previously, the substations needed to be inspected on-site once or twice a year, even if the system was faultless, with the result that seven out of ten inspections were done needlessly. Moreover, faults were only detected once apartments got cold or hot water supply stopped working.

To solve this problem, we worked closely with our skilled technicians to develop an IoT-based solution, paired with machine learning algorithms, to provide predictive maintenance. This dramatically reduced the number of on-site inspections as well as the risk of technical faults that could result in costly downtime and discomfort for tenants.

The algorithm is now part of a new project in Berlin, and a dialogue for using the same solution has started in the Netherlands.

Smart battery steering

One example of a steering solution is the collaboration with our industrial customer Boliden Bergsöe AB, where Vattenfall is testing a large-scale battery solution in Landskrona, in the south of Sweden. The solution is a stacked services concept, which means that it optimises revenue between multiple services and markets to provide the largest return for the end customer at any given time depending on the available resources.

Services include lowering use during peak consumption periods, cutting the costs for power connection, providing flexibility for the local distribution grid to alleviate congestion – or to the national grid to ensure a balance between generation and demand. The project is now moving on to provide ancillary services in the local capacity market E.ON/Switch, which is part of the EU project CoordiNet, as well as future participation in the FCR-D[1] balancing market.

In addition to this, smart steering is being deployed at a number of other locations, for example to control hybrid parks in the Netherlands and for a large-scale battery project in Uppsala.

Increasingly more advanced analytics

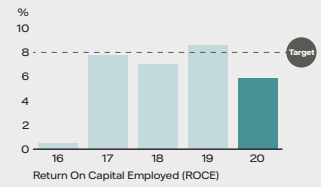
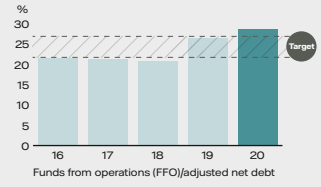
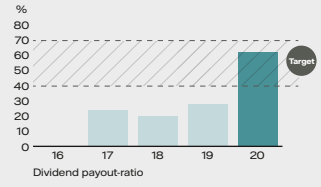
As renewable resources grow and industries electrify, the importance of data-driven decisions is increasing as it is necessary to leverage flexibility and ensure a smooth customer experience. Tools based on machine learning are already being used in production to increase energy efficiency. We continue to develop solutions that utilise image recognition, reinforcement learning and augmented reality to provide our technicians with insights that support them in understanding our assets in ways that was not previously possible.

[1] Frequency containment reserve for disturbances (FCR-D) from energy storage.

Targets and target achievement

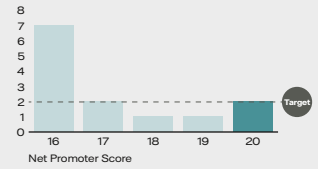
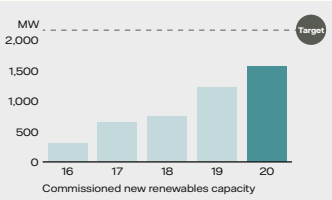
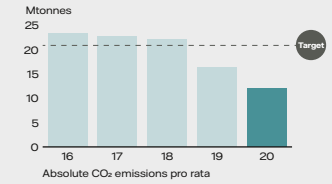
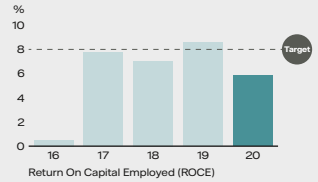
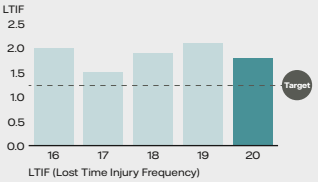
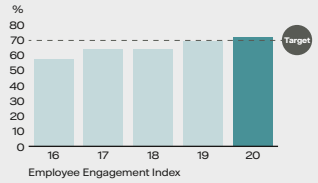
At Vattenfall we aspire to contribute to a sustainable energy system in all parts of the value chain. Our goal is to be a truly customer-centric company as we transition towards a long-term sustainable production portfolio. In 2016 Vattenfall's Board of Directors set six strategic targets for the Group, which we are now reporting on, and new targets for 2025 were set at the end of 2020. Vattenfall's owner has set three financial targets for the Group.

Financial targets

Targets over a business cycle[1]	Outcome 2020	Comment	Five-year trend
Profitability			
≥ 8% Return On Capital Employed (ROCE)[2]	**5.8%**	Return on capital employed decreased to 5.8%, which is below the target of 8%, mainly owing to impairment losses related to the Moorburg power plant in Hamburg. The target was achieved in 2019, however, for the other years, an upward trending underlying operating profit was countered by negative items affecting comparability (mainly impairment losses and provisions).	
Capital structure			
22%–27% Funds from operations (FFO)/adjusted net debt	**28.8%**	FFO/adjusted net debt increased to 28.8% in 2020, mainly owing to lower adjusted net debt resulting from higher cash flow from operations. In the years 2016–2018 the target was not achieved, while the ratio was well above 22% in both 2019 and 2020 mainly owing to higher FFO.	
Dividend policy			
40%–70% Dividend: share of the year's profit after tax	**4.0** **SEK billion[3]**	The Board of Directors has proposed a dividend of SEK 4 billion, corresponding to 62% of profit for the year attributable to the owner of the Parent Company. The dividend pay-out ratio has trended in a positive direction during the last five years, with 2020 marking the first year during the period in which the dividend is within the target interval.	

[1] 5–7 years.
[2] The key ratio is based on average capital employed.
[3] The proposed dividend will be voted on at the Annual General Meeting on 28 April 2021.

Strategic targets for 2020 – outcomes

Strategic objective	Outcome 2020	Comment	Five-year trend
Leading towards Sustainable Consumption[1]			
+2 Customer engagement, Net Promoter Score (NPS)[2] relative (customer satisfaction relative to competitors)	**+2**	Improved performance from +1 to +2 for the Customers & Solutions operating segment in 2020 compared with 2019, mainly owing to strong performance in Germany and the Nordic countries. The relative NPS has been stable during the five-year period, and the improvement relative to peers was mainly in the Nordic countries.	
Leading towards Sustainable Production[1]			
≥ 2,300 MW Commissioned new renewables capacity 2016-2020[3]	**1,560 MW**	334 MW of new renewable capacity installed in 2020. The majority of this new capacity pertains to the Princess Ariane onshore wind farm. The target was not achieved due to project delays, mainly Kriegers Flak (605 MW) in Denmark, which will be commissioned in 2021.	
≤ 21 Mtonnes Absolute CO_2 emissions pro rata	**12.1 Mtonnes**	Absolute CO_2 emissions decreased to 12.1 Mtonnes (19.3). The target was achieved as a result of lower coal-fired generation and divested, converted and closed plants in recent years. Weak clean dark and clean spark spreads contributed to relatively low emissions in 2020.	
High-performing operations[1]			
≥ 8% Return On Capital Employed (ROCE)[4]	**5.8%**	Return on capital employed decreased to 5.8%, which is below the target of 8%, mainly owing to impairment losses related to the Moorburg power plant in Hamburg. The target was achieved in 2019, however, for the other years, an upward trending underlying operating profit was countered by negative items affecting comparability (mainly impairment losses and provisions).	
Empowering our people[1]			
≤1.25 Lost Time Injury Frequency (LTIF)[5]	**1.8**[6]	LTIF was 1.8 (2.1), which means the target was not achieved. Compared with 2019 all areas improved; unfortunately two tragic fatal accidents occurred, both involving employees of subcontractors. The trend over the 5-year period has been relatively unchanged, and a number of actions are being taken to improve safety throughout the organisation.	
≥70 Employee Engagement Index[7]	**72**	The Employee Engagement Index improved considerably to 72% (69%). The improvement over the 5-year period is 15 percentage points, which means that Vattenfall has gone from being far below the industry average (66%) to a high-ranking company.	

[1] Previous strategic objectives. In 2019 these were reformulated, and an addition was made to reflect the importance of a connected and optimised energy system. The strategic direction remains unchanged, however.

[2] NPS is a tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services. The target is a positive NPS in absolute terms +2 compared to Vattenfall's peer competitors.

[3] Pertains only to wind and solar farms completed and commissioned between 1 January 2016 and 31 December 2019.

[4] The key ratio is based on average capital employed.

[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] The value has been adjusted compared with previously published information in Vattenfall's year-end report 2020.

[7] Documentation for measurement of target achievement is derived from the results of the My Opinion employee survey, which is conducted on an annual basis.

New strategic targets for 2025

Strategic focus area	Outcome 2020	Comment
Driving decarbonisation with our customers and partners		
+18 Customer engagement, Net Promoter Score (NPS)	**+7**	**Reasoning**: NPS is a well-established tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services. **Definition**: Absolute NPS is weighted 80% from Customers & Solutions and 20% from Heat, which corresponds to our customer split.
Securing fossil-free energy supply		
≤ 86 **gCO_2e/kWh** CO2 emissions intensity	**97** **gCO_2e/kWh**	**Reasoning:** Used by the Science Based Targets initiative (SBTi), whose methodology has become an industry standard. The target for 2025 is to be on track to achieving the 1.5° C target by 2030, according to SBT. **Definition:** Total emissions of CO_2 equivalents[1], including both Scope 1 and 2[2], in relation to total electricity and heat production.
Conduct high-performing operations		
22%–27% Funds from operations (FFO)/adjusted net debt	**28.8%**	**Reasoning:** The measure is used to assess a company's financial health and is important from a credit rating perspective and as a financial key metric. **Definition:** Funds from operations, see consolidated statement of cash flows (page 101). Adjusted net debt – see comments on the consolidated balance sheet (pages 95–96).
8% Return On Capital Employed (ROCE)[3]	**5.8%**	**Reasoning:** Vattenfall shall generate a commercial market return. ROCE is a common metric for comparing profitability between companies. **Definition:** Operating profit/Capital employed Where capital employed is defined as: Total assets less financial assets, noninterest-bearing liabilities and certain other interest-bearing provisions not included in adjusted net debt (See comments on the consolidated balance sheet, pages 95–96).
Empowering our people		
≤1.0 Lost Time Injury Frequency (LTIF)	**≤ 1.8**[4]	**Reasoning**: Safety first – the safety of our employees is of utmost importance to Vattenfall. **Definition**: 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. Only Vattenfall-employees are covered by this metric. Work-related fatalities do not count towards the score but automatically means that the target is not met (both Vattenfall and subcontracted employees).
75 Employee Engagement Index	**72**	**Reasoning:** Having engaged employees is a precondition for being able to achieve our goals and ambitions as a company. **Definition:** Documentation for measurement of target achievement is derived from the results of the My Opinion employee survey, which is conducted on an annual basis. A score of 75 corresponds to the average of high performing companies.

[1] Including other greenhouse gases, such as N_2O and SF_6.
[2] Direct emissions (Scope 1) and indirect emissions from purchased electricity and heat (Scope 2) as defined in the Greenhouse Gas Protocol standard.
[3] Key ratio based on average capital employed.
[4] Figure adjusted after 2020 year-end report.

Green bond investor report

Vattenfall issued a second green bond in March 2020 and at year-end 2020 had a total of EUR 1 billion in green financing outstanding.[1] Our green bond framework[2] consists of four eligible categories: renewable energy and related infrastructure, energy efficiency, electrification of transport and heating and industry projects. In a second opinion by CICERO[3] the framework 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**	**Total**
Renewable energy and related infrastructure	Kriegers Flak/ Denmark	Wind offshore	605 MW	325	100%	2019/ 2021	7,600 MDKK	801	1,613	2,414
	Princess Ariane[4]/ Netherlands	Wind onshore	301 MW	350	100%	2018/ 2020	394 MEUR	1,073	1,170	2,243
	Hollandse Kust Zuid 1–4/ Netherlands	Wind offshore	1,500 MW	2,400	100%	2020/ 2023	2,600 MEUR	–	14	14
Industry projects	HYBRIT/Sweden	Pilot project	Fossil-free steel	–	33%	2019/ 2021	858 MSEK	51	232	283
Total								**1,925**	**3,029**	**4,954**
Not yet used										5,080
Grand total										**10,034**

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

[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 2020.

Kriegers Flak
Kriegers Flak will be Denmark's largest offshore wind farm and is scheduled to be operational by the end of 2021. Once operational, it is estimated that the wind farm will reduce CO_2 emissions by 325 ktonnes per year.

Princess Ariane[4]
Completed in 2020, Princess Ariane is the largest onshore wind farm in the Netherlands. The electricity generated by the wind farm is used to power a nearby data centre, saving approximately 350 ktonnes of CO_2 emissions per year.

HYBRIT
A pilot project currently being conducted in collaboration with SSAB and LKAB using innovative hydrogen gas technology has the potential to significantly reduce CO_2 emissions from the steel industry, which accounts for 10% of Sweden's total CO_2 emissions.

[1] A third green bond was issued in February 2021.
[2] https://group.vattenfall.com/siteassets/corporate/investors/funding_ratings/doc/vattenfall-green-bond-framework.pdf.
[3] CICERO Shades of Green AS.
[4] The project was formerly called Wieringermeer and Wieringermeer extension.

Investment plan

Vattenfall's investment strategy reflects our goal to enable fossil-free living within one generation. We continue to make substantial growth investments with a clear focus on increasing our renewable production, reducing CO_2 emissions in district heating and strengthening our electricity networks.

Total investments
Total planned net investments for 2021 and 2022 amount to SEK 57 billion. Gross investments amount to SEK 78 billion, where the difference is mainly attributable to partnering assumptions for Hollandse Kust Zuid 1–4 and the Norfolk projects as well as develop-to-sell assumptions for certain wind and solar projects. The figures that follow are all presented net.

Growth investments
Growth investments account for nearly 60% (SEK 32 billion) of the total capex budget. Approximately SEK 21 billion of investments are planned for the development and construction of new wind farms, most of which are offshore (see table on page 29 for major decided projects). Sizeable development projects included in the plan are the Norfolk projects (up to 3,600 MW), the Vesterhav projects in Denmark (350 MW) and Windplan Blauw (58 MW). Development costs for potential wind power projects further ahead in the future are also included. Partnering or divestment of projects post-construction are evaluated on a case-by-case basis.

Other major growth areas include the development of electricity grids and district heating networks, with investments of approximately SEK 7 billion. This mainly entails connecting new customers and areas to our networks. In the heat business this includes projects such as a new heat storage facility at the Reuter site in Berlin and measures related to the targeted coal exit in the city. It also includes projects in the Netherlands such as Amsterdam South Connection, which will enable considerable growth in district heating in the region, and the plannned Green Heat Diemen project southeast of Amsterdam, where we are studying the opportunities for a biomass-fired heat-only boiler (100 MW heat). Major investments are being made in the distribution operations in response to increased capacity requirements, a high number of new connection requests and new renewable production (see pages 60–61).

Further growth activities amount to nearly SEK 2 billion and include investments in e-vehicle charging stations, solar and battery projects, heat and energy solutions, the Dutch service company Feenstra and HYBRIT (see pages 27 and 34–37).

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 24 billion during the coming two years. These consist largely of replacements of heat assets, for example a new biofuel-fired combined heat and power (CHP) plant in Uppsala (112 MW heat) and development costs for new gas turbines with heat recovery boilers in Berlin Charlottenburg (160 MW heat). We plan to invest SEK 10 billion in the electricity grids in Sweden and Berlin to secure the quality of supply and reinforce the grids. Planned investments in the Berlin grid, which has been offered for sale, amount to SEK 4 billion. 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 will amount to approximately SEK 2 billion.

Vattenfall's investment plan 2021-2022

Total investments per type

Growth investments, 32
Maintenance investments, 14
Replacement investments, 10

Growth investments per technology

Wind power, 23
Other, 2
Electricity distribution, 5
Heat grids, 3.0

Growth investments per country

Netherlands, 9
Sweden, 4
Denmark, 9
Germany, 3
UK, 7

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]
Kriegers Flak	Denmark	Wind offshore	605 MW	325	100%	2021/2022	7,600 MDKK	10,249
Hollandse Kust Zuid 1-4	Netherlands	Wind offshore	1,500 MW	2,400	100%	2023/2024	2,600 MEUR	25,979
South Kyle	United Kingdom	Wind onshore	240 MW	140	100%[4]	2023	250 MGBP	2,835
Jaap Rodenburg	Netherlands	Wind onshore	38 MW	45	100%	2021	48 MEUR	482
A16 Klaverspoor	Netherlands	Wind onshore	34 MW	40	75%	2022	46 MEUR	462
Moerdijk	Netherlands	Wind onshore	27 MW	30	100%	2021	38 MEUR	381
Haringvliet Renewable Park	Netherlands	Wind onshore solar, battery	72 MW	50	100%	2021	58 MEUR	582
Heat storage Reuter	Germany	Heat storage	2,750 MWh	n.a.	100%	2023	50 MEUR	502
Uppsala Carpe Futurum	Sweden	Biofuel	112 MWth	n.a.	100%	2022	1,843 MSEK	1,843
Amsterdam South Connection	Netherlands	Heat grid	n.a.	75	100%	2021	91 MEUR	913

[1] All numbers in the table reflect the status as per 31 December 2020.

[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 2020.

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

Hollandse Kust Zuid 1-4

In 2020 Vattenfall made the final investment decision on Hollandse Kust Zuid 1-4 in the Netherlands. Once completed, it will be the world's largest offshore wind farm. The project is being built without subsidies and will have a renewable output equivalent to the annual consumption of over two million Dutch households.

Expanding our presence
The addition of Hollandse Kust Zuid 1-4 will not only strenghten our position as one of the largest producers of offshore wind power in the world but will also enable us to expand our presence in the Dutch wind power market. The project's 1.5 GW capacity constitutes a 45% increase in Vattenfall's wind portfolio.

Beyond the numbers
Vattenfall is proud that the Hollandse Kust Zuid project allows for close collaboration with the Dutch authorities in implementing new and effective environmental and marine protection programmes. In addition, the wind farm is providing new jobs and infrastructure as well as potential co-use opportunities for new offshore businesses.

Markets and regulations

As we enter the Decade of Action, political policy is more important than ever to make the energy transition happen. Climate ambitions are increasing in all our markets both in terms of the phase-out of fossil fuels and the expansion in renewables and in new technologies.

Increased climate ambitions
The commitment to decarbonisation remains strong across all our markets. A long-term objective to make the EU economy climate-neutral by 2050 was adopted by the European Council at the end of 2019 and will be enshrined in a new EU climate law in 2021. This will also raise the EU's interim 2030 target from a 40% to a 55% greenhouse gas emissions reduction. The Covid-19 crisis has caused delays in progressing with several initiatives under the European Green Deal, but EU institutions remain committed to it and to the long-term goal to achieve climate neutrality by 2050.

France, the UK and Finland have already set statutory net zero targets for 2050. In 2020 the UK launched an Energy White Paper which set the framework for how the UK will achieve its net zero target. Finland is renewing its Climate Act, which will be finalised in 2021. A low-carbon roadmap from the Finnish energy ministry notes that investments in electrification of process heating, power-to-hydrogen and industrial decarbonisation are likely to increase demand for fossil-free electricity by 20–50 TWh by 2050.

In Denmark, Parliament has decided on a climate action plan that will reduce CO_2 emissions by 3.4 million tonnes by 2030, which is a major step towards the target of achieving a 70% reduction by the same point in time. The focus is on offshore wind power, decarbonising industry and Power-to-X including an ambition to tender full-scale fossil-free hydrogen plants.

New targets for renewables
Many countries want to see increased use of renewables by setting higher targets, particularly for offshore wind, which supports Vattenfall's ambitions to develop additional renewable capacity in the coming years.

The German Parliament has decided to raise the share of renewable energy consumption to 65% by 2030 by increasing offshore wind power, solar energy and biomass. In addition, new targets for offshore wind have been set with an ambition to reach 20 GW by 2030 and 40 GW by 2040. The UK has confirmed a new target for offshore wind of 40 GW by 2030, including 1 GW of floating offshore wind power.

Both Germany and the UK have set a target of 5 GW of low-carbon hydrogen production capacity by 2030.

In France the government has set out ambitious plans to increase the share of renewables in the electricity mix to 40% by 2035, with a discrete target of 6–7 GW of offshore wind by 2030.

Support for offshore wind deployment, fossil-free hydrogen and electrification
We are now seeing significant political ambition for offshore wind in many of our markets, partly driven by a need to electrify industry, heat and transport.

In the UK, new leasing rounds for offshore wind have been launched, which will open up around 18 GW of capacity. The rounds are separate for England and Wales, and in Scotland the rounds are expected to be concluded in 2021.

The Danish authorities are currently preparing tenders for two large offshore wind farms: Thor in the North Sea and Hesselø in Kattegat. Both are expected to be commissioned by 2027 and have potential to integrate fossil-free hydrogen production. In parallel with this, the potential to develop two additional offshore energy hubs in the North and Baltic Seas is being studied.

German reforms will streamline administrative procedures to allow for speedier deployment of offshore wind farms, and to establish a regulatory framework for offshore fossil-free hydrogen.

In France, new offshore wind rounds are being launched and regulatory reforms have led to simplified administrative procedures, including in the litigation phase, which may see offshore wind projects deployed up to 18 months quicker.

In the Netherlands a revised section of the Offshore Wind Act has proposed allowing extensions of offshore wind farm permits during the first seven years of a project.

In Sweden, renewables growth and increased electrification in the transport and industry sectors are driving a need for new investments in distribution grids. However, revenue regulation for the period 2020–2023 for distribution system operators has had a negative impact on the investment climate within grids in Sweden, and there is also an urgent need to shorten lead times to build new power lines. It now takes around ten to 15 years to build a new high-voltage power line, of which up to ten years are spent securing consent. Although some steps have been taken to speed up the permitting processes, further changes in regulations will be needed to prevent them from becoming an obstacle to much-needed investment.

Tax breaks for the energy transition
The EU's Taxonomy Regulation, which is scheduled for adoption in 2021, provides a framework for what kind of financial product or economic activity can be labelled as "sustainable". The regulation is part of a broader sustainable finance strategy, and the aim is to provide guidelines to the financial sector in supporting more sustainable investments in low-carbon activities. Meanwhile, the European Commission has proposed a new funding mechanism – Next Generation EU – for the 2021–2027 Multiannual Framework. This instrument aims to kickstart fossil-free and digital growth, among other things by providing investment for low-carbon technologies.

Additional support is expected to come through higher carbon prices, following a planned revision of the EU Emissions Trading Scheme (EU ETS) directive in 2021. The Netherlands, however, is considering introducing a national CO_2 tax on industrial emissions on top of the EU ETS. Following the end of the Brexit transition period in December 2020, the UK has left the EU ETS scheme and has established a UK ETS in its place.

A number of countries have set out comprehensive plans for fossil-free growth, partly in response to the Covid-19 crisis. The French government has set out a Covid-19 recovery plan that will inject EUR 100 billion into its economy over the next two years. Of this amount, EUR 30 billion will be allocated to the energy transition with a focus on energy renovation of buildings, fossil-free mobility and renewable technologies. EUR 7 billion will be invested in the hydrogen economy by 2030.

In the UK, the government has announced that onshore wind will be able to compete for support in the country's next Contract for Difference (CfD) auction, which is expected to open in late 2021. The auction will support up to 12 GW of renewable generation.

In Finland, the amount of electricity tax paid by industry will be reduced to the EU minimum level starting in 2021, and a new fixed-term subsidy for carbon-neutral electrification will be available to energy-intensive companies.

Policy support to drive the energy transition
In 2020 the Swedish government approved a national plan for hydro power. This is part of the implementation of the EU Water Framework Directive and a further step towards a regulatory framework for hydro power (see page 48). As a result, hydro power plants will need to implement new environmental measures. In addition, Sweden took a further step towards securing a nuclear waste repository with the decision by the Östhammar City Council to support the proposed site in their municipality. The Swedish government has now been cleared to make a final decision on the matter.

In Germany, the Parliament has adopted the country's coal exit law, signalling an end to coal-fired power generation by 2038 at the latest. The law prescribes annual reductions of lignite and hard coal capacity. For operators of hard coal plants, auctions to take capacity off the grid are foreseen in exchange for compensation. A first auction to take 4 GW offline in 2021 took place in 2020, where Vattenfall's Moorburg plant was granted compensation.

In the UK, major steps have been taken towards a new regulatory framework for district heating grids with major consultations on regulation, the market framework and consumer protection. Scottish legislation will continue in 2021 to establish a regulatory framework for heat in Scotland.

The UK government has also started a major review of the existing offshore transmission regime to address the barriers it presents to further significant deployment of offshore wind power.

In the Netherlands, the Climate Agreement has led to new legislation in a number of areas. These include district heating, where new frameworks have been proposed based on a market model, a minimum decarbonisation path, tariff regulation and security of supply. A new Energy Act will revise and merge the current Gas and Electricity Acts. Political and public support for biomass for heating in the built environment has dropped, and a phase-out of subsidies for new biomass has been proposed. This development will not impact the subsidies for Vattenfall's potential biomass plant near Amsterdam.

Competitive landscape

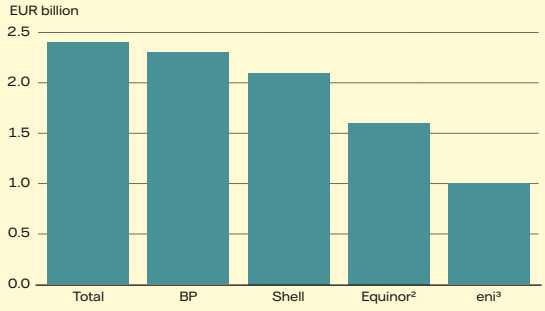
The energy transition and increasing expectations both from customers and other stakeholders is driving change in our sector as well as in the oil and gas sector. For utilities this means intensified competition throughout the value chain as companies position themselves to navigate the new and changing market landscape.

Strategic divergence among utilities
Decarbonisation, new technology and increased competition are all factors that are driving change in the European utilities sector. Some utilities are striving for deeper integration with the goal of leveraging a broad position in the value chain to diversify and mitigate risk. Others are choosing to specialise and focus up- or downstream in the value chain or focus on specific technologies.

Divestment	Dong Energy → Ørsted
Asset swap	E.ON ↔ RWE
Acquisition	Fortum + Uniper

Oil and gas majors adding to the competition in renewables and sustainable energy solutions
Oil and gas majors have entered the renewables market, investing in both production and products. A notable development is in offshore wind, where they are building up substantial pipelines, mostly through acquisitions and recently also through early project involvement (such as in UK Leasing Round 4). In 2025, they will have an installed offshore capacity of 12 GW globally (including partnerships) given current project timelines. Additionally, they are expanding their presence in retail electricity supply businesses, electric vehicle charging and long-term corporate Power Purchase Agreements.

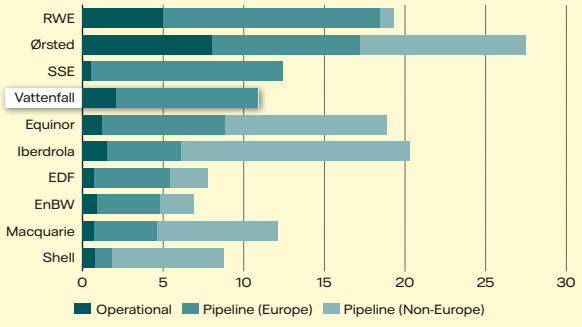
Annual renewables capex 2021-2025 (in EUR billion)[1]



[1] Estimated numbers based on company communication
[2] Pertains to the period 2021-2023
[3] Pertains to the period 2021-2024

Large players dominate in offshore wind while onshore renewables markets are more fragmented
In offshore wind, the market is dominated by large players, whose pipelines dominate the European and global markets. It is a capex-intensive environment due to the large project scale, and the barriers to entry are high as significant investments are needed for project acquisition and development. The onshore renewables markets, in contrast, are much more fragmented. In the maturing renewables markets, the ability to offer a broad range of intertwined renewable solutions, integrating local stakeholders and value creation and, in the mid- to long-term, flexibility services and hydrogen solutions, will be of increased importance.

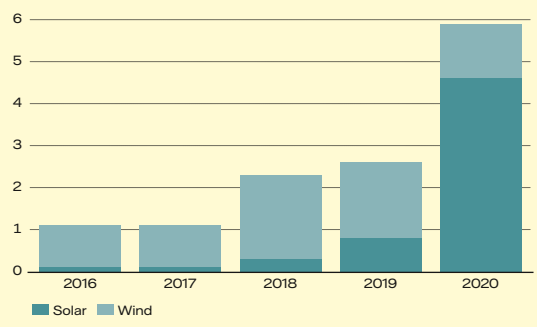
Offshore wind capacity – installed and pipeline (GW)[1]



[1] Minority shares included as 100%, sorting based on operational projects and European pipeline.

PPA market becoming increasingly important
Subsidies for renewable energy in Europe have fallen and are likely to continue to gradually decrease. Therefore, renewable energy operators are looking into ways of reducing their investment risk. One approach is to sell the future generation in advance. This can make it easier to sell projects to a financial investor because of the higher stability of returns. On the offtake side, many companies are looking for ways to meet their sustainability targets which often include requirements for a direct supply of renewable power. While the offtakers used to be global IT companies, there is now a growing interest from all sectors.

Corporate PPAs EMEA, by technology[1]



[1] Source: BloombergNEF, numbers published 2020-11-30.

Topical issue

Climate change is one of the biggest challenges of our time. To tackle it we need to transform ourselves and other emitting industries on an unprecedented scale.

Electricity – a source of decarbonisation and innovation

Vattenfall's goal to enable fossil-free living within one generation means making our own energy mix 100% fossil free through large investments in renewable energy and phasing out fossil energy sources. But it also means looking beyond our own production, to how we can enable fossil freedom in other sectors in our European home markets and beyond.

The necessary transition can be made

On a global scale, demand for carbon-intensive materials and products like concrete, steel and plastic, that have built our modern societies, shows no signs of slowing down. Industry, along with transport, stands for the largest share of global CO_2 emissions today. Globally, the challenge in limiting the climate impact from our way of living, working and producing remains.

However, the necessary transitions can be made. A study from 2020 by the Energy Transition Commission (ETC) shows that technically and financially it is possible to decarbonise our society. Overall, achieving a net-zero carbon emission economy will have a negligible impact on living standards and on growth between now and 2050. Full decarbonisation will cost less than 0.5% of global GDP and the ETC report also shows that this would have only a minor impact on the costs of end consumer products.

There is a growing demand for sustainable solutions and products from customers who wish to be part of and contribute to the energy transition through their consuming preferences. The business potential in satisfying this demand is certain to spur a new generation of materials and industries. As part of Vattenfall's sustainable business strategy, forces should be joined with innovative ideas, competences and financial sources across the borders in our value chains. The energy transition and the development of a fossil-free society will not materialise overnight, but it is the only direction possible.

Electrification as an enabler for fossil-free living

Electricity has been a key driver for social and economic progress ever since it was invented. Now, together with the decarbonisation of the energy sector itself, electricity will be a key tool in the transformation towards fossil-free industrial sectors and societies.

Electricity can be leveraged to reduce or eliminate carbon emissions in industry and society by direct electrification (replacing a fossil-based energy source) and by indirect electrification (mainly of industrial processes by the use of fossil-free hydrogen). Basing energy supply on fossil-free electricity such as wind, solar, hydro or nuclear power is of course a prerequisite for electrification as a driver for decarbonisation.

Within the more conventional direct electrification partnerships with fossil-free electricity, Vattenfall for instance works with companies in the Swedish mining industry such as Boliden AB to explore the technical development of electrification of mines and smelters and the Kaunis Iron company to develop electrified fossil-free mining operations.

When it comes to indirect electrification, Vattenfall is driving the development towards the utilisation of fossil-free hydrogen tailored to the energy-intensive industry in several pioneering projects.

This applies to the production of fossil-free steel in the joint venture HYBRIT that is focused on electrifying and using fossil-free hydrogen in steel production, together with LKAB and SSAB. In a strategy study for large-scale biofuel production, Vattenfall is exploring opportunities to replace fossil fuels in the production process. This is done together with Sweden's largest refinery company Preem. And at the Hamburg-

Moorburg power plant, Vattenfall has joined hands with Shell, Mitsubishi Heavy Industries and the municipal company Wärme Hamburg. The intention of the partnership is to develop plans for a facility to produce hydrogen from wind and solar power and utilise it in the vicinity.

Furthermore, in the heating sector, hydrogen has the potential to reduce CO_2 emissions, if used as an alternative to gas. Vattenfall is among other things working with Siemens Energy to establish whether our CHP plant Marzahn in Berlin can be used for testing the application of hydrogen in power plants.

Vattenfall sees many more opportunities of electrification in other heavy-emitting industries. In the chemical sector, this can be done by producing methanol, a feedstock of materials such as plastic and carbon fibre, through the use of fossil-free hydrogen and captured carbon dioxide. Or in the agricultural sector by decarbonising the production of ammonia used for products such as fertilisers. The aviation sector also offers opportunities, where replacing fossil feedstock with electricity can decarbonise the production of kerosene. Vattenfall is partner in the 'Hemweg Consortium' which among other things is focused on using hydrogen for making aviation fuel. At the wind farm Slufterdam next to the harbour of Rotterdam, renewable electricity can be used directly to produce hydrogen and thereby avoid curtailment, and in Northern Netherlands, Vattenfall aims to produce 100% renewable hydrogen by connecting wind and solar electricity production directly to an electrolyser and a battery.

Partnerships and collaboration across borders are key

Decarbonising our value chains through collaboration across companies, organisational, functional, societal and geographical borders is a complex challenge. Each country and market have their own specific challenges and strategies on how to move forward, demanding industry to even more actively search for the best fitting coalitions in order to create a new generation of fossil-free products and services.

Working together in unconventional partnerships can increase the innovation potential along any step of the value chain, from design to delivery of intermediate and finished products or services, and to the way in which by-product streams are managed. Not in the least, working together also means that financial as well as non-financial risks can be better mitigated throughout the chain.

The journey towards fossil-free living is well underway. By continuing to build exciting partnerships and leveraging fossil-free electricity, Vattenfall will continue to decarbonise industries and society and keep redefining the preconceived notion of electricity as not only a power source but a source of innovation as well.

Five major partnerships with Vattenfall participation

HYBRIT – Our most advanced industry decarbonisation project is the fossil-free sponge iron project HYBRIT for producing fossil-free steel. It is run together with our Swedish partners, steel company SSAB and mining company LKAB with support from the Swedish Energy Agency.

PREEM – Preem has a target of producing five million cubic metres of biofuel by 2030. Vattenfall and Preem have decided to look into the possibility of meeting Preem's hydrogen needs with fossil-free hydrogen from extensive water electrolysis. The strategic study will be finalised by summer 2021.

BOLIDEN – Vattenfall has a collaboration with Boliden on electrification of mines and smelters, which also includes battery solutions aimed at supporting the electricity grid and optimising electricity consumption.

KAUNIS IRON – Vattenfall and Kaunis Iron have a partnership concerning electrified fossil-free mining operations at the iron ore mine in Pajala, in Northern Sweden. The collaboration involves business solutions to reduce the need for fossil fuels, such as electrified iron ore and passenger transports.

HAMBURG HYDROGEN HUB – Vattenfall has signed a letter of intent with the companies Shell, Mitsubishi Heavy Industries and the municipal company Wärme Hamburg to develop a plan for production of hydrogen from wind and solar power at the Hamburg-Moorburg power plant site and utilise it in the vicinity.

Hydrogen – a way to decarbonise the energy system

Vattenfall considers indirect electrification through fossil-free hydrogen as an important solution to decarbonise the value chains of heavy-emitting industries. The particular situation and business case will determine where Vattenfall can add value and invest beyond supplying the fossil-free electricity.

As one of the largest producers of fossil-free electricity from wind, solar, nuclear and hydro, Vattenfall sees a potential to contribute throughout the entire value chain from generation and delivery of fossil-free electricity to, in some cases, production and storage of hydrogen. While fossil-free hydrogen production is not always commercially viable yet, with developments moving fast we can see a natural, close connection between hydrogen production and our huge fossil-free power supply.

Hydrogen will not become the solution to reducing CO_2 emissions in all areas, but it has the potential to decarbonise processes where direct electrification is not possible.

The energy-intensive industry and heavy transport are sectors where the development of the best business cases for decarbonisation through the use of fossil-free hydrogen is first expected. In addition, Vattenfall is exploring solutions for decarbonisation of its heat power plant fleet, where hydrogen can be one solution to replace fossil fuels.

Vattenfall is actively contributing to shape a strong European hydrogen economy, where large-scale hydrogen production based on cheap fossil-free electricity is a key pillar for a successful energy transition.

Vattenfall is participating actively in various projects and development initiatives across all markets to further drive fossil-free hydrogen implementation. See two examples in the boxes below:

A pilot for large-scale hydrogen storage

Hydrogen storage can help dealing with the increasing share of intermittent resources in the energy system, stabilise electricity prices and ensure a stable fossil-free hydrogen supply for industrial processes, electricity or heating.

As part of the HYBRIT joint venture with mining company LKAB and steel company SSAB, we are developing technology for rock storage of pressurised hydrogen, based on the Lined Rock Cavern (LRC) technology for natural gas. We aim to have a pilot LRC hydrogen storage in operation in the north of Sweden in 2022.

In full scale, one hydrogen storage could contain up to about 100 GWh hydrogen, which is the same quantity of energy as a million charged Tesla cars. This is enough to supply a full-scale HYBRIT sponge iron plant (2 Mt/year) for fossil-free steel production with hydrogen for about four to five days.

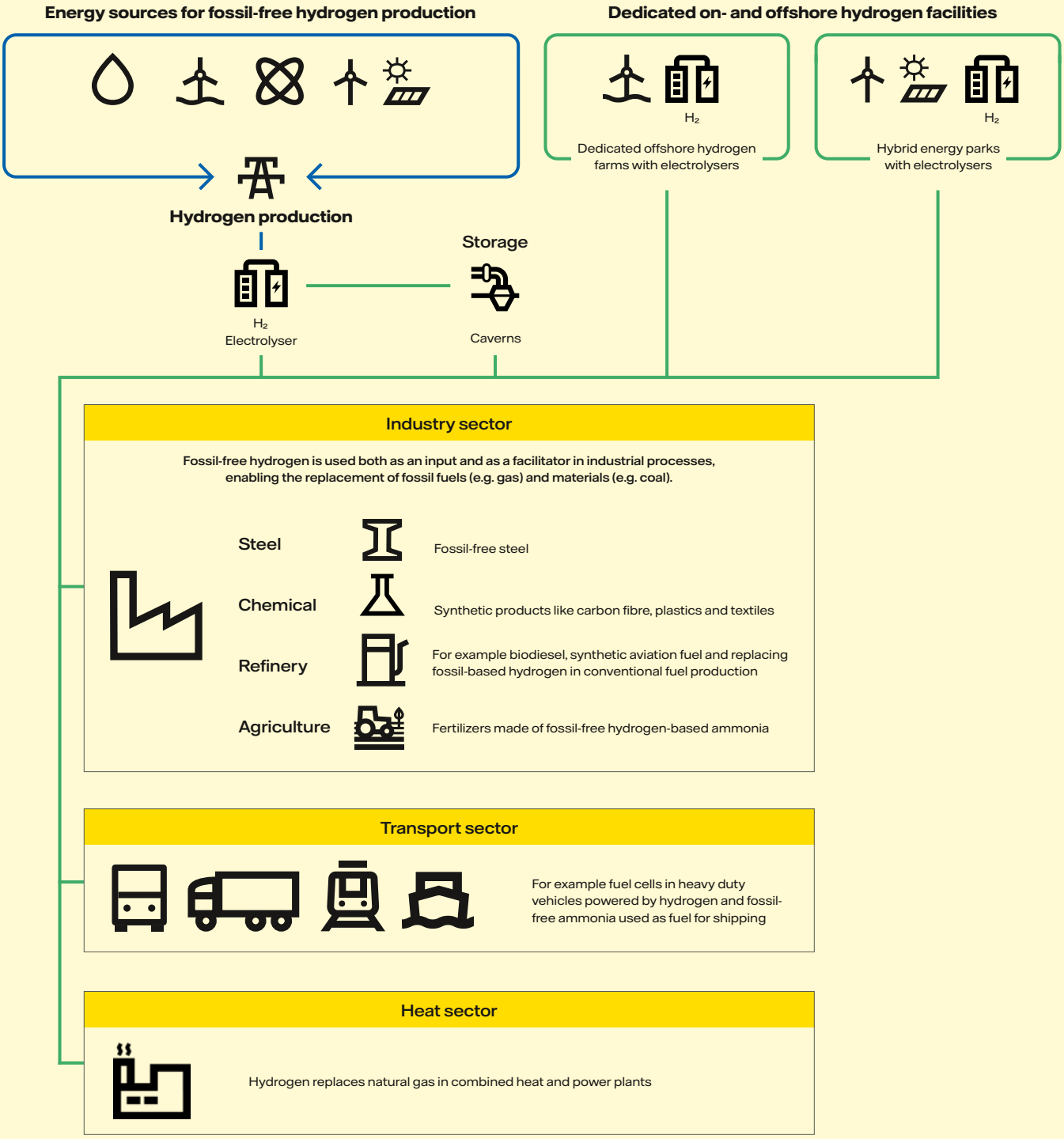
Storage technology of this size and duration is quite rare and could mitigate the variability from primarily wind power and thus make the power system able to 'host' a larger share of variable renewable sources.

Dedicated offshore hydrogen parks can help decarbonise society

Offshore wind could become the backbone of the envisaged hydrogen economy, and thanks to its high number of full-load hours it is particularly well suited for the production of fossil-free hydrogen. Many future wind sites will be located further out at sea which makes electric transmission via cable very expensive. Energy transmission via hydrogen piping will thus become the more attractive solution for these types of farms. We believe that cost-competitive fossil-free hydrogen can be achieved by 2035 by combining scale, standardisation and innovation in dedicated hydrogen-producing offshore wind farms. Therefore, Vattenfall is investigating several projects and initiatives across Europe and is a founding member of the initiative AquaVentus, which has the ambition to install 10 GW of offshore hydrogen capacity in the German North Sea until 2030. Governments in Europe agree and are increasingly moving to include hydrogen components in offshore wind tenders, especially with a view to decarbonisation of coastal industrial hubs.

Fossil-free hydrogen – sources and applications

The illustration presents a general overview of how Vattenfall sees hydrogen can help decarbonise society. Vattenfall is exploring potential opportunities and participates in various projects and development initiatives within a broad range of sectors.



Operating segments

Operating segments

Vattenfall reports its operations 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]

2,971
Customers & Solutions

7,474
Power Generation

1,104
Wind

3,213
Heat

2,366
Distribution

2,731
Other[2]

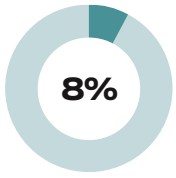
[1] Full-time equivalents.
[2] Pertains mainly to Staff Functions and Shared Service Centres.

Customers & Solutions

Responsible for sales of electricity, gas and energy services in all of Vattenfall's markets.

- A market leader in Sweden with nearly 900,000 electricity contracts
- A market leader in the Netherlands with 3.8 million electricity and gas contracts
- Leading position as electricity supplier in Berlin and Hamburg
- Challenger position in sales of electricity in Denmark, Finland and France and in France also of gas
- Operates 22,400 EV charging points in Sweden, Germany and the Netherlands.

2,146
Underlying operating profit, SEK million



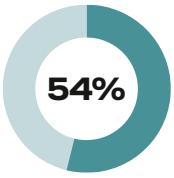
Share of underlying operating profit

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 6.3 GW nuclear power capacity and 11.5 GW hydro power capacity across Sweden, Finland and Germany
- One of Europe's largest producers of fossil-free electricity, with 39.3 TWh from nuclear power and 39.7 TWh from hydro power during 2020
- 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 northwest Europe.

14,670
Underlying operating profit, SEK million



Share of underlying operating profit

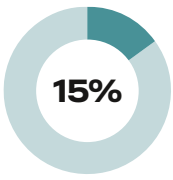
Wind

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
- Strong wind power pipeline with 3 GW under construction and over 4 GW in development
- Front-runner in innovative solutions in solar & batteries, such as co-location with wind farms and shared infrastructure.

3,970

Underlying operating profit, SEK million



Share of underlying operating profit

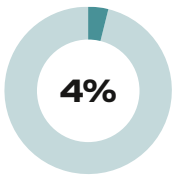
Heat

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, e.g. cooling, EV charging solutions, wind and solar.

978

Underlying operating profit, SEK million



Share of underlying operating profit

Distribution

Responsible for Vattenfall's electricity distribution operations in Sweden, Germany (Berlin) and the UK.

- Leading operator of regional electricity distribution grids and top-3 position in local grids in Sweden
- Approximately 3.3 million business and household customers in Sweden and Berlin, Germany
- Unit for operation and ownership of new grids in the UK established in 2017 has now been awarded its first three contracts.

5,325

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 10.1 million customer contracts in Europe. Vattenfall is a market leader in the retail and business segments in Sweden (nearly 900,000 electricity contracts) and in the Netherlands (3.8 million electricity and gas contracts). In Germany we supply electricity and gas to retail customers (3.9 million contracts) and to the business segment with a focus on property companies. In the cities of Berlin and Hamburg we are a market leader in the electricity retail segment, while in Denmark, Finland and France we are a challenger in the market for sales of electricity and in France also for gas. More than 22,000 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, with 875,000 customer contracts.

Key data

	2020	2019
Net sales (SEK million)	86,298	89,859
External net sales (SEK million)	84,661	87,343
Underlying operating profit[1] (SEK million)	2,146	1,337
Sales of electricity (TWh)	95.8	89.5
– of which, private customers	26.3	28.0
– of which, resellers	8.0	6.5
– of which, business customers	61.5	55.0
Sales of gas (TWh)	52.1	54.2
Net Promoter Score (NPS) relative to competitors[2]	+2	+1

[1] Operating profit excluding items affecting comparability.
[2] NPS was reported for the first time in 2016. For definition, see page 25.

Strategy

Being close to customers is a prerequisite to be able to capitalise on the growth in electrification and new business models that are emerging from the energy transition. Vattenfall's ambition is to be a leading customer-centric company, providing a wide range of sustainable energy solutions and services to retail and business customers.

We are a driver of decarbonisation by helping our customers to live a climate-smart life and contributing to their safety and comfort. We offer sustainable and efficient products and services based on customers' individual energy needs with a focus on smart, data-driven solutions, decentralised production and novel customer interaction models with the aim to achieve significant market size. We are aiming to be the leading operator of EV charging points in northwest Europe.

We leverage Vattenfall's fossil-free generation to offer a diversified commodity portfolio that covers an increasing share of fossil-free electricity and certified Environmental Product Declarations (EPDs).[1] We are also gradually phasing in renewable gas in our offering as it becomes available in the respective markets. To stay competitive in commodity trading, 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. We meet our customers where they want and make it easy for them to manage their energy needs, often solving their queries with a single click. In doing so we hope our customers will actively recommend us and thereby help us grow our business.

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

Developments in 2020

Net sales decreased mainly owing to lower electricity prices and volumes in the Nordic countries and the Netherlands. Underlying operating profit increased mainly as a result of lower depreciation in the Netherlands. The total customer base was stable and amounted to 10.1 million contracts at year-end 2020. In Germany we continue to be one of the fastest growing sales companies in electricity and gas, and our retail business in France is also showing strong growth. In the UK, the retail business iSupply was sold to EDF during the year.

In 2020 the electricity supply mix to our retail customers in the Netherlands reached a share of 32% renewable sources of Dutch origin and 18% renewable sources from other EU countries. This makes us one of the suppliers with the highest share of Dutch renewable sources in the retail market. We have also started to offer renewable gas to our Dutch retail customers. In Sweden, our electricity mix in the retail market is entirely fossil free.

We improved our absolute Net Promoter Score (NPS)[2] in all our markets and increased our lead compared with our peer competitors on average by reaching a relative NPS of +2 (+1), thereby achieving the Group's strategic target for 2020 (see page 25). During the pandemic our customers have particularly valued the seamless continuity of our customer service as well as the flexible solutions offered to customers facing financial difficulties.

In Sweden and the Netherlands Vattenfall significantly increased its sales of EV charging solutions. We have now set up structures to ramp up in Germany and also started operations in Norway. In the UK, however, we divested our charging network in connection with our exit from the retail market. As per year-end 2020 we operated 22,400 charging points, an increase of 50% since year-end 2019, and provided access to some 90,000 public charging points through roaming agreements. We entered new partnerships with the electrical technology wholesaler Elektroskandia and the housing association HSB Norr in Sweden; with BP, Castrol and Honda in Germany; and with Brabant Limburg, Louwman Group, Renewi, Hyundai, Toyota and VW Pon Lease in the Netherlands. Selected charging stations in the Netherlands were fitted with software that regulates the charging speed, thereby creating room in the electricity grid to add more intermittent, renewable energy sources. In Germany in particular, we have expanded our partnerships in city mobility to leasing options for bicycles/e-bikes, ridesharing services and e-vehicle sharing services, all of which serve to increase electric vehicle usage and reduce the total number of cars and their emissions in the cities.

Vattenfall has received high rankings by consumers in the Sustainable Brand Index, which is Europe's largest brand study on sustainability and includes the Nordic countries and the Netherlands. Among electricity and heating companies, Vattenfall was ranked as the third most sustainable company in Sweden, second in the Netherlands and in Denmark, and first in Finland.

We operate 22,400 charging points and provide access to 90,000 public charging points through roaming agreements, which is helping reduce transport emissions in the cities in which we operate.

[2] NPS is a tool for measuring customer loyalty and for gaining an understanding of customers' perceptions of Vattenfall's products and services.

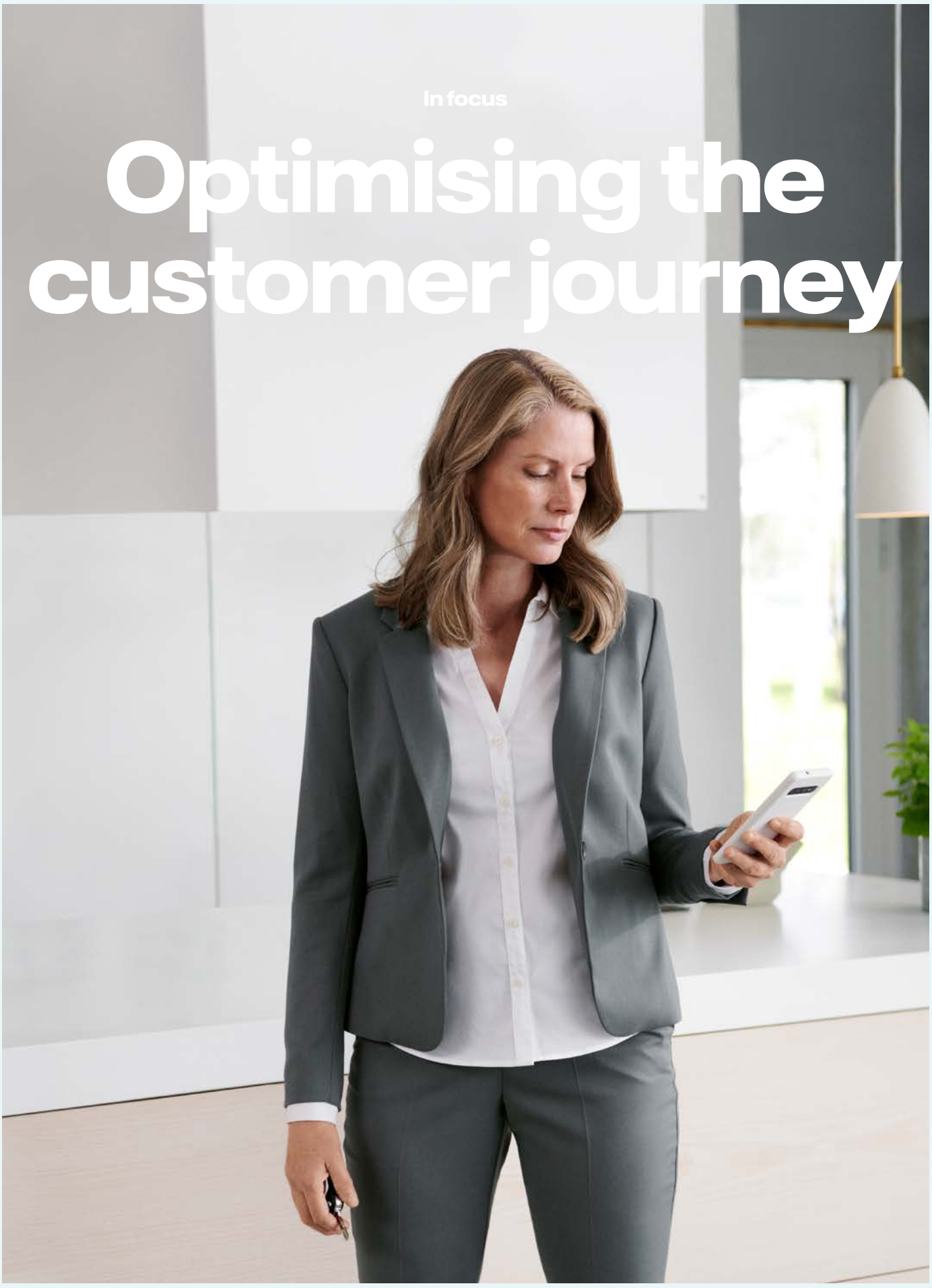
Planned activities

Vattenfall's ambition is to enable a climate-smart life for its customers and to offer its products to even more customers than today. We plan to grow our commodity customer base by 1 million contracts by 2030 through organic growth and retention initiatives as well as to further develop a portfolio of products and services that help our customers to reduce their CO_2 emissions. In the Netherlands, for example, we will be testing a high temperature heat pump combined with an automated accumulator tank as one of several fossil-free decentralised heating solutions to support the transition of the heating system in the country.

Electrification of transport is another main area where we are supporting our customers to become fossil free. We continue to roll out our EV charging services and networks across the Nordic countries, the Netherlands and Germany, capturing significant benefits of scale and enhancing value for our customers and key partners, such as leasing companies and car makers. In the Dutch provinces of North Brabant and Limburg we will install upwards of 8,000 charging points by 2024. We are also continuing our smart charging pilot projects to better match charging of EVs with renewable generation. In procurement processes, Vattenfall takes sustainability into account and seeks to engage with internal and external partners to share best practices and learn from each other.

In focus

Optimising the customer journey



Optimising the customer journey through digitalisation

Digitalisation is a key part of Vattenfall's strategy, not least in Customers & Solutions (C&S). This is how we work with digitalisation and how it optimises the customer experience.

"In C&S we are working to develop a fit-for-future backbone and to automise internal processes while delivering efficiency improvements," explains Dr. Samira Barakat, Vice President of Business Innovation & Strategy at C&S. "At the same time, the front-end offerings aim to enhance the customer experience to best-in-class by digitalising customer journeys, increasing digital interactions, and predicting customers' needs whilst reducing cost-to-serve. Overall, the digitalisation strategy in C&S strives to deliver high-performing operations.The path there is different for each of our markets, but the goal is the same: to serve the customer in a state-of-the-art and more efficient way".

Two eloquent examples of digitalisation in the Netherlands and Germany show how it can not only simplify the work of our employees, but also lead to higher customer satisfaction.

Chatbot Nina and WhatsApp

At the end of 2019, the opening hours for phone calls to Vattenfall's customer service in the Netherlands were shortened. By using messaging via WhatsApp together with the chatbot "Nina", customers did not notice much of this change. Customer service representatives were able to answer questions twice as fast and in fact, customer satisfaction even went up, despite the shorter opening hours for calls.

The chatbot Nina is an automated conversation partner that was developed by Vattenfall in 2018. Nina supports customers with relevant information, and because she is completely digital, customers can receive support 24 hours a day.

"Whereas a year ago we handled 0.3% of all customer inquiries via messaging, this is now 40% of total contact traffic, while the rest of customer contacts are still over the phone," says an enthusiastic Jorissa Neutelings, Director of Digital Innovation & IT at C&S.

40% of total inquiries amounts to more than 400,000 customer contacts per year – so large are the numbers involved. And it is not only the change in customer preference that is interesting; the costs saved by this shift are also significant, as cutting one second per call can yield EUR 20,000 in savings on an annual basis.

"We see messaging as an important intermediate step towards full self-service for customers who normally contact us via the phone," Jorissa Neutelings continues. "Messaging makes customers comfortable with using a digital medium for their questions, and from that the step to talking to a chatbot is smaller. So now, if you call Vattenfall, we offer messaging as an alternative where you have no waiting time, which stimulates the use of messaging without forcing it on the customer".

Customer satisfaction through machine learning

Just like in the Netherlands, managing incoming customer calls for the hundreds of our service employees in Germany is not an easy task. By applying machine learning techniques at call centres, Vattenfall is providing ever-improving customer support service, which is key to retaining existing customers. With the current solution, incoming calls or e-mails are manually steered through experiential knowledge and are routed to the next free call centre agent based on their skillset. This system works and has a proven track record, but through machine learning this can become even more efficient.

"Basically, the system will be automated to route incoming calls to the agent with lowest predicted handling time, thereby reducing the backlog. The machine learning-based routing system will also be used to provide agents with more variation of tasks, boosting learning and engagement," says Tobias Kleine, Data Engineer at Customer Analytics Germany.

First tests of this system have shown that it is able to predict handling time to a promising degree. In addition, other tests have shown that the system is able to reduce call centre backlog and therefore enable more efficient operations. Hence, this translates directly into enhanced customer service, as we are faster, and increased capacity of service agents.

Claudia Wischnewski, Head of Service Analytics, sums up: "The machine learning activities we have begun are very much in line with our vision of customer service: Embracing customers with convincing service experience while balancing costs and customer satisfaction by applying mature technological innovations".

Operating segment

Power Generation

Operations

The Power Generation operating segment comprises the Generation and Markets Business Areas. In 2020 the segment generated a total of 79.0 TWh of electricity from hydro and nuclear power. Vattenfall's total installed hydro power capacity of 11,475 MW generated 39.7 TWh (35.7) of electricity. At year-end, Vattenfall's Nordic reservoir levels were at 82% capacity (60%), which is 25 percentage points above normal. Combined installed capacity of nuclear reactors was 6,318 MW, including Ringhals 1. Nuclear power generation amounted to 39.3 TWh (53.3). Optimisation and sales of reliable and flexible power to the market is provided by the Markets Business Area, which also handles hedging, sourcing and trading to ensure security of supply for Vattenfall's customers.

Key data

	2020	2019
Net sales (SEK million)	90,133	102,378
External net sales (SEK million)	36,597	38,425
Underlying operating profit[1] (SEK million)	14,670	15,437
Electricity generation (TWh)	79.0	89.2
Sales of electricity (TWh)	20.0	27.0
– of which, resellers	17.9	22.8
– of which, business customers	2.1	4.2

[1] Operating profit excluding items affecting comparability.

Strategy

As the share of intermittent renewable power sources increases, hydro and nuclear power, being the two large-scale means of dispatchable fossil-free electricity generation, are becoming increasingly important and valuable, and they will be key to supporting the energy transition. 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 world-leading in nuclear and hydro power by improving our efficiency, reducing costs and maintaining high safety standards and availability.

Maximise the value of our assets, such as by utilising flexibility and developing new business models for different commodities and/or ancillary services that are less exposed to spot prices.

Safely decommission closed reactors and put the radioactive waste and used fuel into final repositories and thereby be the first in the world to complete the full cycle of activities for nuclear power (see page 47).

Manage renewable third-party capacity through power purchase agreements (PPAs). The goal is for the portfolio to reach 10 GW by 2025. By year-end 2020 it amounted to 8 GW.

Sell renewable electricity from specific assets through corporate PPAs. The goal is 7 TWh annual supply by 2025 and at year-end 2020 it amounted to almost 1 TWh.

Implement algorithmic trading tools to achieve a competitive edge in asset optimisation, wholesale sourcing and commodity trading**.**

Expand asset optimisation capabilities by steering 250 MW of flexible assets for our customers by 2025.

Developments in 2020

Net sales decreased mainly as a result of lower electricity prices in the Nordic countries due to a high hydrological balance. Underlying operating profit decreased as a result of lower achieved prices in the Nordic countries and lower nuclear power generation, which was partly compensated by a higher realised trading result and higher hydro power generation.

Hydro power

Hydro power capacity has been increased through refurbishments and upgrades combined with optimised outages. At year-end this resulted in over 600 MW of increased hydro power capacity compared to 2016. Profitability of Vattenfall's pumped hydro storage operations in Germany has improved following a major review. During a year with extreme volatility in prices, these have proven their business advantage. A national plan for ensuring modern environmental conditions in hydro power operations, including a timetable for reconsideration of all permits was adopted by the Swedish government on 25 June (see pages 48–49).

Nuclear power

Average availability was 76.4% (87.8%). The decrease is mainly attributable to longer maintenance work and outages than in 2019 at Ringhals 1 and 3. The closure of Ringhals 2 at year-end 2019, combined the with above-mentioned maintenance and output reductions in response to lower price levels, led to lower generation. Ringhals 1 reduced its output in preparation of its closure on 31 December 2020, 44 years after its connection to the grid. None of our nuclear power reactors in Sweden has a planned decommissioning date and they all have permits to conduct stable operations for many years to come. During the year, systems for independent core cooling at Ringhals 3 and 4 and Forsmark 1, 2 and 3 were installed. Implementation of the sytems was approved by the Swedish Radiation Safety Authority (SSM) in mid-December.

Preparations are ongoing to start construction of the final repository for spent nuclear fuel in Sweden. Following a thorough legal process in which the matter was assessed by SSM and the Land and Environmental Court, the municipalities concerned, Oskarshamn and Östhammar, have given their consent. The government now has all the information it needs to make a decision and we are awaiting its decision. This also applies for the application to extend the repository for low- and medium-level radioactive waste in Forsmark that was accepted by the Land and Environment Court without comments already in 2019. The detailed design of the encapsulation plant has been temporarily halted due to a revision of the regulatory requirements.

Vattenfall has started the dismantling of the Ågesta nuclear power plant (80 MW) located south of Stockholm. The reactor has been out of operation since 1974, and the dismantling work is expected to continue for three to four years.

Markets

Warm, wet and windy weather together with EU-wide economic challenges had a significant negative impact on the energy market, resulting in price drops and falling energy demand. Still, our diversified trading operations and strong market analytics allowed us to benefit from high volatility in many of the markets. We also remain among the top three players in terms of PPA capacity in Germany.

Together with seven other hydro power companies, Vattenfall has formed an environmental fund of SEK 10 billion to improve aquatic environments over a 20-year period.

Planned activities

Preparations for the dismantling of the Ringhals 1 and 2 nuclear reactors are progressing. It is expected that dismantling activities can commence in 2022, when the licences from the Swedish Radiation Safety Authority are expected to be in place. In parallel with this, Ringhals is changing its organisation and procedures to fit a site with two instead of four operating reactors. Dismantling activities of the Ågesta nuclear reactor will continue with planned completion in 2024/2025.

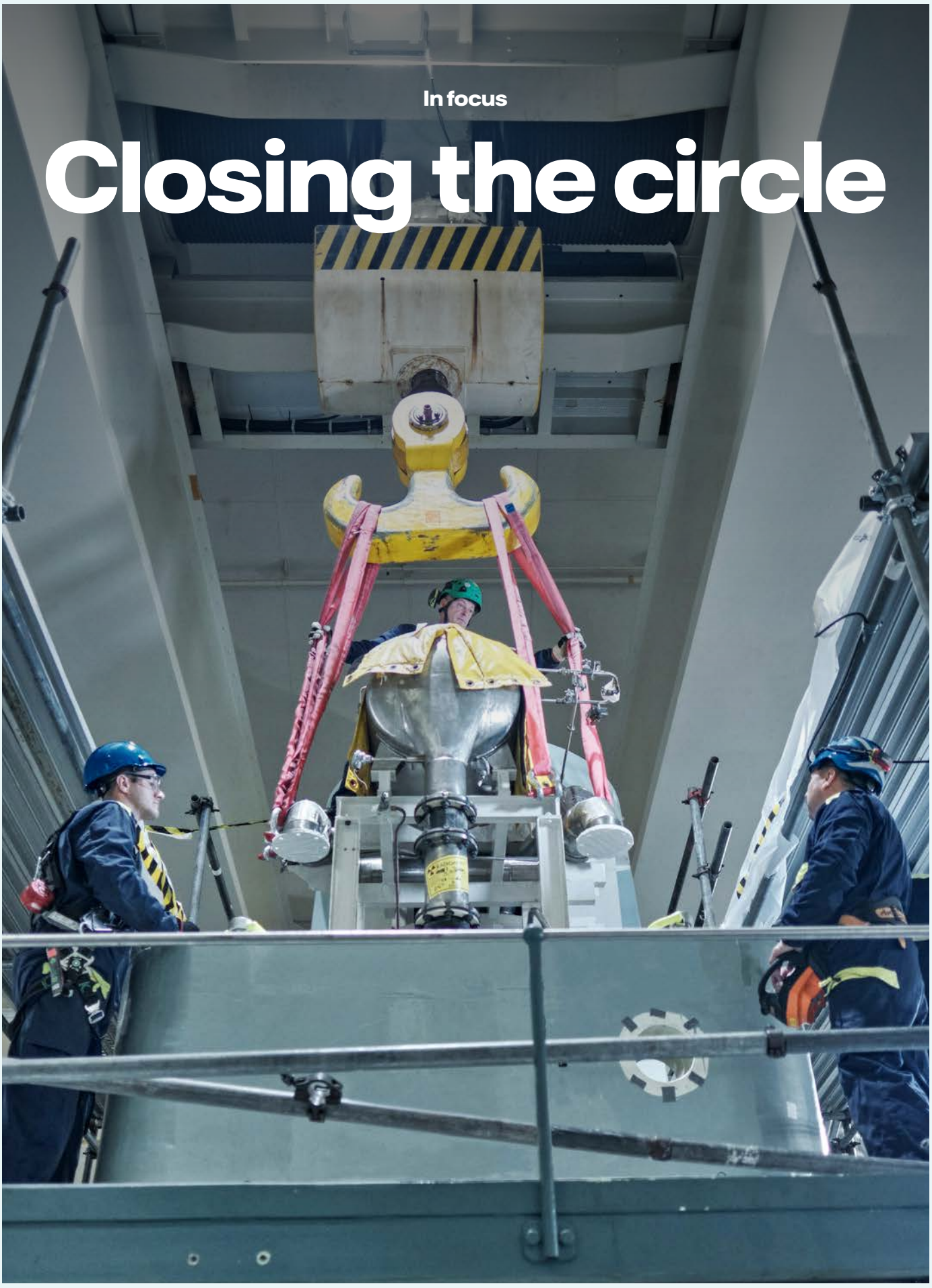
Vattenfall will apply for a judicial review of its first hydro power plants against the new environmental requirements starting with hydro power plants in Rolfsån (expected 2022), Gimån and Dalälven (both expected 2024).

To reduce the negative impacts of hydro power on ecosystems and biodiversity, we are carrying out a large number of initiatives to maximise ecological benefits while minimising production and flexibility losses.

Vattenfall uses corporate power purchase agreements (PPAs) as a tool for securing stable revenues for its growing renewables business. For example, we have entered into a 12-year agreement with Bosch to sell the electricity from a 10 MW solar park that we will build in northern Germany during 2021. In addition, a corporate PPA facilitates the process when partnering or divesting the asset when this is preferred. To scale up our automated customer asset management platform, Vattenfall Flexibility Services, we will start projects with key customers, such as Dutch e-mobility providers and German industrial players. Vattenfall's capabilities to manage PPAs and decentralised flexibility will be enhanced by further developing algorithmic trading.

In focus

Closing the circle



From cradle to grave in a safe manner

After a nuclear power plant has done its last shift in the service of society, it is decommissioned in the same way it was run: safely, cost efficiently and sustainably.

Vattenfall has several nuclear reactors that are currently being decommissioned. In Sweden, the R2 research reactor in Studsvik and the Ågesta power station are currently being dismantled, and planning of the decommissioning of Ringhals 1 and 2 is well under way. Decommissioning work is also being conducted in Germany at the Brunsbüttel and Krümmel power plants outside Hamburg.

History is being written

Sweden and Vattenfall will be writing history as we, together with Finland, will become the first in the world to take the last step in these plants' life cycles: putting radioactive waste in safe final repositories.

"Closing a nuclear plant responsibly provides proof to external stakeholders that we can handle the whole life cycle of nuclear power from the cradle to the grave in a safe way," says Sven Ordéus, head of Vattenfall's nuclear decommissioning unit, BUND.[1]

Mastering decommissioning projects takes a wide range of experts and an overall understanding of the dependencies within and between projects and competences. BUND gathers experienced specialists in all areas that relate to decommissioning, and there is great interest in working in this field.

"We are pioneers in a business that requires expertise and that attracts creative specialists," says Sven Ordéus.

How to decommission

Nuclear decommissioning projects are huge logistical puzzles. Each part that is deconstructed or removed affects how and when other parts can be taken out.

"It's like a domino game: the plants are tightly packed, and the radioactivity that is on and in some materials must not contaminate the unaffected material," Sven Ordéus explains.

The Ågesta facility is situated in a tight rock cavern, and the single largest item is the reactor pressure vessel (RPV), which goes from the bottom and almost to the top of the cavern. If the RPV is taken out untimely or handled improperly, it will contaminate the facility, causing massive clean-up costs. Instead, other components present in large amounts, such as pipes, pumps, supporting structures and equipment, are removed first. The RPV is then filled with water to shield the radioactivity when internal parts are segmented – mostly performed with remote-controlled underwater robots. The method minimises the dose exposure of radioactivity to the workers as well as the risk of spreading contamination to the facility itself. Ågesta is special due to its location and design, but it still gives us a solid amount of experience that we can use at other facilities with different layouts and challenges.

When all radioactive components have been removed, buildings and ground measured to be below clearance levels and finally certified free of radioactivity by the Swedish Radiation Safety Authority, then the area is released to be used for other purposes.

The greatest share of the demolition rubble, approximately 90%–95% of the material at Ringhals 1 and 2, is not radioactive and can be reused and recycled. Components of future use in the plants are saved, and equipment and packaging are transferred between the projects.

Safe, cost efficient and sustainable

Implementing and balancing the principles of safe, cost efficient and sustainable decommissioning can be challenging in practice. Structural measures that can eliminate or lessen elements that create risks, costs or environmental impacts are therefore identified already in the planning stage.

While the safety of the people and the environment is prioritised above all else, cost is of course also a factor. In both Sweden and Germany, the nuclear power companies themselves finance the decommissioning, and experience is highly valuable to avoid costly mistakes. Learnings are vital, and the overall planning with different time lines for each facility is set up with the aim to take learnings from one project into the next.

A vital role in the future energy system

Vattenfall's remaining Swedish nuclear plants, Ringhals 3 and 4 and Forsmark 1, 2 and 3, have recently been upgraded to ensure safe, long-term operation. These reactors will continue to play a vital role in the Swedish energy system by maintaining safe and stable plannable production to meet demand and ensure grid stability for decades to come.

[1] As of 1 April 2021, Christopher Eckerberg will take up the position as head of BU Nuclear Decommissioning. Sven Ordéus will remain in the Group and focus on his position as Managing Director of AB SVAFO.

In focus

Reconciliation of electricity generation and environmental considerations continues to be a central parameter for use of hydro power in Sweden.

Hydro power – the responsible way

Vattenfall owns or has a majority share in 56 large-scale and 32 small-scale[1] hydro power stations in the Nordic countries. Hydro power has been a cornerstone of Sweden's energy system since the early 20th century, when Vattenfall constructed the large Trollhättan, Porjus and Älvkarleby facilities to support emerging industries and supply energy for the Swedish railway network.

The huge construction works and regulation of waterways had a significant impact on the environment surrounding the hydro power plants as water flows and the ecological balance in and around the rivers changed. Over the past decades, Vattenfall has worked hard to improve environmental conditions related to the hydro power plants while at the same time securing safe and efficient operations.

Changed role for hydro power

Hydro power has reached a new phase where flexible operation is vital as an increasing amount of wind and solar power makes more starts and stops of the power stations necessary, causing increased wear and tear on dams, turbines and watercourses. It is expected that hydro power will need to deliver even more flexibility in the future. Today, water is stored when the weather is warm and used when it is cold, but if wind speeds are low during summer, for example, hydro power will have to make up for the missing production, and as a consequence, more water will be needed year-round for electricity generation.

Since 2015 Vattenfall has undertaken a major modernisation project to upgrade its power plants and dams in order to raise their output and flexibility. To cope with the new demands, Vattenfall's hydro power plants have already now during the period 2016–2020 increased their capacity by some 600 MW mainly through refurbishment of technical equipment such as turbines, generators and transformers and reduced outage time for maintenance.

Vattenfall continues to focus on sustainability

Vattenfall has ambitious environmental policies, and with our pledge to support the environment around our hydro power facilities, we continue our many voluntary initiatives to safeguard biodiversity and nature in general. At some of our hydro power stations we have constructed fish ladders and increased passage capacity for migrating fish such as salmon and sea trout. At Stornorrfors in the Umeälven river, Vattenfall R&D is testing artificial intelligence similar to face recognition to better understand fish migration. Vattenfall is Sweden's largest owner of compensatory fish farms, each year stocking 1.3 million young salmon, sea trout and whitefish in the regulated rivers as compensation for the negative impact on natural populations caused by hydro power. In addition, between 2010 and 2020, some 10,000 eels have been transported by truck every year from Lake Vänern past our hydro power stations to the sea on their way to the Sargasso Sea.

New environmental demands

The EU Water Framework Directive was implemented in Swedish legislation through adjustments made to the Swedish Environmental Code in 2004. Since then the discussion of how to adapt Swedish hydro power to modern quality standards has progressed. As a result of negotiations between the authorities, NGOs and the largest hydro power companies, in 2018 a path forward was decided, and a national plan for retrial of environmental conditions for hydro power was prepared by the Swedish Agency for Marine and Water Management together with the Swedish Energy Agency and the TSO Svenska kraftnät. The plan was approved by the government in June 2020.

According to the plan, all Swedish hydro power stations and the watercourses they operate in will have their environmental conditions and permits tested systematically in the Land and Environment Courts. This is done to ensure that environmental improvements are made in the places where they are most cost-efficient and best balanced in relation to maintaining the energy production.

[1] Vattenfall defines large-scale as plants at or above 10 MW and small-scale as below 10 MW.

Environment vs security of supply – a delicate balance

To strike the best balance between environmental improvement measures and security of supply, the Swedish government has decided that the national plan can be allowed to reduce Sweden's total hydro power generation by a maximum of 2.3%, equivalent to 1.5 TWh. A detailed time plan has been drawn up for when hydro power owners must hand in to the court their new environmental application for each plant and section of the river. Implementation of the new environmental conditions will stretch over the coming 20 years and involve a significant amount of man-hours.

Sweden has some 1,800 hydro power plants, of which 200 large facilities are crucial for the security of supply of electricity. It is therefore expected that environmental measures will largely be focused around the 1,600 small-scale facilities, where valuable environmental improvements can be achieved without affecting national supply so much.

The first of Vattenfall's smaller hydro power stations have already started the reassessment process, while for instance the Luleälven river and its large stations are not up for reassessment for ten years. According to Richard Holmgren, Head of Environment for Vattenfall's hydro operations, the whole reassessment process is an opportunity for Vattenfall to further strengthen biodiversity and increase recreational value in addition to the environmental activities that we are already conducting. It is likely to be difficult to justify the construction of fish ladders at the large power stations and rivers that are more a system of interconnected lakes than the once free and fast-flowing streams that salmon and trout need to reproduce. Therefore, many of the actions to be taken at small-scale stations are expected to focus on securing minimum flows to dry riverbeds and to help fish pass the power stations to reach their spawning areas. Also, the natural environment around the rivers with habitats for birds, insects and other animals will most likely be areas for improvement just as the recreational value for local residents and tourists visiting the areas will be considered.

Hydro power's environmental fund

The new national plan has spurred eight hydro power companies to form Vattenkraftens Miljöfond ("hydro power's environmental fund"), which has taken responsibility for funding the environmental measures necessary to secure modern environmental conditions for hydro power in Sweden.

The eight companies represent 95% of Sweden's hydro power generation and are now investing SEK 10 billion over a 20-year-period to improve the aquatic environment at Swedish hydro power stations. As Vattenfall owns half of Sweden's hydro power generation, the company is also covering half of the contribution to the fund.

Companies can apply to the fund for reimbursement of costs of environmental measures resulting from the national plan reassessment. All applications are reviewed by the fund prior to any reimbursement.

Restoration of watercourses in northern Sweden

"Vattenfall is engaged in the restoration of various watercourses, among others the project ReArc working within the framework of the The Kolarctic Fund, a cooperation in the Barents region stretching across four countries – Sweden, Norway, Finland and Russia," explains Henrik Viklands, Vattenfall's environmental coordinator. "The project is being performed by the County Administrative Board of Norrbotten with Vattenfall as the largest co-financer. Our investment is made within the framework of the ecolabelling programme Bra Miljöval (Good Environmental Choice – GEC), to which we provide some SEK 800,000 annually, or SEK 0.8 for each kWh of hydro electricity we sell from our certified hydro power stations. SEK 1.2 million from our GEC fund is used to co-finance the project, which will physically start up in 2021."

Altogether the Kolarctic project will restore 235 km of watercourses (one-fourth of which are in Sweden) to allow free passage for fish migration. Among them are Linabäcken, a tributary to the Luleälven river, where from the 19th to first part of the 20th century boulders, rocks and other obstacles had been removed for the purpose of timber floating. These activities also destroyed spawning and hatching areas for trout, grayling and salmon, as the rivers became homogenous with a flat bottom. Restoration in this tributary includes removal of obstacles to migration, returning of previously removed material to the river as well as the creation of new spawning grounds and re-establishing riparian vegetation on the banks for the benefit of a wide number of species such as birds and insects. One important goal in this project is to strengthen the populations of the rare and endangered freshwater pearl mussel.

Furthermore, in Juktån, a tributary to the Umeälven river, Vattenfall – together with other power companies and Umeå University – is currently returning material to the river to restore the natural environment and create fishing and recreational areas. We have also applied for and been granted the right to change the yearly minimum flow to create a more natural flow pattern, thereby re-creating spring floods and other natural ecosystem processes in the regulated system.

Operating segment

Wind

Operations

Accelerated renewables growth is key to achieving a sustainable energy system, unlocking the climate benefits of widespread electrification of society and ultimately reducing CO_2 emissions. Vattenfall continues to be a leading player in offshore wind power as well as one of the leading companies in onshore wind power in Europe, especially in the UK and the Netherlands. We operate a portfolio of more than 1,200 wind turbines with total installed capacity of approximately 3.6 GW across five countries. In 2020 we continued our focus on solar power (PV) technology and battery storage, building 52 MW of solar power and installing 8 MW of battery capacity.

Key data

	2020	2019
Net sales (SEK million)	13,565	13,492
External net sales (SEK million)	6,901	6,578
Underlying operating profit[1] (SEK million)	3,970	4,155
Electricity generation (TWh)	10.8	9.5
Investments (SEK million)	5,810	9,245

[1] Operating profit excluding items affecting comparability.

Strategy

It is Vattenfall's ambition to be a leader in the energy transition through construction and operation of onshore and offshore wind power and to attain a leading position in solar power in the near future. At year-end 2020 Vattenfall had 3.6 GW of wind and solar capacity in operation, a further 3.2 GW under construction and an additional 4 GW in mature stage development. To achieve our ambition and succeed in an increasingly competitive market environment, we aim to:

Further strengthen our project pipeline by acquiring project development rights or entering into joint development agreements.

Be a leader in Levelised Energy Cost (LEC) and deliver the first new offshore and onshore projects without subsidies.

Innovate in operations and maintenance and keep focus on digitalisation of our entire value chain to reduce costs and improve availability.

Use the potential of combining solar, wind, and battery technology for renewable hybrid power plants and to a greater extent decouple the delivery of electricity from the time of production.

Sustainability is the foundation of our strategy and a prerequisite for long-term profitability. In addition to adding renewable electricity capacity, we aim to deliver sustainable lifecycle solutions both from environmental and social perspectives and to be a frontrunner in the industry.

Vattenfall has decided to build the world's largest non-subsidised offshore wind farm and has commissioned a hybrid energy park to provide consumers with affordable and clean energy.

Developments in 2020

Net sales were unchanged compared with 2019. New capacity was countered by lower electricity prices and lower availability for offshore wind power owing to increased maintenance work. This also resulted in higher costs for maintenance, which contributed to a lower underlying operating profit. Electricity generation increased to 10.8 TWh (9.5) as a result of new capacity and higher wind speeds early in the year.

Offshore wind power

On 4 June the final investment decision (FID) was taken for Hollandse Kust Zuid 1-4 (HKZ 1-4). When commissioned in 2023, the 1.5 GW wind farm will be the largest and first non-subsidised offshore wind farm in the world.

Construction of the Kriegers Flak offshore wind farm (605 MW) in the Danish part of the Baltic Sea is progressing on schedule, and the last foundation was installed in August. When commissioned at the end of 2021 it will be the largest offshore wind farm in Denmark.

The Vesterhav projects (350 MW) have been undergoing a re-design to move the wind turbines as far away from the coast as possible, in order to minimise the environmental and visual impact. On 14 December the Danish Energy Authority gave permission to begin construction work at the site. Commissioning is expected in 2024.

In July 2020, Vattenfall received a development consent for Norfolk Vanguard in the UK which was overturned following a Judicial Review. The UK Government will now re-determine the consent application and a process for this will be published in the first half of 2021. It is one of two large, 1,800MW projects in the pipeline off the coast of Norfolk, together with Norfolk Boreas which are expected to be commissioned in 2027 and 2029, respectively.

Onshore wind power

In the Netherlands, several onshore wind projects are currently under construction. The Princess Ariane wind farm (previously Wieringermeer), a 301 MW repowering and expansion project located north of Amsterdam, was inaugurated in September. In the southwestern part of the country, Haringvliet, a hybrid energy park with six wind turbines, 115,000 solar panels and 12 sea containers of batteries was commissioned. The energy park will generate electricity equivalent to the annual consumption of 39,000 Dutch households.

Foundations and cabling works have been completed at the Blakliden/Fäbodberget wind farm in northern Sweden. When commissioned in 2022 it will be one of Sweden's largest onshore wind farms (353 MW).

In April Vattenfall took the final investment decision to construct the South Kyle wind farm (240 MW) in the UK, which will be able to supply approximately 170,000 British households with renewable electricity. Once completed in 2023, the wind farm will be divested to the renewable infrastructure fund Greencoat UK Wind.

Solar power and batteries

Several solar power and battery projects were developed during the year. In the Netherlands, the 7 MW Coevorden solar park generated its first electricity. The project was divested post-construction to the Belgian insurance company Patronale.

A 10 MW non-subsidised solar park will be built in Germany and is scheduled to commence operation in early 2021. A corporate power purchase agreement (PPA) was signed with Bosch for supply of renewable electricity from the solar park. As part of the expansion of solar power in Germany, Vattenfall was also awarded a contract for installation of solar panels at its existing Markersbach and Geesthacht pumped storage power plants.

Planned activities

Sustainability permeates every aspect of Vattenfall's business. Accordingly, we continue to assess biodiversity impacts as well as mitigation and potential improvement measures in a four-year R&D programme launched in 2020 and at the European Offshore Wind Deployment Centre in Aberdeen. In addition, we have begun using a new sustainability assessment tool to monitor our performance and progress, which we will use to set baselines and KPIs for our facilities – both under construction and currently in operation.

We are working on technology development in several areas. One example is the use of larger turbines, as it reduces installation, operation, and maintenance costs as well as significantly reduces the environmental impact of the wind farms. In the HKZ 1-4 project, in a joint effort with turbine provider Siemens Gamesa, we succeeded in improving turbine efficiency by increasing the rotor diameter from 193 to 200 metres.

Data-driven operations and maintenance, such as predictive maintenance, are key to increasing efficiency and reducing costs. Focus in the coming years will be on strengthening the foundation of our processes and tools as well as on performance optimisation and automation.

We are exploring several opportunities to develop hybrid energy parks, where for example onshore wind and large scale solar are combined with batteries and/or hydrogen electrolysers. The parks not only allow better utilisation of available grid capacity and land space, but also lead to a more stable and competitive power supply.

In focus

Community involvement

Dutch wind farm being built in cooperation with local citizens' initiative

Community involvement is essential for the development of solar and wind farms in harmony with the surrounding environment.

Community involvement is essential for Vattenfall and plays a central role in our projects. One example is in the Netherlands, where in the coming years the Dutch government will focus on local ownership in the development of solar and wind power facilities. In Almere, Vattenfall is currently working with a local citizens' initiative on construction of a wind farm.

Vattenfall has chosen to work with the energy cooperative Almeerse Wind to replace ten existing wind turbines with models with a larger capacity at the Jaap Rodenburg wind farm in Almere-Pampus in the Dutch province of Flevoland.

"It's a unique project," says Hidde Seidel, construction project manager and ultimately responsible for construction of the wind farm on behalf of Vattenfall. "Almeerse Wind will generate its own energy with two of the ten turbines. In addition, local residents were allowed to decide on the location of the wind turbines, and a local construction company, Reimert Bouw en Infrastructuur (Reimert), will take care of construction of the wind farm prior to installation of the wind turbines."

Almeerse Wind energy cooperative

The first wind turbines were installed near Almere in 2000, and they initially had permission to remain in place until 2015 due to planned construction of a new residential area. However, these plans were postponed until after 2035, and the municipality gave permission to rebuild the existing farm. The plans were developed in collaboration with the local energy cooperative Almeerse Wind.

Vattenfall Asset Development Manager Joost de Gooijer, who is responsible for the development of the wind farm, has been involved since 2017:

"Vattenfall is responsible for development of the wind farm, and Almeerse Wind for support for the wind farm. It is a sympathetic initiative as we are helping to make it possible for residents of Almere to benefit from the wind farm in the future," says Joost de Gooijer. "In the coming years we will see more of these kinds of initiatives in which we develop and operate part of a wind farm through local ownership. We will therefore work more often with local owners in the development of wind farms, and this project is a good opportunity to gain experience."

Involvement of local residents

Residents' evenings were organised to provide information to all local residents in the same way as it has been done in connection with the construction of other Vattenfall wind farms, even though there is no other wind farm in the Netherlands in which the nearest house is farther away (1.5 kilometres) than in Almere.

Residents from the areas surrounding the wind farm in Almere were given the opportunity to discuss the location of the ten wind turbines.

Erik van Norren, Environmental Manager at Vattenfall, explains: "In addition to the input we received during the residents' evenings, the municipality of Almere conducted a digital survey among 15,000 households. In this survey, residents were asked to choose among four alternative locations of the wind turbines. A variant with ten wind turbines, in which the existing turbines would also be dismantled at the same time, was ultimately chosen by a majority of the people participating in the survey. In this way we arrived at the current ten turbines by mutual agreement with the municipality of Almere, Almeerse Wind and residents from the surrounding districts."

Local contractor

Reimert from Almere came out on top in the tender for the plan, design and price of the wind farm.

"It's very nice for us that they come from Almere," says Hidde Seidel. "Not only their office, but also a concrete plant is close to the building site." Reimert also scored well on the sustainability aspect. Hidde Seidel continues: "They only need to make few travels, and their concrete plant will recycle the concrete from the demolished wind farm. A story that fits nicely with the vision of Vattenfall."

Jelle van der Schaaf, project manager at Reimert, is proud of the project: "We are very happy that we can play a key role when it comes to providing almost 28,000 of our 'neighbours' with green electricity. The collaboration with Vattenfall fits well with Reimert's ambitions in the field of sustainability; in recent years we have invested a lot in knowledge and skills in the field of sustainable entrepreneurship."

Land lease agreement

The state is the owner of the land on which the wind farm is being built, and Vattenfall pays an annual fee for this. Fifty per cent of that amount, however, does not go to the state, but to four other parties: the province, the municipality, the Flevo-landscape nature reserve and a nearby riding school.

Wind farm data

- 10 wind turbines, of which two will be owned by Almeerse Wind after construction
- Tower height > 90 metres, rotor diameter 117 metres, tip height 150 metres
- Total capacity of 38 MW
- The amount of electricity generated is equivalent to the consumption of approximately 28,000 households
- The wind farm will come into operation in the third quarter of 2021.

Operating segment

Heat

Operations

The Heat operating segment is one of Europe's largest producers and distributors of district heating with more than 1.8 million customers in growing metropolitan areas in northwestern Europe, including Berlin, Amsterdam and Uppsala. The district heating business is mainly based on the operation of large combined heat and power plants (CHPs). The segment also includes Vattenfall's condensing power plants, consisting mainly of gas-fired power plants in the Netherlands.

Moreover, our decentralised energy solutions serve more than 75,000 customers based on mini-CHPs, heat pumps and solar panel installations. With significant growth potential in Sweden, 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.

Key data

	2020	2019
Net sales (SEK million)	23,328	31,403
External net sales (SEK million)	13,538	15,947
Underlying operating profit[1] (SEK million)	978	550
Sales of heat (TWh)	13.8	17.1
Electricity generation (TWh)	23.0	31.7
CO_2 emissions[2] (Mtonnes)	12.1	19.3
Nitrogen oxide, NO_x (ktonnes)	5.5	7.4[3]
Sulphur dioxide, SO_2 (ktonnes)	1.5	2.3[3]
Particulates (ktonnes)	0.1	0.1[3]

[1] Operating profit excluding items affecting comparability.
[2] CO_2 emissions are pro rata.
[3] Excluding the divested heat operations in Hamburg.

Strategy

Decarbonisation of Vattenfall's heat portfolio is a cornerstone for securing a fossil-free energy supply. Our journey to phase out fossil fuels and achieve carbon neutrality by 2050 is under way. Additionally, we will position ourselves as a system manager that integrates a mix of Vattenfall-owned and third-party-owned heat sources in order to maximise system efficiency and minimise the costs of decarbonising the heat and building sectors. Vattefall will develop its district heating grids in new markets, such as the UK, and attract potential customers with more sustainable energy solutions.

We aim to decarbonise district heating by growing in renewables and residual heat sources, maximising the value of our existing fossil-free and convertible assets and implementing our country-specific CO_2 reduction road maps. We are well on our way to implementing the second phase of our decarbonisation journey – the phase-out of hard coal by 2030 – after completing the first phase with the full phase out of the use of lignite in 2017.

We will increase the share of third-party integration and establish a sustainable and reliable energy infrastructure to maintain security of supply.

Our goal is to increase customer centricity and develop innovative, smarter and more sustainable products and services with a focus on energy efficiency. At the same time, we aim to minimise individual customers' energy consumption based on a full roll-out of digital smart meters and state-of-the-art digital tools.

Vattenfall's heat operations in the UK will introduce a district heating system that delivers low-carbon and low-cost heat.

Developments in 2020

Net sales decreased due to changes in the portfolio[1] as well as lower clean dark and clean spark spreads. Underlying operating profit increased mainly as a result of lower maintenance costs and lower depreciation. Compared with year-end 2019, the number of customers increased by 1.6% to 1.8 million households.

In June Vattenfall reached an important milestone in the coal phase-out when the new gas-fired combined cycle heat and power plant Marzahn was put into operation in Berlin. The Marzahn site is planned to be used as a laboratory for testing future energy technologies, including on-site production, storage and eventual co-combustion of fossil-free hydrogen. Planning is under way for production and storage infrastructure, and research is being conducted on how to increase the share of hydrogen that can be combusted in the plant. This will accelerate the integration of renewable energy sources in district heating. Another important milestone for the coal phase-out was reached on 1 December, when Vattenfall's tender to shut down the Moorburg coal-fired power plant was accepted in Germany's first coal phase-out auction.

In Amsterdam, additional infrastructure to couple the city's southeastern and northwestern district heating grids is under construction. The connection will enable us to maximise the use of renewable sources, including waste incineration plants and biomass, and increase grid stability from 2021 and onwards. In addition, we are expanding our efforts to identify potential opportunities and partnerships that could accelerate our transition to fossil-free energy supply.

In Sweden, conversion of the Bolandsverket heat-only-boiler in Uppsala to biomass was completed. As a result, the plant's CO_2 emissions are expected to be reduced by more than 50%. The sustainability of biomass, with respect to both cultivation and production, will be ensured by sourcing certified biomass and routinely performing spot checks of suppliers.

The first heat project in the UK, Brent Cross South, has been launched and is now under construction. The renewal project will see more than 6,000 homes and 400,000 sq. m of retail and office space being built over the next 15 to 20 years. Vattenfall is building a district heating system that delivers low-carbon and low-cost heat from a number of sources, including heat pumps, electric boilers and waste heat from data centres.

Vattenfall has also entered into a joint venture for development of a district heating network that will initially deliver heat sourced from a waste and recycling plant to approximately 1,800 new homes in Midlothian's Shawfair development with a carbon footprint that is 75% lower than a conventional gas boiler.

[1] The sale of the district heating operations in Hamburg and the closure of the Hemweg 8 power plant.

Planned activities

In Berlin, Vattenfall is continuing its coal phase-out in accordance with the feasibility study (see page 57). Work on replacing the coal-fired CHP Moabit plant with a biomass-fired plant is in progress. The biomass is sourced regionally, complying with the sustainability agreement with the City of Berlin. Furthermore, following an agreement with the City of Berlin, detailed planning of a new sewage heat pump is in progress, where the aim is to reuse thermal energy from sewage. This will partially replace the coal-fired units at the Reuter West plant with renewable energy sources.

In the Netherlands, Vattenfall is working to eliminate natural gas from the district heating grids in Amsterdam, Diemen and Almere. We are engaged in close dialogue with local and national authorities and stakeholders regarding the power plant in Diemen, which may potentially be biomass-fired. Additionally, we plan to expand the generation capacity with a power-to-heat solution. Besides stabilising the grid, the boiler – which is planned for commissioning in 2023 – will ensure that surplus solar and wind power can be put to good use instead of being switched off. Furthermore, Vattenfall is involved in a feasibility study for geothermal heat, residual heat from data centres and heat from various water sources in the cities of Almere and Amsterdam.

In Sweden, Vattenfall plans to operate 100% fossil-free by 2025 and to achieve net negative emissions by 2045 at the latest. To enable the latter, a bio-carbon capture and storage (bio-CCS) project has been initiated with the goal for a facility that can capture and store at least 100,000 tonnes of CO_2 annually to be in operation no later than 2030.

Together with Cory Riverside Energy, Vattenfall's UK heat operation has set the vision to create an East London heat grid, initially providing heat to 10,500 homes. The design allows for expanding the network to an equivalent of 75,000 homes in the future. The conversion of residential boilers to district heating offers our customers cost-effective and efficient energy use that will reduce overall CO_2 emissions in the region.

In focus

Heat and the fossil phase-out

Decarbonising district heating to decarbonise Berlin

A concrete plan for phasing out coal in district heating and enabling the City of Berlin to achieve its climate targets as cost-efficiently as possible.

Vattenfall's district heating grid supplies reliable, low-hassle and environmentally-friendly heat to some 1.3 million customers in Berlin. Our offering is currently 40% more CO_2-efficient than our closest competitor's, and with a concrete plan to phase out coal, this advantage will only grow.

In Berlin, for Berlin

"If you see a chimney on the Berlin skyline, you're likely looking at a district heating plant that is warming homes and offices in the area. I like seeing that and knowing that our products are produced by locals and serve locals, that the value we create truly benefits Berlin," says Tanja Wielgoss, head of Heat Berlin in Business Area Heat. "With 11 large plants, about 2,000 km of heating grid and 850 system-critical workers, we are truly part of the fabric of the city."

"As we decarbonise, we help the city and our customers to do so as well. Berlin's emissions come primarily from the building, transport and energy sectors, but it's important to consider the system as a whole. To achieve the 2030 target for buildings would require EUR 80 billion if through refurbishments alone, but using district heating as a lever, we can reduce that by nearly 90%. Keeping the energy transition affordable is critical," she continues. "The building sector appreciates us as a partner because we help them to decarbonise as efficiently as possible. We also recently enabled these customers to choose a 100% renewable tariff or to offset the CO_2 emissions of their fossil-based heat consumption. Eventually there will be no emissions to offset, but in the meantime this engages them actively in the energy transition, which building companies and tenants alike for the most part appreciate."

Coal phase-out by 2030: A tricky but achievable challenge

Although the coal phase-out has received increasing attention lately, the transition in Berlin has been ongoing for years. "When I stepped into my current role in 2009, one of my first jobs was to figure out how to close old fossil plants and replace them with lower-emission alternatives. In that sense, our climate transition has been going on for a decade already," says Markus Witt, head of Asset Management in Business Area Heat and the driving force of the Berlin transformation.

This mirrors the 2009 climate agreement between Vattenfall and the City of Berlin. The first target of that agreement – to reduce emissions by 50% from 1990 levels by 2020 – was already achieved in 2017. The next step, determining how to phase out coal while still guaranteeing affordable heat to customers, was the task of the feasibility study started in 2017.

"We aimed to have a very transparent process with the city and other stakeholders to plan our coal phase-out programme," adds Markus Witt. "To ensure a balance of stakeholder views, we hired an independent consultant to lead the project and make sure the fairest, most feasible option was chosen. The stakeholder reference group, including representatives of unions, NGOs, customers, economic and trade interests, politics and more, met regularly to discuss the programme."

These discussions, along with those with the city and the project lead, led to an agreed way forward which includes eleven major projects. Markus Witt continues: "Today, there is no alternative to gas which allows us to guarantee our customers the heat they need. At the same time, we must utilise all non-fossil alternatives like biomass, power-to-heat, energy from waste or sewage and others, as well as heat storage options."

In early 2020 Vattenfall commissioned a new, super-efficient gas CHP in Marzahn (260 MW electricity and 230 MW heat) to substitute production from older, less efficient plants. Planning is also well under way for projects like switching from coal to biomass in Moabit and installing a 30 MW heat pump to capture heat from a sewage plant.

The German government strongly supports natural gas as a transition fuel. But with operational lifetimes of 25 years or more and a drive to continue reducing emissions, Vattenfall needs to think towards the future when developing assets now. "All our decisions taken today are with a view towards phasing out natural gas eventually," Witt explains. "This could be by using hydrogen as a fuel or by increasing other forms of fossil-free production. We're also participating in research projects which will enable us to easily upgrade newer gas assets to use non-fossil fuels."

Berlin in 2030

"This is a lighthouse programme. Expectations on us are high, but the results will be significant. We will provide residents with low-carbon, cost-efficient heat from future-proof assets, while nearly halving our emissions again until 2030 and enabling the city to achieve its own climate ambitions in doing so," concludes Markus Witt.

Operating segment

Distribution

Operations

Vattenfall's Distribution business owns and operates electricity grids in Sweden and Germany (Berlin) and has approximately 3.3 million business and household customers. In the UK, a business unit for operation and ownership of new grids was established in 2017. Electricity distribution is primarily a regulated business supervised by regulators in the respective countries.

The energy market is in transition, and the market conditions are changing rapidly. Vattenfall is a key player by enabling more renewables in the system, new customers to connect and electrification of industries and transports, and we operate a robust and sustainable electricity infrastructure.

Vattenfall strives to minimise negative impacts on biodiversity in its distribution operations and make best use of the areas around its assets to safeguard protected or threatened species. Sustainable nature conservation and protection of species are important aspects in the construction and operation of our grids. We therefore place high demands on suppliers and contractors to adhere to our environmental and sustainability policies.

Key data

	2020	2019
Net sales (SEK million)	21,644	22,540
External net sales (SEK million)	16,970	17,903
Underlying operating profit[1] (SEK million)	5,325	4,998
Investments (SEK million)	7,610	7,163
SAIDI[2] (minutes/customer)		
Sweden	148	439
Germany	8.9	9.9
SAIFI[3] (number/customer)		
Sweden	2.0	2.4
Germany	0.2	0.2

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

Strategy

A robust and cost-efficient electricity grid is a precondition for fossil-free living. Vattenfall's customers expect reliable electricity distribution, speedy connections and grid capacity to enable electrification and growing cities. The new market conditions have a great impact on the distribution operations, and Vattenfall is facing a period in which large parts of the electricity grid need to be renewed. Major investments in the coming years are necessary to maintain quality of delivery and enable the energy transition.

To meet customers' and society's expectations, Vattenfall needs to enable efficient customer interactions and connections. We want to be the preferred partner for new networks and deliver customer-centric solutions. We are investing to improve the quality and capacity of the electricity grids. Long-term sustainability is important for us, and we continuously strive to minimise environmental impacts at the same time that we are also dependent on a stable regulatory framework. By developing our people and encouraging new ways of working, we ensure the right and diverse competencies in our distribution business.

Safety has top priority and we therefore strive for a healthy and safe workplace through leadership and a culture of health and safety (read more on page 164). We continuously work with safety inspections at our facilities to mitigate risks. In the event of incidents in the electricity grid, we report to and cooperate with the relevant authorities and take necessary measures to prevent similar situations from occurring again. This is a continuous process with the long-term goal to have zero accidents. In 2020, two tragic fatal work-related incidents occurred, both involving employees of subcontractors. We are working to provide more support to the organisation and work closely with contractors and subcontractors to strengthen the health and safety culture. Examples of areas in focus include communication, safety-walks and follow-ups.

Developments in 2020

Net sales decreased due to lower distributed volumes in Swedish local grids and a lower contribution from Germany. Underlying operating profit increased as a result of lower operating expenses, which were elevated in 2019 by the impact of Storm Alfrida. The number of requests for connection of new customers is reaching record levels in Sweden. At the same time, lead times for building electricity infrastructure are very long – upwards of 8–10 years to receive all permits for a new transmission or regional grid. This is a challenging situation and has led to grid capacity bottlenecks primarily in Stockholm and Uppsala, but in other areas as well.

Stable and long-term revenue regulation is a crucial prerequisite for Vattenfall's distribution operations. In Sweden, a legal process regarding the new revenue regulation began in 2020 and is ongoing. The regulation is set in an ordinance which, according to the European Commission, may be in contravention of EU directives. Vattenfall is awaiting the outcome of the legal process and striving to manage the uncertainty surrounding tentatively low revenue frames, the need of grid investments and stable grid tariffs. As an adaption to the new regulation, Vattenfall reduced its grid tariff for 870,000 private and business customers in the local grid in Sweden by approximately 5%, effective 1 July 2020.

In October Vattenfall offered to sell all of the shares in the electricity grid company Stromnetz Berlin GmbH to the State of Berlin. The decision was made in light of continuing litigation over the concession for Berlin's electricity grid. At the end of September the city's Higher Regional Court upheld the interim injunction against the granting process, which prohibits the city from entering into a concession agreement with the city-owned company Berlin Energie. Despite this outcome, the legal processes concerning the concession agreement could continue for several years at the same time that decisions are needed on major investments in the grid, which prompted the decision to offer the company for sale. If the offer is accepted, the transaction can be completed during the first half of 2021. Meanwhile, we remain committed to guaranteeing security of supply in Berlin and will continue digitalising and modernising the grid.

New businesses focusing on the heavy transport market have been started in Sweden and UK. With its Power-as-a-Service (PaaS) offering in its unregulated business, Vattenfall can enable the transition to fossil-free solutions for the marine and road transport sectors, for example, with solutions such as shore power, electric ferries and trucks, hubs, electrical infrastructure and charging and storage solutions. With Power-as-a-Service we can quickly and locally deploy new or temporary solutions, such as mobile batteries to help bridge the gap until new infrastructure is in place.

Planned activities

Owing to market development combined with a need to renew the ageing electricity grid, major investments will be required in Sweden in the coming years. At the same time, Vattenfall is developing new solutions for more efficient grid usage, such as by piloting regional marketplaces for grid flexibility in the CoordiNet and Sthlmflex projects, new types of capacity tariffs and load steering that can help ease pressure on the grid. Leveraging existing flexibility on the customer side will be an important part of the solution.

In Berlin we continue to participate in the WindNODE project, which aims to integrate large amounts of renewable electricity into the energy system while keeping the power grids stable. Started in 2017, the four-year programme is a joint initiative involving more than 50 partners with the goal to create a model region for smart energy in northeast Germany.

Focus of our environmental work in the coming years 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. Additionally, the ambition is to adopt new insulation technologies for high voltage breakers to avoid the use of the greenhouse gas SF_6.

With Vattenfall's Power-as-a-Service offering we are enabling the transition to fossil-free solutions and deployment of new solutions such as mobile batteries.

In focus

Sweden's electricity distribution system:
The unsung hero of the energy transition

The backbone of a fossil-free society

Fundamentally, the roll of the electricity distribution system is to play matchmaker between supply and demand, for example between supply from a hydro power plant in northern Sweden and the demand from a person's cellphone charger in Stockholm. It is one of the building blocks of society and the enabler of the climate transition. The distribution grids are essential for being able to connect a greater share of renewable electricity generation, to electrify industry and transports and to supply new businesses and growing cities with fossil-free electricity.

A challenge for the matchmaker
Until only recently, the Swedish system was able to fulfill the role of matchmaker extremely well. However, a few recent developments have made this a major challenge.

1. Shifting supply
Traditionally, supply has come from large, predictable nuclear or hydro power plants. Today, however, supply is coming from an increasing number of smaller, intermittent sources. In addition to the growing number of large on- and offshore wind power installations being connected to national or regional grids, in 2020 there were nearly 4,500 customers looking to put solar panels on their homes or office buildings and who requested connections to Vattenfall's local grids. Every new connection creates one more variable the grid must manage to ensure it stays harmoniously balanced.

2. Increasing demand
Electrification has emerged as a powerful tool for decarbonisation of the industrial and transport sectors. Given Sweden's low-cost and nearly fossil-free electricity, this has spurred local industries to electrify their processes and has attracted international actors to Sweden. However, new demand is often not necessarily geographically aligned with new or existing supply, placing a strain on the system that transports the electricity. And as e-mobility continues to expand, so too will the number of public and private charging stations, both of which again put new strains on the grid. And this is just the beginning of widespread electrification.

3. Backlogged investment
Grid operators must continuously invest to maintain and modernise the grids. These investments are dependent on concession and permit processes which ensure, among other things, due consideration for environmental and social impacts caused by the proposed projects. The concession process is extremely important in maintaining trust among involved stakeholders, but they have grown so protracted and complex that certain major projects have remained stalled in the process for 10–15 years. Inevitably, this has led to a backlog of needed investments.

4. Revenue framework
Grids are operated as regulated monopolies. This means that for any given customer or location, there is only one option of grid operator; this also means there is no competition and theoretically the operator could charge whatever it wanted. In Sweden, a regulator is involved to ensure this does not happen. The regulator sets a maximum amount of revenue the grid operators can earn based on their assets. A high rate of return spurs more investment than a low rate of return. In 2019 the regulator lowered the rate of return for the coming four-year period, thereby disincentivising investment at arguably the time when investment is most needed.

Together these four challenges have led to delays in customers' connection requests or in customers being told that the capacity they are requesting will not be available for a decade or more.

Grid optimisation creates additional capacity and is a win-win proposition
Investing in new capacity remains the most important tool for accommodating new connections and ensuring grid stability. Despite the unfavorable investment conditions, Vattenfall plans to invest billions of SEK over the coming years to address the challenges. In the meantime we are utilising digital tools to optimise the grid and address problems on a smaller scale on a daily basis.

Batteries can accommodate higher peak demand
In Uppsala, growth has led to instances where at certain times more electricity is demanded in the local grid than can be supplied from the regional grid. To address this problem, Vattenfall has built the largest energy storage facility (20 MWh) in the Nordic countries. The facility's batteries are charged up when demand is low and discharged when demand is high, thereby alleviating the strain on the regional grid and boosting overall system reliability.

Better grid management through digitalisation
In line with the authorities' requirements, a project has been started to handle the replacement of Vattenfall's 900,000 electricity meters and build a digital platform to be able to measure the low-voltage grid that these new meters will enable. Vattenfall will then be able to monitor the entire electricity grid down to individual households. A central data and analysis platform will improve our ability to optimise and analyse the grid, make for more exact maintenance and support proactive grid operations. The meters will also enable an improved customer interface where customers can see their metering data and better control their consumption.

Future-proofing rollout of EV charging infrastructure
In collaboration with the Swedish Proving Ground Association (an automotive winter testing organisation), Vattenfall and Luleå University of Technology have conducted a stress test to see how fast chargers impact the electricity grid. The test has provided important knowledge that will enable future electric vehicle charging infrastructure to be developed to avoid causing undue stress on the grid.

Grid optimisation through flexibility
Flexibility is essentially the service of turning something on or off upon request, whether it be a source of production like a generator, or a source of demand like industrial machinery. As areas like Stockholm and Uppsala grow, their demand is outstripping the capacity of the grids to transport the requested electricity to the end consumer. This can happen either at a regional level, as multiple regional grids demand more than the national grid can supply, or at a local level, where local customers demand more than the regional grid can supply. This is where flexibility can play a valuable role in ensuring that electricity is supplied to the customers when they need it most, by either turning on local sources of supply or turning off local sources of demand.

Vattenfall is participating in multiple pilot projects focused on creating market flexibility. In the CoordiNet project, Vattenfall and its partners are testing the use of artificial intelligence to predict grid constraints in Uppsala as well as creating markets to trade flexibility to alleviate the predicted constraints.

Similarly, in the Stockholm Flex (SthlmFlex) project, Vattenfall is collaborating with Stockholm's other regional grid operator Ellevio to create a cross-regional flexibility market to ensure that electricity gets to those who need it most.

Should the pilot projects be successful, these flexibility markets would be a way of better managing both existing and future grid capacity, in turn reducing the amount of new capacity needed, with the end result being lower costs for end consumers.

How exactly does electricity arrive in Swedish consumers' sockets?
There are three types of distribution systems: national, regional, and local grids.

National grid
The national grid consists of ~15,000 km of high-voltage (220 kV or 400 kV) power lines operated by Svenska kraftnät. These can be considered to be the highways of electricity and serve to efficiently shuttle electricity from major power plants to regional, medium-voltage power lines. The national grid is responsible for maintaining frequency, or ensuring that supply and demand on the grid is balanced.

Regional grids
Three companies, Vattenfall, E.ON, and Ellevio, own the majority of Sweden's ~31,000 km of medium-voltage (70–130 kV) regional grids. Vattenfall's share is around 50% and is mainly located in central and northern Sweden. Regional grids serve to transport electricity from the national "highways" to both local grids and large industrial consumers.

Local grids
Hundreds of companies own and operate parts of Sweden's ~500,000 km of local grids, which transport electricity from the regional grids to the over 5 million local customers like homes and businesses. Vattenfall operates over 100,000 km of local grids with roughly ~1 million customers connected to it, e. g. in the greater Stockholm area and Uppsala.

These distribution systems serve to keep Swedish society functioning: the lights stay on, spaces stay heated and businesses and industries continue operating.

Most national and regional grids consist of overhead power lines. To ensure safe operation, the land around the power lines must be carefully maintained, creating so-called "power line corridors". We have conducted an analysis of our power line corridors and have identified roughly 1,200 km of land with potentially high biodiversity values. We have developed special maintenance plans for these areas in order to strengthen biodiversity values even further.

Our people

Having the right people with the right competencies and skills, both today and in the future, is key for Vattenfall's success in the transition to fossil-free living within one generation. We therefore strive tirelessly to be best in class in empowering our people. We also need to ensure diversity in all aspects to achieve a breadth of ideas and experience, so that our people can have an open dialogue and learn from each other.

Strategy

Our employees are key to Vattenfall's success. We work actively to ensure that our employees feel empowered, engaged and constantly develop so that they can perform to their utmost, all while we ensure a safe, inspiring and caring work environment. We support this work in our people strategy, which encompasses all stages of an employee's experience and focuses on three areas that will help us secure the relevant, diverse competence we need now and in the future:

- attract
- retain
- enhance.

Additionally, Vattenfall has four guiding principles for employees in their daily work which support a work culture that empowers all people 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 enhance diverse competence in all areas – today and in the future

Securing the diverse set of pertinent competencies that are needed both today and in the future is key for delivering on Vattenfall's strategy. We work actively to attract, retain and enhance the right competencies and thereby remain a competitive and attractive employer. Due to Covid-19, most of our activities in 2020 had to be held virtually. See pages 10–11 for how we worked with employee well-being and to keep operations running during the pandemic.

Attract

Vattenfall cooperates with schools and universities to attract the right people with the specific skill sets that Vattenfall is in need of today and in the future. This applies especially in the technical areas. During 2020 approximately 400 students gained experience at Vattenfall work sites, where they had the opportunity to explore practical aspects of their bachelor and master theses. In its power generation business, Vattenfall also cooperates with several universities in Sweden to attract more female employees in technical fields. Vattenfallgymnasiet in Forsmark is a high school with a focus on technical and sustainability-related subjects where students have opportunities for hands-on training at the nuclear power plant, at the Swedish Nuclear Fuel and Waste Management Company's facilities and at our R&D laboratory in Älvkarleby.

Vattenfall also has two international trainee programmes – one general programme and one that specifically targets IT talents. In 2020 approximately 30 trainees were selected from more than 5,000 applicants. During a one-year period they 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. In March 2020 a new Nordic trainee programme in nuclear power was launched under a joint initiative with Fortum and Uniper.

Retain and develop

At Vattenfall we conduct many initiatives to retain people with key competencies and to provide support to employees in continuously developing their strengths and releasing their superpowers for curiosity, energy and creativity.

At the beginning of 2020 Vattenfall introduced IntroDays, an inspiring onboarding programme for all new employees aimed at helping familiarise them with all of the business areas, projects and initiatives, and get acquainted with each other – all to strengthen engagement from the outset.

Leaders in Vattenfall are role models in our daily work and pillars of our work culture. We therefore support them with tools to empower and engage their own employees. The roll-out of the Leadership Focus Programme continued in 2020 with the aim of equipping managers at all levels to lead according to the focus areas of Accelerate Learning, Connect People and Drive Innovation. This has developed into a virtual, multi-module programme that spreads learning over several months. Over 200 managers have already started or completed this journey, and the intention is to extend this to an additional 300 in 2021.

Additionally, Vattenfall conducts an annual Top Talent programme that is targeted at a group of talents seen as potential successors in various management functions. The programme includes workshops, trainings 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 2020 the group consisted of 52 talents of whom 52% were female.

On top of this we encourage continuous learning, and all employees have access to an online platform with the latest training and e-learning offers.

A safe, inspiring and inclusive work environment that underpins our strategy

Employee health and safety (H&S) is our number one priority, and we have a goal of zero accidents and zero work-related illnesses. To ensure that employees can perform in a safe, inspiring and inclusive environment that is free from physical and mental health risks, we maintain a clear focus on H&S leadership and organisational and social health aspects. See page 164 for a detailed description of our H&S strategy and activities.

Diversity and inclusion (D&I) are fundamental conditions for an inspiring workplace, as a multitude of perspectives, and a culture that enables the exchange of those perspectives, gives employees opportunities to share, learn and be inspired by one another. With this in mind, in 2020 Vattenfall revamped its D&I strategy. Our ambition is to establish D&I in everything we do, as we believe it is good for business, for people and for society as a whole. Our new and comprehensive D&I Strategy 2020–2023 rests on three pillars:

- Embed diversity and inclusion in everything we do by living our principles
- Think broadly and drive all dimensions of diversity
- Include everyone; our managers will lead the way.

For more information on our D&I initiatives, see page 165.

Measuring our success in empowering and engaging our people

One measure of the success of our efforts is captured by our annual employee survey, MyOpinion. MyOpinion tracks how well our employees feel connected to Vattenfall's purpose, how each individual can contribute to it and what can be done to make everyone feel sufficiently empowered and engaged. The most recent MyOpinion survey shows that Vattenfall's employees are truly engaged and increasingly proud to work for Vattenfall. In 2020 the engagement index increased by three percentage points over the preceding year to 72%, and 77% of respondents say they would recommend Vattenfall as a place to work for family and friends – up from 73% in 2019.

Vattenfall received the Universum award for the Best Employer Branding company in Sweden 2020.
In the UK, Vattenfall was awarded the Committed to Equality (C2E) Diversity Assured Accreditation at a Gold Standard for the second year in a row in 2020.

Vattenfall has contributed two case studies to the new Offshore Wind Industry Council Gender and Ethnicity Best Practice Guide in a) Engagement and Attraction and b) Progression and Leadership Development. The document was presented at the Global Offshore Wind Conference in late October 2020.

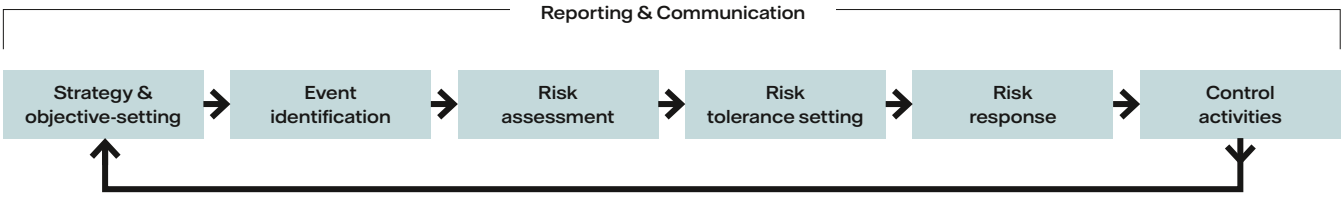
Risks and risk management

We apply conscious and balanced risk-taking in which business transactions are reviewed from both profitability and risk perspectives. Our risks are managed based on a sound risk culture throughout the entire company, with the aim to support our strategy and achieve our long-term goals. In accordance with the Swedish Corporate Governance Code and the Risk Policy, decided 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 the Group 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 Organizations of the Treadway Commission (COSO) and the three lines model (see page 80).

ERM process



Risks and risk management are part of the financial statements in accordance with International Financial Reporting Standards (IFRS). Read more on pages 91–150.

ERM process

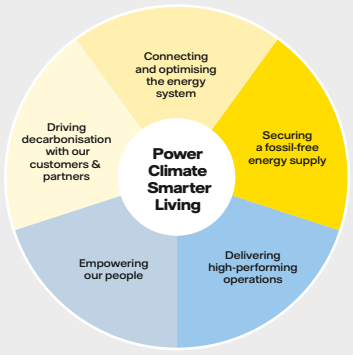
Vattenfall's strategy serves as the basis for setting objectives for the respective business units in the business planning process. When setting these objectives, risks that could hinder their achievement are identified. In our risk management process, risks are quantified and analysed with respect to both financial and nonfinancial consequences (e.g. concerning the environment, including climate change, as well as 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 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 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 entail 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 70). Additionally, the relative importance of market price risk is increasing for Vattenfall due to dramatic changes in support schemes – especially for offshore wind investments. To mitigate this risk, we are seeking to find an optimal long-term balance between the various portfolio components.

With high probability, in 2020 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 2021.

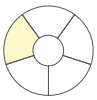
The global Covid-19 pandemic has manifold impact on our company. Both our operations as well as projects in construction and development were affected during 2020. The most



relevant risks in relation to the pandemic, however, are changes in the overall economy, including declining margins, the risk that project completion may be delayed or even discontinued, and the risk of counterparties being unable to meet their obligations. Our management of these kinds of risks is described in the respective chapters below. Furthermore, the countermeasures that we implemented at an early stage helped support our financial targets, e.g. by adjusting processes and cost reductions. The severity of the impact on our company depends mainly on further development of the pandemic and the related impact on the general economic conditions in the markets in which Vattenfall works.

The UK left the European Union in 2020 after a deal was reached between the EU and the UK on 24 December 2020. It is in this immediate post-exit period when consequences will come to light and emerging issues will become clearer in the early part of 2021. We expect the consequences of Brexit to be limited for us. Our main areas of interest remain the impact at the operational level on the wind and trading businesses, including the non-tariff-based costs of trade, such as port delays and increased bureaucracy, for example. While the UK and EU have agreed to some identical rules now, they will not necessarily be identical in the future, and we see the risk of disputes as an ongoing feature of the future EU/UK relationship.

In the section below we have categorised our risks based on our strategic focus areas. The section presents the main risks we are exposed to as well as the way in which we manage them. It includes some examples on how we work with climate change risks and adaptation. Certain financial risks are associated with more than one of the strategic focus areas and are therefore addressed in a separate paragraph in the risk section.



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

- Inability to meet customers' expectations, which might lead to loss of customers (e.g. with respect to decarbonisation or providing affordable energy solutions)
- Inability to develop and provide sufficient solutions to support customers and partners with their decarbonisation efforts and possibly leading to loss of market shares
- 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

To understand our stakeholder expectations, we performed a materiality analysis in 2020, which shows that besides decarbonisation and investment in renewable energy, a top priority is providing affordable energy (see pages 156–157). Thus, we are continuing our work to reduce our cost to serve and maintain scale through digitalisation as well as organic and inorganic growth of our commodity sales business. We have partnered with basic industries in Sweden to electrify and decarbonise their industrial processes. One example is HYBRIT, the start-up of a hydrogen pilot plant in partnership with SSAB and LKAB for the production of fossil-free sponge iron (direct reduced iron). Other projects include production of sustainable biofuel in collaboration with Preem and sustainable mining with Boliden (see page 34–37).

Also, we are piloting alternative heating solutions, which is especially important with the phase-out of gas in the Netherlands (e.g. electric heat pumps or district heating). In Germany the Technical University of Dresden certified CO_2-neutrality for our innovative cooling product Kühlung Smart ("smart cooling"). We have also used smart algorithms to optimise district heating, and we implemented a pilot in an apartment building in Gustavsberg (Stockholm).

In the context of our digitalisation efforts in the Customers & Solutions Business Area, a cooperation agreement was signed with EIT InnoEnergy to capitalise on innovations developed to a large extent by external start-up companies. The focus is on collaboration and partnerships in three focus areas: alternative heating, storage and flexibility and data and monetisation of communication.

Additionally, we offer corporate Power Purchase Agreements (PPAs) to supply large customers with renewable energy and help them achieve their sustainability goals (e.g. with Bosch or the British soft drink maker AG Barr). To further help our customers and partners decarbonise, we continue to develop energy solutions to optimise and increase value for customers – such as charging solutions in the InCharge charging network and other digital offerings, a cooperation with Hyundai in the Netherlands and a pilot project for garbage trucks together with BSR – the local waste disposal company in Berlin). Furthermore, we won one of the bigger tenders for new charging networks in the Netherlands.

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 network infrastructure.

Risks

- Failure to ensure satisfactory security of supply due to grid capacity constraints or extreme weather conditions. Additionally, the long permit process for building new grids is a risk, as this is already delaying projects and thereby delaying improvements in security of supply
- Risk of continued regulatory instability for electricity distribution in Sweden and lack of a forward-looking regulatory scheme, which is reducing the scope for Vattenfall to make investments in the electricity grid and improve capacity and quality, which is necessary to support development of electrification
- Risk of failing to automate our processes to account for the increasing share of intermittent electricity generation from of our growing wind asset portfolio.

Risk management activities during the year

To meet customer and regulatory demands on quality of supply, we are working continuously to make the electricity grid less vulnerable in Sweden by successively replacing overhead power lines with underground cables in the low voltage grids and replacing old equipment. At the same time, the development of smart solutions is contributing to a reduction in the frequency and duration of outages and enabling customers to monitor and control their own energy consumption. Because of the worsening investment conditions imposed by the new revenue frames in Sweden, and the long lead times for grid build-out, we have to look into alternative solutions. We are making more room in congested parts of the grids by load steering and with new tariffs that support flexibility. With complementary solutions such as Power-as-a-Service, (electrical infrastructure solutions for sectors like industry and transport), we can bridge the gap until new infrastructure is in place. Furthermore, we have appealed the Swedish regulator's (Energimarknadsinspektionen) decision on the revenue frames to the Administrative Court in Linköping, and we expect a ruling in January or February 2021. Regardless of the court's decision, the losing party is expected to appeal. In autumn 2020 the Minister for Energy opened up for a discussion with distribution system operators and customers to achieve an appropriate and accepted revenue regulation. Vattenfall is pushing for a "state public inquiry" (statlig offentlig utredning) during 2021, which would give an opportunity for a fresh start and hopefully move the discussion forward. In Uppsala we are constructing the Nordic region's largest battery storage facility, an innovation project to solve the capacity shortage in the region. To increase grid capacity, we are part of a two-year research project in Landskrona (together with Boliden and Landskrona Energi) and are investing in a new battery storage facility there, too. To reduce the large uncertainty regarding the future of the electricity grid in Berlin, we have offered the complete takeover of the Stromnetz Berlin GmbH to the State of Berlin. This will end years of dispute over the electricity concession. Meanwhile, Stromnetz Berlin will continue its high quality of supply and efforts in digitalisation and modernisation of the grid in Berlin (Stromnetz Berlin's largest single investment in recent years, the Charlottenburg hub, went into operation in October 2020.)

Adding wind and other renewable generation creates more challenges in planning and optimisation due to the inherent intermittency of assets. To maintain high profitability we have started to apply algorithms to support our physical planning, optimisation and dispatch areas. During 2020, development of algorithms to support the management of flexibility in our portfolio continued, and additional algorithms have been implemented.

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

- Our competitiveness could be reduced due to insufficient speed in developing our renewable production portfolio and phasing out fossil fuels. The lack of speed in the transition could commit us to less profitable technologies and result in loss of market shares
- Renewables are becoming increasingly exposed to competition, entailing both profitability and growth risks. New investments in renewables without subsidies also add risks, especially for our long-term market risk
- Lack of speed in implementation of sector coupling measures and third-party integration
- New players are entering the electricity value chain, leading to higher competition, resulting in both profitability and growth risks.

Risk management activities during the year

We are reducing our CO_2 exposure through a stepwise phase-out of fossil fuels. Our bid for Moorburg in Germany's first coal phase-out auction was accepted, which means we can close the plant in July 2021. Offshore wind will be crucial for achieving national CO_2 emissions targets and will enable us to deliver on our decarbonisation target. As an established player, we aim to further build on our competitive advantage in offshore wind (in the Netherlands we have taken final investment decision for Hollandse Kust Zuid 1–4, and in UK our Norfolk Vanguard Offshore Wind Farm has been granted consent by the Planning Inspectorate.)

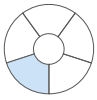
The switch from coal-fired to biomass- or gas-fired combined heat and power plants, as well as gas boilers, battery storage, and expansion of power-to-heat solutions, provides greater flexibility and reduces CO_2 emissions. We will have coal-free production in all countries where we operate by 2030.

In Germany, further reduction of our carbon footprint was achieved by the commissioning of CHP Marzahn, a modern plant in the eastern part of Berlin.

Vattenfall Heat UK has signed an agreement with Brent Cross South developer Argent Related to provide low-carbon heating to homes, shops and other businesses in a redevelopment project in London.

The focus on integration of third-party heat (e.g. excess heat from data centres) will further decarbonise our district heating operations. To further diversify in renewables, we continue to invest in other technologies besides wind power, including solar power and battery storage as well as new business models (e.g. the floating solar farm in Gendringen, the Netherlands). Especially in Germany and in the Netherlands, we are supplementing certain existing pumped-storage power plant locations with photovoltaics (e.g. Markersbach and Geesthacht in Germany).

To ensure that we prioritise our investment money right in the areas where we are most competitive, in 2020 we put extra focus on business areas where we have a competitive advantage. In all activities we are trying to achieve economies of scale and further deploy operational excellence to ensure that costs remain competitive and decline faster than those of our key competitors.



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 in connection with outsourcing and/or cost-cutting
- Work environment risks of accidents and incidents not only affect the individuals concerned but also threaten workforce productivity and Vattenfall's attractiveness as an employer.

Risk management activities during the year

To support our strategy of enabling fossil-free living within one generation, we rely on the diversity of our people, bringing in their unique talents and competences. The digital transformation requires that we make cultural changes from "traditional" expectations (strict work regulations) to proactive and solutions-oriented behaviour (changes in working models) in more Vattenfall units. To secure long-term competence supply, we are using job rotation programmes and specific talent-, trainee- and leadership programmes.

To fully live up to our commitment to Diversity & Inclusion (D&I), we performed a number of activities, including D&I workshops open to all employees and managers. During the summer we launched a new D&I strategy. The work to implement this is led by a dedicated D&I Officer (see more about D&I on page 165).

To gain valuable information from all levels of the organisation, an annual employee survey is conducted, called My Opinion.

We aim to offer a more flexible work situation and to adapt to changing work habits as well as our employees' needs. This has become particularly accentuated during the pandemic, and we are offering our people more flexibility with respect to remote working and a smarter working concept.

Health and Safety (H&S) is crucial and a guiding principle in our day-to-day operations, where the goal is to have zero injuries and no work-related illnesses. Monitoring and controlling H&S risks are covered in the various risk management systems of the respective Business Areas or Staff Functions. We are performing thorough analyses of past accidents and creating systems, routines and processes to detect and prevent future ones. Read more on page 164. Regarding our efforts to handle the effects of the Covid-19 pandemic, read more on pages 10–11.

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

- Operational asset risks – such as power availability, dam failure or environmentally hazardous emissions – could have significant negative financial and non-financial consequences. Furthermore, as the geopolitical environment is becoming increasingly challenging, in parallel with increased globalisation and digitalisation our operations are becoming more vulnerable to disruption
- Political risks, e.g. changes in climate-related policies or environmental regulations, could negatively affect business development or restrict our operations or permits. This includes long permit processes for electricity grids in Sweden as well as for wind power
- Given the data we collect, the smart services we offer and critical infrastructure we operate, we face many forms of cyber risks, including phishing and digital trust, as well as data and privacy breaches
- With an increasing number of large projects, our project execution risk may increase
- Fraud and breaches of our Code of Conduct for Suppliers or our Code of Conduct and Integrity could disrupt operations, resulting in negative impacts on people and the environment and hence also on our brand and trust, or could lead to the loss of our licence to operate.

Risk management activities during the year

Management of operational asset risks involves a systematic inspection programme, continuous control of plant conditions and effective maintenance. Our maintenance strategy ensures safe and reliable operations while also reducing maintenance costs. New methods of monitoring and predictive maintenance are being deployed, which further improves our resilience to disruptions.

It is essential to execute large construction projects on time and budget. As subsidy levels for wind, solar and battery projects decrease, we are using all our expertise to ensure that our Levelised Energy Cost (LEC) remains competitive. Initiatives to decrease LEC include, for instance, upgrades of rotor size, proactive fault avoidance, optimised planned maintenance and set-up of sufficient in-house operational and service capabilities.

Regulatory changes as well as market development could have a sizeable influence on us. We continuously monitor changes and development trends, and analyse their short- and long-term influence on us. Furthermore, it is important to understand the expectations of our stakeholders and communicate and act on those changes in an appropriate and effective way.

To improve sustainability performance we have a human rights action plan, an environmental plan and a sustainable supply chain roadmap. We have agreed on a general onboarding process, strengthened the Know Your Counterpart procedure, and apply robust assessments within sustainability risk management. Furthermore, we extended sustainability risk assessment procedures to our customers, potential acquisitions and partners. We perform risk assessments and reviews of our suppliers based on our Code of Conduct for Suppliers. The Vattenfall Environmental Management System and the Code of Conduct for Suppliers are parts of our overarching Vattenfall Management System, see page 80.

To effectively manage security risks and to ensure compliance with the various security regulations, such as the GDPR or the new national security regulations in Sweden, we have appropriate technical and organisational measures (e.g. we have formulated internal instructions and defined roles and responsibilities at the corporate level and in the businesses). Compliance with the internal security governance model is steadily improving, and we have strengthened the three lines model structure throughout the company (see page 80).

We have a Code of Conduct and Integrity and zero tolerance for bribery and corruption. To increase awareness and ensure compliance, we conduct continuous training and e-learning programmes. Read more on page 169. The “four eyes principle” is applied to protect assets and information from improprieties and fraud.

We worked on further improving our resilience to disruptions while applying Business Continuity Management processes.

Adapting to a changing climate

Climate change affects our operations and activities

There is increasing urgency linked to climate change, and efforts to reduce emissions need to accelerate. There is also a need to adapt to a changing climate. Climate change affects Vattenfall – through physical effects on our assets and operations, and through changes associated with the transition to a fossil-free society. We are committed to our goal of enabling fossil-free living within one generation and have high focus on adapting to change. This is enabling us to secure a resilient business and capitalise 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 increasingly including the risks and opportunities that climate change entail for our processes. Climate change risks are explicitly included in Enterprise Risk Management as well as in investment decisions for large projects. We are currently working to strengthen the work with scenario analysis for relevant assets.

Physical risk drivers • Temperature • Wildfires • Precipitation • Storms • Flooding	**Examples of risks** • Extreme weather inflicting infrastructure damage • Flooding caused by high river flows • Rising temperatures, reducing cooling water efficiency • Supply chain disturbances	**Examples of risk mitigation** • Measures to strengthen the electricity grid and infrastructure • Adjusted flow regulation, investments in dam safety • Alternative cooling solutions • Diversification of the supply chain
Transitional risk drivers • Legal • Market • Technology • Reputation • Policy	**Examples of risks** • Changed customer preferences • Stranded assets due to new demands and requirements • Brand damage • Not meeting stakeholder expectations	**Examples of risk mitigation** • New products and fossil-free energy solutions • Climate target in line with science • High focus on sustainable operations • Clear targets and purpose

Financing the transition

Vattenfall is integrating climate aspects throughout the whole value chain to manage risks and capture opportunities. One example is the issuance of a new EUR 500 million green senior bond in 2020. This means that Vattenfall now has two green bonds outstanding with a total size of EUR 1 billion contributing to finance the transition. Another tool to manage both risk and capture opportunities of the transition entails signing corporate Power Purchase Agreements (PPAs), where the customer signs a long-term contract for power delivery, which typically is the starting point for investment in a new wind or solar installation. Vattenfall has an ambition to supply 7 TWh of renewable energy to companies in the form of long-term corporate PPAs by 2025.

Adapting hydro power assets

River flows are affected by climate change through, for example, changes to precipitation patterns and the timing and magnitude of snowmelt. This has relevance for our hydro power generation, planning and dam safety aspects. Vattenfall has high focus on improving the safety and robustness of its operations. Dimensioning flows form the basis for dam safety management.

In Sweden, hydro power dams are dimensioned in accordance with industry standards for dam safety. Climate scenarios are considered, and extra margins or adjustments are implemented where relevant. More than SEK 3.5 billion has been invested in the last 20 years to rebuild and modernise our hydro power dams, to adapt them to higher flows and improve monitoring. As an example, Vattenfall is currently rebuilding the Lilla Edet power station to be able to release higher flows.

Market risk – commodities including electricity

Market risk for electricity and commodities refers to the risk of Vattenfall failing to achieve its financial targets as a result of an adverse change in electricity or commodity prices. While Vattenfall's price hedging strategy is primarily focused on the Nordic generation assets, we also conduct short-term hedging of Continental thermal assets.

Risk management activities

Through our asset ownership and sales activities, we are exposed to electricity, fuel and CO_2 emission allowance prices, which in turn are affected by numerous other factors, such as the global macroeconomic situation, local supply, demand and 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. These contracts pertain to time horizons in which there is no possibility to hedge prices in the liquid part of the futures market and stretch as far as 2026.

Most volumes are hedged at the beginning of this time horizon, with falling volumes towards the end. The Vattenfall Risk Committee (VRC) decides how much generation is to be hedged within the mandates 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. Price risk for uranium is limited, as uranium accounts for a relatively small share of the total cost of nuclear power generation. With the current portfolio structure, the dominant risk exposure is now coupled to Nordic nuclear and hydro power base load generation. On top of this, Vattenfall's operations generate a substantial share of regulated revenue from electricity distribution, heat and wind power, which diversifies the total risk exposure on the Continent (Germany, the Netherlands and the UK) as well as in the Nordic countries. 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 outright power exposure in the Nordic countries. Market price risk of Vattenfall's production assets and hedges for electricity, fuel prices and emissions as well as ancillary trading market price risks are monitored daily.

Nordic market

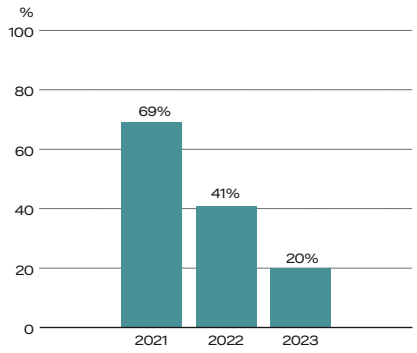
The table below shows the average indicative Nordic hedge prices as per 30 December 2020, while the chart below shows the estimated Nordic hedge ratio. The hedge ratio has been estimated based on an internal risk management model that uses simulations to reflect – in a realistically interlinked way – both future possible price scenarios and the volume risk associated with hydro power generation.

Average indicative Nordic hedge prices as per 30 December 2020

EUR/MWh	2021	2022	2023
Nordic[1]	28	29	26

[1] Including remaining price hedges on the Continent.

Vattenfall's estimated Nordic hedge ratio (%) as per 30 December 2020



Continental market

Due to the combined effect that various commodity price changes have on the Continental portfolio, the table below shows on one hand the individual impact of changes in commodity prices on expected future profit before tax and on the other hand the observed yearly volatility of relevant commodity prices. This sensitivity analysis includes both the expected production and hedge levels. However, it does not reflect possible changes in expected generation in response to changes in price levels nor the interrelationship between fuel and power prices. Both of these factors tend to reduce the impact of price changes on profit.

The effect of price movements on future profit before tax increases as the share of exposure that is not hedged increases. The analysis is based on the assumption that risks are independent of each other and that there are 252 trading days in a year. Prices and positions are stated as per 30 December 2020. For example, a movement of +10% in the price of electricity in 2021 would have an impact on profit before tax of SEK 352 million. Observed yearly volatilities during 2020 are shown in the far-right column in the table below. The chart below visualises the information shown in the sensitivity table.

Ancillary trading

In addition to commodity market risk resulting from our assets and sales activities, Vattenfall's Board of Directors has given the CEO a risk mandate to allow discretionary risk-taking and trading in the wholesale market. 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 yearly volatility[2], %
	2021	2022	2023	
Electricity	+/- 352	+/- 454	+/- 1,439	19% - 27%
Coal	-/+ 43	-/+ 22	-/+ 7	17% - 21%
Gas	-/+ 133	-/+ 156	-/+ 720	18% - 28%
CO_2	-/+ 60	-/+ 72	-/+ 318	48% -50%

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

[2] Observed yearly volatility in 2020 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 for deviations between anticipated and actual delivered volume.

Risk management activities
In hydro power generation, volume risk is managed by analysing and forecasting historical weather data, including such factors 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. Improved monitoring and forecasting capabilities are the most efficient risk management instruments also in this case.

Liquidity risk

Liquidity risk refers to the risk of Vattenfall not being able to finance its capital needs and arises if asset values at maturity do not match those of liabilities and other derivatives.

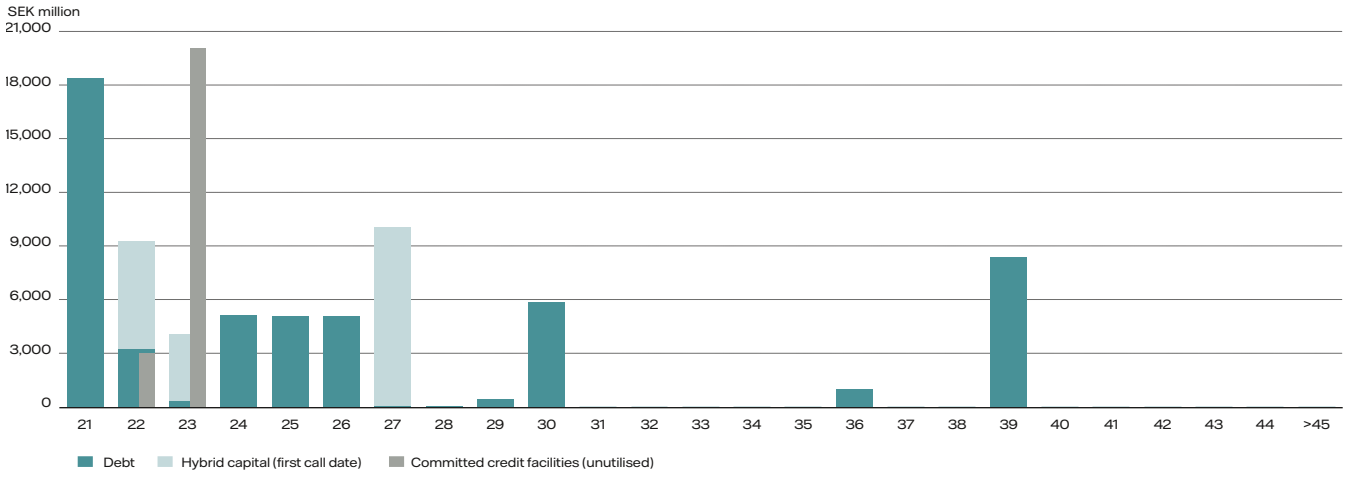
Risk management activities
Access to capital and flexible financing solutions is ensured through several types of debt issuance programmes and credit facilities. The maturity profile of our debt portfolio is shown in the chart below.

The Group has a defined target for its short-term accessibility to capital. The goal 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 2020, available liquid assets and/or committed credit facilities amounted to 47% (30%) of consolidated net sales.

Vattenfall is committed to maintaining financial stability, which is reflected in the company's long-term targets for capital structure. On 4 June 2019 Moody's affirmed Vattenfall's long-term A3 and short-term P-2 ratings, and Baa2 rating for hybrid bonds. At the same time, Vattenfall's rating outlook was revised from stable to negative. On 12 May 2020 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 stable.

Two bonds were issued during 2020: one SEK 4.1 billion bond with a 1.5-year tenor and a EUR 500 million green bond with a 4.5-year tenor. During the year, Vattenfall's Revolving Credit Facility (RCF) was refinanced. Fifteen banks participate in the new facility, which is sustainability-linked and expires in 2023 with two one-year extension options. Vattenfall has a strong liquidity reserve, but given our large future investments we aim to opportunistically use favourable market conditions for refinancing. Vattenfall has decided to use green financing in its funding activities. Investors should expect all future long-term financing to be made under Vattenfall's Green Bond framework.

Maturity profile for Vattenfall's loans as per 31 December 2020[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	2020	2019	2020	2019	2020	2019	2020	2019
Borrowing programmes									
Commercial paper	SEK	0	15,000	–	–	0	5	0	2,410
Euro Commercial paper	EUR	4,000	2,000	–	–	34	55	12,414	9,858
Euro Medium Term Note	EUR	10,000	10,000	–	–	41	35	44,636	37,402
Committed credit facilities									
Revolving Credit Facility[1]	EUR	2,000	2,000	2023	2021	–	–	–	–
	SEK	3,000		2022					

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

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires on 10 November 2023, with two one-year extension options. The maturity structure pertains to the debt portfolio excluding loans from minority owners and associated companies, which amounted to SEK 11,618 million for 2020 (11,380). 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 negative impact of changed interest rates on the Group's income statement and cash flow.

Risk management activities

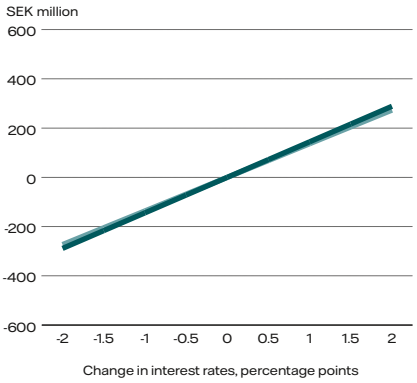
We quantify interest rate risk in our debt portfolio in terms of duration, which describes the average term of fixed interest. The given norm duration of 3 to 7 years is based on the company's current financing need and desired interest rate sensitivity in net interest income/expense. The duration of the Group's debt portfolio at year-end was 3.83 years (4.67) 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	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
< 3 months	19,028	17,643	10,797	15,116	29,825	32,759
3 months–1 year	15,020	2,909	-1,684	-66	13,336	2,844
1–5 years	19,678	27,507	-2,393	-6,791	17,285	20,716
> 5 years	30,919	31,076	-6,374	-8,310	24,545	22,766
Total	**84,645**	**79,135**	**346**	**-50**	**84,992**	**79,085**

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 11,618 million for 2020 (11,380). The average financing rate as per 31 December 2020 was 3.37% (3.96%). All figures in nominal amounts.

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



The interest rate sensitivity analysis shows how changes in interest rates affect the Vattenfall Group's interest income and expenses (before tax and including capital gains/losses on interest rate derivatives) within a 12-month period given the Group's current structure of borrowing at fixed interest rates. With the same method and an assumption that interest rates would rise by 100 basis points, the impact on the Vattenfall Group's equity after tax would be SEK –115 million (–107), including derivatives and Hybrid Capital, but excluding loans from minority owners and associated companies. All figures in nominal amounts.

Currency risk

Currency risk refers to the negative impact of changed exchange rates on the Group's 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 derivatives. Derivative assets and derivative liabilities are reported in Note 36 to the consolidated accounts, Financial instruments. We have limited transaction exposure, since most generation, distribution and sales of electricity take place in the respective local markets. Sensitivity to currency movements is therefore relatively low. All transaction exposure that exceeds a nominal value equivalent to SEK 10 million is to 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 59,794 million (2019: 62,332). Of this amount, 41% (40%) 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 2.5 billion (2.6), where a strengthening 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 a statistical compilation of external operating income and expenses. Changes in inventories and investments are excluded.

Debt portfolio, breakdown per currency, in millions

	Debt		Derivatives		Total	
Original currency	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
DKK	12	5,175	–	–	12	5,175
EUR	51,303	44,819	5,705	5,939	57,008	50,758
GBP	10,665	10,987	0	0	10,665	10,987
JPY	1,587	1,713	-1,587	-1,713	0	–
NOK	524	579	-524	-579	0	–
PLN	0	0	–	–	0	–
SEK	15,628	11,351	23	23	15,652	11,374
USD	4,927	4,510	-3,271	-3,720	1,656	790
Total	**84,645**	**79,135**	**346**	**-50**	**84,992**	**79,085**

The table shows currency risk in the debt portfolio and the currencies that Vattenfall is exposed to. The level of debt increased compared with 2019 due to new issues in 2020. Figures above are exclusive of loans from minority owners and associated companies, totalling SEK 11,618 million (11,380). All figures in nominal amounts.

Consolidated operating income and expenses per currency, %

	Income		Expenses	
Currency	**2020**	**2019**	**2020**	**2019**
EUR	69%	80%	82%	87%
SEK	26%	16%	14%	8%
GBP	3%	3%	1%	2%
DKK	3%	1%	2%	1%
Other	0%	0%	1%	3%
Total	**100%**	**100%**	**100%**	**100%**

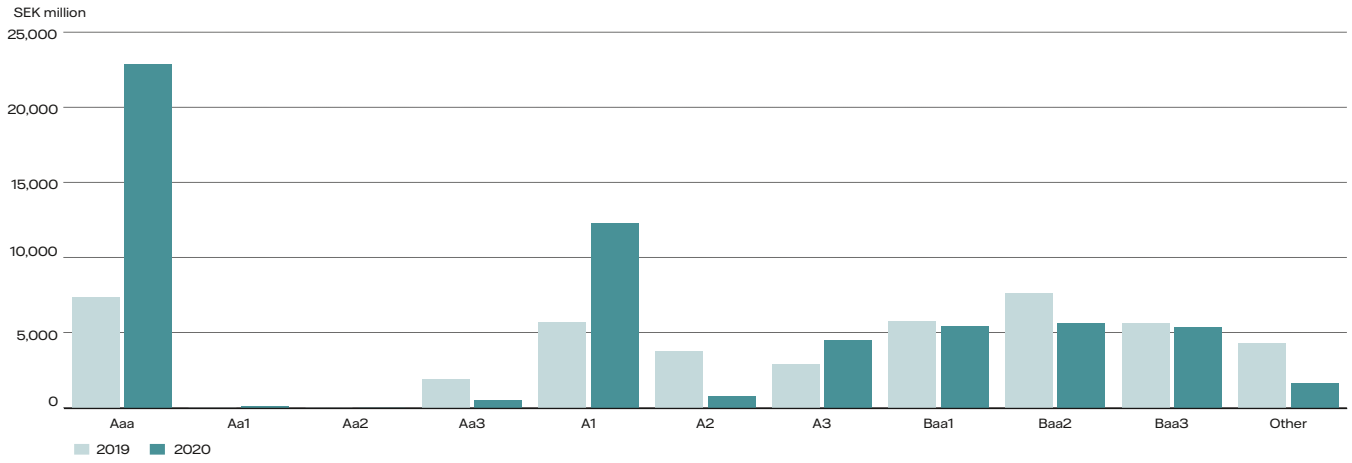
The values are calculated based on a statistical compilation of external operating income and expenses. Changes in inventories and investments are excluded.

Credit risk

Credit risk can arise if a counterparty cannot or fails to meet its obligations and exists in all parts of Vattenfall's operations.

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 within the Group's risk appetite. The company's credit risk management involves the analysis of its counterparties, reporting of credit risk exposures, contract negotiations and proposals for risk mitigation measures (e.g. obtaining collateral). Credit risk exposure per rating class in SEK million is shown in the chart below.

Counterparty exposure per rating class

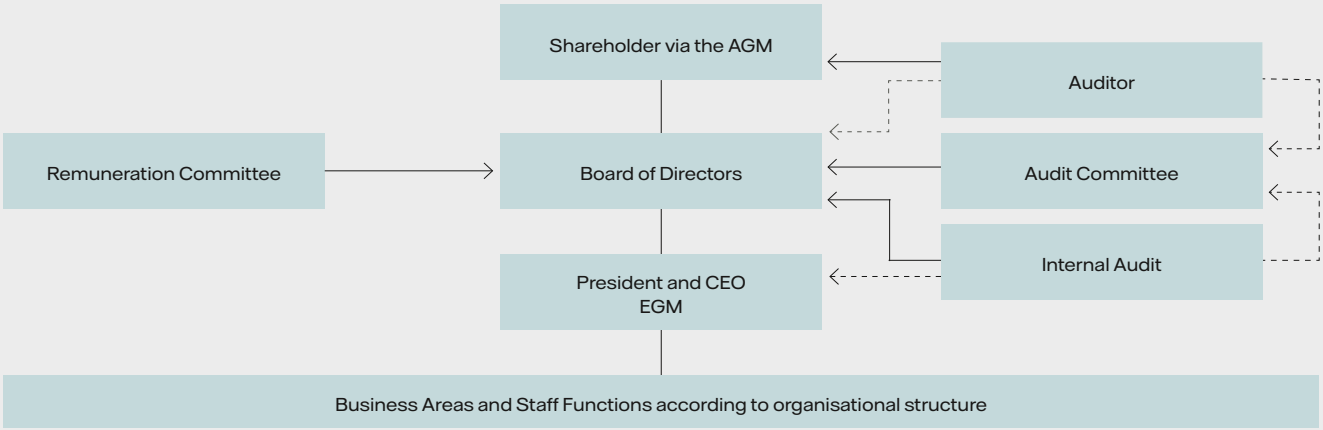


The chart shows exposures to Vattenfall's counterparties where the exposure is greater than SEK 50 million per counterparty, broken down per rating class according to Moody's rating scale. Counterparties are reviewed and approved in line with Vattenfall's credit mandates and policies. Smaller exposures are considered to have such a large diversification effect that the net risk for Vattenfall is judged to be low. Exposures in procurement, sales in France, and heat are not included. Other financial assets (that are neither past-due nor impaired) are considered to have good creditworthiness. The values for "Other" in the chart include mostly counterparties covered by policy and limit exceptions, mainly pertaining to long-term sales contracts.

Corporate Governance Report

This report includes information on corporate governance during the 2020 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 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 (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. Vattenfall follows the stock exchange rules that apply for companies that have fixed-income instruments registered on Nasdaq Stockholm and other marketplaces
- 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 Impact Reporting, Science Based Targets and the Task Force on Climate-related Financial Disclosures (TCFD)

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

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

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.

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 2020

Vattenfall held its 2020 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. The President and auditor were in attendance, while the Chairman of the Board participated via video. 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.

Due to the changed financial situation and the presumed long-term, uncertain international conditions caused by Covid-19, the Board and the President had revised the initially proposed resolution on distribution of the company's profit, presented in the Notice to Attend the Annual General Meeting. The AGM resolved to distribute the profit in accordance with the Board's revised proposal, meaning that SEK 3,622,500,000 was distributed to the shareholder.

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
- Decide on guidelines for remuneration of senior executives
- Decide on other matters of business prescribed by law or the company's Articles of Association

The 2021 AGM will be held on 28 April in Solna, Sweden.

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. Each year, the Board adopts its Rules of Procedure and a number of instructions. 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's Rules of Procedure stipulate that the Board shall 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

The Board's yearly planning

Q1	Q2	Q3	Q4
Report from the auditors, nomination of auditor, annual accounts, dividend, reporting on major disputes, integrity reports and remuneration report (from 2021)	First quarter interim report, strategic personnel issues, diversity and equal opportunity plan, risk mandate and risk policy, and statutory board meeting following the AGM	Strategic direction and targets, R&D strategy, nuclear power and dam safety	Business, investment and financing plans, overview of investments for final repositories in the nuclear business, the auditor's interim review, guidelines for remuneration of senior executives, overall remuneration principles within Vattenfall, Internal Audit's budget and plan, issues regarding human rights and the UK Modern Slavery Act statement, tax policy, evaluation of the Board and President
Annual and Sustainability Report, AGM notice	Brand strategy, strategic sustainability issues	Half-year interim report, reporting on major disputes	Nine-month interim report, report on safety and threat landscape

serving as a liaison between the owner and the Board. According to the Rules of Procedure, the Board – through the Chairman – shall coordinate its views with representatives of the owner when the company is facing particularly important decisions.

Board meetings

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

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

In addition, certain items of business are included on the agenda every year, in accordance with the yearly planning in the Board's Rules of Procedure. Investments approved by the Board are followed up by the Board one year after their commercial operation date. Strategy issues are discussed in more detail at an annual board seminar where the Executive Group Management participates.

The Board met eleven times in 2020, including the statutory meeting. From March until December, 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 84–85.

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 2020 AGM, the owner's representative presented a reasoned statement on the Board's composition as well as on the changes that had been proposed. 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 2020, 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. All directors were Swedish citizens. Biographical information about the board members is provided on pages 84–85.

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. All 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-related consequences of CO_2 emissions are included in the Board's handling of the strategy and in the business planning process.

The Board's main items of business in 2020

- Items according to the Rules of Procedure
- Appointment of new President and CEO
- Strategic targets 2025
- Impact of Covid-19 (the coronavirus) on personnel, operations and financials
- Climate Risk Report
- Acquisitions and divestments
- Strategy, bidding and investments with regard to new on- and offshore wind farms
- District heating investments
- Moorburg heat power plant
- Distribution business in Germany
- Investments in nuclear power and decommissioning
- Outsourcing project
- Audit tender

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 2020 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 with the support of external consultants. The averages have generally risen since 2015. Evaluations have contributed to the continuous development of board work both in terms of content and composition. In 2019 the Board conducted a less comprehensive evaluation. In 2020 a more extensive evaluation, following up on the same methodology used prior to 2019, was again carried out, with support of an external consultant.

The 2020 evaluation used a questionnaire for the Board as a whole, which each of the directors and deputy directors responded to, and a questionnaire for evaluation of the individual directors, responded to by the directors elected by a general meeting. The questions addressed Vattenfall's current challenges, management and organisation, the Board's effectiveness, composition and expertise, and its relationship with the owner, the Chairman and the President. The evaluation was reported on and discussed at the board meeting on 3 February 2021. 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 84–85.

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 guidelines for other services than auditing that Vattenfall may procure from the Group's auditors, as well as to decide on procurement in specific cases based on these guidelines.

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

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

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

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

Auditor

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

At the 2020 AGM, the accounting firm Ernst & Young AB was re-elected as auditor. The accounting firm appointed Authorised Public Accountant Staffan Landén as auditor-in-charge. He has held this position since the 2015 AGM. Staffan Landén is also the auditor of, among others, Alfa Laval AB, Nederman Holding AB, Ambea AB and Investment AB Latour and is a stock exchange auditor appointed by Nasdaq Stockholm. The auditor has no

assignments with companies that affect its independence as auditor of Vattenfall.

The applicable legal provisions for rotation mean that Vattenfall must elect a new accounting firm no later than 2021. Work on the procurement was finalised in 2020, for election of the new auditor at the 2021 AGM.

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 2020 AGM the auditor reported on the audit work in 2019 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 2020 to the entire Board at the board meeting on 3 February 2021 (without the presence of any person from the Executive Group Management), and also reported on its observations at the board meeting on 15 December 2020. In addition, the auditors performed a review of the half-year interim report.

In accordance with the Act on Auditing of State Activities, etc., the Swedish National Audit Office may appoint one or more auditors to participate in the annual audit. No such auditor was appointed in 2020.

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 Executive 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. In 2020, Magnus Hall was President until 1 November, when he was succeeded by Anna Borg, who left her position as CFO on the same day. 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, such as certain investments. 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.

In addition, 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 86–87.

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.

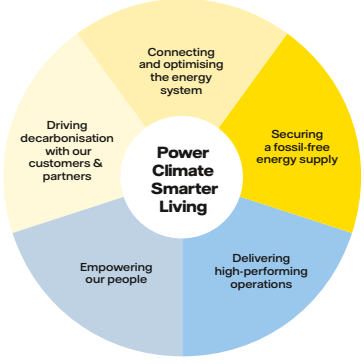
Vattenfall has five strategic focus areas, according to a strategy wheel, which visualises Vattenfall's way forward to ensure profitability and be a leader in the energy transition. In addition to this are the financial targets, decided on by the general meeting. The targets are further described in the Annual and Sustainability Report on page 24 and 26. 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 Vattenfall Management System (VMS), which elaborates on these rules. The Code has been communicated throughout the Group and is available on the intranet in

The strategy wheel



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 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 169.

Vattenfall's employees, consultants, contractors and other stakeholders have the opportunity to report serious improprieties anonymously through a whistleblowing function, either externally to one of the locally appointed external ombudsmen (attorneys) or internally through a web-based whistleblowing channel. 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 169. 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.

   Risk Management 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 64–65) 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.
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. Certain central documents are approved by the Board of Directors of Vattenfall AB, including all policies except the policies on dam safety and nuclear safety; however, within these areas, regular reporting is conducted to the Board. The VMS is an integrated management system that applies for the entire Vattenfall Group, with the limitations that may arise from legal requirements, such as regarding the unbundling of the electricity distribution business. Special routines are in place to ensure adherence to the management system also by subsidiaries.

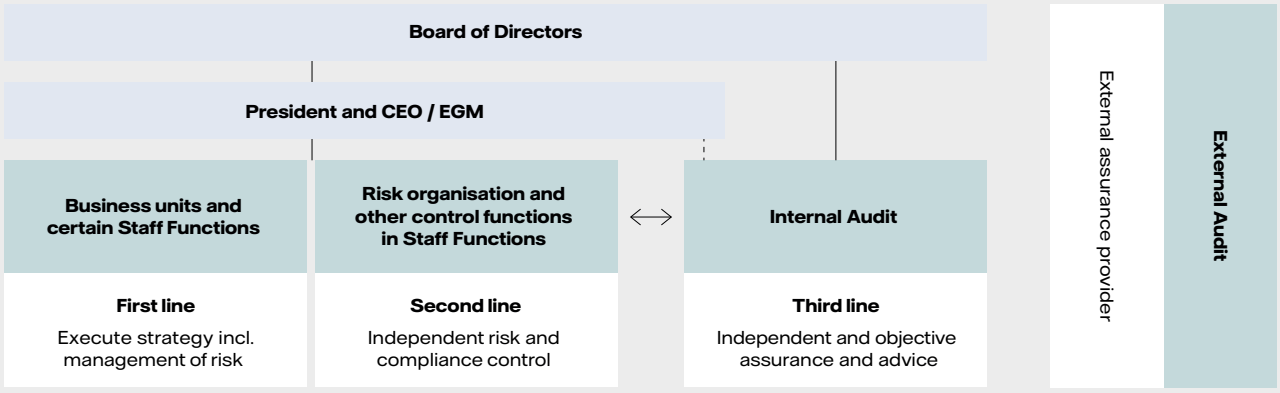
The policies lay out the company's direction and exist in the areas of

- the 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 64–73 in the Annual and Sustainability Report, and
- sustainability, where governance is based on an overall policy which stipulates, among other things, that for Vattenfall, sustainability entails taking responsibility for future generations by contributing to sustainable development in society – economically, environmentally and socially. Further highlighted is that access to energy is a precondition for our society to function and to develop in a sustainable way and that Vattenfall's sustainability focus extends throughout its value chain.

In addition, specific policies exist for various sustainability areas:

- Environment, stating Vattenfall's commitment to being climate neutral, to protect nature and biodiversity and to use resources in a sustainable manner,

Three lines model



as well as principles for Vattenfall's work within these areas.
- Health and safety, stating the vision of a culture of care where everyone takes responsibility, and where accidents and work-related illnesses never occur.
- Human rights, identifying Vattenfall's salient human rights risks and describing how the company identifies, assesses, and manages these risks. Prohibition of modern slavery was added in 2020.
- The Code of Conduct for Suppliers, addressing issues such as human rights, working conditions, the environment and business integrity, based on the UN Global Compact, among other things. An update published in 2020 included the suppliers' responsibility in cases of conflict-affected or high-risk areas, including "conflict minerals", as well as additional requirements on actions to be taken and routines to be in place in certain cases.
- Also, the Board issues a general statement on Vattenfall's tax policy.

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. All policies and instructions are accessible for employees on the intranet, and certain policies are also communicated externally. 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.

The evaluation with respect to knowledge about and compliance with the VMS is made through regular surveys and self-assessments. Results of these evaluations are reported to the EGM and to the Audit Committee. In addition, self-assessments are conducted via the Staff Functions for certain stipulations, including matters concerning integrity and competition law. A special routine ensures that all VMS content is reviewed and updated at least every other year.

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, the majority now according to ISO 45001. Several business units have certificates in accordance with ISO 50001.

In 2020, continuing reviews and updates of the VMS were conducted.

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 electricity distribution operations are conducted in a special Business Area. The Head of the Distribution Business Area is not member of any decision-making forums outside of the Business Area.

Integrity organisation

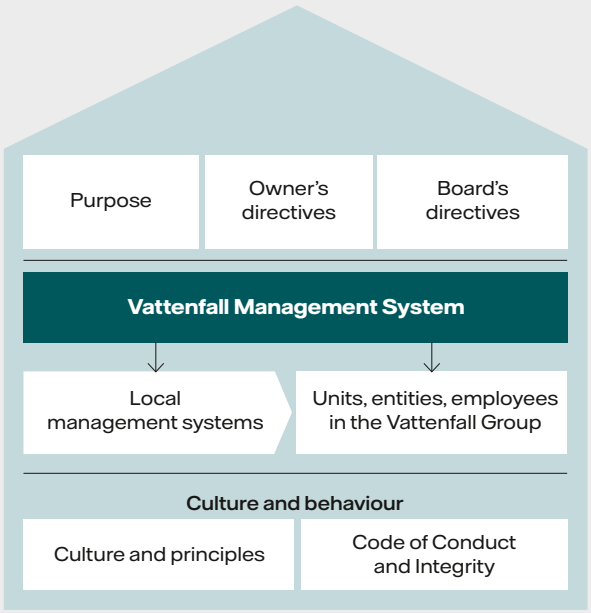
The aim of integrity work at Vattenfall is to preserve the integrity and to protect the reputation of Vattenfall. In order to achieve this, an organisational framework is established, which – within its scope – has the task to ensure transparency, understanding of applicable laws, regulations and standards and promote compliance with them, in the countries where Vattenfall operates.

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.

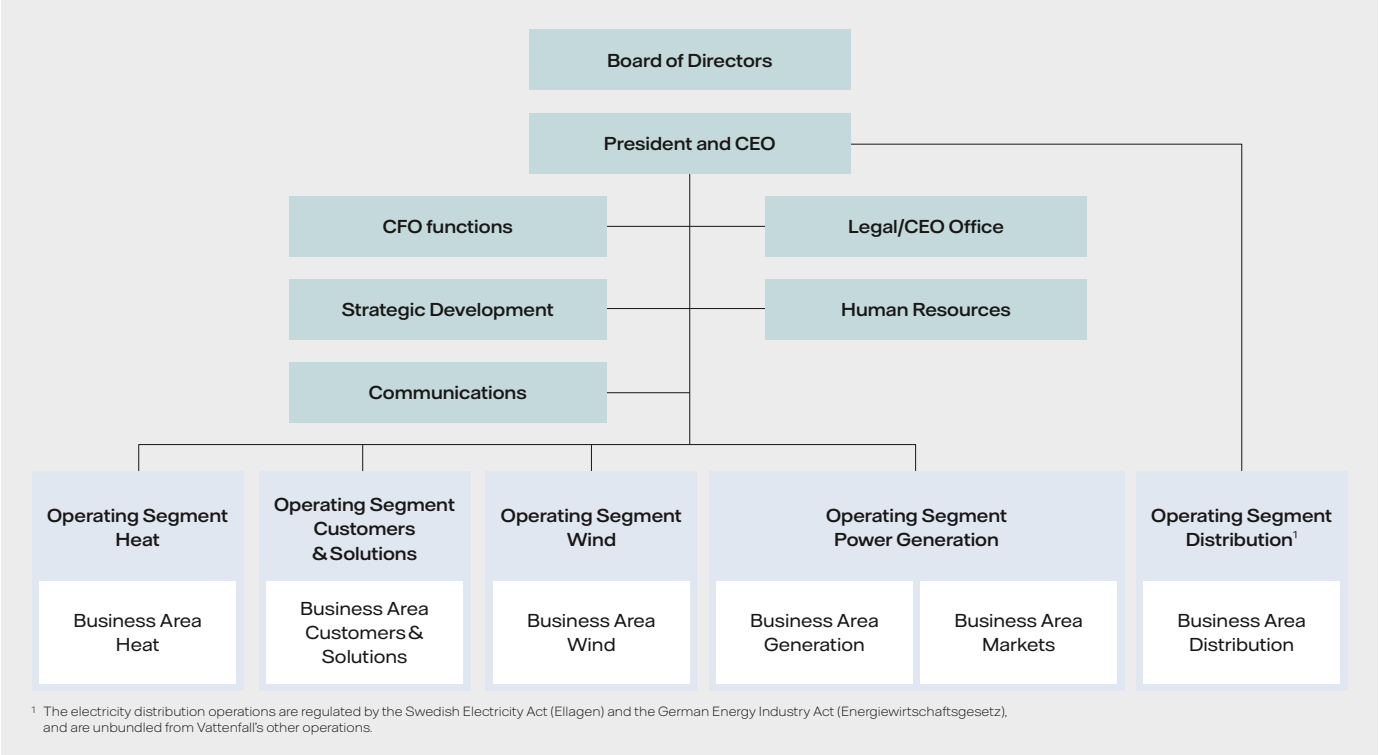
Within its scope, the Integrity organisation supports Vattenfall in identifying, mitigating, managing and monitoring the risk of non-compliance with laws, regulations,

Structure of the VMS and other governing rules



rules, standards and codes of conduct, relevant to its activities. Work is carried out in accordance with an annual plan. The day-to-day work is aligned at meetings within the Integrity organisation and via regular follow-ups. The annual integrity work is summarised in an integrity report to the Board.

Current integrity issues in 2020 are described in more detail in the Annual and Sustainability Report on page 169.



[1] The electricity distribution operations are regulated by the Swedish Electricity Act (Ellagen) and the German Energy Industry Act (Energiewirtschaftsgesetz), and are unbundled from Vattenfall's other operations.

Guidelines for remuneration of senior executives

The 2020 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 Companies Act, 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 2019 Annual and Sustainability Report, page 86. The Swedish Government Offices' principles are available on the Government Offices' website, www.regeringen.se.

Actions taken in 2020 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 2021 AGM are shown on pages 88-89.

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 64-73.

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 80) contains steering rules for all identified material areas, including roles and responsibilities, authority and risk mandates, decision-making processes, risk management, internal control, and ethics and integrity issues. The VMS lays out the so-called grandparent principle and four eyes principle for decision-making. An instruction and IT solution is in place for assignment of Group internal authority concerning invoicing, among other things. The VMS also stipulates which decision-making, oversight and advisory bodies exist within the Group, on top of those required by law.

Vattenfall has an internal financial control (IFC) process, organised in Group Finance and whose overall purpose is to ensure that controls are in place in the financial reporting but also in certain 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 80) 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. This is done in particular through internal Representation Letters to management.

Information and communication

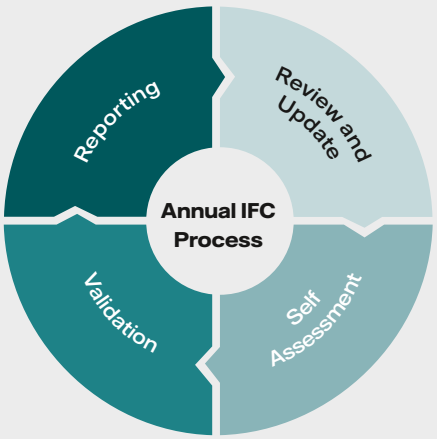
The Group's steering documents are accessible via Vattenfall's intranet. The forms for handling internal and external communication are documented in a VMS instruction which aims to ensure that Vattenfall is in compliance with legal as well as stock exchange rules, the state's ownership policy (including 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 (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 attendence: 11/11
Committee meeting attendence: Remuneration Committee: 3/3

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, 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 attendence: 11/11
Committee meeting attendence: Remuneration Committee: 3/3

ANN CARLSSON (1966)
Board member
Education: Bachelor's degree in Personnel, Work and Organisation at the Stockholm School of Economics.
Current position: CEO Apoteket AB
Other assignments: Board member of Martin & Servera, The Swedish Pharmacy Association, The Confederation of Swedish Enterprise, The Swedish Trade Federation, SNS and Ruter Dam.
Previous positions: 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 attendence: 11/11
Committee meeting attendence: Remuneration Committee: 3/3

HÅKAN ERIXON (1961)
Board member
Education: B.Sc. International Business Administration and Economics.
Other assignments: Chairman of the Board of Hemnet Group AB and Transfer Galaxy AB. Board member of Alfvén & Didrikson Invest AB.
Previous positions: 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. Various positions with Merrill Lynch International Ltd, London (1992–1997).
Elected: 2011
Committee assignment: Member of the Audit Committee
Board meeting attendence: 11/11
Committee meeting attendence: Audit Committee: 6/6

MATS GRANRYD (1962)
Board member
Education: M.Sc. Engineering, KTH Royal Institute of Technology.
Other assignments: 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 Ericsson (1995–2010).
Elected: 2020
Committee assignment: Member of the Audit Committee
Board meeting attendence: 8/8
Committee meeting attendence: Audit Committee: 4/4

TOMAS KÅBERGER (1961)
Board member
Education: M.Sc. Engineering Physics. Ph.D. Physical Resource Theory. Associate Professor (Docent), Environmental Science.
Other assignments: Industrial Growth Executive InnoEnergy. 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. Affiliate professor at Chalmers University of Technology. Member of the Royal Swedish Academy of Engineering Sciences (IVA).
Previous positions: Professor Chalmers University of Technology, Industrial Energy Policy (2012–2018). 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 attendence: 11/11
Committee meeting attendence: Audit Committee: 6/6

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 attendence: 11/11
Committee meeting attendence: Audit Committee: 6/6

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: 2017
Committee assignment: Audit Committee chair
Board meeting attendence: 11/11
Committee meeting attendence: Audit Committee: 6/6

ÅSA SÖDERSTRÖM WINBERG (1957)
Board member
Education: B.Sc. Econ.
Other assignments: Chairman of the Board of Scanmast AB. 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 attendence: 10/11
Committee meeting attendence: Remuneration Committee: 3/3

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 attendence: 11/11

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 attendence: 11/11
Committee meeting attendence: Audit Committee: 5/6

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 attendence: 10/11

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: 2018
Board meeting attendence: 10/11

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 attendence: 11/11

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).
Elected: 2013
Board meeting attendence: 11/11

Directors who left the Board in 2020: Fredrik Arp resigned in connection with the Annual General Meeting on 28 April.

Executive Group Management

ANNA BORG (1971)
President and CEO
Vattenfall employee since: 2017 and 1999–2015
Education: Master's 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: No other assignments.

In 2020 Anna Borg did not have any significant shareholdings in companies with which Vattenfall has business relations.

KERSTIN AHLFONT (1971)
Senior Vice President, Chief Financial Officer
Vattenfall employee since: 1995
Education: M.Sc. Eng.
Previous positions: Senior Vice President Human Resources (2015–2020) as well as long-standing experience from various management positions within Vattenfall Finance in Business Unit Heat Nordic, Business Group Pan Europe, Business Division Production and Region Nordic.

OSKAR AHNFELT (1972)
Senior Vice President, acting Head of Communications
Vattenfall employee since: 2017 and 2004–2015
Education: M. Sc. Industrial Engineering and Management
Previous positions: Vice President Public & Regulatory Affairs, Vattenfall (2017–), Senior Consultant at Hallvarsson & Halvarsson (2016), Head of Public & Regulatory Affairs Nordic, Vattenfall (2010–2015), Public Affairs manager, Vattenfall (2006–2010), Consultant at Swedpower (2004–2005), Consultant at CMA-Centrum för Marknadsanalys (2000–2004), Consultant at Industri-Matematik (1997–1999).

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), Program Manager Optimization Program Vattenfall Service Unit Germany (2009–2011); Manager, KPMG Advisory (2001–2009).
Other assignments: Managing Director Vattenfall Europe Business Services GmbH, VSG GmbH and other subsidiaries.

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.

MARTIJN HAGENS (1971)
Senior Vice President, Head of Customers & Solutions Business Area
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 Heat Business Area
Vattenfall employee since: 2018 and 1999–2004
Education: M.Sc. Aquatic & Environmental Engineering.
Previous positions: Vice President, Business Unit Heat Sweden, 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.

ANDREAS REGNELL (1966)
Senior Vice President, 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 also member of RISE Research Council.

ANNA-KARIN STENBERG (1956)

Senior Vice President, Head of Markets Business Area

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 Generation Business Area

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.

ROBERT ZURAWSKI (1976)

from 1 February 2021

Senior Vice President, acting Head of Business Area Wind

Vattenfall employee since: 1999

Education: Diploma in Business Administration

Previous positions: Vice President, Business Control Business Area Wind, Vattenfall (2015–2021), Director Planning & Control Continental/UK, Vattenfall (2014–2015), Director Business Control Thermal, Vattenfall (2011–2013), Manager Strategic Controlling, Business Group Central Europe, Vattenfall (2008-2010), Various positions in Finance, Controlling and Strategic Control, Vattenfall (1999–2008).

A new Head of Business Area Wind has been appointed, Helene Biström, and will take up the position on 1 september, 2021 at latest.

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, Member of the Swedish Electrification Commission.

The electricity distribution operations are regulated by the Swedish Electricity Act (Ellagen) and the German Energy Industry Act (Energiewirtschaftsgesetz), and are unbundled from Vattenfall's other operations. The head of Business Area distribution is therefore not a member of the EGM.

Persons who left the EGM in 2020:

- Magnus Hall
- Tuomo Hatakka
- Niek den Hollander
- Karin Lepasoon
- Gunnar Groebler (left 31 January 2021)

In 2020, Magnus Hall and Anna Borg did not have any significant shareholdings in companies with which Vattenfall has business relations.

AGM proposal

The Board's proposed guidelines for remuneration of senior executives

These guidelines cover senior executives. "Senior executives" refers to board members, 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 2021 Annual General Meeting. The guidelines do not cover remuneration decided by the 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 as well as moderate 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% 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% of the part of salary above the cap. The minimum retirement age shall not be under 65 years.

If a salary exchange scheme is offered, the solution shall 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 shall 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. Remuneration for such assignments shall be consistent with these guidelines.

Termination of employment

If the company gives notice of termination, the period of notice may not exceed six months, and severance pay shall 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 insofar as the previously employed executive is not entitled to severance pay. The remuneration shall amount to not more than 60% 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 terms of employment for employees

Remuneration of 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 terms of employment 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 of 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 of 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, insofar 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 decide 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 deviations 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 case, the Board of Directors shall disclose the deviation and the reasons why.

Explanation for deviations from the government's principles

The deviation from the Government's principles for remuneration and other terms of employment for senior executives of state-owned companies was decided on by the owner at the 2020 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 70,065,099,040. The Board of Directors and President propose that the profits be distributed as follows:

To be distributed to the shareholder:	SEK 4,000,000,000
To be carried forward:	SEK 66,065,099,040

The proposed distribution corresponds to a dividend of SEK 30.37 per share. The dividend is proposed for payment on 12 May 2021.

Statement by the Board of Directors pursuant to the Swedish Companies Act, Chapter 18, Section 4

Based on the Parent Company's and Group's financial position, earnings and cash position, the Board of Directors is of the opinion that the proposed distribution of profits will not lead to any material limitation of the Parent Company's or Group's ability to make any necessary investments or to meet their obligations in the short and long term. In view of the above, the Board of Directors finds the proposed dividend, totalling SEK 4,000,000,000 to be carefully considered and justified, and that the proposal adheres to the principles of the adopted dividend policy (page 24).

The Board of Directors' and the President's assurance upon signing the Annual and Sustainability Report for 2020

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 172–174, have been prepared in accordance with the GRI Standards, and have been adopted by the Board of Directors.

Solna, 23 March 2021

Lars G. Nordström, Chairman of the Board

Viktoria Bergman Ann Carlsson Håkan Erixon Mats Granryd

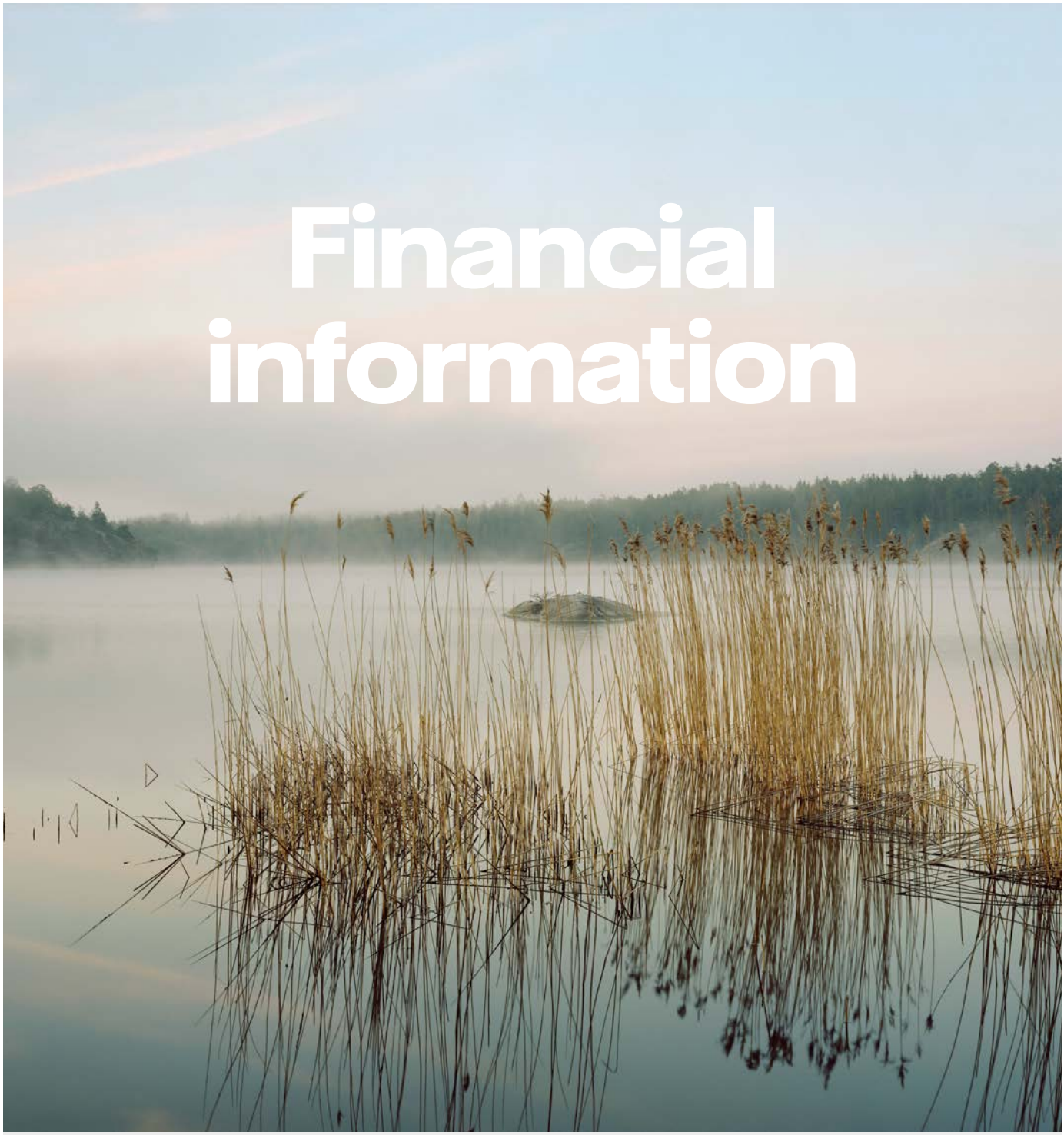
Tomas Kåberger Jenny Lahrin Robert Lönnqvist

Rolf Ohlsson Jeanette Regin Fredrik Rystedt Åsa Söderström Winberg

Anna Borg, President and CEO

Our auditor's report was submitted on 23 March 2021
Ernst & Young AB

Staffan Landén, Authorised Public Accountant



Financial information

Contents

Vattenfall's financial performance

Underlying operating profit amounted to SEK 25.8 billion in 2020, an increase of SEK 0.7 billion compared with 2019. Higher earnings contributions from the Customers & Solutions and Heat operating segments had a positive effect on underlying operating profit. A lower contribution from the Power Generation operating segment had a countering effect.

Amounts in SEK million	2020	2019
Net sales	158,847	166,360
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[1]	46,507	42,445
Underlying operating profit before depreciation, amortisation and impairment losses[1]	44,041	43,940
Operating profit (EBIT)[1]	15,276	22,141
Underlying operating profit[1]	25,790	25,095
Profit for the year	7,716	14,861
Funds from operations (FFO)[1]	35,024	34,949
Net debt[1]	48,178	64,266
Adjusted net debt[1]	121,480	132,014
Electricity generation, TWh	112.8	130.3
– of which, hydro power	39.7	35.8
– of which, nuclear power	39.3	53.4
– of which, fossil-based power	22.7	31.3
– of which, wind power	10.8	9.5
– of which, biomass, waste	0.3	0.4
Sales of electricity, TWh[2]	164.1	169.4[6]
Sales of heat, TWh	13.8	17.1
Sales of gas, TWh	56.8	59.2[6]
CO_2 emissions, Mtonnes	12.1[4]	18.2[4]
Work-related accidents, number (LTIF)[3]	1.8	2.1
Number of employees, full-time equivalents	19,859	19,815
Key ratios[1]		
Return on capital employed, %	5.8[5]	8.5[5]
Net debt/equity, %	43.3	59.2
FFO/adjusted net debt, %	28.8	26.5
Adjusted net debt/EBITDA, times	2.6	3.1

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 14–15, 25-26, 65-69, 79-81 and 156–171 of this printed document, pertains to Vattenfall and its subsidiaries.

Wholesale price trend

Average Nordic electricity spot prices were 65% lower in 2020 than in 2019, mainly owing to a stronger hydrological balance. Average spot prices in Germany and the Netherlands were 6% and 7% higher, respectively, than in 2019, mainly owing to higher fuel prices and higher prices for CO_2 emission allowances.

Futures prices for electricity for delivery in 2021 and 2022 were 8%–45% lower than in 2019. Futures prices for coal and gas were 11% and 20% lower, respectively, than in 2019, while the price for CO_2 emission allowances was 11% higher than in 2019.

Electricity generation

Total electricity generation in 2020 was 112.8 TWh (130.3).

Hydro power generation amounted to 39.7 TWh (35.8). Nordic reservoir levels were at 82% (60%) of capacity at year-end, which is 25 percentage points above the normal level.

Nuclear power generation decreased by 14.1 TWh to 39.3 TWh (53.4), mainly due to the closure of Ringhals 2, prolonged outages for yearly inspections and output reductions in response to lower price levels. Combined availability for Vattenfall's nuclear power plants for 2020 was 76.4% (87.8%). Forsmark had an availability of 83.3% (88.9%) and generation of 22.7 TWh (25.3). Ringhals had an availability of 67.5% (88.9) and generation of 16.5 TWh (28.0).

Electricity generation from wind power amounted to 10.8 TWh (9.5) in 2020. The inrease was due to new capacity, mainly the onshore wind farm Princess Ariane (301 MW) in the Netherlands.

Fossil-based power generation totalled 22.7 TWh (31.3).

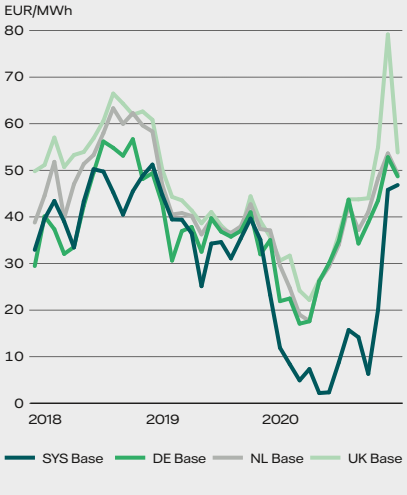
Sales of electricity, heat and gas

Sales of electricity, excluding sales to Nord Pool Spot and deliveries to minority shareholders, decreased by 0.8 TWh to 118.2 TWh (119.0). Sales of gas decreased by 2.4 TWh to 56.8 TWh (59.2) as a result of warmer weather in the Netherlands. Sales of heat decreased by 3.3 TWh to 13.8 TWh (17.1).

Vattenfall's price hedging

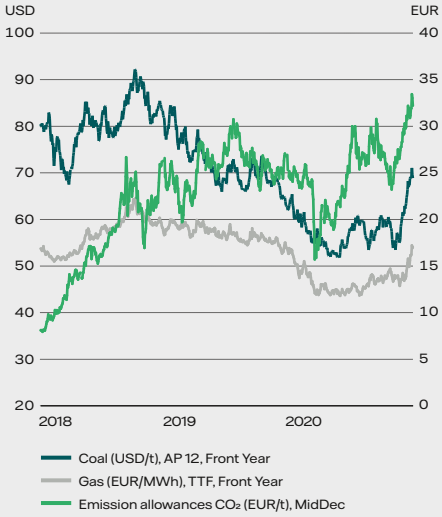
Vattenfall continuously hedges its future electricity generation through sales in the forward and futures markets. Spot prices therefore have only a limited impact on Vattenfall's earnings in the near term. With the current portfolio structure, Vattenfall's dominant risk exposure is coupled to Nordic 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 wind power, which diversifies the total risk exposure on the Continent (Germany, the Netherlands and in the UK) and in the Nordic countries. 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, the Netherlands and UK, 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	
	2020	2019	2020	2019	2020	2019
Customers & Solutions	**84,661**	**87,343**	**1,637**	**2,516**	**86,298**	**89,859**
Power Generation	**36,597**	**38,425**	**53,536**[2]	**63,953**[2]	**90,133**	**102,378**
Wind	**6,901**	**6,578**	**6,664**	**6,914**	**13,565**	**13,492**
Heat	**13,538**	**15,947**	**9,790**	**15,456**	**23,328**	**31,403**
Distribution	**16,970**	**17,903**	**4,674**	**4,637**	**21,644**	**22,540**
– of which, Distribution Germany	5,464	6,498	4,107	4,156	9,571	10,654
– of which, Distribution Sweden	11,377	11,288	597	509	11,974	11,797
Other[1]	**180**	**164**	**5,737**	**5,392**	**5,917**	**5,556**
Eliminations	**–**	**–**	**-82,038**	**-98,868**	**-82,038**	**-98,868**
Total	**158,847**	**166,360**	**–**	**–**	**158,847**	**166,360**

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 decreased by SEK 7.5 billion (of which, negative currency effects of SEK 0.9 billion) compared with 2019. The decrease is mainly attributable to lower electricity prices and lower sales volume in the Nordic countries, the Netherlands and Germany, and lower revenue from the heat operations.

Underlying operating profit

Amounts in SEK million	2020	2019
Operating profit (EBIT)	15,276	22,141
Depreciation, amortisation and impairment losses	31,231	20,304
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	**46,507**	**42,445**
Items affecting comparability excl. impairment losses and reversed impairment losses	-2,466	1,495
Underlying operating profit before depreciation, amortisation and impairment losses	**44,041**	**43,940**
Operating profit (EBIT)	15,276	22,141
Items affecting comparability[1]	10,514	2,954
Underlying operating profit	**25,790**	**25,095**

1) See Definitions and calculations of key ratios for definition of this Alternative Performance Measure.

The underlying operating profit increased by SEK 0.7 billion, which is mainly explained by the following:

- A higher earnings contribution from the Customers & Solutions operating segment (SEK 0.8 billion), mainly owing to lower depreciation in the Netherlands
- A higher earnings contribution from the Heat operating segment (SEK 0.4 billion), owing to lower maintenance costs and lower depreciation
- A higher earnings contribution from the Distribution operating segment (SEK 0.3 billion), owing to lower costs that were elevated in 2019 due to Storm Alfrida
- A lower earnings contribution from the Power Generation operating segment (SEK -0.8 billion), owing to lower achieved prices in the Nordic countries and lower nuclear power generation, which was partly compensated by higher realised earnings from the trading operations and higher hydro power generation

Operating segments

	Operating profit (EBIT)		Underlying operating profit	
	2020	2019	2020	2019
Customers & Solutions	**1,882**	**1,157**	**2,146**	**1,337**
Power Generation	**18,984**	**9,870**	**14,670**	**15,437**
Wind	**2,401**	**3,603**	**3,970**	**4,155**
Heat	**-12,149**	**354**	**978**	**550**
Distribution	**5,313**	**4,986**	**5,325**	**4,998**
– of which, Distribution Germany	1,081	1,118	1,093	1,132
– of which, Distribution Sweden	4,225	3,858	4,225	3,856
Other[1]	**-1,146**	**2,279**	**-1,290**	**-1,274**
Eliminations	**-9**	**-108**	**-9**	**-108**
Total	**15,276**	**22,141**	**25,790**	**25,095**

	2020	2019
Underlying operating profit	25,790	25,095
Items affecting comparability (for specification, see Income statement)	-10,514	-2,954
Financial net	-3,270	-3,819
Profit before income taxes	**12,006**	**18,322**

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 0.8 billion compared with 2019, mainly owing to lower depreciation in the Netherlands. Higher costs for electricity purchases in Germany were compensated by tariff increases. Earnings growth was held back by continued high competition and costs for growth activities. Underlying operating profit for the Power Generation operating segment decreased by SEK 0.8 billion as a result of lower achieved prices in the Nordic countries and lower nuclear power generation, which was partly compensated by a higher realised trading result and higher hydro power generation. Underlying operating profit for the Wind operating segment decreased by SEK 0.2 billion, mainly owing to more maintenance work, which entailed higher maintenance costs. Underlying operating profit for the Heat operating segment increased by SEK 0.4 billion, mainly owing to lower maintenance costs and lower depreciation. Underlying operating profit for the Distribution operating segment increased by SEK 0.3 billion, mainly as a result of lower operating expenses, which were elevated in 2019 by the impact of Storm Alfrida. 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	2020	2019
Capital gains	301	3,538
Capital losses	-241	-25
Impairment losses	-12,980	-1,459
Reversed impairment losses	–	–
Provisions	-3,488	-3,431
Unrealised changes in the fair value of energy derivatives	4,753	-1,688
Unrealised changes in the fair value of inventories	476	-556
Restructuring costs	-854	-148
Other infrequent items affecting comparability	1,519	815
Total	**-10,514**	**-2,954**

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 unrealised 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).

Items affecting comparability in 2019 amounted to SEK –3.0 billion. Capital gains on the divestment of the district heating operations in Hamburg (SEK 3.1 billion) and the sale of nuclear power production rights in Germany (SEK 1.5 billion) were countered by unrealised changes in market value for energy derivatives and inventories (SEK –2.2 billion) and higher provisions for nuclear power (SEK –3.4 billion), partly owing to changed discount rates for Germany and Sweden.

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 3.2 billion in 2020, compared with SEK 3.7 billion in 2019.

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 2020 Vattenfall invested SEK 449 million (503) in R&D. For further information on Vattenfall's R&D activities, see page 23.

Financial items
Financial items amounted to SEK –3.3 billion, which is SEK 0.5 billion lower than in 2019.

Taxes
The Group reported a tax expense of SEK 4.3 billion for 2020 and an effective tax rate of 35.8%. The effective tax rate is mainly explained by unvalued tax-loss carryforwards. For 2019 the Group reported a tax expense of SEK 3.5 billion and an effective tax rate of 18.9%. 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 2020	31 December 2019
Intangible assets: current and non-current	16,716	18,870
Property, plant and equipment	249,120	256,700
Participations in associated companies and joint arrangements	4,347	4,827
Deferred and current tax assets	14,104	15,746
Non-current noninterest-bearing receivables	3,853	3,758
Contract assets	416	188
Inventories	16,828	13,353
Trade receivables and other receivables	23,812	26,345
Prepaid expenses and accrued income	6,935	7,853
Unavailable liquidity	5,374	3,859
Other	483	530
Total assets excl. financial assets	**341,988**	**352,029**
Deferred and current tax liabilities	-18,455	-16,215
Other noninterest-bearing liabilities	-1,994	-2,134
Contract liabilities	-8,752	-8,462
Trade payables and other liabilities	-24,912	-27,809
Accrued expenses and deferred income	-14,558	-17,098
Total noninterest-bearing liabilities	**-68,903**	**-71,904**
Other interest-bearing provisions not related to adjusted net debt[1]	-10,619	-11,314
Capital employed[2]	**262,466**	**268,811**
Capital employed, average	**265,639**	**260,190**

[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 12.5 billion compared with the level at 31 December 2019, to SEK 463.2 billion (450.8). Short-term derivative assets decreased by SEK 0.1 billion. Cash and cash equivalents increased by SEK 15.5 billion.

Financial position

Amounts in SEK million	2020	2019
Cash and cash equivalents, and short-term investments	56,222	33,155
Committed credit facilities (unutilised)	23,069	20,894

Cash and cash equivalents, and short-term investments increased by SEK 23.1 billion compared with the level at 31 December 2019.

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires in November 2023 and a credit facility of SEK 3.0 billion that expires in January 2022. As per 31 December 2020, available liquid assets and/or committed credit facilities amounted to 46.5% 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	2020	2019
Hybrid Capital[1]	-19,304	-20,164
Bond issues and liabilities to credit institutions	-49,642	-38,829
Short-term debt, commercial papers and repo	-13,268	-17,453
Liabilities to associated companies	-688	-733
Liabilities to owners of non-controlling interests	-10,931	-10,647
Other liabilities	-10,942	-9,801
Total interest-bearing liabilities[1]	**-104,775**	**-97,627**
Cash and cash equivalents	26,074	10,604
Short-term investments	30,148	22,551
Loans to owners of non-controlling interests in foreign Group companies	375	206
Net debt[1]	**-48,178**	**-64,266**

[1] See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.

Net debt decreased by SEK 16.1 billion compared with the level at 31 December 2019, mainly owing to a positive cash flow after investments (SEK 21.5 billion) and positive currency effects (SEK 3.7 billion), which were partly countered by payment of a dividend to the owner (SEK 3.6 billion) and to minority owners (SEK 1.7 billion).

Adjusted gross and net debt as per 31 December

Amounts in SEK million	2020	2019
Total interest-bearing liabilities	-104,775	-97,627
50% of Hybrid Capital[1]	9,652	10,082
Present value of pension obligations	-43,824	-44,026
Provisions for gas and wind operations and other environment related provisions	-10,599	-8,571
Provisions for nuclear power (net)[2]	-37,794	-35,521
Margin calls received	4,081	3,706
Liabilities to owners of non-controlling interests due to consortium agreements	10,931	10,647
Adjustment related to assets/liabilities held for sale	–	–
Adjusted gross debt	**-172,328**	**-161,310**
Reported cash and cash equivalents and short-term investments	56,222	33,155
Unavailable liquidity	-5,374	-3,859
Adjusted cash and cash equivalents and short-term investments	**50,848**	**29,296**
Adjusted net debt[3]	**-121,480**	**-132,014**

[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 10.5 billion. The decrease is mainly attributable to the lower level of net debt, which was partly countered by higher provisions for nuclear power, net (SEK 2.3 billion) and higher provisions for the phase-out of coal-fired power generation (SEK 1.4 billion).

Equity

The Group's equity increased by SEK 2.7 billion. The increase is mainly attributable to the profit for the year.

Comments on the consolidated statement of cash flows

Cash flow from operating activities

Amounts in SEK million	2020	2019
Funds from operations (FFO)	35,024	34,949
Cash flow from changes in operating assets and operating liabilities (working capital)	6,668	-18,230
Cash flow from operating activities	41,692	16,719

Funds from operations (FFO) increased by SEK 0.1 billion in 2020 to SEK 35.0 billion (34.9). A higher underlying operating profit before depreciation, amortisation and impairment losses (EBITDA) was countered by higher paid tax (the comparison is affected by a tax refund in Germany in 2019).

Cash flow from changes in working capital was SEK 6.7 billion (-18.2) in 2020. The largest contributing factors were the net change in margin calls (SEK 12.6 billion), an increase in inventories (SEK -1.6 billion), and changes related to CO_2 emission allowances, which had a negative cash flow effect (SEK -3.7 billion).

Cash flow from investing activities

Amounts in SEK million	2020	2019
Maintenance/replacement investments	12,539	15,148
Growth investments	8,808	11,685
Total investments	**21,347**	**26,833**
Total divestments	**1,237**	**7,452**
– of which, shares	536	6,703

Investments are specified in the table below. Divestments in 2019 pertains mainly to the district heating operations in Hamburg.

Specification of investments

Amounts in SEK million	2020	2019
Hydro power	920	920
Nuclear power	1,877	2,213
Coal power	22	139
Gas	192	277
Wind power	7,709	7,501
Biomass, waste	295	149
Other	–	–
Total electricity generation	**11,015**	**11,199**
Fossil-based power	1,261	2,134
Heat networks	1,400	1,522
Other	933	760
Total CHP/heat	**3,594**	**4,416**
Electricity networks	7,435	7,071
Total electricity networks	**7,435**	**7,071**
Purchases of shares, shareholder contributions	-137	498
Other	1,690	1,754
Total investments	**23,597**	**24,938**
Changes in accrued, non-paid liabillities	-2,250	1,895
Total investments with cash flow effect	**21,347**	**26,833**

Cash flow from financing activities

Cash flow from financing activities amounted to SEK -6.0 billion (-3.4) in 2020.

Consolidated income statement

Amounts in SEK million, 1 January–31 December	Note	2020	2019
Net sales	6, 7, 8	158,847	166,360
Cost of purchases		-76,225	-87,580
Other external expenses	10	-20,732	-22,675
Personnel expenses	42	-19,535	-20,249
Other operating incomes and expenses, net		3,882	6,167
Participations in the results of associated companies	19	270	422
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	7	**46,507**	**42,445**
Depreciation, amortisation and impairments		-31,231	-20,304
Operating profit (EBIT)[1]	7, 8, 9, 14, 15	**15,276**	**22,141**
Financial income[4]	11	558	451
Financial expenses[2, 3, 4]	12	-5,886	-6,522
Return from the Swedish Nuclear Waste Fund	20	2,058	2,252
Profit before income taxes		**12,006**	**18,322**
Income taxes expense	13	-4,290	-3,461
Profit for the year		**7,716**	**14,861**
Attributable to owner of the Parent Company		6,489	13,173
Attributable to non-controlling interests		1,227	1,688
Supplementary information			
Underlying operating profit before depreciation, amortisation and impairment losses[5]	7, 8	44,041	43,940
Underlying operating profit[5]	7, 8	25,790	25,095
Financial items, net excl. discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund		-3,163	-3,774
[1] Including items affecting comparability.[5]		-10,514	-2,954
[2] Including interest components related to pension costs.		-538	-871
[3] Including discounting effects attributable to provisions.		-2,165	-2,297
[4] Items affecting comparability recognised as financial income and expenses, net.		-1	-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	2020	2019
Profit for the year	**7,716**	**14,861**
Other comprehensive income		
Items that will be reclassified to profit or loss when specific conditions are met		
Cash flow hedges – changes in fair value	3,023	181
Cash flow hedges – dissolved against income statement	4,310	-5,641
Cash flow hedges – transferred to cost of hedged item	-43	-34
Hedging of net investments in foreign operations	1,808	-1,275
Translation differences, divested companies	-5	-94
Translation differences	-4,084	2,728
Income taxes related to items that will be reclassified	-2,587	2,157
Total Items that will be reclassified to profit or loss when specific conditions are met	**2,422**	**-1,978**
Items that will not be reclassified to profit or loss		
Remeasurement pertaining to defined benefit obligations	-1,505	-4,577
Income taxes related to items that will not be reclassified	392	1,244
Total Items that will not be reclassified to profit or loss	**-1,113**	**-3,333**
Total other comprehensive income, net after income taxes	**1,309**	**-5,311**
Total comprehensive income for the year	**9,025**	**9,550**
Attributable to owner of the Parent Company	8,260	7,757
Attributable to non-controlling interests	765	1,793

Consolidated balance sheet

Amounts in SEK million	Note	31 December 2020	31 December 2019
Assets			
Non-current assets			
Intangible assets: non-current	16	16,524	18,735
Property, plant and equipment	17	249,120	256,700
Participations in associated companies and joint arrangements	19	4,347	4,827
Other shares and participations		304	333
Share in the Swedish Nuclear Waste Fund	20	48,270	45,691
Derivative assets	36	9,449	7,788
Deferred tax assets	13	13,824	14,583
Other non-current receivables		5,529	5,537
Total non-current assets		**347,367**	**354,194**
Current assets			
Inventories	21	16,828	13,353
Intangible assets: current	22	192	135
Trade receivables and other receivables	23	23,812	26,345
Contract assets	6	416	188
Advance payments paid	24	1,046	3,996
Derivative assets	36	9,962	10,080
Prepaid expenses and accrued income	25	6,935	7,853
Current tax assets	13	280	1,163
Short-term investments	26	30,148	22,551
Cash and cash equivalents	27	26,074	10,604
Assets held for sale	28	188	318
Total current assets		**115,881**	**96,586**
Total assets	7	**463,248**	**450,780**
Equity and liabilities			
Equity attributable to owners of the Parent Company			
Share capital		6,585	6,585
Reserve for cash flow hedges		1,970	-3,147
Other reserves		1,606	3,874
Retained earnings incl. profit for the year		87,563	86,319
Total equity attributable to owners of the Parent Company	38	**97,724**	**93,631**
Equity attributable to non-controlling interests		**13,468**	**14,891**
Total equity		**111,192**	**108,522**
Non-current liabilities			
Hybrid Capital	29	19,304	20,164
Other interest-bearing liabilities	29	49,091	52,405
Pension provisions	30	43,824	44,026
Other interest-bearing provisions	31	108,665	102,395
Derivative liabilities	36	7,924	7,833
Deferred tax liabilities	13	17,617	14,713
Contract liabilities	6	8,752	8,462
Other noninterest-bearing liabilities	32	1,994	2,134
Total non-current liabilities		**257,171**	**252,132**
Current liabilities			
Trade payables and other liabilities	33	24,912	27,809
Advance payments received	34	5,794	1,577
Derivative liabilities	36	8,901	13,701
Accrued expenses and deferred income	35	14,558	17,098
Current tax liabilities	13	838	1,502
Other interest-bearing liabilities	29	36,380	25,058
Interest-bearing provisions	31	3,462	3,371
Liabilities associated with assets held for sale	28	40	10
Total current liabilities		**94,885**	**90,126**
Total equity and liabilities		**463,248**	**450,780**

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	2020	2019
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		46,507	42,445
Tax paid		-2,719	-1,528
Capital gains/losses, net		-62	-3,513
Interest received		183	329
Interest paid		-2,808	-2,969
Other, incl. non-cash items	37	-6,077	185
Funds from operations (FFO)[1]		**35,024**	**34,949**
Changes in inventories		**-1,315**	**-196**
Changes in operating receivables		-1,344	-6,294
Changes in operating liabilities		-3,726	9,171
Margin calls		12,588	-20,733
Other changes		465	-178
Cash flow from changes in operating assets and operating liabilities		**6,668**	**-18,230**
Cash flow from operating activities		**41,692**	**16,719**
Investing activities			
Acquisitions in Group companies	4	-86	-754
Investments in associated companies and other shares and participations		223	256
Other investments in non-current assets	37	-21,484	-26,335
Total investments		**-21,347**	**-26,833**
Divestments	37	1,237	7,452
Cash and cash equivalents in acquired companies		20	148
Cash and cash equivalents in divested companies		-80	-3,542
Cash flow from investing activities		**-20,170**	**-22,775**
Cash flow before financing activities		**21,522**	**-6,056**
Financing activities			
Changes in short-term investments		-8,926	559
Changes in loans to owners of non-controlling interests in foreign Group companies		-185	282
Loans raised[2]		21,471	12,622
Amortisation of debt pertaining to acquisitions of Group companies		-27	-23
Amortisation of other debt		-12,156	-12,001
Dividends paid to owners		-5,298	-3,714
Contribution/repaid contribution from owners of non-controlling interests		-829	-1,138
Cash flow from financing activities		**-5,950**	**-3,413**
Cash flow for the year		**15,572**	**-9,469**
Cash and cash equivalents			
Cash and cash equivalents at start of year		10,604	17,094
Cash and cash equivalents included in assets held for sale		–	2,992
Cash flow for the year		15,572	-9,469
Translation differences		-102	-13
Cash and cash equivalents at end of year		**26,074**	**10,604**

Supplementary information

Amounts in SEK million, 1 January–31 December	2020	2019
Cash flow before financing activities	**21,522**	**-6,056**
Financing activities		
Dividends paid to owners	-5,298	-3,714
Contribution to/from owners of non-controlling interests	-829	-1,138
Cash flow after dividend	**15,395**	**-10,908**
Cash flow from operating activities	41,692	16,719
Maintenance investments	-12,539	-15,148
Free cash flow[1]	**29,153**	**1,571**
Analysis of change in net debt		
Net debt at start of year	-64,266	-47,728
Change accounting principles	–	-4,609
Cash flow after dividends	15,395	-10,908
Changes as a result of valuation at fair value	-171	-456
Change in interest-bearing liabilities for leasing	-2,837	-711
Interest-bearing liabilities/short-term investments acquired/divested	24	-11
Cash and cash equivalents included in assets held for sale	–	2,992
Interest-bearing liabilities associated with assets held for sale	–	-792
Translation differences on net debt	3,677	-2,043
Net debt at end of year	**-48,178**	**-64,266**

	Liquid funds bank overdraft	Short-term investments	Financial leasing agreements	Current liabilities	Non-current liabilities	Total
Net debt as at 1 January 2019	**17,094**	**23,453**	**-601**	**-24,413**	**-63,261**	**-47,728**
Cashflow	-9,469	-841	903	2,454	-3,955	**-10,908**
Change accounting principles	–	–	-4,609	–	–	**-4,609**
Change in interest-bearing leasing liabilities	–	–	-711	–	–	**-711**
Translation differences on net debt	-13	145	-155	-901	-1,119	**-2,043**
Assets held for sale	2,992	–	12	-804	–	**2,200**
Other non-cash items	–	–	-11	12	-468	**-467**
Net debt as at 31 December 2019	**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**
Acquired/divested interest-bearing liabilities/short-term investments	–	–	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**

1) See Definitions and calculations of key ratios for the definition of this Alternative Performance Measure.

2) Short-term borrowings in which the duration is three months or shorter are reported net.

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 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**

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 2019	**6,585**	**450**	**2,466**	**78,595**	**88,096**	**15,501**	**103,597**
Profit for the year	**–**	**–**	**–**	**13,173**	**13,173**	**1,688**	**14,861**
Cash flow hedges – changes in fair value	–	181	–	–	**181**	–	**181**
Cash flow hedges – dissolved against income statement	–	-5,624	–	–	**-5,624**	-17	**-5,641**
Cash flow hedges – transferred to cost of hedged item	–	-34	–	–	**-34**	–	**-34**
Hedging of net investments in foreign operations	–	–	-1,275	–	**-1,275**	–	**-1,275**
Translation differences, divested companies	–	–	-94	–	**-94**	–	**-94**
Translation differences	–	–	2,504	–	**2,504**	224	**2,728**
Remeasurement pertaining to defined benefit obligations	–	–	–	-4,443	**-4,443**	-134	**-4,577**
Income taxes related to other comprehensive income	–	1,880	273	1,216	**3,369**	32	**3,401**
Total other comprehensive income for the year	**–**	**-3,597**	**1,408**	**-3,227**	**-5,416**	**105**	**-5,311**
Total comprehensive income for the year	**–**	**-3,597**	**1,408**	**9,946**	**7,757**	**1,793**	**9,550**
Dividends paid to owners	–	–	–	-2,000	**-2,000**	-1,714	**-3,714**
Group contributions from(+)/to(–) owners of non-controlling interests	–	–	–	–	**–**	30	**30**
Contribution to/from minority interest	–	–	–	–	**–**	-1,138	**-1,138**
Changes as a result of changed ownership	–	–	–	–	**–**	197	**197**
Other changes	–	–	–	-222	**-222**	222	**–**
Total transactions with equity holders	**–**	**–**	**–**	**-2,222**	**-2,222**	**-2,403**	**-4,625**
Balance carried forward 2019	**6,585**	**-3,147**	**3,874**	**86,319**	**93,631**	**14,891**[1]	**108,522**

[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 23 March 2021. 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 2021. 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 2019
No recalculations were made.

Presentation of Consolidated income statement and Consolidated statement of cash flows
To clarify the effect of the return from the Swedish Nuclear Waste Fund it is now disclosed on a separate row within the financial income and expense. To increase transparancy payments regarding Margain calls related to commodity derivatives are now being disclosed on a separate row instead of within Other changes in the Cash flow from operating activities.

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 2020
None of the amendments to the existing accounting standards effective from 2020 have had a material impact on the Vattenfall Group's financial statements.

New IFRSs and interpretations effective as from 2021 and later
A number of accounting standards and interpretations have been published, but have not become effective. These are not, with the exeption below, 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. Vattenfall intends to apply the amendment prospectively as soon as possible after it has been endorsed. 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 28 Assets held for sale
- Note 30 Pension provisions
- Note 31 Other interest-bearing provisions

Note 4 Acquired and divested operations

Acquired operations
Acquisitions 2020
In 2020, no major acquisitions of operations were made by Vattenfall.

Acquisitions 2019
End of February 2019, Vattenfall finalized the acquisition of the Dutch electricity and gas sales company DELTA Energie. DELTA Energie supplies green electricity and gas to households and small and medium-sized companies, mainly in the Dutch province Zeeland. The company has 120 employees and 170,000 customers.

End of March 2019, Vattenfall finalized the acquisition of the Dutch company Senfal. Senfal is a company that offers innovative software services to large industrial customers, wind and solar farms and owners of large batteries.

In addition to the operations mentioned above Vattenfall has acquired a number of wind- and solar project companies that are currently in a pre-construction stage.

The total purchase consideration paid was SEK 754 million and total assets acquired was SEK 1,135 million whereof SEK 1,109 million pertains to intangible assets.

Divested operations
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 amounts to SEK 506 million and the capital gain amounts 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.

Divestments in 2019
On 2nd of September 2019, Vattenfall finalized the divestment of the district heating in Hamburg to the City of Hamburg. The transaction was based on the decision taken by the City of Hamburg in October 2018 to exercise its option to acquire Vattenfalls shareholding of 74.9% in the company. The consideration received amounts to EUR 634 million including interest.

	2020	2019
Intangible assets: non-current	18	1
Property, plant and equipment	590	4,819
Participations in associated companies and joint arrangements	35	4
Other shares and participations	–	6
Deferred tax assets	–	513
Other non-current assets	–	552
Inventories	61	278
Trade receivables and other receivables	100	587
Current tax assets	–	27
Cash and cash equivalents	80	3,579
Borrowings	-25	-10
Pension provisions	–	-4,021
Other interest-bearing provisions	-66	-571
Deferred tax liabilities	-137	-232
Trade payables and other liabilities	-55	-1,823
Current tax liabilities	–	-97
Total net assets	**601**	**3,612**
Non-controlling interests´share of net assets	246	–
Proceeds from sales/Cash flow for the year	536	6,703
Capital gain (+)/loss (–) recognised in the income statement	**181**	**3,091**

Note 5 Exchange rates

Key exchange rates applied in the accounts of the Vattenfall Group:

		Average rate		Balance sheet date rate	
	Currency	2020	2019	31 December 2020	31 December 2019
Euro countries	EUR	10.4789	10.5572	10.0343	10.4468
Denmark	DKK	1.4056	1.4140	1.3485	1.3982
UK	GBP	11.8334	12.0391	11.1613	12.2788
USA	USD	9.1718	9.4180	8.1773	9.2993

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.

Connection fees

Distribution and Heat are responsible for physical connections of the respective distribution networks to houses and buildings. The fee for the physical connection is paid by the customer when the connection is established. Revenue from connection fees is recognised over time since Vattenfall handles maintenance and repairs of the assets used in the physical connection, which is satisfied over time. The basis for revenue recognition of connection fees is the useful life of the underlying assets.

Vattenfall recognises revenues from contracts with customers and other revenues through profit or loss.

	2020	2019
Sales of electricity	98,366	102,028
Sales of gas	15,723	18,458
Sale of heat and steam	10,918	13,315
Distribution	16,882	15,975
Sale of service and consulting services	4,516	5,999
Total revenues from contracts with customers	**146,405**	**155,775**
Other revenues	12,442	10,585
Total	**158,847**	**166,360**

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	2020	2019
Contract assets	416	188
– of which, released as cost from opening balance during the year	412	445
Contract liabilities	8,752	8,462
– of which, released as revenue from opening balance during the year	659	781

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 (Berlin) 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	
	2020	2019	2020	2019	2020	2019
Customers & Solutions	**84,661**	**87,343**	**1,637**	**2,516**	**86,298**	**89,859**
Power Generation	**36,597**	**38,425**	**53,536**[2]	**63,953**[2]	**90,133**	**102,378**
Wind	**6,901**	**6,578**	**6,664**	**6,914**	**13,565**	**13,492**
Heat	**13,538**	**15,947**	**9,790**	**15,456**	**23,328**	**31,403**
Distribution	**16,970**	**17,903**	**4,674**	**4,637**	**21,644**	**22,540**
– of which, Distribution Germany	5,464	6,498	4,107	4,156	9,571	10,654
– of which, Distribution Sweden	11,377	11,288	597	509	11,974	11,797
Other[1]	**180**	**164**	**5,737**	**5,392**	**5,917**	**5,556**
Eliminations	**–**	**–**	**-82,038**	**-98,868**	**-82,038**	**-98,868**
Total	**158,847**	**166,360**	**–**	**–**	**158,847**	**166,360**

	Operating profit before depreciation, amortisation and impairment losses (EBITDA)		Underlying operating profit before depreciation, amortisation and impairment losses	
	2020	2019	2020	2019
Customers & Solutions	**2,832**	**2,976**	**3,083**	**3,021**
Power Generation	**23,144**	**13,642**	**18,796**	**19,207**
Wind	**9,482**	**9,645**	**9,426**	**9,620**
Heat	**2,644**	**4,957**	**4,462**	**4,409**
Distribution	**8,713**	**8,236**	**8,725**	**8,248**
– of which, Distribution Germany	2,162	2,175	2,174	2,189
– of which, Distribution Sweden	6,505	6,018	6,505	6,016
Other[1]	**-299**	**3,097**	**-442**	**-457**
Eliminations	**-9**	**-108**	**-9**	**-108**
Total	**46,507**	**42,445**	**44,041**	**43,940**

	Operating profit (EBIT)		Underlying operating profit	
	2020	2019	2020	2019
Customers & Solutions	**1,882**	**1,157**	**2,146**	**1,337**
Power Generation	**18,984**	**9,870**	**14,670**	**15,437**
Wind	**2,401**	**3,603**	**3,970**	**4,155**
Heat	**-12,149**	**354**	**978**	**550**
Distribution	**5,313**	**4,986**	**5,325**	**4,998**
– of which, Distribution Germany	1,081	1,118	1,093	1,132
– of which, Distribution Sweden	4,225	3,858	4,225	3,856
Other[1]	**-1,146**	**2,279**	**-1,290**	**-1,274**
Eliminations	**-9**	**-108**	**-9**	**-108**
Total	**15,276**	**22,141**	**25,790**	**25,095**

	2020	2019
Underlying operating profit	25,790	25,095
Items affecting comparability (for specification, see Income statement)	-10,514	-2,954
Financial net	-3,270	-3,819
Profit before income taxes	**12,006**	**18,322**

	Investments		Assets	
	2020	2019	2020	2019
Customers & Solutions	**759**	**1,548**	**49,381**	**52,616**
Power Generation	**3,030**	**3,439**	**295,854**	**290,112**
Wind	**5,810**	**9,245**	**88,028**	**85,453**
Heat	**4,326**	**5,079**	**89,751**	**94,478**
Distribution	**7,610**	**7,163**	**71,536**	**65,662**
– of which, Distribution Germany	1,860	1,951	20,934	18,202
– of which, Distribution Sweden	5,546	5,068	49,737	46,866
Other[1]	**3,530**	**12,066**	**202,755**	**184,490**
Eliminations	**-3,718**	**-11,707**	**-334,057**[3]	**-322,031**[3]
Total	**21,347**	**26,833**	**463,248**	**450,780**

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 CO2 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	
	2020	2019	2020	2019	2020	2019
Sweden	45,869	52,455	12,157	14,785	58,026	67,240
Germany	77,318	77,215	36,537	53,696	113,855	130,911
Netherlands	26,310	29,493	12,616	22,985	38,926	52,478
Other countries	9,350	7,198	5,277	5,558	14,627	12,756
Eliminations	–	-1	-66,587	-97,024	-66,587	-97,025
Total	**158,847**	**166,360**	**–**	**–**	**158,847**	**166,360**

	Operating profit (EBIT)		Underlying operating profit		Intangible assets: non-current, property, plant and equipment and investment property	
	2020	2019	2020	2019	2020	2019
Sweden	13,712	16,580	15,725	17,449	133,745	128,036
Germany	-2,729	4,279	5,525	5,739	55,270	71,268
Netherlands	2,683	293	2,354	496	38,798	38,284
Other countries	1,612	993	2,154	1,416	37,800	37,813
Eliminations	-2	-4	-2	-4	31	34
Total	**15,276**	**22,141**	**25,756**	**25,096**	**265,644**	**275,435**

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:

	2020		2019	
	Before tax	After tax	Before tax	After tax
Discount rate regulated business, %	5.3	4.0	5.3	4.1
Discount rate non-regulated business, %	5.8–8.6	4.5–6.8	5.8–8.9	4.5–6.9

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 give rise to a SEK 100 million 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 26% but would not lead to any impairment. For non-subsidized wind assets in the Nordics, the corresponding figure would range from 6% to 11%. The latter would lead to recognition of further impairment losses of approximately SEK 200 million (all else equal). For other assets, such a decrease in electricity prices would not lead to any impairment.

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 2020 a change has been implemented relating to cash generating units within business area Wind whereby cash generating units now consists of onshore respective offshore wind power plants in the respective countries where Vattenfall operates within the business area.

Vattenfall closely monitors market developments on a continuous basis and their impact on operations.-

Goodwill is not amortised but is instead tested annually for impairment. Impairment testing of goodwill is included in the impairment testing process described above.

In addition to the regular impairment test for the Cash Generating Units, Vattenfall recognizes impairment losses for individual assets if these are planned to be divested and the expected consideration is below the carrying amount. 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 2020
During 2020, impairment losses recognized in operating profit amounts to SEK 12,980 million. The predominant part, SEK 11,337 million, pertains to the power plant Moorburg within the business area Heat. Within the business area Wind, impariments of SEK 1,627 million were made, of which SEK 812 million pertains to land-based units in Sweden, SEK 438 million pertains to offshore units in Sweden, SEK 330 million pertains to land-based units in Denmark and SEK 29 million pertains offshore units in the United Kingdom. The remaining amount refers to other minor write-downs.

Impairment losses 2019
Impairment losses charged against operating profit in 2019 amounted to SEK 1.459 million. Of this total, SEK 495 million is attributable to the Wind operating segment and SEK 747 million to the Heat operating segment. No previously recognised impairment losses were reversed in the income statement in 2019.

Note 10 Other external expenses

	2020	2019
Purchased services	8,326	9,192
IT expenses	1,982	1,998
Consulting expenses	3,371	3,844
Non-capitalised lease expenses	506	484
Marketing and selling expenses	1,515	1,454
Expenses related to provisions	4,565	3,760
Other	467	1,943
Total	**20,732**	**22,675**

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

	2020	2019
Interest income attributable to investments	138	226
Net change in value from remeasurement of derivatives	304	146
Dividends	73	70
Exchange rate differences, net	37	–
Capital gains from divestments of shares and participations	6	9
Total	**558**	**451**

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

	2020	2019
Interest expenses attributable to loans	3,182	3,126
Interest effects attributable to provisions	2,165	2,297
Interest expenses for the net of pension provisions and plan assets	538	871
Exchange rate differences, net	–	225
Capital losses from divestments of shares and participations	1	3
Total	**5,886**	**6,522**

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

	2020	2019
Current tax expense (-)/ tax income (+)		
Current taxes pertaining to the period:		
Sweden	-1,517	-2,221
Germany	-468	-776
Netherlands	-427	-56
Other countries	-134	-23
Adjustment of current tax for prior periods:		
Sweden	-10	16
Germany	-19	-804
Netherlands	6	-39
Other countries	8	70
Total current tax	**-2,561**	**-3,833**
Deferred tax expense (-)/ tax income (+)		
Sweden	-1,004	-789
Germany	-547	1,166
Netherlands	23	182
Other countries	-201	-187
Total deferred tax	**-1,729**	**372**
Total income tax expense	**-4,290**	**-3,461**

The difference between the nominal Swedish tax rate and the effective tax rate

	2020		2019	
	%		%	
Profit before tax		12,006		18,322
Swedish income tax rate at 31 December	21.4	-2,569	21.4	-3,921
Difference in tax rate in foreign operations	-2.0	237	1.2	-226
Tax adjustments for previous periods	0.1	-12	3.0	-553
Revaluation of previously non-valued losses and other temporary differences	1.5	-183	-0.4	78
Tax-loss carryforwards from current year that are not valued	18.6	-2,238	0.2	-45
Other non-taxable income	-4.3	522	-1.9	356
Other non-deductible expenses	1.4	-167	1.1	-206
Capital gains	-0.3	40	-5.0	922
Participations in the results of associated companies	-0.1	13	0.0	9
Changed tax rates	-0.6	67	-0.7	125
Effective tax rate	**35.7**	**-4,290**	**18.9**	**-3,461**

Balance sheet reconciliation of current tax

	2020	2019
Balance brought forward net asset (+)/ net liability (-)	-339	1,575
Translation differences, acquisitions, disposals and assets held for sale	–	98
Interest and discounting effects on non-current tax items	13	18
Change via income statement	-2,561	-3,833
Tax effect through equity[1]	-390	275
Taxes paid, net	2,719	1,528
Balance carried forward net asset (+)/ net liability (-)	**-558**	**-339**

[1] Of which, equity hedge amounts to SEK -391 million (283).

Break down of the deferred tax

	2020	2019
Non-current assets	-28,100	-28,339
Current assets	-5,836	-4,208
Provisions	21,326	21,897
Other non-current liabilities	2,399	2,045
Current liabilities	6,700	6,323
Cash flow hedges	-1,411	741
Tax losses carried forward	1,129	1,411
Total	**-3,793**	**-130**

Accumulated tax-loss carryforwards

	2020	2019
Sweden	179	33
Germany	18,451	12,415
Netherlands	17	84
Other countries	979	1,173
Total	**19,626**	**13,705**

The tax-loss carryforwards fall due as follows:

	2020
2021	–
2022-2025	9
2026 and beyond	31
No time limit	19,586
Total	**19,626**

The tax-loss carryforwards correspond to a potential deferred tax asset of SEK 4,583 million, of which SEK 1,129 million is booked on the balance sheet as of 31 December 2020. Tax-loss carryforwards not included in the computation of deferred tax represent a tax value of SEK 3,454 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	2,066	1,694	325	375	**4,460**
Additions to the right-of-use-asset during the year	1,951	81	238	–	**2,270**
Depreciation for the year	-112	-445	-178	-215	**-950**
Other changes to the right-of-use-asset during the year	-52	-49	24	163	**86**
Balance carried forward	**3,853**	**1,281**	**409**	**323**	**5,866**

Lease liability

Lease liability development	
Balance as of 1 January	3,766
Additions to the liability	2,270
Repayment of the liability	-991
Other changes	226
Balance carried forward	**5,271**

Total leasing related cash-outflows amounted to 991 MSEK in 2020 of which 104 MSEK is related to interest expenses.

Maturity analysis - contractual undiscounted cash flows	
< 1 year	824
1 - 5 years	2,064
> 5 years	4,377
Total as of 31 December 2020	**7,265**

Lease payments amounting to 506 MSEK have not been capitalized 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 2020, Vattenfall has signed contracts, which have yet not commenced with a corresponding lease liability amounting to 1,452 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 2020, cost of assets leased out amounted to SEK 5,305 million (5,493). Accumulated depreciation amounted to SEK 3,697 million (3,500) and accumulated impairment losses amounted to SEK 196 million (232). Future payments for this type of facility are broken down as follows:

	Operating leasing
2021	23
2022	170
2023	143
2024	115
2025	83
2026 and beyond	170
Total	**704**

Note 15 Auditors' fees

	2020	2019
Annual audit assignment		
EY	43	42
Audit-related activities besides the annual audit assignment		
EY	5	11
Tax consulting		
EY	–	–
Other assignments		
EY	9	28

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.

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

	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**
Acquired companies	–	–	–	–	–	**–**
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**

	2019					
	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	2,271	44,682	18,117	1,222	178	**66,470**
Acquired companies	–	–	1,337	17	–	**1,354**
Investments	259	–	161	611	1	**1,032**
Transfer from development projects in progress	-1	–	2	–	–	**1**
Divestments/disposals	-3	–	-126	-80	-11	**-220**
Reclassifications	–	–	1	–	–	**1**
Assets held for sale	-3	–	-1	–	–	**-4**
Translation differences	24	860	380	21	2	**1,287**
Accumulated cost carried forward	**2,547**	**45,542**	**19,871**	**1,791**	**170**	**69,921**
Amortisation according to plan						
Amortisation brought forward	-1,769	–	-12,627	-604	-46	**-15,046**
Acquired companies	–	–	-172	–	–	**-172**
Amortisation for the year	-50	–	-1,224	-476	-4	**-1,754**
Divestments/disposals	3	–	10	80	11	**104**
Reclassifications	–	–	-1	–	–	**-1**
Assets held for sale	3	–	1	–	–	**4**
Translation differences	-24	–	-216	-10	-1	**-251**
Accumulated amortisation according to plan carried forward	**-1,837**	**–**	**-14,229**	**-1,010**	**-40**	**-17,116**
Impairment losses						
Impairment losses brought forward	-212	-30,891	-2,129	-35	-76	**-33,343**
Impairment losses for the year	–	-45	-89	–	–	**-134**
Divestments/disposals	–	–	84	–	–	**84**
Translation differences	–	-601	-75	-1	–	**-677**
Accumulated impairment losses carried forward	**-212**	**-31,537**	**-2,209**	**-36**	**-76**	**-34,070**
Residual value according to plan carried forward	**498**	**14,005**	**3,433**	**745**	**54**	**18,735**

Contractual commitments for acquisitions of non-current intangible assets amounted to SEK 1 million (3) as per 31 December 2020.

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

	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**
Reversed investments	–	–	–	-49	**-49**
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	-824	**6,214**
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**

	2019				
	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]	56,072	463,347	12,436	30,591	**562,446**
Adoptation of new accounting standard (IFRS 16)	3,832	–	778	–	**4,610**
Acquired companies	10	13	92	11	**126**
Investments[4]	410	1,580	632	21,259	**23,881**
Reversed investments	–	–	–	-38	**-38**
Advance payments capitalised	–	–	–	85	**85**
Capitalised/reversed future expenses for decommissioning, restoration	20	4,947	–	–	**4,967**
Transfer from construction in progress	1,453	25,121	131	-26,703	**2**
Divestments/disposals	-697	-1,855	-999	-8	**-3,559**
Other reclassifications	97	–	1	–	**98**
Assets held for sale	-33	-1,939	-4	118	**-1,858**
Translation differences	614	6,481	203	505	**7,803**
Accumulated cost carried forward	**61,778**	**497,695**	**13,270**	**25,820**	**598,563**
Depreciation according to plan					
Depreciation brought forward	-25,577	-216,842	-9,149	–	**-251,568**
Acquired companies	–	-12	-54	–	**-66**
Depreciation for the year	-1,485	-14,608	-999	–	**-17,092**
Divestments/disposals	506	1,663	917	–	**3,086**
Other reclassifications	-16	–	–	–	**-16**
Assets held for sale	5	1,120	-1	–	**1,124**
Translation differences	-289	-2,929	-140	–	**-3,358**
Accumulated depreciation according to plan carried forward	**-26,856**	**-231,608**	**-9,426**	**–**	**-267,890**
Impairment losses					
Impairment losses brought forward	-3,638	-67,779	-423	-336	**-72,176**
Acquired companies	–	1	–	–	**1**
Impairment losses for the year	-11	-876	-80	-230	**-1,197**
Divestments/disposals	33	101	1	–	**135**
Other reclassifications	-4	–	–	–	**-4**
Assets held for sale	–	281	–	–	**281**
Translation differences	-56	-1,021	-7	-2	**-1,086**
Accumulated impairment losses carried forward	**-3,676**	**-69,293**	**-509**	**-568**	**-74,046**
Residual value according to plan carried forward	**31,246**	**196,794**	**3,335**	**25,252**	**256,627**
Advance payments to suppliers					**73**
Total					**256,700**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 12,287 million (12,550), which are not subject to depreciation.

[2] Borrowing costs during the construction period have been reported as an asset in the amount of SEK 60 million (137) for the year. The average interest rate for 2020 was 1.91% for borrowings in SEK, 3.58% for borrowings in EUR and 5.22% for borrowings in GBP.

[3] Government grants received, balance brought forward, amount to SEK 7,789 million (7,552).

[4] Government grants received during the year amounted to SEK 183 million (237).

At 31 December 2020, contractual commitments for the acquisition of property, plant and equipment amounted to SEK 19,991 million (9,515).

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 2020	Participation in % 2020	Carrying amount Parent Company 2020	Carrying amount Parent Company 2019
Sweden						
Borås Elhandel AB	556613-7765	Borås	1,000	100	100	100
Chlorout AB	556840-9253	Stockholm	500	100	–	–
Forsaströms Kraft AB	556010-0819	Åtvidaberg	400,000	100	48	48
Forsmarks Kraftgrupp AB	556174-8525	Östhammar	198,000	66	198	198
Försäkrings AB Vattenfall Insurance	516401-8391	Solna	200,000	100	924	524
Gotlands Energi AB	556008-2157	Gotland	112,500	75	13	13
InCharge AB	559178-6081	Stockholm	50,000	100	–	–
Klimatum AB	559030-1148	Borås	100	100	39	39
Produktionsbalans PBA AB	556425-8134	Stockholm	4,800	100	5	5
Ringhals AB	556558-7036	Varberg	248,572	70	379	379
Svensk Kärnbränslehantering AB	556175-2014	Solna	360	36[1]	–	–
Vattenfall Business Services Nordic AB	556439-0614	Stockholm	100	100	130	130
Vattenfall Computing Services AB	559217-9229	Stockholm	50,000	100	14	–
Vattenfall Elanläggningar AB	556257-5661	Solna	1,000	100	1	1
Vattenfall Eldistribution AB	556417-0800	Solna	8,000	100	38,000	38,000
Vattenfall France Holding AB	556815-4214	Stockholm	30,500	100	3	11
Vattenfall Kundservice AB	556529-7065	Umeå	100,000	100	30	30
Vattenfall Nuclear Fuel AB	556440-2609	Solna	100	100	96	96
Vattenfall PHEV Holding AB	556785-9383	Stockholm	1,000	100	–	–
Vattenfall Power Consultant AB	556383-5619	Stockholm	12,500	100	–	–
Vattenfall Power Management AB	556573-5940	Stockholm	6,570	100	12	12
Vattenfall Services Nordic AB	556417-0859	Stockholm	26,000	100	19	19
Vattenfall Vattenkraft AB	556810-1520	Stockholm	1,200	100	1	1
Vattenfall Vindkraft AB	556731-0866	Stockholm	1,000	100	14,000	14,000
Västerbergslagens Energi AB	556565-6856	Ludvika	14,674	51	15	15
Denmark						
Vattenfall A/S	213 11 332	Copenhagen	10,040,000	100	33	33
Vattenfall Energy Trading A/S	310 811 81	Copenhagen	500	100	49	49
Vindstød A/S	340 451 43	Århus	1,333,333	90[2]	179	60
Finland						
Vattenfall Sähkömyynti Oy	1842073-2	Helsinki	85	100	5	5
Germany						
Vattenfall GmbH	(HRB) 124048	Berlin	500,000,000	100	51,366	51,366
Poland						
Vattenfall IT Services Poland Sp.z.o.o	0000402391	Gliwice	58,000	100	12	12
Netherlands						
Vattenfall N.V.	33292246	Amsterdam	136,794,964	100	44,138	44,138
Other countries						
Parc Eolien En Mer des Bancs de Flandre SAS	2018B02593	Boulogne Billancourt	58,680	1[3]	1	1
Vattenfall Eolien S.A.S.	832352538	Boulogne Billancourt	1,000	100	182	
Vattenfall HEAT UK Limited	2951085	London	17,000,002	100	200	
Vattenfall Network Ltd	2731769	London	15,000,002	100	176	
Vattenfall Network Solutions Ltd	2692708	London	2,000	100	–	
Vattenfall Wind Power Ltd	6205750	London	646,000,001	100	10,510	10,510
Vattenfall UK Sales Limited	05461926	London	104,000,400	100		288
Total					**160,878**	**160,083**

[1] The Group owns a further 30% via Forsmarks Kraftgrupp AB.

[2] The remaining 10 % of the shares will be paid 2022.

[3] The Group owns a further 79 % via Vattenfall Vindkraft AB.

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 % 2020
Sweden		
Vattenfall Kraftgården AB	Ragunda	74
Denmark		
Vattenfall Vindkraft A/S	Esbjerg	100
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
Stromnetz Berlin GmbH	Berlin	100
Vattenfall Energy Trading 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 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 % 2020
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
Nuon 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
Vattenfall Windpark Wieringermeer B.V.	Amsterdam	100
Vattenfall Windpark Wieringermeer EXT B.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%) together with Mellansvensk Kraftgrupp AB (25.5%), with Fortum as the largest owner, and Sydkraft Nuclear Power AB (8.5%). The part-owners have a consortium agreement that regulates how the operations of Forsmarks Kraftgrupp are conducted and how decision-making is done. Forsmarks Kraftgrupp is reported as a Group company in the Vattenfall Group since Vattenfall has control over Forsmarks Kraftgrupp 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 2020 amounted to 22.7 TWh (25.3), and the average availability for Forsmark was 83.3 % (88.9%).

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 2020 amounted to 16.5 TWh (28.0), and the average availability for Ringhals was 67.5 % (86.7 %).

DanTysk Sandbank Offshore Wind
The DanTysk offshore wind farm, west of the island of Sylt (Germany) and just over the border with Denmark, was one of the first large marine wind farms built in the German North Sea. The wind farm comprises 80 wind turbines of 3.6 MW each with a total capacity of 288 MW. DanTysk began generating electricity in December 2014. The Sandbank wind farm comprises 72 wind turbines of 4 MW each with a total capacity of 288 MW. The wind farm is located 90 kilometres off the coast of Schleswig-Holstein (Germany), adjacent to DanTysk. Sandbank was inaugurated in 2017.

Both wind farms are part of the company DanTysk Sandbank Offshore Wind GmbH & Co. KG, in which Vattenfall Europe Windkraft GmbH owns 51% of the shares, and the partner Stadtwerke München holds 49% of the shares. Vattenfall has control over DanTysk Sandbank Offshore Wind in accordance with IFRS 10 – "Consolidated Financial Statements".

Following is condensed financial information for Forsmarks Kraftgrupp, Ringhals and DanTysk Sanbank Offshore Wind:

	2020			2019		
	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind	Forsmarks Kraftgrupp	Ringhals	DanTysk Sandbank Offshore Wind
Income statements in summary						
Net sales	5,766	6,091	5,399	5,720	7,161	5,774
Profit for the year	438	508	2,112	762	1,416	2,575
– of which allocated to non-controlling interests	77	276	1,035	164	174	1,262
Balance sheets in summary						
Non-current assets	65,910	51,936	15,073	62,611	48,983	17,461
Current assets	4,619	4,207	898	4,362	4,253	1,037
Total assets	**70,529**	**56,143**	**15,971**	**66,973**	**53,236**	**18,498**
Equity	13,221	1,590	14,606	12,814	1,426	17,218
Liabilities	57,308	54,553	1,365	54,159	51,810	1,280
Total equity and liabilities	**70,529**	**56,143**	**15,971**	**66,973**	**53,236**	**18,498**
Statement of cash flows in summary						
Cash flow for the year	37	-961	-69	139	911	112

Note 19 Participations in associated companies and joint arrangements

Shares and participations owned by the Parent Company Vattenfall AB or by other Group companies

				Carrying amount Group		Carrying amount Parent Company	
	Corporate Identity Number	Registered office	Participation in % 2020	2020	2019	2020	2019
Associated companies and joint ventures owned by the Parent Company Vattenfall AB							
Sweden							
Enwell AB[1]	556813-3846	Stockholm	81	52	52	72	69
Hybrit Development AB	559121-9760	Stockholm	33	276	116	359	127
Norway							
NorthConnect KS	996625001	Kristiansand	33	44	68	50	68
NorthConnect AS	995878550	Kristiansand	30	6	10	5	8
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	154	245	–	–
V[2] Plug-In Hybrid Vehicle Partnership HB	969741-9175	Gothenburg	50	132	292	–	–
UK							
East Anglia Offshore Wind Ltd	06990367	Hexham	50	45	50	–	–
Germany							
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	HRA 200395	Oldenburg	26	46	106	–	–
GASAG AG	HRB 44343	Berlin	32	3,326	3,584	–	–
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	29	15	–	–
Windpark Birkhorst GmbH	HRB 161462	Hamburg	50	2	–	–	–
Netherlands							
B.V. Nederlands Elektriciteit Administratiekantoor	09018339	Arnhem	23	74	78	–	–
C.V. Windpoort	34122462	Heemskerk	40	1	6	–	–
NoordzeeWind C.V.	34218377	Ijmuiden	50	-21	47	–	–
OSwinT B.V.	74311883	Swifterbant	23	–	–	–	–
V.O.F. Windpark Oom Kees	09210903	Amsterdam	13	2	2	–	–
Westpoort Warmte B.V.	34121626	Amsterdam	50	179	142	–	–
Windpark Hoofdplaatpolder B.V.	22053732	Sluis	70	–	–	–	–
V.O.F. Noordpier Wind	51173441	Heemskerk	50	–	–	–	–
Vliegasunie B.V.	30123419	Culemborg	0	–	14	–	–
Total				**4,347**	**4,827**	**486**	**272**

[1] As a result of a shareholder agreement, Vattenfall does not have such control over Enwell AB that is required for the company to be reported as a subsidiary of the Vattenfall Group. The company is therefore reported as an associated company until further notice.

Participations in the results of associated companies

	2020	2019
Sweden		
Blakliden Fäbodberget Wind Holding AB	-6	–
Enwell AB	-3	-16
Hybrit Development AB	-72	-6
V2 Plug-In Hybrid Vehicle Partnership HB	307	360
Norway		
NorthConnect KS	-27	-1
NorthConnect AS	-4	1
Germany		
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	-17	-4
GASAG AG	115	91
SOLYTIC GmbH	-4	-3
Netherlands		
B.V. Nederlands Elektriciteit Administratiekantoor	-1	10
NoordzeeWind C.V.	-69	-52
Westpoort Warmte B.V.	44	39
Windpark Hoofdplaatpolder B.V.	1	-3
V.O.F. Noordpier Wind	5	3
Vliegasunie B.V.	-2	7
Other associated companies	3	-4
Total	**270**	**422**

Note 20 Share in the Swedish Nuclear Waste Fund

	2020	2019
Balance brought forward	45,691	42,038
Payments	1,627	2,445
Disbursements	-1,106	-1,044
Returns	2,058	2,252
Balance carried forward	**48,270**	**45,691**

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. The fund reimburses the owner of the reactor for expenses as the owner's obligations pursuant to the Swedish law are fulfilled. According to agreements between the Swedish state, Vattenfall AB and E.ON Sverige AB, fund assets for Ringhals AB shall be managed by Vattenfall AB. 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 72,271 thousand million (66,137). 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.

The value of the energy stored in the form of water in reservoirs is not reported as an asset.

Financial information

	2020	2019
Inventories held for own use		
Nuclear fuel	6,178	5,667
Materials and spare parts	3,068	3,064
Fossil fuel	404	704
Biological assets	16	19
Other	376	374
Total	**10,042**	**9,828**
Inventories held for trading		
Fossil fuel	1,330	1,482
CO_2 emission allowances/certificates	1,802	1,954
Biomass	99	89
Total	**3,231**	**3,525**
Inventories under construction		
Development projects, wind power	3,480	–
Development projects, solar power	75	–
Total	3,555	–
Total inventories	**16,828**	**13,353**

Inventories recognised as an expense in 2020 amount to SEK 4,316 million (7,793). Impairment losses for inventory for own use amounted to SEK 111 million (1) during the year. Reversed impairment amounted to SEK 25 million (40).

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. This obligation is reported as an expense and a liability or a decrease of the current intangible asset. This liability is valued 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. This obligation is reported as an expense and as a liability or as a decrease of the current immaterial asset. The liability is valued at the amount at which it is expected to be settled.

Financial information

	CO_2 emission allowances		Certificates		Total	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**
Balance brought forward	–	324	135	386	**135**	**710**
Purchases	10,825	14,321	223	397	**11,048**	**14,718**
Received free of charge	–	–	27	139	**27**	**139**
Sold	-7,281	-9,547	-47	-258	**-7,328**	**-9,805**
Redeemed	-3,382	-5,108	-296	-529	**-3,678**	**-5,637**
Disposals	-6	–	–	–	**-6**	**–**
Translation differences	-6	10	–	–	**-6**	**10**
Balance carried forward	**150**	**0**	**42**	**135**	**192**	**135**

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. For individual, significant receivables, an individual assessment may be made. Impairment of trade receivables is reported in operating expenses.

Financial information

	2020	**2019**
Accounts receivable - trade	18,117	20,648
Receivables from associated companies	192	193
Other receivables	5,503	5,504
Total	**23,812**	**26,345**

Age analysis

The collection period is normally between 10 and 30 days.

	2020			2019		
	Receivables, gross	**Impaired receivables**	**Receivables, net**	**Receivables, gross**	**Impaired receivables**	**Receivables, net**
Accounts receivable - trade						
Not due	16,579	26	16,553	18,707	25	18,682
Past due 1-30 days	816	19	797	1,189	12	1,177
Past due 31-90 days	462	112	350	420	39	381
Past due >90 days	1,150	733	417	1,159	751	408
Total	**19,007**	**890**	**18,117**	**21,475**	**827**	**20,648**
Receivables from associated companies						
Not due	188	–	188	192	–	192
Past due 1-30 days	3	–	3	1	–	1
Past due 31-90 days	1	–	1	–	–	–
Past due >90 days	2	2	–	2	2	–
Total	**194**	**2**	**192**	**195**	**2**	**193**
Other receivables						
Not due	5,499	–	5,499	5,489	–	5,489
Past due 1-30 days	–	–	–	8	–	8
Past due >90 days	19	15	4	23	16	7
Total	**5,518**	**15**	**5,503**	**5,520**	**16**	**5,504**

Note 24 Advance payments paid

	2020	2019
Margin calls paid, energy trading	661	3,522
Other advance payments	385	474
Total	**1,046**	**3,996**

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. Margin calls paid within financing activities are recognised as short-term investments (Note 26 to the consolidated accounts, Short-term investments) and are thereby reported in the statement of cash flows as cash flows from financing activities.

Note 25 Prepaid expenses and accrued income

	2020	2019
Prepaid expenses and accrued income, electricity	4,914	5,568
Prepaid expenses, other	1,421	1,235
Accrued income, other	600	1,050
Total	**6,935**	**7,853**

Note 26 Short-term investments

	2020	2019
Interest-bearing investments	26,805	20,547
Margin calls paid, financing activities	3,343	2,004
Total	**30,148**	**22,551**

Note 27 Cash and cash equivalents

	2020	2019
Cash and bank balances	14,426	6,335
Cash equivalents	11,648	4,269
Total	**26,074**	**10,604**

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.

Important estimations and assessments

Certain criteria must be fulfilled to classify an asset as held for sale. The asset must be available for immediate sale in its present condition subject to usual and customary terms. Further, the sale must be highly probable within one year from the date of classification. The last-mentioned criterion means that a plan for the disposal must have been prepared and approved at the appropriate level of management, an active programme for the disposal must have been initiated, and the asset must be marketed for sale at a price that is reasonable in relation to its current fair value. In the event shareholder approval is required before a sale can be carried out, Vattenfall is of the opinion that a transaction cannot be regarded as likely until shareholder approval has been obtained.

Financial information

Assets held for sale as per 31 December 2020 refer to assets in business area Wind.

	2020	2019
Property, plant and equipment	166	289
Other non-current assets	22	29
Total assets	**188**	**318**
Other interest-bearing provisions	–	5
Other non-current liabilities	–	3
Trade payables and other liabilities	40	2
Total liabilities	**40**	**10**

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.

Hybrid Capital is reported as follows:

	2020	2019
Balance brought forward	20,164	19,832
Effects from hedge accounting	2	3
Translation differences	-862	329
Balance carried forward	**19,304**	**20,164**

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	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Bond issues	10,541	17,649	18,582	19,553	**29,123**	**37,202**	15,512	200	**44,635**	**37,402**
Commercial paper	–	–	–	–	**–**	**–**	13,268	17,453	**13,268**	**17,453**
Liabilities to credit institutions	3,000	–	–	–	**3,000**	**–**	2,007	1,427	**5,007**	**1,427**
Liabilities to owners of non-controlling interests	–	–	10,839	10,514	**10,839**	**10,514**	92	133	**10,931**	**10,647**
Liabilities to associated companies	–	–	–	–	**–**	**–**	688	733	**688**	**733**
Lease liability	–	–	5,271	3,766	**5,271**	**3,766**	732	802	**6,003**	**4,568**
Other liabilities	218	208	640	715	**858**	**923**	4,081[1]	4,310 [1]	**4,939**	**5,233**
Total interest-bearing liabilities excl. Hybrid Capital	**13,759**	**17,857**	**35,332**	**34,548**	**49,091**	**52,405**	**36,380**	**25,058**	**85,471**	**77,463**
Hybrid Capital	9,271	9,717	10,034	10,447	**19,304**	**20,164**	–	–	**19,304**	**20,164**
Total interest-bearing liabilities	**23,030**	**27,574**	**45,366**	**44,995**	**68,395**	**72,569**	**36,380**	**25,058**	**104,775**	**97,627**
Derivatives (swaps) attributable to the above interest-bearing liabilities	485	248	-2,404	-2,203	**-1,919**	**-1,955**	-2	262	**-1,921**	**-1,693**

[1] Of which, margin calls within financing activities SEK 4,081 million (3,706).

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	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Interest-bearing liabilities	25,163	34,496	50,875	52,595	**76,038**	**87,091**	41,781	27,585	**117,819**	**114,676**
Derivatives (swaps)	-96	-426	-2,307	-2,264	**-2,403**	**-2,690**	-147	40	**-2,550**	**-2,650**
Trade payables and other financial liabilities	395	428	1,599	1,706	**1,994**	**2,134**	24,912	27,809	**26,906**	**29,943**
Total	**25,462**	**34,498**	**50,167**	**52,037**	**75,629**	**86,535**	**66,546**	**55,434**	**142,175**	**141,969**

The table below shows the largest benchmark bond issues by Vattenfall:

Type	Issued	Currency	Nominal amount	Coupon %	Maturity
Euro Medium Term Note	2009	EUR	1,085	6.250	2021
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	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 2020 was changed to 1.50% (1.75%). The discount rate is based on mortgage bonds with high credit ratings, the market for which is large and liquid. In Germany, where the discount rate is based on high quality corporate bonds, the discount rate in 2020 was also changed to 0.75% (1.00%).

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 0.14868%, while Vattenfall's share of the total number of actively insured in Alecta is 1.26755%. Alecta's surplus can be distributed among the policyholders and/or the insured. At the end of 2020, Alecta's surplus in the form of its so-called collective funding amounted to 148% (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 has been classified as a defined contribution plan and is reported as such since the benefit is based on paid-in premiums and Pensionskasse der Bewag's financial position.

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

	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**

	2019			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	14,374	455	21,425	**36,254**
Present value of fully or partly funded obligations	–	16,066	412	**16,478**
Present value of obligations	**14,374**	**16,521**	**21,837**	**52,732**
Fair value of plan assets	–	8,585	121	**8,706**
Net defined benefit liability	**14,374**	**7,936**	**21,716**	**44,026**

Changes in obligations

	2020	2019
Balance brought forward	52,732	48,426
Benefits paid by the plan	-2,465	-2,392
Service cost	870	717
Contributions by plan participants	4	4
Actuarial gains (-) or losses (+) due to changes in financial assumptions	1,411	5,297
Actuarial gains (-) or losses (+) due to plan experience	480	-946
Current interest expense	623	1,024
Liabilities associated with assets held for sale	–	-55
Translation differences	-1,515	657
Balance carried forward	**52,140**	**52,732**

Changes in plan assets

	2020	2019
Balance brought forward	8,706	8,740
Benefits paid by the plan	-538	-520
Contributions by employer	17	18
Contributions by plan participants	3	4
Interest income	85	153
Difference between calculated and actual return	385	144
Translation differences	-342	167
Balance carried forward	**8,316**	**8,706**

Plan assets consist of the following

	2020	2019
Shares and participations	4,760	4,890
Interest-bearing instruments	1,709	2,285
Property	1,493	1,236
Other	354	295
Total	**8,316**	**8,706**

Pension costs

	2020	2019
Defined benefit plans:		
Current service cost	658	654
Interest expenses	623	1,024
Interest income	-85	-153
Past service cost	212	63
Total cost for defined benefit plans	**1,408**	**1,588**
Cost for defined contribution plans	928	911
Total pension costs	**2,336**	**2,499**

In calculating pension obligations, the following actuarial assumptions have been made (%):

	Sweden		Germany	
	2020	2019	2020	2019
Discount rate	1.50	1.75	0.75	1.00
Future annual salary increases	3.00	2.75	2.50	2.50
Future annual pension increases	1.75	2.00	0–2.0	0–2.0

Sensitivity to key actuarial assumptions

	Sweden				Germany			
	2020		2019		2020		2019	
		%		%		%		%
Impact on the defined benefit obligation at 31 December of a:								
Increase by 50 basis points in the discount rate	-1,306	-8.7	-1,236	-8.6	-2,544	-6.6	-2,510	-6.5
Decrease by 50 basis points in the discount rate	1,484	9.8	1,405	9.8	2,854	7.4	2,818	7.3
Increase by 50 basis points in the annual pension increases	1,491	9.9	1,291	9.0	2,182	5.7	2,164	5.6
Decrease by 50 basis points in the annual pension increases	-1,343	-8.9	-1,394	-9.7	-1,999	-5.2	-1,977	-5.2

At 31 December 2020 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 expenses for nuclear power operations

Provisions for future expenses 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 expenses. These long-term cash flow estimations mainly pertain to technical plans, estimations on the amount of the expenses, 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 expenses for nuclear power operations in Sweden, the discount rate has been reduced to 2.50% (2.75%) and in Germany to 0.25% (0.50%) compared with the preceding year.

Other provisions than pension provisions and provisions for future expenses for nuclear power operations

For other types of provisions, such as provisions for future expenses 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 2.50% (2.75%), Germany 0.25–2.25% (0.50–2.50%) Netherlands 0.25 % (0.25%), Denmark 2.00% (2.25%) and the UK 2.75% (3.25%).

Financial information

	Non-current portion		Current portion		Total	
	2020	2019	2020	2019	2020	2019
Provisions for future expenses of nuclear power operations	88,938	83,929	1,972	1,952	**90,910**	**85,881**
Provisions for future expenses of gas and wind operations and other environmental measures/undertakings	10,194	8,532	405	39	**10,599**	**8,571**
Personnel-related provisions for non-pension purposes	4,863	4,753	1,026	1,200	**5,889**	**5,953**
Provisions for legal disputes	2,272	2,292	18	116	**2,290**	**2,408**
Other provisions	2,398	2,889	41	64	**2,439**	**2,953**
Total	**108,665**	**102,395**	**3,462**	**3,371**	**112,127**	**105,766**

Provisions for future expenses 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 expenses for the handling of low- and intermediate-level radioactive waste. 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 48,270 million (45,691).

	Sweden	Germany	Total
Balance brought forward	66,137	19,744	**85,881**
Provisions for the period from the income statement	2,380	957	**3,337**
Interest effects	1,770	99	**1,869**
Revaluations versus non-current tangible assets	3,747	–	**3,747**
Reclassification to liabilities	–	–	**–**
Reversed provisions	–	-194	**-194**
Provisions used	-1,763	-1,203	**-2,966**
Translation differences	–	-764	**-764**
Balance carried forward	**72,271**[1]	**18,639**[2]	**90,910**

[1] Of which, approximately 36% (35%) pertains to the dismantling of nuclear power plants and approximately 64% (65%) to the handling of spent radioactive fuel.

[2] Of which, approximately 65% (66%) pertains to the dismantling of nuclear power plants and approximately 35% (34%) to the handling of nuclear waste.

Other provisions than provisions for future expenses for nuclear power operations

	Provisions for dismantling and other environmental measures	Personnel-related provisions for non-pension purposes	Provisions for legal disputes	Other provisions
Balance brought forward	8,571	5,953	2,408	2,953
Provisions for the period from the income statement	1,418	1,538	49	115
Interest effects	212	38	46	–
Reclassified to/from other provision	–	-8	–	–
Revaluations	1,015	-17	–	-3
Provisions used	-39	-1,201	-6	-50
Provisions reversed	-21	-193	-135	-544
Assets held for sale	-61	–	–	–
Translation differences	-496	-221	-72	-32
Balance carried forward	**10,599**	**5,889**	**2,290**	**2,439**

Provisions for future expenses 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 expenses due to ongoing legal disputes and actions.

Other provisions
Other provisions include, among others, provisions for onerous contracts, restructuring and guarantee commitments.

Future expenses 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	4,762	1,490	2,548	1,722	2,165	**12,687**
6–10 years	7,316	2,794	2,047	550	233	**12,940**
11–20 years	4,588	5,010	228	–	–	**9,826**
Beyond 20 years	–	900	40	–	–	**940**
Total	**16,666**	**10,194**	**4,863**	**2,272**	**2,398**	**36,393**

Payments of future expenses 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 1,994 million (2,134), SEK 1,599 million (1,706) falls due after more than five years. Of the total liabilities, SEK 1,673 million (1,862) pertains to deferred income and SEK 321 million (272) to other liabilities.

Note 33 Trade payables and other liabilities

	2020	2019
Accounts payable - trade	16,571	17,049
Liabilities to associated companies	360	86
Other liabilities	7,981	10,674
Total	**24,912**	**27,809**

Note 34 Advance payments received

	2020	2019
Margin calls received, energy trading	5,561	1,391
Other advance payments	233	186
Total	**5,794**	**1,577**

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 while margin calls received within financing activities are recognised on the balance sheet as Current interest-bearing liabilities (Note 29 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives) and are thereby recognised in the statement of cash flows recognised as cash flows from financing activities.

Note 35 Accrued expenses and deferred income

	2020	2019
Accrued personnel-related costs	2,577	2,898
Accrued expenses, CO_2 emission allowances	2,972	5,167
Accrued nuclear power-related fees and taxes	289	377
Accrued interest expense	1,620	1,795
Other accrued expenses	3,353	3,739
Deferred income and accrued expenses, electricity	3,397	2,739
Other deferred income	350	383
Total	**14,558**	**17,098**

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 64–73 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.

	2020		2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	5,529	5,563	5,537	5,566
Short-term investments	4,190	4,190	2,852	2,852
Financial liabilities at amortised cost				
Hybrid Capital, non-current interest-bearing liability	19,304	21,002	20,164	21,671
Other non-current interest-bearing liabilities	49,091	55,094	52,405	58,469
Current interest-bearing liabilities	36,380	37,188	25,058	25,066

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 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**

Assets 31 December 2019

				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	5,774	–	5,774	2,124	3,537	113
Derivatives, commodity contracts	63,998	53,933	10,065	–	1,176	8,889
Total	**69,772**	**53,933**	**15,839**	**2,124**	**4,713**	**9,002**
Derivatives, not subject to offsetting	2,029	–	2,029	–	–	2,029
Total derivative assets			**17,868**			**11,031**

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**

Liabilities 31 December 2019

				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	4,113	–	4,113	2,124	2,015	-26
Derivatives, commodity contracts	68,470	53,933	14,537	–	3,510	11,027
Total	**72,583**	**53,933**	**18,650**	**2,124**	**5,525**	**11,001**
Derivatives, not subject to offsetting	2,884	–	2,884	–	–	2,884
Total derivative liabilities			**21,534**			**13,885**

[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 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**

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2019

	Level 1	Level 2	Level 3	Total
Assets				
Share in the Swedish Nuclear Waste Fund	45,691	–	–	**45,691**
Derivative assets	–	17,490	377	**17,867**
Short-term investments, cash equivalents, other shares and participations	15,870	8,430	–	**24,300**
Total assets	**61,561**	**25,920**	**377**	**87,858**
Liabilities				
Derivative liabilities	–	21,514	20	**21,534**
Total liabilities	**–**	**21,514**	**20**	**21,534**

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 2020 of +/–10% would change the fair value of Vattenfall's electricity and fuel derivatives by +/– SEK 939 million (+/–352) in other comprehensive income (hedge-accounted derivatives) and +/– SEK 1,494 million (+/–793) 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 2020 has been calculated at SEK 500 million (357) 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 23 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:

	2020			2019		
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	8,278	2,207	-16	-258	2,354	-107
Financial assets measured at amortised cost	26	–	–	26	–	–
Financial liabilities at fair value through profit or loss	185	–	-44	124	76	–
Financial liabilities measured at amortised cost	805	–	-2,870	-380	–	-2,791
Total	**9,294**	**2,207**	**-2,930**	**-488**	**2,430**	**-2,898**

[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	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Financial contracts	612	850	4,841	4,393	**5,453**	**5,243**	327	533	**5,780**	**5,776**
Commodity and commodity-related contracts	4,014	2,599	-18	-54	**3,996**	**2,545**	9,635	9,547	**13,631**	**12,092**
Total	**4,626**	**3,449**	**4,823**	**4,339**	**9,449**	**7,788**	**9,962**	**10,080**	**19,411**	**17,868**

Derivative liabilities

	Non-current portion, maturity 1–5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Financial contracts	1,205	1,032	2,437	2,185	**3,642**	**3,217**	1,328	896	**4,970**	**4,113**
Commodity and commodity-related contracts	2,942	2,213	1,340	2,403	**4,282**	**4,616**	7,573	12,805	**11,855**	**17,421**
Total	**4,147**	**3,245**	**3,777**	**4,588**	**7,924**	**7,833**	**8,901**	**13,701**	**16,825**	**21,534**

Note 37 Specifications of the cash flow statement

Other, including non-cash items

	2020	**2019**
Undistributed results from participation in associated companies	-30	-255
Unrealised foreign exchange gains/losses	-199	-28
Unrealised changes in values related to derivatives	-4,723	1,669
Changes in the Swedish Nuclear Waste Fund	-394	-1,258
Changes in provisions	-274	-223
Other	-457	280
Total	**-6,077**	**185**

Dividends received totalled SEK 211 million (136).

Other investments in non-current assets

	2020	**2019**
Investments in intangible assets: non-current, including advance payments	-893	-1,031
Investments in property, plant and equipment, including advance payments	-20,591	-25,304
Total	**-21,484**	**-26,335**

Divestments

	2020	**2019**
Divestments of shares and participations	536	6,703
Divestments of intangible assets: non-current	1	4
Divestments of property, plant and equipment	700	745
Total	**1,237**	**7,452**

Note 38 Specifications of equity

Share capital

As of 31 December 2020 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:

	2020		2019	
	Cash flow	**Income statement**	**Cash flow**	**Income statement**
Within 1 year	2,210	2,482	-1,668	-2,663
Between 1–5 years	1,106	1,678	-314	-406
Beyond 5 years	215	215	–	–
Total	**3,531**	**4,375**	**-1,982**	**-3,069**
Other	-727	–	-611	–
Total	**2,804**	**4,375**	**-2,593**	**-3,069**

The change in the reserve for hedges relating to Cash flow hedges – dissolved against income statement amounted to SEK -4,309 million (5,641), of which SEK -4,393 million (5,597) 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	2020	2019	2020	2019	2020	2019	2020	2019
EUR	59,794	62,331	24,464	25,213	35,330	37,118	35,567	41,806
DKK	5,847	5,781	–	–	5,847	5,781	6,014	4,863
GBP	12,694	13,200	4,431	4,826	8,263	8,374	8,310	7,978
Total	**78,335**	**81,312**	**28,895**	**30,039**	**49,440**	**51,273**	**49,891**	**54,647**

Note 39 Collateral

	2020	2019
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	160	199
Total	**7,455**	**7,494**

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 collateral to counterparties for the negative fair value of derivative positions. As per 31 December 2020 this collateral amounted to SEK 661 million (SEK 3,522 million) for energy trading and SEK 3,343 million (SEK 2,004 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 collateral 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 collateral to Vattenfall. Security received as per 31 December 2020 amounted to SEK 5,561 million (SEK 1,391 million) for energy trading and SEK 4,081 million (3,706) 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 2020, such compensation deliveries amounted to 0.9 TWh (0.8), for a value of approximately SEK 140 million (326).

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 2020 totalled 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 2020 is as follows:

	Share %	Total liabilities	Of which reported in Vattenfall's consolidated statements
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	66.7	11,939	11,939
Kernkraftwerk Krümmel GmbH & Co. oHG	50.0	16,466	8,233
Kernkraftwerk Stade GmbH & Co. oHG	33.3	3,133	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	20.0	19,813	–

During 2019 and 2020, Nuclear Powerplant, Kernkraftwerk Krümmel GmbH & Co. OHG, in which Vattenfall has a 50% shareholding, sold production rights to the other part-owner PreussenElektra GmbH. Vattenfall's share of the sales price amounted to SEK 4.1 billion on an accumulated basis as per year-end 2020, recognised as income during 2019 and 2020. On top of this, additional production rights were sold in January 2021 to PreussenElektra GmbH, where Vattenfall's share of the sales price is SEK 1.4 billion. The transactions are subject to a court proceeding initiated by PreussenElektra. In the event the judicial review entails a negative outcome for Vattenfall, a repayment may need to be made, which will affect Vattenfall's profit. However, as mentioned in Note 45 Events after Balance Sheet Date, on 5th of March 2021 the German government announced the cornerstones of an understanding with E.ON, EnBW, RWE and Vattenfall to implement the rulings of the Federal Constitutional Court on the nuclear phase-out. If this agreement becomes effective, the previous sales of production rights of the nuclear power plant Krümmel will be reversed but Vattenfall will get a financial compensation from the German government for its share in the production rights of Krümmel that exceeds the price which is to be repaid.

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 11,9614), corresponding to SEK 11,961 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.

In 2009 Vattenfall AB, together with its subsidiary the Swedish Nuclear Fuel and Waste Management Company (SKB) and the other part-owners of that company, signed a long-term co-operation agreement with the Östhammar and Oskarshamn municipalities. The agreement covers the period 2010 to 2030 and regulates development efforts in association with the implementation of the Swedish nuclear waste programme. Through development initiatives in areas such as training, enterprise and infrastructure, over time the parties will generate value-added worth SEK 1,500 million to SEK 2,000 million. The parties are to finance the development efforts in proportion to their ownership interests. The Vattenfall Group's ownership interest is 56%. Implementation of the efforts is being carried out across two periods: a period before all necessary permits have been received (Period 1), and a period during implementation and operation of the facilities (Period 2). As per 31 December 2020 Vattenfall reported a provision of SEK 25 million (34) for its share of Period 1 activities.

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 2020, 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 7,200 MW 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 61 million per 31 December 2020.

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:

	2020			2019		
	Men	Women	Total	Men	Women	Total
Sweden	6,921	2,555	**9,476**	6,722	2,416	**9,138**
Denmark	283	85	**368**	253	77	**330**
Germany	4,441	1,312	**5,753**	4,569	1,334	**5,903**
Netherlands	2,633	911	**3,544**	2,647	894	**3,541**
UK	221	105	**326**	343	181	**524**
Other countries	277	115	**392**	281	98	**379**
Total	**14,776**	**5,083**	**19,859**	**14,815**	**5,000**	**19,815**

Average number of employees during the year, full-time equivalents:

	2020			2019		
	Men	Women	Total	Men	Women	Total
Sweden	6,851	2,486	**9,337**	6,634	2,360	**8,994**
Denmark	269	82	**351**	241	69	**310**
Germany	4,488	1,325	**5,813**	4,931	1,389	**6,320**
Netherlands	2,647	900	**3,547**	2,644	881	**3,525**
UK	272	135	**407**	338	164	**502**
Other countries	279	107	**386**	258	88	**346**
Total	**14,806**	**5,035**	**19,841**	**15,046**	**4,951**	**19,997**

Personnel costs:

	2020	2019
Salaries and other remuneration	13,984	14,797
Social security costs[1]	5,551	5,452
Total	**19,535**	**20,249**

[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

	2020			2019		
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	835	–	–	821	–	–
Fredrik Arp, board member (until April 28, 2020)	156	–	–	454	–	–
Viktoria Bergman, board member	416	–	–	410	–	–
Håkan Erixon, board member	445	–	–	438	–	–
Tomas Kåberger, board member	445	–	–	438	–	–
Jenny Lahrin, board member	–	1	–	–	–	–
Åsa Söderström Jerring, board member	430	–	–	418	–	–
Fredrik Rystedt, board member	461	–	–	438	–	–
Ann Carlsson	415	–	–	300	–	–
Mats Granryd (from April 28, 2020)	300	–	–	–	–	–
Total, Board of Directors	**3,903**	**1**	**–**	**3,717**	**–**	**–**

	2020			2019		
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						
Magnus Hall, President and CEO (until October 31st, 2020)[1]	15,716	68	4,643	15,818	73	4,643
Anna Borg, CFO (until October 31st, 2020) and President and CEO (from November 1st, 2020)	7,848	90	2,491	6,712	90	2,060
Kerstin Ahlfont, CFO (from November 1st, 2020) Head of HR Staff Function (until October 31st, 2020)	4,823	22	1,426	4,400	24	1,300
Torbjörn Wahlborg, Head of Generation Business Area	7,411	72	2,206	7,432	72	2,193
Tuomo Hatakka, Head of Heat Business Area (until Novmeber 30th, 2020)[2]	13,681	96	2,882	13,783	97	2,903
Ulrika Jardfelt, Head of Heat Business Area (from December 1st, 2020)	512	5	154	–	–	–
Gunnar Groebler, Head of Wind Business Area	6,987	127	1,397	6,704	128	1,284
Anne Gynnerstedt, Head of Legal & CEO Office Staff Function and Secretary to the Board of Directors	5,119	67	1,476	5,249	70	1,467
Martijn Hagens, Head of Customers & Solutions Business Area	7,876	42	1,323	7,538	39	1,250
Niek den Hollander, Head of Business Area Markets (until May 31st, 2020)	3,117	59	561	7,538	1,939[3]	1,344
Andreas Regnell, Head of Strategic Development Staff Function	4,686	78	1,389	4,665	79	1,381
Karin Lepasoon, Head of Communication (until October 31st, 2020)	4,411	51	1,121	4,518	63	1,345
Other senior executives						
Björn Linde, Head of Business Unit Nuclear Generation	3,600	90	1,071	3,423	91	1,010
Annika Viklund, Head of Distribution Business Area	5,190	39	1,513	5,419	40	1,504
Total Executive Group Management and senior executives	**90,977**	**906**	**23,653**	**93,199**	**2,805**	**23,684**
Total Board of Directors, Executive Group Management and other senior executives	**94,880**	**907**	**23,653**	**96,916**	**2,805**	**23,684**

[1] Magnus Hall was formally employed and paid a salary through 20 January 2021.

[2] Toumo Hatakka was formally employed and paid a salary through 31 December 2020.

[3] Of this amount, SEK 1,795 thousand pertained to payment of variable remuneration, received in 2019, related to a previous position at Vattenfall.

Board of Directors

The Annual General Meeting on 28 April 2020 resolved in favour of unchanged fees, entailing that directors' fees for the period until the end of the next Annual General Meeting shall amount to SEK 790 thousand for the Chairman of the Board and SEK 370 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 99 thousand shall be paid to committee chair and SEK 75 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 74–89.

President and Chief Executive Officer
Magnus Hall, who was President and CEO through 31 October 2020, received a total salary of SEK 15,716 thousand in 2020. The value of other benefits in 2020 amounted to SEK 68 thousand and pertained to an annual rail pass with SJ and health insurance. Magnus Hall's pension is a defined contribution solution. Premiums paid in 2020 for Magnus Hall totalled SEK 4,643 thousand, which corresponds to 30% of 2020 salary, excluding benefits.

Anna Borg, who took office as President and CEO on 1 November 2020, received a salary of SEK 7,848 thousand in 2020, of which SEK 2,639 thousand for the time during which she served as President and CEO. The value of other benefits in 2020 amounted to SEK 90 thousand, of which SEK 15 thousand for time during which she served as President and CEO, and pertained to a car benefit and health insurance. Anna Borg's pension is a defined contribution solution. Premiums paid in 2020 totalled SEK 2,491 thousand for the full year, of SEK 773 thousand pertains to the time during which she served as President and CEO.

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 2020, including the value of company cars and other benefits, was SEK 59,243 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 2020, including the value of company cars and other benefits, was SEK 8,918 thousand.

Retirement benefits
Kerstin Ahlfont, Torbjörn Wahlborg, Tuomo Hatakka, Ulrika Jardfelt, Gunnar Groebler, Anne Gynnerstedt, Niek den Hollander, Andreas Regnell, Karin Lepasoon, 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 2020	Payment 2019
Type of programme:		
Profit-sharing	204,087[2]	97,833
Short-term incentive programmes	293,928[2]	280,171
Long-term incentive programmes	76,854[3]	37,914

[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.

[2] The difference between the amounts paid out in 2020 and 2019 is due to target achievement of 80% on the Group Scorecard, compared with 20% in the preceding year.

[3] During 2020, payment was made for LTI 2018 and LTI 2019. In the performance year 2019, a higher than expected trading result was achieved.

Note 43 Gender distribution among senior executives

	Women, %		Men, %	
	2020	2019	2020	2019
Gender distribution among board members	33	33	67	67
Gender distribution among other senior executives	56	36	44	64

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 2020 and associated receivables and liabilities as per 31 December 2020 are described below.

Kernkraftwerk Brokdorf GmbH & Co. oHG
This is a nuclear power plant from which Vattenfall purchases electricity. Purchases amounted to SEK 1,056 million (655). Operating revenue from the company amounted to SEK 0 million (0). Vattenfall's interest expense to the company amounted to SEK 6 million (4). Loan liabilities amounted to SEK 472 million (449).

GASAG Berliner Gaswerke AG
The company sells, distributes and stores natural gas in the Berlin area. Operating revenue from the company amounted to SEK 403 million (300) and purchases from the company totalled SEK 18 million (20). Trade liabilities amounted to SEK 0 million (–8). Vattenfall's part of contingent liabilities of the company amounted to SEK 44 million (34).

Note 45 Events after the balance sheet date
On 5th of March 2021, the German government announced the cornerstones of an understanding with E.ON, EnBW, RWE and Vattenfall to implement the rulings of the Federal Constitutional Court on the nuclear phase-out. Under this understanding, Vattenfall will receive compensation of EUR 1,425 million from the German Federal Government and EUR 181 million from E.ON for further residual power sales, thus resulting in a compensation of EUR 1,606. The previous residual power volume sales of the nuclear power plant Krümmel will be reversed and repaid (Vattenfall share EUR 543). All related legal proceedings (including the arbitration procedure) will be suspended and terminated. The key points of the understanding still have to be transferred into an agreement and accompanying legislation that requires the approval of the Bundestag. Given that several steps still needs to be taken before the intended agreement becomes effective it has no impact on the financial situation as per 31 December 2020.

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.

Parent Company Vattenfall AB

Condensed review of 2020
A condensed income statement and balance sheet for the Parent Company are presented below.

- Net sales amounted to SEK 41,969 (49,807).
- Profit before appropriations and income taxes was SEK 11,162 million.
- Lower prices on electricity had a negative effect on earnings, unrealised changes in fair value of energy derivatives impacted positively. Dividend received from subsidiaries amounted to SEK 703 million (8,226). Lower financial expenses due to exchange rate effects impacted earnings positively.
- The balance sheet total was SEK 305,916 million (282,662).
- Investments during the period amounted to SEK 3,006 million (11,917), whereof SEK 526 million of this year's amount pertains to group internal asset transactions and SEK 776 million pertains to group internal share transactions, SEK 10,500 of last year's amount pertains to group internal share transactions.
- Cash and cash equivalents, and Short-term investments amounted to SEK 53,043 million (28,573). The decrease pertains mainly to dividends, the repayment of loans from subsidiaries and changes in the company's debt portfolio.
- Dividend paid to the owner of SEK 3,623 million (2,000).

Parent Company income statement

Amounts in SEK million, 1 January–31 December	Note	2020	2019
Net sales	5, 6	41,969	49,807
Cost of purchases	6	-23,800	-28,256
Other external expenses		-4,744	-3,697
Personnel expenses		-2,116	-2,083
Other operating incomes and expenses, net		170	160
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	14, 15	**11,479**	**15,931**
Depreciation, amortisation and impairments	7	-596	-525
Operating profit (EBIT)		**10,883**	**15,406**
Result from participations in subsidiaries	8	408	8,226
Result from participations in associated companies	9	–	1
Other financial income	10	2,593	1,592
Other financial expenses	11	-2,722	-4,137
Profit before appropriations and income taxes		**11,162**	**21,088**
Appropriations	12	-394	498
Profit before income taxes		**10,768**	**21,586**
Income taxes	13	-2,243	-2,890
Profit for the year		**8,525**	**18,696**

Parent Company statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2020	2019
Profit for the year	8,525	18,696
Total other comprehensive income	–	–
Total comprehensive income for the year	**8,525**	**18,696**

Parent Company balance sheet

Amounts in SEK million	Note	31 December 2020	31 December 2019
Assets			
Non-current assets			
Intangible assets: non-current	16	356	333
Property, plant and equipment	17	6,618	5,273
Shares and participations	18	161,474	160,465
Deferred tax assets	13	313	762
Other non-current receivables	19	69,078	66,195
Total non-current assets		**237,839**	**233,028**
Current assets			
Inventories	20	411	383
Intangible assets: current		38	168
Current receivables	21	14,585	20,510
Short-term investments	22	29,301	21,702
Cash and cash equivalents	23	23,742	6,871
Total current assets		**68,077**	**49,634**
Total assets		**305,916**	**282,662**
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		1,492	1,480
Non-restricted equity			
Retained earnings		61,540	46,479
Profit for the year		8,525	18,696
Total equity		**116,131**	**111,229**
Untaxed reserves	12	**13,342**	**11,598**
Provisions	24	**5,138**	**5,219**
Non-current liabilities			
Hybrid capital	25	19,305	20,167
Other interest-bearing liabilities	25	35,506	40,494
Other noninterest-bearing liabilities	26	12,762	12,148
Total non-current liabilities		**67,573**	**72,809**
Current liabilities			
Other interest-bearing liabilities	25	95,706	70,892
Current tax liabilities	13	122	249
Other noninterest-bearing liabilities	27	7,904	10,666
Total current liabilities		**103,732**	**81,807**
Total equity, provisions and liabilities		**305,916**	**282,662**

See also information on Collateral (Note 29), Contingent liabilities (Note 30) and Commitments under consortium agreements (Note 31), in the notes to the Parent Company accounts.

Parent Company cash flow statement

Amounts in SEK million, 1 January–31 December	Note	2020	2019
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		11,479	15,931
Tax paid		-1,921	-836
Interest received		1,549	1,595
Interest paid		-2,477	-2,767
Other, incl. non-cash items	35	-2,281	-5,796
Funds from operations (FFO)		**6,349**	**8,127**
Changes in inventories		-28	-114
Changes in operating receivables		2,685	-3,333
Changes in operating liabilities		-3,359	-2,236
Cash flow from changes in operating assets and operating liabilities		**-702**	**-5,683**
Cash flow from operating activities		**5,647**	**2,444**
Investing activities			
Investments in subsidiaries	18	-1,091	-10,510
Investments in associated companies and other shares and participations	18	-245	-23
Other investments in non-current assets		-1,969	-1,384
Total investments		**-3,305**	**-11,917**
Divestments		49	9
Cash flow from investing activities		**-3,256**	**-11,908**
Cash flow before financing activities		**2,391**	**-9,464**
Financing activities			
Changes in short-term investments		-7,599	427
Loans raised		65,964	7,369
Amortisation of other debts		-42,313	-15,545
Dividend paid to owner		-3,623	-2,000
Effect of early termination of swaps related to financing activities		–	-222
Amortisation received from subsidiaries		20	–
Dividend received from subsidiaries		703	8,249
Group contributions received/paid		1,328	388
Cash flow from financing activities		**14,480**	**-1,334**
Cash flow for the year		**16,871**	**-10,798**
Cash and cash equivalents			
Cash and cash equivalents at start of year		6,871	17,669
Cash flow for the year		16,871	-10,798
Cash and cash equivalents at end of year		**23,742**	**6,871**

Parent Company statement of changes in equity

Amount in SEK million	Share capital	Revaluation reserve	Other reserves[1]	Non-restricted equity	Total
Balance brought forward 2019	6,585	37,989[2]	1,340	48,618	**94,532**
Dividend paid to owner	–	–	–	-2,000	**-2,000**
Fund for development costs	–	–	140[3]	-139[3]	**1**
Profit for the year	–	–	–	18,696	**18,696**
Balance carried forward 2019	**6,585**	**37,989**	**1,480**	**65,175**	**111,229**
Dividend paid to owners	–	–	–	-3,623	**-3,623**
Fund for development costs	–	–	12	-12[3]	**–**
Profit for the year	–	–	–	8,525	**8,525**
Balance carried forward 2020	**6,585**	**37,989**	**1,492**	**70,065**	**116,131**

1) Other reserves consist of Statutory reserve SEK 1,286 million (1,286) and Fund for development costs SEK 206 million (195).

2) Pertains to the revaluation of shares in Vattenfall Eldistribution AB. This revaluation is a non-taxable item, and the book value before the revaluation was SEK 11 million.

3) Pertains to the year's capitalised costs less depreciation according to plan for own development work that have been reserved in the Fund for development costs. The capitalised costs are considered to be tax-deductible once the assets they pertain to become operational and depreciation according to plan is made.

As of 31 December 2020 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 2020 Annual Report was approved in accordance with a decision by the Board of directors on 23 March 2021. 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 2021.

Note 2 Proposed distribution of profits

The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 70,065,099,040. 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	4,000,000,000
To be carried forward	66,065,099,040
Total	**70,065,099,040**

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
No changed accounting standards and interpretations valid from 2020 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.

Presentation of Parent Company's income statement
See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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.

Significant accounting policies applicable as from 1 January 2020
As from 2020, 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	2020	2019
Nordic	30,758	34,397
Germany	10,670	14,947
Netherlands	241	443
Other countries	300	20
Total	**41,969**	**49,807**

Net sales for products and services	2020	2019
Sales of electricity	35,829	43,707
Sale of heat and steam	1,818	1,894
Service and consulting	422	1,999
Total Revenues from contracts with customers	**38,069**	**47,600**
Other Revenues	3,900	2,207
Total	**41,969**	**49,807**

Contract balances	2020	2019
Contract assets	–	–
– of which, released as cost from opening balance during the year	–	–
Contract liabilities	235	225
– of which, released as revenue from opening balance during the year	-14	-13

Note 6 Intra Group transactions

Of the Parent Company's total income from sales and total purchase costs, transactions with subsidiaries account for 33% (37%) of sales and 72% (90%) of purchase costs.

Note 7 Impairment losses

No impairments were recognised of intangible non-current assets or of property, plant and equipment 2020 or 2019 financial years.

Note 8 Result from participations in subsidiaries

	2020	2019
Dividends	703	8,249
Impairment losses	-296[1]	-15
Capital gains/losses on divestments	1	–
Reversed debt to subsidiaries	–	-8
Total	**408**	**8,226**

[1] The impairment losses pertain to liquidation within Vattenfall UK Sales Ltd.

Note 9 Result from participations in associated companies

	2020	2019
Dividends	–	1
Total	**–**	**1**

Note 10 Other financial income

	2020	2019
Interest income from subsidiaries	1,395	1,464
Other interest income	228	128
Foreign exchange gains and losses, net	970	–
Total	**2,593**	**1,592**

Note 11 Other financial expenses

	2020	2019
Interest expenses to subsidiaries	21	27
Other interest expenses	2,701	2,772
Foreign exchange gains and losses, net	–	1,338
Total	**2,722**	**4,137**

Note 12 Appropriations and untaxed reserves

Appropriations

	2020	2019
Group contributions paid	-1,672	-2,392
Group contributions received	3,022	2,735
Provision/Dissolution of untaxed reserves, net	-1,744	155
Total	**-394**	**498**

Untaxed reserves

	Balance brought forward	Provision (+)/ dissolution (-)	Balance carried forward
Accelerated depreciation	2,240	-94	2,146
Tax allocation reserves for 2015-2021 tax years	9,358	1,838	11,196
Total	**11,598**	**1,744**	**13,342**

Note 13 Income taxes

The reported tax income/tax expense is broken down as follows:

	2020	2019
Current tax	-1,794	-1,730
Deferred tax	-449	-1,160
Total	**-2,243**	**-2,890**

The tax effect of the standard interest on tax allocation reserves amounts to SEK 10 million (8).

The difference between the nominal Swedish tax rate and the effective tax rate is explained as follows:

	2020		2019	
	%		%	
Profit before tax		10,767		21,586
Swedish income tax rate at 31 December	21.4	-2,304	21.4	-4,620
Current tax adjustment attributable to previous years	0.1	-11	0.0	1
Capital gains, non-taxable	0.0	–	0.0	–
Non-taxable income	-1.4	150	-8.2	1,766
Impairment losses, non-deductible	0.6	-63	0.0	-3
Interest expence, non-deductible	0.1	-11	0.1	-15
Other non-deductible expenses	0.1	-13	0.1	-23
Tax rate change	-0.1	9	0.0	4
Effective tax rate in Sweden	**20.8**	**-2,243**	**13.4**	**-2,890**

Balance sheet reconciliation – Deferred tax:

	Balance brought forward		Changes via income statement		Balance carried forward	
	2020	2019	2020	2019	2020	2019
Non-current assets	3	-108	-1	111	2	3
Current assets	-1,465	-1,235	-35	-230	-1,500	-1,465
Provisions	91	111	-5	-20	86	91
Other non-current liabilities	630	971	-177	-341	453	630
Current liabilities	1,503	2,182	-231	-679	1,272	1,503
Total	**762**	**1,921**	**-449**	**-1,159**	**313**	**762**

Note 14 Leasing

Leasing expenses

Future payment commitments, as of 31 December 2020 for leasing contracts and rental contracts are broken down as follows:

	Finance leases	Operating leases
2021	–	12
2022-2025	–	10
2026 and beyond	–	–
Total	**–**	**22**

Leasing expenses for the year amounted to SEK 624 million (83).

Note 15 Auditors' fees

Annual audit assignment:

Annual audit assignment	2020	2019
EY	8	7
Total	**8**	**7**

Auditing activities besides the annual audit assignment	2020	2019
EY	1	2
Total	**1**	**2**

Note 16 Intangible assets: non-current

	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**
Divestments/disposals	-44	-293	–	**-337**
Accumulated cost carried forward	**569**	**851**	**–**	**1,420**
Amortisation according to plan				
Amortisation brought forward	-198	-928	–	**-1,126**
Amortisation for the year	-9	-106	–	**-115**
Divestments/disposals	–	293	–	**293**
Accumulated amortisation according to plan carried forward	**-207**	**-741**	**–**	**-948**
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**

	2019			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	377	987	–	**1,364**
Investments	160	65	–	**225**
Divestments/disposals	-3	-11	–	**-14**
Accumulated cost carried forward	**534**	**1,041**	**–**	**1,575**
Amortisation according to plan				
Amortisation brought forward	-198	-858	–	**-1,056**
Amortisation for the year	-4	-80	–	**-84**
Divestments/disposals	3	11	–	**14**
Accumulated amortisation according to plan carried forward	**-199**	**-927**	**–**	**-1,126**
Impairment losses				
Impairment losses brought forward	-116	–	–	**-116**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**219**	**114**	**–**	**333**

At 31 December 2020 there were no contractual commitments for the acquisition of intangible non-current assets.

Note 17 Property, plant and equipment

	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**
Reclassifications	–	–	–	–	**–**
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**

	2019				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,193	8,377	442	1,173	**11,185**
Investments	–	46	127	986	**1,159**
Transfer from construction in progress	31	807	23	-861	**–**
Divestments/disposals	-7	-103	-35	–	**-145**
Accumulated cost carried forward	**1,217**	**9,127**	**557**	**1,298**	**12,199**
Depreciation according to plan					
Depreciation brought forward	-724	-5,630	-265	–	**-6,619**
Depreciation for the year	-29	-321	-91	–	**-441**
Divestments/disposals	7	100	30	–	**137**
Accumulated depreciation according to plan carried forward	**-746**	**-5,851**	**-326**	**–**	**-6,923**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Accumulated impairment losses carried forward	**-1**	**-2**	**–**	**–**	**-3**
Residual value according to plan carried forward	**470**	**3,274**	**231**	**1,298**	**5,273**
Accumulated accelerated depreciation	–	-2,239	–	–	**-2,239**
Carrying amount	**470**	**1,035**	**231**	**1,298**	**3,034**

At 31 December 2020 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 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

	2020				2019			
	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	160,083	272	110	**160,465**	149,565	104	110	**149,779**
Investments	5	–	–	**5**	10,510	23	–	**10,533**
Shareholder contributions	1,086	245	–	**1,331**	–	145	–	**145**
New share issue	–	–	–	**–**	23	–	–	**23**
Divestments	–	–	–	**–**	–	–	–	**–**
Profit participations in associated companies	–	-31	–	**-31**	–	–	–	**–**
Liquidation	–	–	–	**–**	–	–	–	**–**
Impairment losses	-296	–	–	**-296**	-15	–	–	**-15**
Balance carried forward	**160,878**	**486**	**110**	**161,474**	**160,083**	**272**	**110**	**160,465**

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

	2020					2019				
	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	60,262	26	6,180	-273	**66,195**	57,309	29	5,324	704	**63,366**
New receivables	2,850	32	–	24	**2,906**	2,588	13	–	67	**2,668**
Payments received	–	-20	–	–	**-20**	-36	-16	–	–	**-52**
Foreign exchange gains/losses	-737	–	–	–	**-737**	401	–	–	–	**401**
Derivative changes	–	–	733[1]	–	**733**	–	–	856[1]	–	**856**
Other changes	–	–	–	1	**1**	–	–	–	-492	**-492**
Reclassification between non-current and current receivables	–	–	–	–	**–**	–	–	–	-552	**-552**
Balance carried forward	**62,375**	**38**	**6,913**	**-248**	**69,078**	**60,262**	**26**	**6,180**	**-273**	**66,195**

[1] Net change and measurement at fair value.

Note 20 Inventories

Accounting policies
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.

Financial information
Inventories consist mainly of biofuels and fossil fuels for heat production.

Note 21 Current receivables

	2020	2019
Advance payments paid	134	132
Accounts receivable - trade	1,047	1,405
Receivables from subsidiaries	9,038	12,881
Receivables from associated companies	–	1
Other receivables	-690	1,355
Derivative assets	2,459	1,448
Prepaid expenses and accrued income	2,597	3,288
Total	**14,585**	**20,510**

Age analysis of current receivables
The collection period is normally 30 days.

	2020			2019		
	Receivables gross	Impaired receivables	Receivables net	Receivables gross	Impaired receivables	Receivables net
Accounts receivable – trade						
Not due	989	5	984	1,348	8	1,340
Past due 1–30 days	29	–	29	58	1	57
Past due 31–90 days	8	–	8	4	–	4
Past due >90 days	51	25	26	31	27	4
Total	**1,077**	**30**	**1,047**	**1,441**	**36**	**1,405**

Receivables from subsidiaries, Receivables from associated companies, and Other receivables include no receivables that are due for payment.

Note 22 Short-term investments

	2020	2019
Fixed-income investments	25,958	19,698
Margin calls, financing activities[1]	3,343	2,004
Total	**29,301**	**21,702**

[1] With respect to pledged assets, see Note 29 to the Parent Company accounts, Collateral.

Note 23 Cash and cash equivalents

	2020	2019
Cash and bank balances	12,094	2,603
Cash equivalents	11,648	4,268
Total	**23,742**	**6,871**

Note 24 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

	2020	2019
Pension provisions[1,2]	4,236	4,262
Personnel-related provisions for non-pension purposes	332	364
Provisions for environmental measures/ undertakings	20	41
Other provisions	550	552
Total	**5,138**	**5,219**
[1] Of which, information registered by PRI	3,866	3,875
[2] Of which, covered by credit insurance with FPG/PRI	4,233	4,258

The Parent Company owns, together with Svafo Ågestaverket, a nuclear power station that previously produced district heating in southern Stockholm. Vattenfall is settling its obligation for dismantling, restoration and final storage through payments to the Swedish Nuclear Waste Fund. Vattenfall's payments to the Swedish Nuclear Waste Fund have been expensed in the Parent Company's accounts and are therefore not recognised as a liability for the obligation nor a balance with the Swedish Nuclear Waste Fund in the Parent Company. See also Note 20, Share in Nuclear Waste Fund and Note 31, Other interest-bearing provisions in the notes to the consolidated accounts.

Note 25 Other interest-bearing liabilities

	Non-current portion maturity 1–5 years		Non-current portion maturity >5 years		Total non-current portion		Current portion		Total	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Bond issues	11,452	18,077	17,784	18,426	**29,236**	**36,503**	16,585	5,366	**45,821**	**41,869**
Commercial paper	–	–	–	–	**–**	**–**	12,414	12,270	**12,414**	**12,270**
Liabilities to credit institutions	3,000	–	–	–	**3,000**	**–**	2,007	1,427	**5,007**	**1,427**
Liabilities to subsidiaries	14	19	–	–	**14**	**19**	57,503	45,162	**57,517**	**45,181**
Derivative debts	3,073	3,824	183	148	**3,256**	**3,972**	3,333	2,746	**6,589**	**6,718**
Other liabilities (margin calls within financing activities)[1]	–	–	–	–	**–**	**–**	3,864	3,921	**3,864**	**3,921**
Total interest-bearing liabilities excluding Hybrid capital	**17,539**	**21,920**	**17,967**	**18,574**	**35,506**	**40,494**	**95,706**	**70,892**	**131,212**	**111,386**
Hybrid capital[2]	9,271	9,720	10,034	10,447	**19,305**	**20,167**	–	–	**19,305**	**20,167**
Total interest-bearing liabilities	**26,810**	**31,640**	**28,001**	**29,021**	**54,811**	**60,661**	**95,706**	**70,892**	**150,517**	**131,553**

1) With respect to pledged assets, see Note 29 to the Parent Company accounts, Collateral.

2) See Note 29 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives.

Note 26 Other noninterest-bearing liabilities (non-current)

	2020	2019
Liabilities to subsidiaries	12,488	11,871
Contract debts	235	225
Other liabilities	39	52
Total	**12,762**	**12,148**

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 10 million (8) falls due after more than five years.

Note 27 Other noninterest-bearing liabilities (current)

	2020	2019
Accounts payable – trade	905	488
Liabilities to subsidiaries	3,318	5,625
Other liabilities	162	1,527
Accrued expenses and deferred income	3,519	3,026
Total	**7,904**	**10,666**

Breakdown of accrued expenses and deferred income:

	2020	2019
Accrued personnel-related costs	337	358
Accrued interest expenses	1,322	1,399
Other accrued expenses	1,726	844
Deferred income and accrued expenses, electricity	111	388
Other deferred income	23	37
Total	**3,519**	**3,026**

Note 28 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.

	2020		2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	69,078	69,548	66,195	66,916
Short-term investments	29,301	29,301	21,702	21,702
Total	**98,379**	**98,849**	**87,897**	**88,618**
Financial liabilities at amortised cost				
Hybrid capital	19,305	21,002	20,167	21,671
Other non-current interest-bearing liabilities	35,506	35,657	40,494	43,205
Current interest-bearing liabilities	95,706	96,297	70,892	70,899
Total	**150,517**	**152,956**	**131,553**	**135,775**

Note 29 Collateral

Collateral and pledged assets (given)

	2020	2019
Shares pledged to the Swedish insurance company PRI Pensionsgaranti as security for credit insurance for pension obligations in Vattenfall's Swedish operations[2]	7,295	7,295
Pledged security to counterparties (derivative market)[1]	3,343	2,004
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	**10,646**	**9,299**

Collateral and pledged assets (received)

	2020	2019
Pledged security from counterparties (derivative market)[1]	4,081	3,706

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 to PRI Pensionsgaranti contains of shares of Vattenfall Eldistribution AB (51%).

Note 30 Contingent liabilities

Guarantees pertaining to:

	2020	2019
Swedish Nuclear Waste Fund	23,935	23,935
Contractor guarantees provided by order of subsidiaries	31,725	9,462
Guarantees provided as collateral for the subsidiaries within Vattenfall Energy Trading's energy trading	10,832	9,307
Other contingent liabilities	12,289	13,466
Total	**78,781**	**56,170**

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 21 December 2017, the Swedish government set new guarantee amounts for the years 2018-2020. 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 23,935 million (15,448). Two types of guarantees will be issued. The first guarantee – so-called Financing Security, totaling SEK 15,892 million (10,633) – 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 (4,815) – 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%. 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 31,725 million (9,462), mainly attributable to obligations in the Wind Business Area. which increased significantly in 2020.

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 44,697 million (43,425) for energy trading conducted by the subsidiary Vattenfall Energy Trading. As per 31 December 2020 a total of SEK 10,832 million (9,307) of these guarantees had been utilised, which is included in the reported amount of contingent liabilities.

Other contingent liabilities
Other contingent liabilities SEK 12,289 million (13,466) 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 1,460 million (1,431).

In addition to the contingent liabilities mentioned above, Vattenfall has the following significant commitments
In 2009 Vattenfall AB, together with its subsidiary SKB (the Swedish Nuclear Fuel and Waste Management Company) and the other part-owners of that company, signed a long-term cooperation agreement with the Östhammar and Oskarshamn municipalities. The agreement covers the period 2010 to approximately 2031 and regulates development efforts in association with the implementation of the Swedish nuclear waste programme. Through development initiatives in areas such as training, enterprise and infrastructure, over time the parties will generate value-added worth SEK 1,500 million to SEK 2,000 million. The parties are to finance the development efforts in proportion to their ownership interests. The Vattenfall Group's ownership interest is 56%. Implementation of the efforts is being carried out across two periods: a period before all necessary permits have been received (Period 1), and a period during implementation and operation of the facilities (Period 2). In 2020 Vattenfall reported a provision of SEK 25 million (34) for its share of Period 1 activities.

Atomic liability in Sweden is strict and limited to 1,000 million Special Drawing Rights (SDRs) (rate 11,9614), corresponding to about SEK 11,961 million (3,866), which means that the companies that are owners of nuclear power plants are only liable for damage to the surrounding environment up to this amount.

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 2020, 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.

Note 31 Commitments under consortium agreements

See note 41 to the consolidated accounts, Commitments under consortium agreements.

Note 32 Average number of employees and personnel costs

Average number of employees

	2020			2019		
	Men	Women	Total	Men	Women	Total
Sweden	1,160	583	**1,743**	1,127	556	**1,683**

Personnel costs

	2020	2019
Salaries and other remuneration	1,297	1,256
Social security expenses	841	847
– of which pension costs[1]	297	289
Total	**2,138**	**2,103**

1) SEK 4.6 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:

	2020			2019		
	Senior executives[1]	Other employees	Total	Senior executives[1]	Other employees	Total
Sweden	70	1,227	**1,297**	68	1,188	**1,256**

1) Senior executives comprise board members and deputy board members as well as the President and the Executive vice president. The term also refers to former board members and deputy board members, former Presidents and Executive Vice Presidents, and other senior executives who are members of the Executive Group Management.

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 33 Gender distribution among senior executives

See Note 43 to the consolidated accounts, Gender distribution among senior executives.

Note 34 Related party disclosures

See Note 44 to the consolidated accounts, Related party disclosures.

Note 35 Specification of the cash flow statement

Other, including non-cash items

	2020	2019
Realised foreign exchange gains/losses	-2,635	1,177
Changes in provisions	-81	-37
Other	435[1]	-6,936[1]
Total	**-2,281**	**-5,796**

[1] Including the value of unrealiased derivatives in operating profit before depreciation, amortisation and impairment losses (EBITDA), totalling SEK -564 million (-6,820).

Financial liabilities

	Current	Non-current
Financial liabilities at 1 January 2019	**86,207**	**59,007**
Cashflow	-14,514	5,316
Non-cash effecting currency effects	1,808	874
Other non-cash flow effecting items	-2,609	-4,536
Financial liabilities at 31 December 2019	**70,892**	**60,661**
Cashflow	8,586	14,462
Non-cash effecting currency effects	-3,149	-1,145
Other non-cash flow effecting items	19,377	-19,167
Financial liabilities at 31 December 2020	**95,706**	**54,811**

Note 36 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) except for the corporate governance statement on pages 74–90 for the year 2020. The annual accounts and consolidated accounts of the company are included on pages 4–5, 12–13, 64–150 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 the parent company as of 31 December 2020 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 2020 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 74–90. 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.

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.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions.

Key Audit Matters

Key audit matters of the audit are those matters that, in our professional judgment, 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 matters, the Group
Valuation of Tangible and Intangible assets

Description of the matter	How this matter has been reflected in the audit
In the Group´s statement of financial position as per December 31, 2020 reported value of fixed tangible and intangible assets amounts to SEK 265 644 million, which equals 57,3 % of the Group´s total assets. Of the carrying value, SEK 13 452 million was goodwill. As described in note 9 the Company is making assessments 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 calculated in order to determine whether there is any need for impairment. For goodwill the recoverable amount is calculated at least annually or as soon as there is an indication that an asset has decreased in value. The Company has grouped its assets to the smallest group of assets that generates cash inflows that are largely independent from cash inflows from other assets. Recoverable amount is determined by calculating value in use. In note 9 the main assumptions, such as future prices of electricity, fuel and CO2 emission allowances used when calculating the value in use, are described. Further, in note 9 it is described that the calculation of value in use for cash-generating units with finite useful lives are based on forecasts of the useful life of the respective asset. Cash flow projections for cash-generating units with infinite useful lives are based on the business plan for the coming five years. Cash flows after the five year-period are calculated based on a growth factor of 0–0,5 %. Future cash flows have been discounted to value in use using a discount rate as described in note 9. Goodwill impairment is never reversed. Impairment of other assets is reversed if there has been a significant and lasting change in the assumptions used to calculate the recoverable amount. In 2020, the company wrote-down a total of SEK 12,980 million primarily within Business Area Heat and Wind. No write-down reversals have occurred during the year. Changes in assumptions may have a significant impact on the calculation of value in use which imply that the determination of assumptions is of significant importance to the valuation. Hence, we have assessed the valuation of tangible and intangible assets as a key audit matter in the audit.	In our audit we have evaluated the Company's process to develop and perform impairment tests. We have assessed how cash-generating units, based on established criteria's, are identified and compared to how the Company internally monitors its business. We have involved valuation specialists to assist us in the assessment of the Company's valuation and calculation methods, assessment of reasonableness in used assumptions, sensitivity analysis of changed assumptions, comparisons with historical results and the accuracy in previous forecasts. Each cash-generating units' discount rate and long-term growth have been evaluated through comparisons with other companies within the same industry and current market rates. We have also assessed whether the information disclosed is appropriate

Provision for future expenses of nuclear power operations

Description of the matter	How this matter has been reflected in the audit
In the Group's statement of financial position as per December 31, 2020 the provisions for future expenses of nuclear power operations amounts to SEK 90,910 million. As described in note 31 the provisions pertain to future obligations for handling the decommissioning of the Company's nuclear power plants in Sweden and Germany as well as for handling nuclear waste. The provisions are based on forecasts for future expenditures that cover a period of up to 50 years. These forecasts include assessments with significant uncertainties, such as for expenditures for the disposal of nuclear fuel and radioactive waste as well as for the decommissioning of reactor plants. The estimated expenditures have thus been calculated based on a discount rate. Calculation of future expenses for decommissioning of nuclear power operations include a number of assumptions determined by the Company and changes in these assumptions may have a significant impact on the provision amount. Hence, we have assessed the recognition of provisions for future expenses of nuclear power operations as a key audit matter in the audit.	In our audit we have evaluated the Company's process to calculate the amount of the provisions. We have evaluated the Company's calculation methods, obtained assessments by third-parties, assessed the reasonableness in used assumptions and sensitivity analysis of changed assumptions and performed comparisons with historical results and the accuracy in previous forecasts. The reasonableness of used discount rate has been evaluated through comparisons with other companies within the same industry and current market rates. 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, 6-11, 14–63 and 156–190. The remuneration report for the 2020 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 intends 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 Director's 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.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the annual accounts and consolidated accounts, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of the company's internal control relevant to our audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Board of Directors and the Managing Director.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting in preparing the annual accounts and consolidated accounts. We also draw a conclusion, based on the audit evidence obtained, as to whether any material uncertainty exists related to events or conditions that may cast significant doubt on the company's and the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the annual accounts and consolidated accounts or, if such disclosures are inadequate, to modify our opinion about the annual accounts and consolidated accounts. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause a company and a group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the annual accounts and consolidated accounts, including the disclosures, and whether the annual accounts and consolidated accounts represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient and appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated accounts. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.

We must inform the Board of Directors of, among other matters, the planned scope and timing of the audit. We must also inform of significant audit findings during our audit, including any significant deficiencies in internal control that we identified.

We must also provide the Board of Directors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the Board of Directors, we determine those matters that were of most significance in the audit of the annual accounts and consolidated accounts, including the most important assessed risks for material misstatement, and are therefore the key audit matters. We describe these matters in the auditor's report unless law or regulation precludes disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in the auditor's report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

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 2020 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's 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.

As part of an audit in accordance with generally accepted auditing standards in Sweden, we exercise professional judgment and maintain professional skepticism throughout the audit. The examination of the administration and the proposed appropriations of the company's profit or loss is based primarily on the audit of the accounts. Additional audit procedures performed are based on our professional judgment with starting point in risk and materiality. This means that we focus the examination on such actions, areas and relationships that are material for the operations and where deviations and violations would have particular importance for the company's situation. We examine and test decisions undertaken, support for decisions, actions taken and other circumstances that are relevant to our opinion concerning discharge from liability. As a basis for our opinion on the Board of Directors' proposed appropriations of the company's profit or loss we examined the Board of Directors' reasoned statement and a selection of supporting evidence in order to be able to assess whether the proposal is in accordance with the Companies Act.

The auditor's examination of the corporate governance statement

The Board of Directors is responsible for that the corporate governance statement on pages 74–90 has been prepared in accordance with "The State's Ownership Policy and guidelines for companies with state ownership" ("the Ownership Policy").

Our examination of the corporate governance statement is conducted in accordance with FAR´s auditing standard RevU 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.

Stockholm, 23 March 2021
Ernst & Young AB

Staffan Landén
Authorized Public Accountant

Sustainability notes

Contents

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 target (employee engagement and LTIF) and environmental target (CO_2 emissions and renewables capacity) are given equal weight with the financial targets.

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

Total value creation

Calculating total value creation is a way of describing the full impact of Vattenfall's operations and for improving decision-making by raising awareness of the risks and opportunities related to impacts from social and environmental perspectives. Since 2017 we have been refining our methodology to quantify our full impacts on people and society – both positive and negative – from economic, social, and environmental perspectives. We continuously review our approach as it is increasingly integrated into the company's decision-making processes and influences how we contribute towards various sustainability initiatives, such as the UN's Global Sustainable Development Goals. Value creation decreased from SEK 34.2[1] billion in 2019 to SEK 26.6 billion in 2020.

Economic value

Vattenfall's net economic contribution reported here is equal to the company's profit. See the CEO's message on pages 6–9 for further detail.

Social value

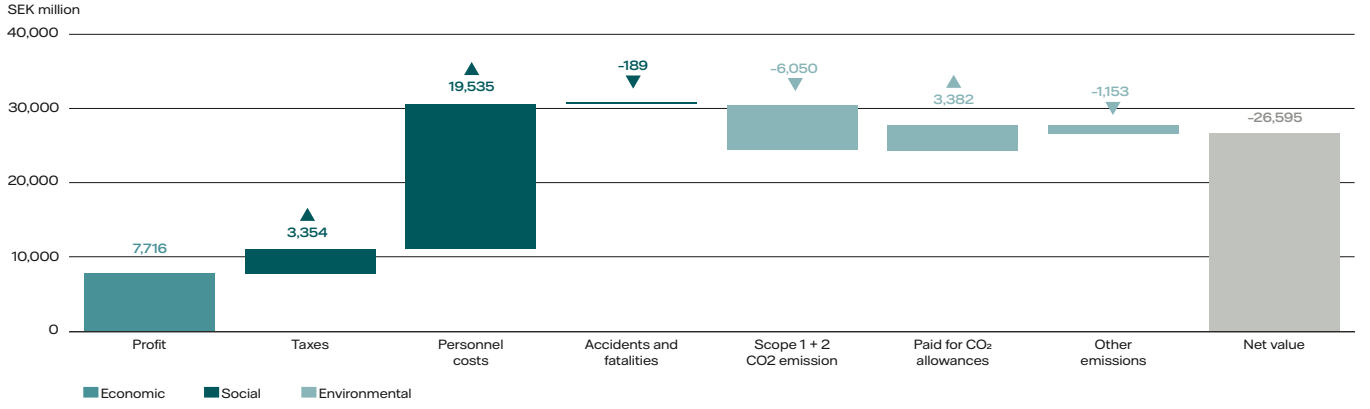
We strive to identify our impacts on people and society, although much of the social value we create – e.g., investments in community improvements – and the costs we incur – e.g., impacts on people's health – can be difficult to quantify. We have included taxes and wages[2] from the financial reporting and have quantified the cost of an employee or contractor involved in an accident. Health costs associated with non-CO_2 emissions are included in the "other emissions" category in the environmental section. Social value generated decreased slightly in 2020. Both personnel costs and taxes paid decreased. Although lost time injuries (LTI)[3] decreased, there were unfortunately two fatalities involving contractors in 2020, leading to thorough investigations to determine the root causes and measures to prevent all such occurrences in the future[4].

Environmental value

As Vattenfall decarbonises on its path to make fossil-free living possible within one generation, the costs associated with our CO_2[5] and other emissions[6] will decrease in tandem. The effects of this will be gradual. Meanwhile, we are implementing best available technologies and ensuring that our power plants emit less than the legal limits for non-CO_2 emissions.

Although we put great focus on our full value chain and have set a science-based target for Scope 3 emissions (see page 159), we have not included them in the value calculation, as we cannot yet accurately represent both value and costs at the Group level. However, we continue to integrate the value creation approach in our projects, leading to reduced environmental impact. See page 167 for more details. The quantification of certain benefits, such as biodiversity or ecosystem restoration, remains under review, as do potential negative impacts including land use, ecosystem alterations and others. Nonetheless, we are taking steps to quantify some of these aspects and strive to have a net-positive impact on biodiversity by 2030, see page 161.

Value creation



[1] The value has been corrected compared with information previously published.
[2] For more information on taxes and wages, see the table on page 170 excluding personnel-related taxes and Note 42 to the consolidated accounts, Number of employees and personnel costs.
[3] LTI: Lost Time Injury. See page 164 for more information.
[4] SEK 1 million per accident and SEK 25.4 million per fatality (based on figures from the Swedish National Traffic Authority).
[5] Typical costs are estimated to be in the range of SEK 200–1,000/ tonne. Ecofys, "Subsidies and costs of EU energy", 2014. SEK 500/ tonne is used as the baseline value.
[6] European Energy Agency, "Revealing the cost of air pollution from industrial facilities in Europe", 2011. Country-specific values applied.

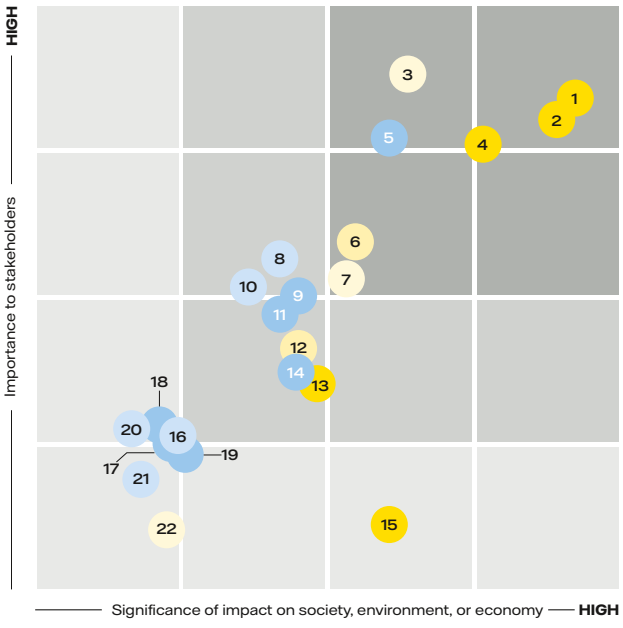
Materiality analysis

Between May and June 2020 nearly 3,000 stakeholders – representing all of Vattenfall's various stakeholder groups and markets – participated in dialogues to share what they consider to be most important for Vattenfall to focus on and where Vattenfall has the greatest influence. The results help us shape our strategic focus areas to ensure we meet our stakeholders' expectations moving forward.

As our analysis was conducting during the Covid-19 outbreak, we asked respondents if their expectations of Vattenfall have changed due to the pandemic. 85% of respondents indicated that Covid-19 had no impact on their expectations on Vattenfall.

The main takeaway of the 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 the business goals, while topics related to empowering our people and delivering high-performing operations are considered necessary for achieving our business goals, but 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.

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	Description	Page reference
Reducing CO_2 emissions and phasing out fossil fuels	In 2020 Vattenfall continued the coal phase-out and supported partners in reducing their CO_2 emissions.	54-57
Investing in renewable energy	Investments totalling approximately SEK 23 billion are planned for development and construction of new wind farms, and SEK 2 billion will be invested in renewable energy growth in areas such as solar and heat energy solutions.	28-29
Providing affordable energy	Vattenfall will build the world's first non-subsidised offshore wind farm and has commissioned a hybrid energy park that is supplying clean and affordable energy.	51

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

Stakeholders

Our stakeholders
We conduct a continuous mapping of our stakeholders, from the Group level all the way down to local community level, to gain an understanding of relationships within 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. With such a diverse range of stakeholders it is important that we are engaged in a constant dialogue with everyone, 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 and addressed in our projects. Our dialogues take many other forms as well, including attitude surveys, direct customer satisfaction feedback and many direct lines of communication with people throughout our organisation.

The importance of stakeholder dialogue
As an employer, we influence the mental and physical health as well as the economic livelihood of our employees and the communities we work in. As a provider of electricity, heat, gas and associated products and services, Vattenfall has a fundamental and direct impact on millions of people's lives. As a developer of wind and solar projects, we impact local communities and ecosystems through our facilities. Finally, as a purchaser of fuels, goods and services from around the world, we have social, environmental and economic impacts through our suppliers on an even greater number of people and local communities. We also have a global impact through the fossil fuels that are used in our electricity and heat production, as these lead to greenhouse gas emissions that are contributing to climate change, which in turn affects the entire earth. 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.

Feedback
While our updated 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. The energy transition is unfolding at a rapid pace, and consequently Vattenfall's projects and partnerships are increasing in scale and impact. However, this growth can only be sustainable with public support, and in some cases public support is not always immediate. One example is in the Netherlands, where biomass is currently the only large-scale alternative available to eliminate fossil fuels from our district heating grid. Even though local stakeholders share in our aim to

decarbonise, they have expressed opposition to biomass, despite the lack of good alternatives. We are still in the process of working closely with local stakeholders and municipalities to arrive at a solution that is supported by all parties, as only then can we secure our social licence to operate. On the other hand, this demonstrates that despite shared ambitions, stakeholders' views on solutions may vary, and thus stakeholder engagement will remain fundamental to reach our ambitions of fossil-free living. Read more about our work with local engagement on page 53.

Ratings
Sustainability and ESG (Environment, Social, Governance) 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.

Ratings

Rating firm	Score	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 sector.	February 2021
Sustainalytics	Vattenfall scored in the top 9% of the electric utilities category and received an ESG risk rating of medium based on a strong management score and medium risk exposure.	November 2020
CDP	For the second year in a row, Vattenfall scored an A (on a scale of A to F), which confirms Vattenfall as a leader and places us in the top 3% of all companies that disclosed.	December 2020

Stakeholder perspectives

Martin Pei, CTO of SSAB
SSAB is a global leader in producing high quality, high strength and durable steel for a multitude of applications. "Enabling our customers to reduce their environmental footprint has been a driving force behind SSAB's business model. The high-quality iron ore provided by LKAB along with an optimised production process has meant that SSAB has been able to manufacture steel while emitting lower CO_2 emissions than a majority of the steel industry. Nevertheless, to support Sweden's climate goal to be a fossil-free nation by 2045 at the latest, SSAB has decided to eliminate its emissions from steel production entirely, which stands for 10% of the country's total emissions," says Martin Pei, Chief Technical Officer for SSAB and initiator of the HYBRIT initiative.[1]

"After investigating different end-of-pipe solutions like carbon capture and storage systems, we realised that the largest impact would be to eliminate the root cause of CO_2 emissions in the iron making process. Successful implementation of HYBRIT essentially allows us to replace the coal with hydrogen and renewable energy," explains Pei.

"Our ambition is to be the first in producing fossil-free steel by using the HYBRIT technology. We hope to have the fossil-free steel commercially available by 2026. We believe that this is one of the most aggressive plans in the steel industry. One of the reasons why we can set such an ambitious target is due to our partnership with Vattenfall and its provision of renewable energy for our transformation. It has been a joy to work with Vattenfall and their employees; it has been a great partnership. It was clear after one of the first meetings that partnering with Vattenfall was the logical choice as they share our fossil-free vision and have a large presence in the Swedish energy market. Furthermore, our collaboration has created new opportunities such as load balancing and reducing distribution losses, which is promising for the future".

Kate Breeze, Executive Director for the Pen y Cymoedd Community Fund
The Pen y Cymoedd Wind Farm Community Fund was established in 2017 to support communities in the upper Rhondda, Cynon, Afan and Neath valleys in Wales. "Our main priority is to drive the local economy by supporting initiatives led by the local businesses, entrepreneurs, cultural associations and other organisations. Our mandate for funding is broad and unique since it is targeted and at the local level. We have supported all sorts of initiatives from strategic tourism plans to the realisation of a bat hospital. However, we can only support the community if there is a high level of contact and engagement. We pride ourselves on actively engaging with the community and co-producing solutions that respond to the needs of the community," says Kate Breeze, Executive Director of the Pen y Cymoedd Wind Farm Community Fund.

"Even though we are a completely independent fund, our close collaboration with Vattenfall has contributed to our success. For example, Vattenfall's thorough initial community consultation during the construction of the Pen y Cymoedd Wind Farm enabled us to effectively establish the community fund and nearly immediately start serving the community," explains Breeze.

"Of course, with Covid-19 we felt it was our responsibility to continue supporting the community during this crisis and to take a flexible, yet diligent, approach to providing funding. We had a proposal for an emergency fund and within 12 days, we had funded our first emergency grants. That would not have been possible without the collaboration of Vattenfall.[2] We really view them as a critical friend: a friend that is not afraid to challenge us on our ideas, but always wants us to succeed. Clearly, it was what the community needed as we were overwhelmed with requests upon launch of the emergency fund and we ended up providing GBP 570,000 in emergency funds. Ultimately, with Vattenfall's help, we hope that by 2043 to have a resilient and thriving community that no longer requires grant funding."

[1] For more information on HYBRIT, see pages 34–37.
[2] For more information on Vattenfall's Covid-19 response, see pages 10 and 11..

Environmental governance

Vattenfall's Environmental Management System is part of the Vattenfall management system (see page 81). Our environmental activities are governed by our environmental policy and operational instructions, which describe the principles for environmental governance and environmental management.

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

	2020	2019	2018
Heat	99.2	99.1	98.0
Electricity	99.9	99.9	99.9

*Non-certified facilities are back-up installations.

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

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

Goals coupled to the EU's 2020 targets
Vattenfall has been informing the Swedish Parliament yearly via the Government Offices on the company's progress in relation to the EU's 2020 targets. Vattenfall had targets for 2020 on CO_2 emissions, energy efficiency, and increases in renewable energy capacity.

CO_2 emissions
Vattenfall's emissions reductions are mainly attributable to the divestments of the lignite operations and of the district heating operation in Hamburg, the closure of several coal-fired plants in the Netherlands and Germany, and fuel switches to gas from coal. See the chart at right for emissions development.

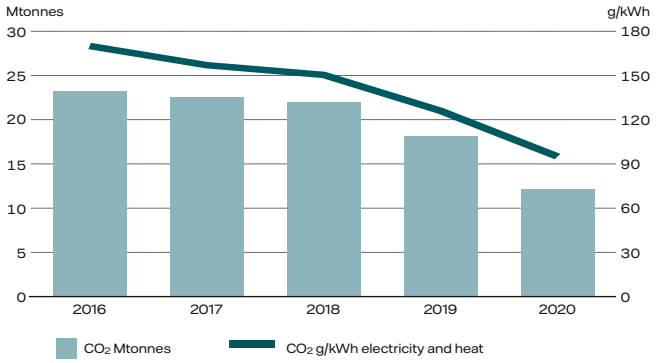
Energy efficiency
In 2020 we achieved 146 GWh in additional efficiency improvements, mainly through upgrades of hydro power plants and distribution networks and by replacing local boilers with district heating. This adds up to 1,040 GWh, exceeding the 1,000 GWh target.

Increase in renewable energy capacity
Owing to a delay in the 605 MW Kriegers Flak project, we did not reach our target of ≥ 2,300 MW (2016–2020), although we expect to achieve it in 2021. For more information see Targets and target achievement on page 24–26. New strategic targets for e.g., CO_2 intensity for 2025 have been set. For more information, see page 26.

Environmental Action Plan
During 2020 we developed Vattenfall's Environmental Action Plan (EAP) 2030. The EAP outlines the direction forward for our environmental work and concretises the needed efforts to deliver on the Group strategy and our commitments in the environmental policy. Additionally, the EAP is a way to steer our environmental work in the most efficient way by aggregating initiatives, inspiring cross-organisational sharing and learning, and supporting development.

In the EAP we have defined our 2030 ambition and targets for our three focus areas: Reduce climate impact, Protect Nature and Biodiversity, and Sustainable Use of Resources. The plan will be reviewed and updated each year so it is always in line with our continuous progress.

Vattenfall Scope 1 CO_2 absolute emissions and intensity[1]



Vattenfall's total CO_2 emissions in 2020 amounted to 12.1 Mtonnes pro rata.

[1] Data for 2016 does not include the lignite operations.

CO_2 emissions along the value chain 2020

Suppliers
CO_2e

4.8 Mtonnes

Other indirect emissons
Scope 3

Vattenfall
CO_2e

12.2 Mtonnes

0.1 Mtonnes

Direct and indirect emissions
Scope 1 Scope 2

Customers
CO_2e

12.2 Mtonnes

Other indirect emissions
Scope 3

Target
2025*

Reduction in business air travel

-30%

Approved Science Based Target
2030*

Vattenfall's own emissions reduced by

-38%

to 12.5 million tonnes of CO_2e

Approved Science Based Target
2030*

Absolute emissions reduction

-20%

Downstream (use of sold products)

* 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 p178.

Reduce climate impact

Reducing our climate impact is Vattenfall's number one sustainability focus. We take a full lifecycle and value chain perspective of our climate impact, including working with customers, suppliers, and partners to reduce their emissions. Our goal is to be transparent about the challenges associated with climate change and how we are working strategically to phase out fossil fuels and capture climate-related business opportunities. Vattenfall supports the Task Force on Climate-related Financial Disclosures (TCFD). For more details, see Risk Management, page 69, and the table, page 175.

Emissions to air

CO_2

Vattenfall is taking concrete steps towards its ambition of enabling fossil-free living within one generation. Our climate targets are approved by the Science Based Targets initiative (SBTi), which provides external validation that our reduction efforts are in line with climate science, i.e., what is required to limit global warming to 2 degrees Celsius (see infographic on page 159). Due to a decrease in our direct emissions, 2020 is the first year in which Vattenfall's upstream and downstream emissions overtook our direct emissions. The decrease in our direct emissions is attributable to the divestment of our lignite operations, the closure of certain older coal or lignite plants, and a switch from coal to natural gas in others. For further details, see pages 54–57. In addition, we have high emissions reduction objectives together with our stakeholders in the value chain. For further information, see page 35.

To involve all employees on the journey to becoming fossil-free, we have set a target to reduce business travel. For the travel that does occur, we compensate through CO_2 certificates in the UN's Clean Development Mechanism system. In 2020 this compensation consisted of Gold Standard-verified carbon credits that amounted to about 8,500 tonnes of CO_2.

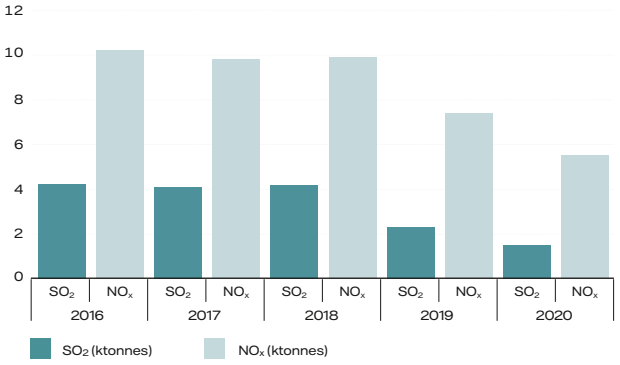
Other emissions

Besides CO_2, we focus specifically on reducing emissions of sulphur dioxide (SO_2), nitrogen oxides (NO_x) and particulates 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.

This includes:

- Using combined heat and power (CHP) plants to improve fuel efficiency and reduce specific emissions. In addition, expansion of district heating is replacing large numbers of single heating units with high specific emissions
- The shift to biomass and gas, which is resulting in reductions in both CO_2 and SO_2 emissions
- The use of power-to-heat is replacing fossil-based heating and eliminating associated emissions.

Nitrogen oxide (NO_x) and sulphur dioxide (SO_2)[1]



[1] Data for 2016 does not include the lignite operations.

Lifecycle assessments and Environmental Product Declarations

We have worked actively with lifecycle assessments (LCAs) for more than 20 years. Vattenfall publishes Environmental Product Declarations (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. In early 2020 we published the updated EPD for nuclear electricity[1]. The general interest in being able to report environmental impacts for a product's full lifecycle is increasing, such as through the European Commission's work in the Single Market for Green Products, where a product's environmental impact is emphasised in e.g., public procurement via policies. Vattenfall's experience with EPDs and LCAs is a competitive advantage when addressing the growing interest in this topic among customers and other stakeholders. Further, LCAs support Vattenfall's work on identifying where emission reductions or other environmental improvements can be made throughout the value chain.

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

Protect nature and biodiversity

As part of our EAP, 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. We have clear targets and milestones to ensure we deliver on our commitment. We assess our biodiversity impacts throughout the entire value chain and have integrated these assessments in our business processes. For example, we have initiated a hot-spot analysis of our supply chain as one element to increase our knowledge and enable us to define suitable requirements for suppliers and in tenders. 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. A responsible approach to biodiversity management is important for reducing our impact, gaining acceptance from local communities, reducing permitting obstacles and lowering the risk of projects being delayed.

The progress of our targets is followed up yearly with various KPIs and evaluations. For example, we will monitor the number of office premises where we have biodiversity-enhancing measures and the percentage of power line corridors with biodiversity-enhancing management plans. To further develop our biodiversity efforts and targets we are engaging in the Science Based Targets (SBTs) for Nature. As a member of the SBT Network's corporate engagement programme, we are supporting the development of methods and tools for the development of Science Based Targets that will help us all create an equitable, net-zero, nature-positive future.

Our various ongoing biodiversity projects and initiatives have several positive effects, both on life on land and life below water. See the next page 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. More than 190 projects have been supported since the foundation was established, including environmental education and nature conservation projects in urban areas and renaturalisation of small watercourses. The foundation is an independent non-profit 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.

Selected biodiversity projects

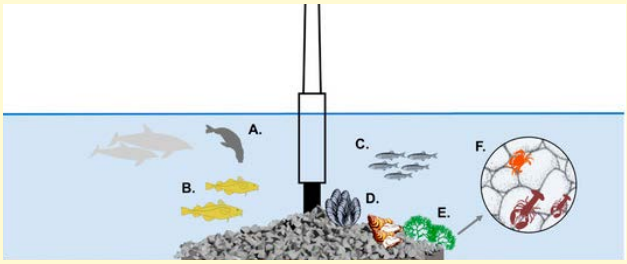
Restoration of Juktån (hydro power)
Juktån is a regulated tributary to the Umeälven river in northern Sweden. In the first half of the 20th century it was used as a floatway for timber transport to the sawmills on the coast. The waterways were cleared and piers were built to straighten the waterways to enable the timber to pass. The negative ecological impact on the aquatic environment was extensive, as spawning and nursery areas for fish were destroyed.

A project to restore Juktån was started in 2016 by Vattenfall, the University of Umeå, Samverkan Umeälven, and other power companies. The aim of the project is to restore the negative impact from timber floating and adapt the river's morphology to the reduced flow resulting from the water regulation at the power station. Important goals are to regain spawning areas for trout and grayling, to increase stream habitat areas, and to increase Juktån's potential as an attractive area for fishing and recreation. The restoration process was finished in autumn 2020, after which Vattenfall was granted a permit to change the minimum flow pattern. During the period 2021–2025 Vattenfall will monitor the ecological effects of the project.

Creating artificial reefs from offshore wind turbine foundations (wind power)
When building offshore wind farms in soft-bottom environments, a layer of stones is usually placed around the foundations to avoid erosion (scour) of the surrounding seabed. To better understand the ecological function and potential of these scour-protection stone beds, Vattenfall asked the National Institute of Aquatic Resources at the Technical University of Denmark (DTU Aqua) to conduct an exhaustive review[1] of the available literature on scour protection and artificial reefs with particular focus on fish communities.

The review concluded that the wind farm foundations do indeed function as artificial reefs, with increased abundance and diversity of species after providing shelter and food for fish, such as Atlantic cod. The study also points to potential ways of further increasing the ecological benefits of the wind farm reefs, which will be valuable in considering opportunities to optimise scour protection from a biodiversity perspective.

[1] https://www.mdpi.com/2077-1312/8/5/332



Biodiversity in Vattenfall's offices
At Vattenfall we want to make sure that our office premises constitute an extension of and connection between habitats as far as possible. Our target is to implement biodiversity-enhancing measures at all office premises by 2025. In 2020 we developed a catalogue of ideas for initiatives that can support nature and biodiversity at many of our different premises. The purpose of the document is to support decision-making about biodiversity-enhancing measures and provide inspiration for how we can work towards our target.

Reintroduction of species (hydro power)
Successful reintroduction of species is dependent on the existence or restoration of suitable habitats. When Vattenfall sells electricity with the Bra miljöval ("Good Environmental Choice") ecolabel in Sweden, money is set aside to an environmental fund that can be used to improve aquatic biodiversity, such as through the reintroduction of species. In southwest Sweden, one project has been carried out and one is ongoing to improve the situation for the acutely endangered Noble Crayfish. By creating shelter and hiding places in watercourses, we can improve the survival rates of juvenile crayfish.

A second example involves a project in the Dalälven river, where salmon and sea trout are being reintroduced by placing out small boxes with roe as artificial spawning nests. Small perforated boxes with fish roe are placed in appropriate places in the river, where the newborn fish are protected for a time. They eventually swim out into the river, and the hatching boxes are collected and reused. This project is being conducted together with the power company Fortum and the County Administrative Board.

Onshore wind power and bird collisions (wind power)
Having a good understanding of bird collision risk and measures that can be implemented to mitigate that risk is an essential part of wind farm planning – ensuring that development targets can be reached without affecting the viability of populations of sensitive species.

Providing solid evidence of collision risk for pink-footed geese and common cranes was the focus of an extensive monitoring programme at the Klim onshore wind farm in Denmark. The results show that these species were much better at avoiding wind turbines than previously thought.

Are there measures that can be implemented to increase the visibility of wind turbines and thereby decrease the risk of collisions? The results of a recently published large collaborative study suggested among other things that painting one blade black may indeed hold some potential.[2] We are currently looking into possibilities to further test the effectiveness of the measure at other sites.

[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7452767/

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.

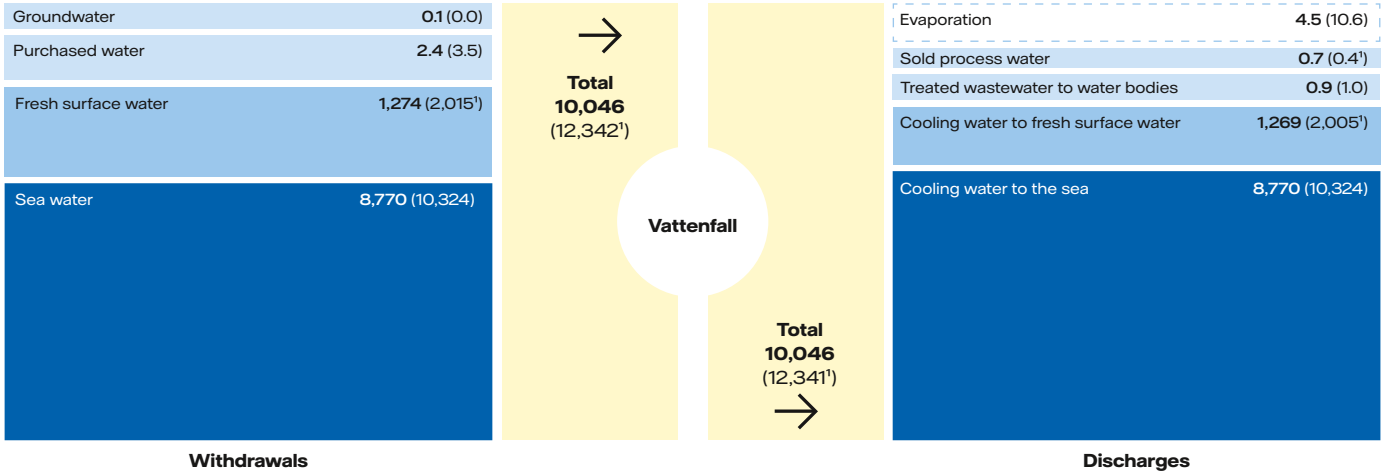
Water management

Water is a key resource for Vattenfall. We use it to run our hydro power operations, as cooling water in our nuclear and thermal power plants, and it is an integral part of the environment surrounding us. Vattenfall has a high focus on ensuring environmentally sustainable management of water resources. This means, for example, working to improve the efficiency of water use, minimise impacts on aquatic ecosystems, improve water quality and regulate 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. A plant's location determines its primary source of cooling water, as plants near the sea primarily use sea water, and plants inland primarily use freshwater from rivers. 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 warmer than a threshold temperature, it cannot be used for cooling, and the plant output must be reduced or temporarily shut down. The threshold temperature varies between plants and is decided by technical parameters relating to the plant and permit conditions to protect ecosystems in the recipient. 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)



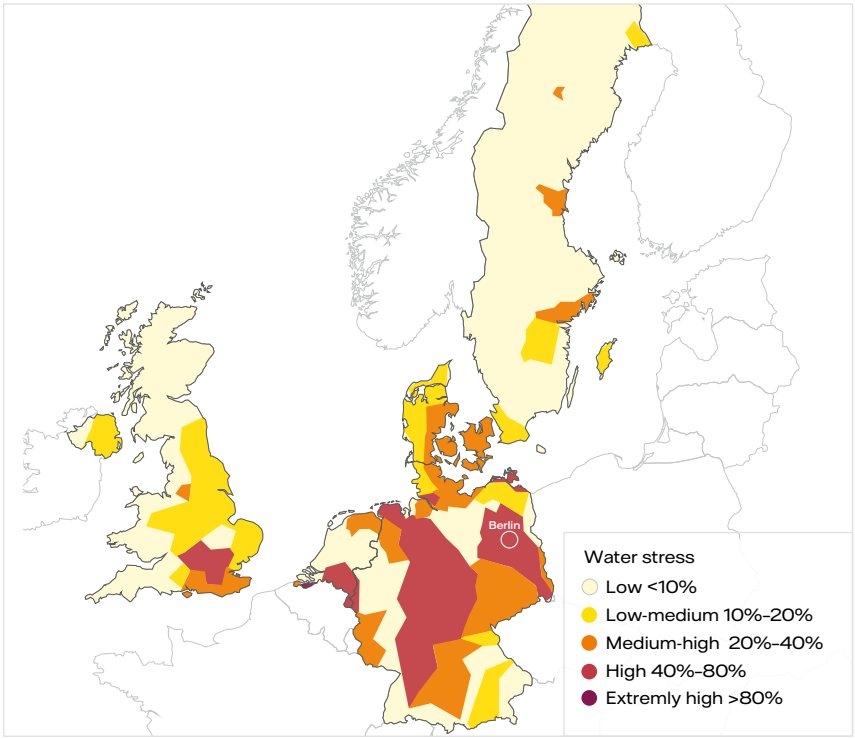
¹ The number has been adjusted compared with information previously published.

High water stressed areas

The Berlin region in Germany, where Vattenfall owns and operates several heat and CHP plants, is classified as an area with high water stress.[1] Vattenfall works to reduce water use and limit impacts on aquatic ecosystems. One example of a project involves conducting thermographic aerial surveys to detect water leaks. Another involves measures to reduce pressure on the storm water system in situations with heavy rain. The transition of Vattenfall's portfolio and related fuel switches are also contributing to more efficient use of water.

Examples include our Lichterfelde and Marzahn gas-fired combined heat and power plants, commissioned in 2019 and 2020, respectively. Both plants are more water-efficient and have replaced older plants that also had a higher temperature water discharge. The net result is lower water use and a lower impact on aquatic systems.

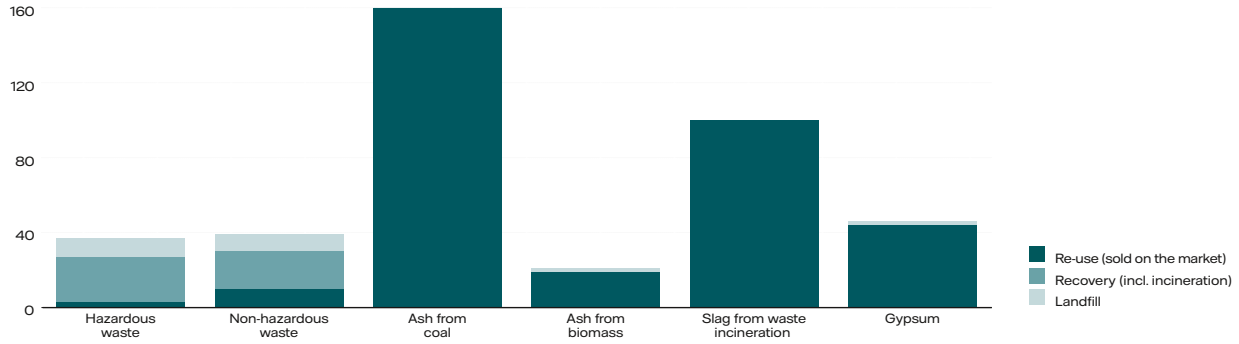
[1] wwwwri.org/applications/aqueduct/water-risk-atlas/



Vattenfall's plants in this region use approximately 214 million m³ of freshwater, equivalent to 17% of Vattenfall's total freshwater use of 1,277 million m³. The majority of the water is used for cooling.

Water balance in Berlin	Withdrawal	Discharge
Freshwater sources	213	213
Third party	1	1
Total	214	214

Waste and residues (ktonnes)



ktonnes	Hazardous waste[1]	Non-hazardous waste	Ash from coal	Ash from biomass	Slag from waste incineration	Gypsum
2020	37	39	160	22	100	45
2019	72	75	423	33	173	128

Waste from construction and demolition make up a small portion compared with the residues that are created at combustion plants.

[1] Includes fly ash from waste incineration.

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 90% of residual products are sold to the construction industry and reused as secondary raw material for cement, concrete or asphalt production. The remainder is sent to landfills.

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. Please see page 46–47 for more information on waste management during decommissioning.

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. When it comes to 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, and Vattenfall is working together with partners and the industry to find new solutions for recycling and reuse. As an example, Vattenfall has partnered with Research Institutes of Sweden (RISE) in the Rekovind project to develop a chemical recycling process for turbine blades[1].

Hazardous substances

Vattenfall is working continuously to phase out hazardous substances. As one of the targets in Vattenfall's Environmental Action Plan, glyphosate will be phased out by 2021 at the latest in all our operations. Alternative methods for weed abatement at transformer stations, for example, are already in use or will be implemented. During 2020 an updated guideline for managing procurement and use of sulphur hexafloride (SF_6) was introduced. One of the aims with the guideline is to make the operations aware of SF_6 use especially when purchasing new equipment and to work proactively with suppliers to test new SF_6-free solutions. With this we are also better prepared for forthcoming EU legislation in 2021 under the F-gas Regulation, which stipulates stricter use of SF_6 in electrical equipment.

[1]The research report is available here: https://bit.ly/3pqPCSp.

Implementing our environmental policy in facility management

Supported by the knowledge of our suppliers, new technologies, and effective internal knowledge-sharing, we are able to develop solutions related to our environmental focus areas of the climate, biodiversity and sustainable use of resources. Vattenfall's purpose and sustainability targets are also reflected in an effort to provide climate smarter offices for all employees. In early 2020 we finalised a roadmap with overarching targets for the next two decades to continuously improve the sustainability performance of our office buildings and services in all regions.

During 2020 we adjusted our real estate standard to set clear guidelines for office buildings, including certification standards for new offices, technical building measures for existing offices and biodiversity enhancement measures at Vattenfall's sites. One example of how our guidelines are being implemented is the new office building in Berlin Südkreuz, which will be built from 100% recyclable material in a modular wood-hybrid construction with limited use of concrete. The building has been awarded a platinum certificate, the highest possible, by the German Sustainable Building Council.

To enhance biodiversity, Vattenfall conducts an urban gardening project in Berlin that is open to the public. In addition, the company has given beekeepers the opportunity to safely house their honey bees at some 30 locations. We are currently investigating where biodiversity measures can be promoted at other locations in Sweden, the Netherlands and the UK.

To ensure sustainable use of resources, our catering vendors are providing more healthy food, like organic products or more vegetables, and are working continuously with wet waste avoidance. Furthermore, we encourage environmentally-friendly practices in our offices by promoting the use of reusable cups at coffee stations and providing bins to collect different types of waste. In the Netherlands, we update the building management systems on a regular basis to reduce energy consumption.

Employee health and well-being

Ensure a safe, inspiring and caring work environment
Our goal of having zero accidents and zero work-related illnesses can only be achieved by improving our Health & Safety (H&S) culture.

With the Covid-19 pandemic, H&S leadership has become even more important. In the various countries in which Vattenfall operates, task forces have been formed to support managers and employees with tools to address the challenges arising from the pandemic. The strategy of targeting the H&S culture on top of leadership and maturity development continued and was only slightly derailed by the Covid-19 pandemic. Business units were still able to continue implementing activities, and the focus of managers on employee well-being has increased in all countries.

Organisational as well as social health aspects are addressed in online workshops and podcasts about working from home, stress, lifestyle, ergonomics and work/life balance. Other initiatives included online coaching or "Mystery Coffee", where employees are randomly paired up with others in the organisation to foster connectivity and expand internal networks. At the same time that we are seeking to foster connections, especially in times of significant remote working, we are doing so with the core principle that all forms of harassment are unacceptable in all interactions and contacts. Routines for reporting and dealing with undesirable behaviour have been in place for many years.

Sick leave is relatively low, measuring 3.5% in 2020 compared with 3.7% in 2019, but the decreasing trend from previous years may be broken due to the still unknown effects of the pandemic.

We continue to maintain focus on Health & Safety reporting. The most common hazards are slips, trips and falls; falls from heights; being caught in, under or between equipment; and improper working positions. The most common root causes of accidents are behaviours and awareness. To counter this, we continue to work relentlessly to improve the H&S culture and maturity level, and secure focus from the entire organisation, including top management with the hierarchy of controls as a basis. This resulted in a reduction in LTIF to 1.8 in 2020, compared with 2.1 in 2019.

Unfortunately, two work-related fatalities occurred in 2020 among our contractors. Extensive investigations are being conducted to gain insights into the causes and to determine follow-up measures so that similar situations are avoided in the future.

Within Vattenfall, hazards are defined and documented in instructions. These are identified locally after investigations and subsequently reported centrally in the HSSEQ reporting system Intelex. In 2021 we intend to start investigating H&S topics through a data-driven approach to consolidate data sources and enhance availability. Our policy clearly states that work shall stop if an employee or contractor is in danger.

Intelex's IT system is used to report safety, health, security, environmental and quality incidents and hazards (process safety incidents can be reported as safety and health incidents). The system can be accessed via the intranet home page. The HSSEQ reporting system is used to generate reports, analyses and statistics.

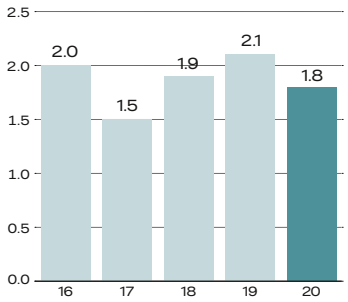
All notifications are aggregated monthly and included in a complete overview that is reviewed by the Executive Group Management. Each accident is methodically investigated by local H&S specialists, and measures are defined with the intention to completely eliminate the hazard.

LTIF[1] – Lost Time Injury Frequency for employees

	Sweden	Germany	Netherlands	Total[2]
LTIF internal employees	1.2	3.1	1.2	1.8
Fatal accidents	0	0	0	0
High consequence LTI[3]	0	0	0	0
Total LTI	19	32	7	60
TRIF[4]	2.7	4.0	1.3	2.8
Worked hours (million)	15.9	10.3	6.0	34.2
External (contractors)[5]				
Fatal accidents	2	0	0	2
Total LTI	45	21	10	78
TRI	86	26	20	139
Sick leave per country				
Men	2.3%	4.6%	3.3%	3.1%
Women	4.5%	5.1%	5.9%	4.6%
Total	**2.9%**	**4.7%**	**4.1%**	**3.5%**

[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] Since the contractor LTIF cannot be calculated with sufficient reliability, only LTI is reported.

LTIF internal employees 2016–2020



Types of injuries (LTI) – employee

- Cuts, Laceration, Puncture, 18.8%
- Strain, 20.3%
- Fracture, 12.5%
- Bruise, 18.8%
- Burn or Scald, 7.8%
- Swelling, 3.1%
- Foreign body in eye or skin, 3.1%
- Inflammation incl. joints, tendons, 1.6%
- Abrasion, 0.0%
- Shock, 1.6%
- Dysfunction, 0.0%
- Other, 12.5%

Types of injuries (LTI) – contractors

- Cuts, Laceration, Puncture, 17.2%
- Strain, 12.6%
- Fracture, 14.9%
- Bruise, 6.9%
- Burn or Scald, 9.2%
- Swelling, 12.6%
- Foreign body in eye or skin, 4.6%
- Inflammation incl. joints, tendons, 2.3%
- Abrasion, 2.3%
- Shock, 1.1%
- Dysfunction, 1.1%
- Other, 14.9%

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

Diversity & Inclusion (D&I) at Vattenfall
Our D&I strategy is founded on the sincere belief that diversity and inclusion create value for Vattenfall, its employees, and the society around us. The work on implementing the strategy is led by a dedicated D&I Officer, on a two-year rotation among members of the Executive Group Management. We apply the Global Diversity & Inclusion Benchmarks (GDIB) to systematically measure the progress of our strategy and also use targeted questions in our annual employee survey. All employees are to attend a D&I workshop by 2023.

Our commitments
Equal by 30, promoting equal pay, equal leadership, and equal opportunities for women in the energy sector by 2030. Aspiring towards Equal by 30, we will also contribute to the UN Sustainable Development Goal of Gender Equality (SDG 10).

In 2020 women represented more than 41% of all managerial hires, increasing the share of female managers from 26% in 2019 to 27% (compared to 26% of employees company-wide in 2020).

Bias awareness within our organisation. We are convinced that a diverse workforce results in a greater variety of perspectives, leading to more innovation and better results. To ensure equal opportunities and raise awareness of bias, we have developed workshop training material for employees with a target that all employees will have participated in a D&I workshop by 2023.

Furthermore, Vattenfall is participating in the Vidga Normen project. The project includes a series of internal trainings aiming to increase knowledge and awareness about racism in the labour market, with particular focus on skin colour and Afrophobia. In 2020 we hosted the first of eight sessions with 150 Vattenfall employees in total from relevant departments such as recruitment and communications.

Employee engagement. In November 2020 we celebrated our third annual Diversity Day with an extensive offering of virtual lectures and workshops open to employees throughout the organisation.

Company-wide "Diverse Energy" networks are expanding, and further participation is encouraged. These grassroots employee groups reflect the widespread commitment that is felt and work to further build awareness and drive change on a local level.

We also participate in mentoring programmes and internships for e.g., non-Europeans via Jobbsprånget, and collaborate with external partners to enhance our knowledge.

We will measure the progress of our strategy through an enhanced set of targeted questions in our employee surveys.

Developing competent and engaged employees
We encourage our employees to actively develop their skills and competencies 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. Toward this end, and 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 an engaging and high-performance culture while securing relevant and diverse competencies and talents. The remuneration policy outlines the general guidelines for remuneration and benefits at Vattenfall. 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 is to be fair and consistent, and reflective of the local market, local laws and collective agreements[1]. It should also take into account individual performance, Group objectives and professional competency. Variable salary programmes strengthen the connection between performance and reward and help to attract, retain and motivate employees on all levels below the senior executive level. The programmes are structured in accordance with local laws, collective agreements and market conditions and therefore may differ from country to country. For more information, see Note 42.

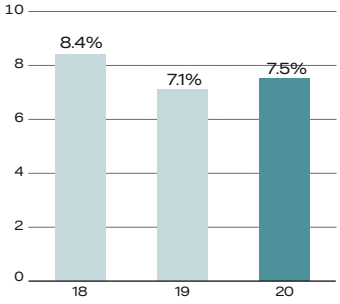
[1] 98% of employees are covered by collective bargaining agreements at the Group level.

Employee key ratios[1]

	No. of employees	Women	Men	-29	30-49	50-
Managers	1,749	27%	73%	1%	57%	42%
Country						
Sweden	9,475	27%	73%	11%	50%	39%
Germany	5,753	23%	77%	11%	44%	45%
Netherlands	3,545	26%	74%	10%	55%	36%
Other	1,087	28%	72%	11%	69%	20%
Total	**19,859**	**26%**	**74%**	**11%**	**50%**	**39%**
Of which, part-time	1,646	19%	5%			
Of which, temporary	723	5%	3%			

[1] The gender composition of the Board of Directors is 33% women and 67% men. See pages 84-85.

Employee turnover, %



Human rights

Our commitment
We recognise the importance of ensuring that human rights are upheld and protected, and are committed to respecting internationally recognised human rights in our supply chain, operations and in the communities in which we operate. 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, and the UN's Guiding Principles for Business and Human Rights. Our commitment to respecting human rights is expressed in our human rights policy[1] and is also included in our Code of Conduct and Integrity[2], our Code of Conduct for Suppliers[3] and in our statement on slavery and human rights in accordance with the UK Modern Slavery Act[4].

Our approach
Vattenfall employs multiple policies and measures to identify, prevent and mitigate human rights risks:

- Our Human Rights Policy 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 defines how we are to act with integrity within the company in the course of our business
- Our Code of Conduct for Suppliers (CoCfS) defines the company's basic requirements and expectations for suppliers with respect to sustainability
- A whistleblowing function[5] is in place to handle reporting of any violations of human rights (or any other irregularity) . It is open to employees, consultants, contractors, suppliers and other stakeholders and accessible 24/7, 365 days a year
- Human rights trainings are conducted to improve Vattenfall's ability to manage human rights risks or impacts
- Vattenfall conducts regular and systematic due diligence to identify and assess human rights, environmental and business ethics-related risks and impacts in 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 impact and risks
We carefully monitor our value chain for human rights impacts and risks. The latest screening showed the salient risks that we contribute to or are linked to exist in our supply chain in high-risk countries in the areas of working conditions and local communities' livelihood. Salient risks associated with our own operations are mainly related to subcontractors' working conditions, local communities' livelihood, indigenous peoples and privacy (personal data and information).

As our portfolio composition shifts, so may our impacts and associated risks. Our due diligence processes and strategic supply chain work ensure we are able to foresee and manage the changing landscape.

In support of our human rights action plan, we conducted a number of important activities in 2020.

Important human rights activities in 2020

Topic	Activities conducted in 2020	Planned activities
Improving due diligence	Further developed due diligence guidelines in the areas of overtime and child labour.	Assess our due diligence process against the OECD Due Diligence Guidance for Responsible Business.
Reviewing governance processes & policies	Updated and strengthened our Human Rights Policy. Overhauled the Vattenfall whistleblowing function and channel to safeguard grievances of stakeholders.	Improve understanding of the human rights issues linked to data protection, privacy and digitalisation. Further communicate the whistleblowing function and channel to external stakeholders.
Building capacity & competence	Made a high-level training available to all employees. Conducted trainings on specific topics with targeted employees.	Continue increasing awareness by conducting cross-departmental trainings.
Collaborating with relevant stakeholders	Documented our best practices regarding collaboration with indigenous people in the north of Sweden. Participated in several forums for best practice sharing, such as the Swedish Network on Business & Human Rights, Bettercoal and WindEurope.	Maintain an open dialogue and collaboration with indigenous peoples who live and work in Sweden. Continue participating in knowledge-sharing forums to expand our horizons in respecting human rights.

[1] Human Rights Policy: https://bit.ly/3dWHW7z
[2] Code of Conduct: https://bit.ly/3qOC7we
[3] Code of Conduct for Suppliers: https://bit.ly/3t4nCpO
[4] UK modern slavery statement: https://bit.ly/3sDNvfq
[5] https://report.whistleb.com/en/vattenfall
[6] Human rights action plan: https://bit.ly/3qUccDk

Sustainable supply chain

We are committed to responsible business practices throughout our supply chain and promote sustainability in and beyond our corporate boundaries. By setting environmental, social and governance requirements for our suppliers, we can gain long-term competitive advantages by reducing risks, reducing costs and improving our brand value. We strive to spread good practices in the supply chain, to strengthen relationships with our suppliers, and to improve our suppliers' sustainability performance.

Our approach to a sustainable supply chain

In the work on ensuring sustainable supply chains, a system of operational instruments (processes, guidelines, etc.) for supplier assessment, monitoring and management is in place. Our approach, illustrated below, is grounded in compliance with Vattenfall's Code of Conduct for Suppliers (CoCfS), where our requirements and expectations for suppliers with respect to sustainability are defined. First, suppliers are assessed in two steps: an initial risk assessment followed by a detailed supplier assessment. Second, corrective actions are taken to reduce negative environmental, social and governance impacts in the supply chain. Finally, we encourage our suppliers to make continuous improvements by providing guidance and support to ensure sustainable development of our supplier base.

Key improvements in supply chain sustainability

We are continually improving our own processes and procedures to increase sustainability performance in our supply chains. During 2020, four main initiatives contributed to more accurate supplier risk assessments, greater transparency in high-risk categories and more consistency in the onboarding of new suppliers and other counterparties.

The Supplier Risk Assessment Tool (SRAT) provides a more precise risk categorisation of our supplier base, covering environmental, social, human rights, business and governance risks. The approach takes into account product and service category specific risks and country-specific risks, and offers the possibility to apply a spend filter to support prioritisation of actions following the outcome of the supplier risk assessments. With this we can achieve greater visibility of sustainability risks amongst our first-tier suppliers and can apply more accurate risk mitigation actions.

Deep-dives are conducted in specific product categories to map various sustainability parameters such as environmental impacts and human rights issues along the value chain, with the aim of identifying potential risks and opportunity areas in greater detail. Deep dives have already been conducted on batteries, solar panels and EV charging stations and the results have been applied by including sustainability requirements in tenders or engaging with suppliers or industry initiatives on material topics.

In August 2020 Vattenfall standardised a preferred approach for the onboarding of third parties such as suppliers, partners or traders. This preferred onboarding approach ensures that due diligence is maintained at a high quality level across Vattenfall and that resources are allocated consistently and strategically to mitigate sustainability risks. Implementation of the preferred onboarding approach will take place in 2021.

Vattenfall is currently testing an online platform to serve as a library for employees to exchange knowledge and share inspiration and thereby improve sustainability performance throughout the supply chain and go beyond the minimum requirements. The sustainability requirements listed in the library can be included in tenders, framework agreements and other contracts. The knowledge and inspiration shared on the platform will be a stepping stone for defining an ambitious set of sustainability requirements to increase our impact on key supply chains and sustainability topics.

Our planned activities for 2021

- Begin a comprehensive review of the Code of Conduct for Suppliers to ensure that it reflects Vattenfall's values, vision and principles as well as our stakeholders' expectations
- Further develop the supplier audit process by implementing several guidelines focusing on red flags, child labour and overtime to ensure compliance with our Code of Conduct for Suppliers and to enhance guidance on these topics.

Selected examples of sustainability improvements in our supply chain

Sustainability requirements in tenders for technical consultants

We have introduced sustainability requirements as evaluation criteria in a framework agreement tender for technical consultants. The sustainability questions focus on three areas: integration of the Sustainable Development Goals in suppliers' strategies, suppliers' CO_2 emissions reduction targets, and the suppliers' own Codes of Conduct in combination with their work on a healthy work environment. By implementing these sustainability requirements in tenders we have been able to reflect our sustainability ambitions in our technical consultant procurement process.

Improving the environmental performance of onshore wind parks

In the Balance of Plant project for the Jaap Rodenburg onshore wind farm in the Netherlands, we worked closely with our contractor to optimise the design for sustainability. In both in the predesign and construction design phases, we looked at alternatives to concrete and asphalt and created a smart design for foundations, roads and hardstands. This resulted in a reduction of material use and an increase of temporary and reusable materials. Through this collaboration we achieved a 35% reduction in the environmental impact of the project's design.

Initial risk assessment

Our suppliers are assessed by country risk (soon also by category risk). For high-risk suppliers a sustainability audit is required.

Supplier assessment

Supplier screening

All potential suppliers are screened to identify and take actions for those with potential financial, reputational or supply risks.

Supplier audits

High-risk supplier: During an on-site audit the supplier's compliance with our sustainability requirements is evaluated.

Corrective actions

The supplier addresses non-compliance by providing and implementing a corrective action plan.

Continuous improvement

The supplier's sustainability performance is monitored and followed up to ensure continuous improvement.

Compliance with Vattenfall's Code of Conduct for Suppliers

Our Code of Conduct for Suppliers defines our requirements and expectations to ensure that our suppliers and sub-suppliers share the same values as we do. It is based on the UN Global Compact, the UN Guiding Principles on Business and Human Rights, the OECD Guidelines, and other international norms and guidelines in the sustainability area.

Goods and services

- The main sourcing countries are Sweden, Germany and the Netherlands, with a small but increasing share of suppliers in Asia.
- All suppliers with a contract value in excess of SEK 3,000 are subject to screening (to the extent permitted by Swedish law).
- New suppliers from high-risk countries are assessed via counterparty on-site audits. However, due to Covid-19 few on-site audits were conducted.
- Sustainable Supply Chain (SSC) Roadmap framework is still in place and has been updated; Several SSC Roadmap workshops with various Business Areas have been conducted to create tailored action plans per Business Area or Business Unit.
- The Supplier Risk Assessment Tool (SRAT) produced a risk heatmap with 51 validated high-risk suppliers covering 15% of our supplier base representing 65% spend. Three project workstreams were developed: one for current high-risk suppliers, one for new high-risk suppliers, and one for new medium-risk suppliers. Current high-risk suppliers are being addressed through individual risk analyses followed by external supplier dialogues. The other two workstreams will be implemented in 2021.
- Sustainability requirements in tenders have been included for procurement of batteries, covering topics such as supply chain transparency, conflict minerals and CO_2 footprint.
- Five Sustainable Supply Chain Trainings for newcomers to procurement were held clustered with an Integrity and Compliance training; in addition, an update of procurement guidelines was conducted as well as a human rights training with more than 200 participants.
- Virtual Share and Learn sessions were conducted with certain key suppliers, covering sustainability topics such as Covid-19 activities, operations and sub-suppliers in Xinjiang, and CO_2 footprint in the supply chain.

Commodity fuels

- Primary commodity fuels include coal, biomass and gas.
- For coal, the main sourcing countries are Russia (90%) and USA (10%). Biomass is mainly sourced for trading purpose and originates to a large extent from the EU and Baltic States (85–90%), the rest is sourced from Russia and Belarus.
- As a founding member of Bettercoal, our active participation in the initiative continues, particularly in Bettercoal country working groups for Colombia and Russia.
- As a founding member of the Sustainable Biomass Program (SBP) we contributed strongly to the development of a commonly accepted sustainability standard for woody biomass. Most of our pellet supply is purchased under one of the relevant certification schemes (SBP/FSC/PEFC).
- A two-level approach is applied for onboarding our commodity fuel suppliers: the Know Your Counterparty (KYC) process, and specified due diligence processes in coal and biomass supply chains. Our due diligence process in coal supply chain strongly relies on Bettercoal assessments in order to address social and environmental performance of direct coal suppliers. All of our currently approved direct coal suppliers that we publicly report on went through the Bettercoal assessment process and are implementing Continuous Improvement Plans. Our due diligence process for biomass supply mainly relies on relevant certification schemes and addresses legality and sustainability risks as well as compliance with our CoCfS.
- In 2020 we started development of a specific due diligence process for our gas supply chain, and we continue looking for relevant initiatives to join in order to contribute to sustainable gas sourcing and learn from best practices.

Heat fuels

- Primary heat fuels are biomass and waste. With the conversion of the HVC boiler in Uppsala, we have phased out peat.
- In Germany 100% of biomass and waste is sourced locally. In Sweden approximately 60% of biomass and waste is sourced locally.
- The Code of Conduct for Suppliers has been implemented in all new contracts and contract renewals.
- No direct (first tier) suppliers from high- or medium-risk countries were contracted in Germany or Sweden in 2020.

Nuclear fuel

- Uranium suppliers are spread among Namibia, Canada, Australia, Kazakhstan and Russia. Depending on the current contractual situation, we may receive deliveries from a number 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 2020 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 2020 but postponed to 2021 due to Covid-19 restrictions.
- Management systems were generally at a high standard at nuclear fuel production facilities. No major findings were noted in 2020 among performed audits.
- All suppliers welcomed the Vattenfall audit team, and the audits were performed in a constructive and open atmosphere.
- No sanctions are currently affecting the nuclear supply chain.

	Goods and services	Commodity fuels	Heat fuels	Nuclear fuel
Number of suppliers:	~31,000	~40	~100	10
Number of site audits conducted:	4	34 (external audits)	1	4
Share of new suppliers that have undergone social/environmental assessments:	100%	100%	67%	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

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, as well as of Transparency International Sweden. We require that all employees take personal responsibility to act in accordance with the company's ethical guidelines, which are laid out in the Vattenfall Code of Conduct and Integrity. Tailor-made face-to-face training programmes, e-learning tools, instructions 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 74.

The Code of Conduct and Integrity
The Vattenfall Code of Conduct and Integrity applies for 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 do an e-learning on the Code. As of December 2020 it had been completed by 81% of all active employees.

Additionally, all members of the Executive Group Management and all managers three levels below, as well as all employees who have extensive contacts with competitors, 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-bribery and 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.

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 tailor-made trainings. One specific action in 2020 was to further raise awareness about our procurement policies through extensive targeted trainings and by updating the VIP training material with new procurement-related content.

Incidents
Suspected misconduct in Vattenfall is to be reported to the employee's immediate manager, to the integrity organisation, or to the Internal Audit department. In 2020 a new web-based Whistleblowing Channel was launched (see more in box at right). This has further facilitated the reporting of suspected improprieties in Vattenfall and thereby also led to an increased number of reported incidents in 2020 compared to previous years. Additionally, we have locally appointed external ombudspersons (attorneys) to whom suspected improprieties can also be anonymously reported.

All incident investigations are led by Vattenfall's Internal Audit unit. A total of 66 integrity-related incidents were reported in 2020 (2019: 53; 2018: 46), of which 13 (2019: 11; 2018: 11) led to disciplinary action. Currently there are no pending integrity-related cases against Vattenfall in court. Most of the incidents were reported internally, while six cases were reported via the external ombudspersons (2019: 5; 2018: 4). 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. In 2020 we had 22 reported incidents in these areas (2019: 16; 2018: 17). 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 on 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 control the risk of transacting with counterparties that may be involved in money laundering, tax fraud, terrorist financing, are that may be subject to EU sanctions or have poor performance on environment, social and governance issues.

New Whistleblowing Channel
A new web-based Whistleblowing Channel was launched in March 2020. It enables all Vattenfall employees, temporary staff, suppliers and other stakeholders to report concerns in a simple and secure way, also on an anonymous basis if desired.

Reports filed in the Whistleblowing Channel are first received by a Vattenfall Whistleblowing Coordinator responsible for the relevant country to which the incident primarily relates. If it is decided that further investigation is required, the investigation is usually conducted by Group Internal Audit or Staff Function Human Resources with support from other relevant Staff Functions (such as Legal), depending on the type of suspected misconduct. The whistleblower is always informed about the investigation.

In 2020 nearly half of all reported incidents in the Group were received through the Whistleblowing Channel. Most informants decided to remain anonymous throughout the investigation.

Taxes

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 we work in. 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 established a process for tax management and monitoring to ensure that its taxation is in accordance with the law and to manage our tax risk. The Group and Country Tax functions ensure that the 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 on tax policy and provides updates on tax regulations and the main challenges we face. The Board of Directors and Audit Committee receive quarterly updates on significant tax issues.

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. Starting in 2021 Vattenfall will report in accordance with the GRI 207 tax standard. Vattenfall already now reports according to the new standards but will increase the information in its country-by-country reporting.

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

Vattenfall as a taxpayer
Vattenfall's business generates considerable tax revenue for the national, regional, and local authorities in the countries we work in. In addition to corporate income tax, Vattenfall pays taxes on production, employment and property. In many of the countries in which we operate, these nonincome-based taxes account for a majority of the tax revenue. In the income statement they are reported as operating expenses, which entails that corporate income taxes are only part of the total taxes paid by Vattenfall. Total taxes reported in Vattenfall's income statement for 2020 amounted to SEK 6.5 billion and are outlined at right. Corporate income taxes amounted to SEK 2.6 billion.

[1] For more details about the tax strategy and policy, see https://bit.ly/2NWgvzH.

Effective tax rate
Vattenfall's effective tax rate in 2020 was 35.7%, expressed as a percentage of consolidated profit before tax. This corresponds to SEK 4,290 million. See Note 13 to the consolidated accounts, Income taxes, for more information. When required, financial statements for the respective local companies are prepared and generally contain similar reconciliations of the effective tax rate. The Group's future tax cost and effective tax rate may be affected by several factors, including changes in tax laws and their interpretation, tax reforms in progress that have yet to be enacted into law, and the effects of acquisitions, divestments and any restructuring of our operations.

Total taxes paid by type
Taxes reported in the 2020 income statement, SEK 6.5 billion

SEK million	Sweden	Germany	Netherlands	Other	Total
Personnel-related taxes[1]	2,024	790	303	77	3,194
Property tax	494	31	31	77	633
Income tax[2]	1,527	487	421	126	2,561
Other taxes	89	39	26	0	154
Nuclear capacity tax	0	0	0	0	0
Total taxes paid	**4,134**	**1,347**	**781**	**280**	**6,542**

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

Total taxes 2020
SEK 6.5 billion, shown per tax type

Total taxes paid by region
Tax history by country

SEK million	Sweden	Germany	Netherlands	Other	Total
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

GRI 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 172–174. 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.

Reporting profile and scope
The Annual and Sustainability Report (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 2020 financial year, unless indicated otherwise, and the figures provided pertain to the 2020 financial year. Vattenfall reports sustainability data annually in the ASR, and the preceding year's report was published on 20 March 2020.

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 12–13 and 81–82. Changes in Vattenfall's supply chain are described on pages 167–168. 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 168. 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 2020.

For commodity fuels, a coal supplier is an entity that delivered coal to Vattenfall's power plants for own use. A supplier of biomass, nuclear fuel or heat fuels 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 2020 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 in the respective plants. Reported CO_2 emissions are calculated based on fuel consumption. 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 have either been measured or calculated based on periodically recurring measurements. 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 Annual and Sustainability Report and meets the reporting requirements for the environment, social responsibility, personnel, human rights and anti-corruption:

- Strategic targets, page 25–26
- Business model and value creation, pages 14–15
- Integrity and risk management, pages 65–69, 169
- Internal governance, pages 79–81
- Materiality analysis and stakeholders, pages 156–157
- Human rights, page 166
- Sustainable supply chain, pages 167–168
- Human resources, pages 164–165
- Environment, pages 159–163

External assurance
The sustainability information in the Annual and Sustainability Report for 2020 has been reviewed by Vattenfall's auditor, Ernst & Young. 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 Annual and Sustainability Report 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 Index. The cross reference is primarily done to the DMA (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
- Dutch Covenant in respect of improvements in the coal supply chain
- 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)	Omission	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		8-9: Environment
	102-3	Location of headquarters	4, 75		
	102-4	Location of operations	4-5		
	102-5	Ownership and legal form	4		
	102-6	Markets served	5		
	102-7	Scale of the organisation	4		
	102-8	Information on employees and other workers	164-165		6: Labour
	102-9	Supply chain	167-168		
	102-10	Significant changes to the organisation and its supply chain	12-13, 167-168		
	102-11	Precautionary Principle or approach	65-68, 159		All principles
	102-12	External initiatives	173		
	102-13	Membership of associations	173		
	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	62-63, 80-81, 164-170		All principles
	Governance				
	102-18	Governance structure	74-87		
	Stakeholder engagement				
	102-40	List of stakeholder groups	157		
	102-41	Collective bargaining agreements	165		3: Labour
	102-42	Identifying and selecting stakeholders	157		
	102-43	Approach to stakeholder engagement	157		
	102-44	Key topics and concerns raised	157		
	Reporting practice				
	102-45	Entities included in the consolidated financial statements	171		
	102-46	Defining report content and topic boundaries	171		
	102-47	List of material topics	155		
	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	172-174		
	102-56	External assurance	171		

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Omission	UNGC Principle(s)
	Economic				
GRI 205: Anti-corruption 2016					
	103-1/2/3	Management approach, 205	169, 81		10: Anti-corruption
	205-2	Communication and training about anti-corruption policies and procedures	169		
GRI 206: Anti-competitive behavior 2016					
	103-1/2/3	Management approach, 206	169, 81		10: Anti-corruption
	206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	169		
	Environmental				
GRI 302: Energy 2016					
	103-1/2/3	Management approach, 302	80–81, 159	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.	8–9: Environment
	302-1	Energy consumption within the organisation	178		
GRI 303: Water and Effluents 2018					
	103-1/2/3	Management approach, 303	80–81, 162	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	162	We disclose our water footprint from a value chain perspective in our Environmental Product Declarations. For more information, please see respective EPD document. https://www.environdec.com/library.	
	303-2	Management of water discharge-related impacts	162		
	303-3	Water withdrawal	162		
	303-4	Water discharge	162		
GRI 304: Biodiversity 2016					
	103-1/2/3	Management approach, 304	80–81, 160		8–9: Environment
	304-2	Significant impacts of activities, products, and services on biodiversity	160–161		
GRI 305: Emissions 2016					
	103-1/2/3	Management approach, 305	80–81, 159	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	159, 178		
	305-4	GHG emissions intensity	178	CO_2 emissions (Scope 1) are reported.	8: Environment
	305-7	Nitrogen oxides (NO_X), sulphur oxides (SO_X), and other significant air emissions	160, 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), sulfur oxides (SO_X), and other significant air emissions	160, 178		
GRI 306: Waste 2020					
	103-1/2/3	Management approach, 306	159, 163		8–9: Environment
	306-1	Waste generation and significant waste-related impacts	163		
	306-2	Management of significant waste related-impacts	163		
	306-3	Waste generated	163		

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Omission	UNGC Principle(s)
	Environmental, cont.				
Electric Utility Sector-Specific Environmental Performance Indicators					
	EN23	Waste by type and disposal method	163		
GRI 308: Supplier Environmental Assessment 2016					
	103-1/2/3	Management approach, 308	167		7: Environment
	308-1	New suppliers that were screened using environmental criteria	168		
	Social				
GRI 403: Occupational Health and Safety 2018					
	103-1/2/3	Management approach, 403	164, 80–81, 63		1–2: Human rights 4–6: Labour
	403-1	Occupational health and safety management system	164	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	164	For the European countries Vattenfall operates in, reprisals are not considered to be an issue.	
	403-3	Evaluation of the management approach	164		
	403-4	Worker participation, consultation, and communication on occupational health and safety	164	• 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	164	We put demands on our contractors regarding health & safety conduct and competence.	
	403-6	Promotion of worker health	164		
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	164		
	403-9	Work-related injuries	164	Data is collected locally to a central reporting system.	
GRI 405: Diversity and Equal Opportunities 2016					
	103-1/2/3	Management approach, 405	63, 165	No reporting per minority group, as this is prohibited by rules in certain markets.	6: Labour
	405-1	Diversity of governance bodies and employees	165		
GRI 414: Supplier Social Assessment 2016					
	103-1/2/3	Management approach, 414	167		
	414-1	New suppliers that were screened using social criteria	168		
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.	74-87	Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.	64-73	Describe the organisation's processes for identifying and assessing climate-related risks.	64-65; 69	Disclose the metrics used by the organisation to assess climate related risks and opportunities in line with its strategy and risk management process.	24-26; 27-29; 159-160; 178-179
Describe management's role in assessing and managing climate-related risks and opportunities.	64-73; 74-87	Describe the impact of climate related risks and opportunities on the organisation's businesses, strategy and financial planning.	20-23; 27-29; 64-73	Describe the organisation's processes for managing climate-related risks.	20-23; 64-73	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	159-160; 178-179
		Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	20-23; 26; 69	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management.	64-73	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	24-26

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)	20-23; 27-29; 30-37; 64-73; 178-186
Exposure to regulatory changes or changing consumer and investor expectations (e.g.,expansion of renewable energy in the mix of energy supply)	18-19, 20-23, 30-37,156-159
Changes in investment strategies (e.g., opportunities for increased investment in renewable energy, carbon-capture technologies, and more efficient water use)	18-19, 20-23, 27-29, 30-37

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 AB's Sustainability Report for the year 2020. Vattenfall AB has defined the scope of the Sustainability Report to the pages referred to in the GRI index on the pages 172–174. The Statutory Sustainability Report is 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 applicable criteria and the Annual Accounts Act respectively. The criteria are defined on page 171 in the Sustainability Report and are part of the Sustainability Reporting Guidelines published by GRI (The Global Reporting Initiative) that are applicable to the Sustainability Report, as well as the accounting and calculation principles that the Company has developed. This responsibility includes the internal control relevant to the preparation of a Sustainability Report that is free from material misstatements, whether due to fraud or error.

Responsibilities of the auditor
Our responsibility is to express a conclusion on the Sustainability Report based on the assurance procedures we have performed and to express an opinion regarding the Statutory Sustainability Report. Our engagement is limited to historical financial information presented in this document and does therefore not include future oriented information.

We conducted our engagement in accordance with ISAE 3000 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 the data that is 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. Our examination regarding the Statutory Sustainability Report has been conducted in accordance with FAR's accounting standard RevR 12 The auditor's opinion regarding the statutory sustainability report. A limited assurance engagement and an examination according to RevR 12 are different from and substantially less in scope than reasonable assurance conducted in accordance with IAASB's Standards on Auditing and other generally accepted auditing standards in Sweden.

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 of Vattenfall AB in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

The conclusion based on our limited assurance procedures and an examination according to RevR 12 does not provide the same level of assurance as the conclusion of our reasonable assurance procedures. Since this engagement is combined, our conclusions regarding reasonable assurance and limited assurance are presented separately below.

Our audit has consisted of following information:
Outcome of the strategic targets, disclosed on page 25:
- Customer engagement, Net Promoter Score relative
- Commissioned new renewables capacity
- Absolute CO_2 emissions pro rata
- Lost Time Injury Frequency
- 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 conclusion 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 de-fined 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, 23 March 2021
Ernst & Young AB

Staffan Landén
Authorised Public Accountant

Outi Alestalo
Expert member of FAR

This is the translation of the auditor's report in Swedish

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 the management of Vattenfall AB to undertake a limited review of Vattenfall's Green Bond Investor Report 2020 ("Investor Report"). The Investor Report is located on page 27 in Vattenfall's Annual and Sustainability Report 2020.

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 2020 and consist of relevant parts of Vattenfall's Green Bond Framework, 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 conclusion on the Investor Report based on the limited assurance procedures we have performed.

We have conducted our limited assurance engagement in accordance with ISAE 3000 *Assurance engagements other than audits or reviews of historical financial information*. A limited assurance engagement consists of making inquiries, primarily of persons responsible for the management of bond proceeds and the process for selection of eligible assets, and applying analytical and other limited assurance procedures.

Ernst & Young AB 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 of SEB in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

The procedures performed in a limited review 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 the Executive Management as described above. We consider these criteria suitable for the preparation of the Investor 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 and the evidence we have obtained, 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 criteria defined by the Board of Directors and Executive Management.

Stockholm, 23 March 2021
Ernst & Young AB

Staffan Landén
Authorised Public Accountant

Outi Alestalo
Expert member of FAR

Ten-year overview of sustainability data

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production and environment										
Electricity generation	166.7	178.9	181.7	172.9	173	119	127.3	130.3	129.3	112.8
– of which Hydro power	34.5	42.2	35.6	34.3	39.5	34.8	35.6	35.5	35.8	39.7
– of which nuclear power	42.5	48.9	51.9	49.9	42.2	46.9	51.9	55.0	53.4	39.3
– of which fossil power	85	81.7	87.9	82.7	84	30.8	31.9	31.6	30.2	22.7
– of which wind power	3.4	3.6	3.9	4.1	5.8	5.8	7.6	7.8	9.5	10.8
– of which biomass and waste	1.3	2.5	2.4	2.0	1.5	0.7	0.4	0.4	0.4	0.3
Energy consumption, TWh										
Gas	33.8	32.5	37.1	31.7	27.7	32.5	36.8	38.6	44.3	41.8
Hard coal	58.5	41.5	45.1	35.2	46.1	43.9	42.1	41.1	25.6	10.7
Lignite	147.4	152.8	157.0	153.5	152.7	3.2	1.5	–	–	–
Peat	1.1	0.6	0.7	0.4	0.5	0.5	0.4	0.6	0.2	–
Waste (non-biogenic)	2.8	2.9	3.2	2.9	2.6	1.9	1.2	1.2	1.2	0.7
Biomass, waste (biogenic)	11.8	10.5	9.8	7.1	4.3	4.6	3.7	3.9	4.1	3.5
Other fuels, including oil	5.3	5.9	5.7	5.7	1.9	1.5	1.5	1.7	1.6	0.3
Uranium (tonnes)	104	126	133	119	143	119.6	105.9	118	136.4	98.6
Emissions to air (Scope 1)[1]										
Carbon dioxide (CO_2), Mtonnes	86.7	83.5	86.9	82.7	84.3	23.7	23.0	22.5	18.2	12.1
Specific CO_2 emissions, g/kWh	418	400	412	421	426	170	157	150	126	95
Biogenic CO_2[2], Mtonnes	4.0	3.6	3.4	2.4	1.9	1.6	1.3	1.3	1.4	1.2
Nitrogen oxides(NOx), ktonnes	63.6	53.4	56.5	52.8	52.2	10.2	9.8	9.9	7.4	5.5
Specific NOx emissions, g/kWh	0.306	0.258	0.268	0.271	0.264	0.073	0.066	0.066	0.051	0.044
Specific NOx emissions (only combustion plants), g/kWh	0.491	0.46	0.458	0.474	0.475	0.196	0.187	0.194	0.161	0.148
Sulphur dioxide (SO_2), ktonnes	69.8	56.1	58.2	53.1	50.1	4.2	4.1	4.2	2.3	1.5
Specific SO_2 emissions, g/kWh	0.336	0.272	0.276	0.272	0.253	0.030	0.028	0.028	0.016	0.012
Specific SO_2 emissions (only combustion plants), g/kWh	0.539	0.483	0.472	0.476	0.455	0.081	0.078	0.082	0.051	0.040
Particulate matter (PM), ktonnes	2.6	1.9	2.1	1.7	1.5	0.3	0.3	0.2	0.1	0.1
Specific PM emissions, g/kWh	0.012	0.009	0.010	0.008	0.008	0.002	0.002	0.001	0.001	–
Specific PM emissions (only combustion plants), g/kWh	0.020	0.016	0.017	0.015	0.014	0.005	0.006	0.004	0.003	0.002
Carbon dioxide (CO_2), Mtonnes (Scope 2)	–	–	–	–	–	0.1	0.1	0.1	0.1	0.1
Carbon dioxide (CO_2), Mtonnes (Scope 3)	–	–	–	–	–	19.9	19.6	20.7	19.0	17.0
Capital Goods, goods and services	–	–	–	–	–	0.4	0.4	0.2	0.5	0.6
Fuel and waste incl. transports	–	–	–	–	–	5.0	5.0	5.1	5.0	4.1
Business travel	–	–	–	–	–	0.03	0.03	0.02	0.02	0.01
Use of sold products	–	–	–	–	–	14.4	14.2	15.4	13.5	12.2
Waste and by-products, ktonnes										
Hazardous waste	211	431	194	123	86	106	61	59	72	37
Non-hazardous waste	219	447	349	416	342	133	145	98	75	39
Ash from coal and lignite	6,301	5,997	6,126	5,912	6,219	775	671	579	423	160
Ash from biomass	90	64	67	42.3	38	41.3	37.4	38.4	32.9	21.6
Slag from waste incineration	301	317	330	245	229	237	168	170	173	100
Gypsum	3,109	3,154	3,219	3,000	3,048	208	169	185	128	45
Radioactive waste										
Low and medium radiactive operational waste, m^3	1,082	1,277	883	2,251	3,353	1,013	912	829	411	628
Core components, tonnes	842	18	18	10	7	17	15	31	13[3]	58
Spent nuclear fuel, tonnes	157	147	161	193	197	124	175	137	260	274
SAIDI (minutes/customer)										
Sweden	349	217	183	177	212	150	125	187	439	148
Germany	11	12	13	15	11	10	11	15	10	9
SAIFI (number/customer)										
Sweden	3.1	2.6	2.1	2.4	2.2	2.1	1.8	2.9	2.4	2
Germany	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2

Ten-year overview of sustainability data, cont.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Our people										
Number employees, FTE,	34,685	32,794	31,819	30,181	28,567	19,935	20,041	19,910	19,814	19,859
– of which females	8,267	7,928	7,485	6,983	6,399	4,773	4,827	4,840	5,000	5,083
– of which temporary employed (not permanent contract)	–	1,234	1,154	882	761	550	609	618	664	723
Sick leave										
men %	–	–	3.8%	3.7%	4.1%	3.5%	3.6%	3.5%	3.2%	3.1%
females %	–	–	5.3%	5.0%	5.8%	5.4%	5.7%	5.4%	5.1%	4.6%
Working related accidents										
Internal LTIF (employees)	3.3	2.3	2.6	2.7	2.6	2.0	1.5	1.9	2.1	1.8
External LTI[4] (contractors)	–	–	–	–	133	101	80	71	88	78
Gender diversity										
Female managers %	19%	19%	18%	18%	19%	22%	23%	24%	26%	27%
Share of managers per age category total										
-29	2%	1%	2%	2%	1%	1%	1%	1%	1%	1%
30-49	70%	55%	51%	54%	52%	56%	58%	56%	56%	57%
50-	28%	44%	47%	45%	46%	43%	40%	43%	43%	42%

[1] Emissions are presented in accordance to financial accounting and consolidated.

[2] CO_2 emissions from combustion of biomass.

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

[4] As the Contractor LTIF calculation is not reliable enough, only LTI is reported.

[5] Total greenhouse emissions amount to 12.1 Mtonnes CO_2eq, 0.1 Mtonnes CO_2eq consist of SF_6 and N_2O emissions. Characterisation factors are obtained from the IPCC Fifth Assessment report.

Quarterly overview

	2020				2019			
Amounts in SEK million	**Q4**	**Q3**	**Q2**	**Q1**	**Q4**	**Q3**	**Q2**	**Q1**
Income statement items								
Net sales	44,032	35,375	31,280	48,160	46,179	35,938	34,691	49,552
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	12,121	9,235	8,251	16,900	8,844	13,499	7,515	12,587
Operating profit (EBIT)	5,246	4,743	-7,027	12,313	2,427	8,677	2,869	8,168
Underlying operating profit	7,987	4,818	2,792	10,187	8,207	3,594	3,622	9,673
Financial net	-693	-218	1,058	-3,418	-2,254	-879	-379	-307
Profit before income taxes	4,553	4,525	-5,969	8,895	173	7,798	2,490	7,861
Profit for the period	5,727	3,583	-8,495	6,900	488	6,700	1,253	6,420
– of which, attributable to owners of the Parent Company	5,132	3,595	-8,826	6,587	151	6,375	935	5,713
– of which, attributable to non-controlling interests	595	-12	331	313	337	325	318	707
Balance sheet items								
Cash and cash equivalents and short-term investments	56,222	49,221	42,634	31,706	33,155	33,929	29,006	26,788
Equity	111,192	107,862	103,383	122,277	108,522	109,461	104,815	108,613
– of which, attributable to owners of the Parent Company	97,724	94,705	90,160	107,008	93,631	94,385	90,128	92,680
– of which, attributable to non-controlling interests	13,468	13,157	13,223	15,269	14,891	15,076	14,687	15,933
Interest-bearing liabilities	104,775	108,529	114,768	113,845	97,627	93,821	101,713	99,609
Net debt	48,178	58,858	71,613	81,579	64,266	59,648	72,455	72,539
Adjusted net debt	121,480	126,299	140,319	148,322	132,014	125,373	137,244	134,384
Provisions	155,951	151,439	151,794	149,843	149,792	147,273	143,543	138,113
Noninterest-bearing liabilities	91,330	81,825	83,138	106,329	94,839	95,835	103,961	108,186
Capital employed, average	265,639	263,156	268,587	279,052	260,190	260,068	266,463	265,229
Balance sheet total	463,248	449,655	453,083	492,294	450,780	446,390	454,032	454,521
Cash flow items								
Funds from operations (FFO)	11,368	7,000	4,420	12,235	11,520	7,583	6,057	9,789
Cash flow from operating activities	14,854	19,447	15,924	-8,533	4,990	13,609	9,085	-10,965
Free cash flow	10,199	17,161	12,656	-10,865	-1,171	10,940	6,725	-14,921
Key ratios								
In % unless otherwise stated. (x) means times.								
Operating margin	11.9	13.4	-22.5	25.6	5.3	24.1	8.3	16.5
Operating margin[1]	18.1	13.6	8.9	21.2	17.8	10.0	10.4	19.5
Pre-tax profit margin	10.3	12.8	-19.1	18.5	0.4	21.7	7.2	15.9
Pre-tax profit margin[1]	16.6	13.0	12.3	14.1	12.9	7.6	9.3	18.9
Return on equity	6.7	1.5	4.4	14.4	14.0	16.8	12.0	13.8
Return on capital employed	5.8	4.7	6.1	9.4	8.5	9.2	7.1	7.1
Return on capital employed[1]	9.7	9.9	9.2	9.2	9.6	8.3	7.5	7.6
EBIT interest cover, (x)	4.3	3.3	3.2	4.5	5.3	6.0	5.1	5.1
EBIT interest cover, (x)[1]	7.1	6.8	4.7	4.4	6.0	5.4	5.4	5.4
FFO interest cover, (x)	10.4	10.0	7.2	6.9	9.3	8.3	7.7	7.2
FFO interest cover, net, (x)	12.1	11.3	10.9	9.8	10.3	10.7	10.1	9.5
Cash flow interest cover after maintenance investments, (x)	10.2	6.4	3.3	2.0	1.5	2.1	3.8	5.5
FFO/gross debt	33.4	32.4	31.2	32.8	35.8	32.7	25.9	24.4
FFO/net debt	72.7	59.8	49.9	45.8	54.4	51.5	36.4	33.5
FFO/adjusted net debt	28.8	27.9	25.5	25.2	26.5	24.5	19.2	18.1
EBITDA/net financial items, (x)	15.7	11.2	25.0	13.7	8.7	13.0	7.9	16.5
EBITDA/net financial items, (x)[1]	16.1	11.4	22.6	11.9	12.9	8.1	8.6	18.5
Equity/total assets	24.0	24.0	22.8	24.8	24.1	24.5	23.1	23.9
Gross debt/equity	94.2	100.6	111.0	93.1	90.0	85.7	97.0	91.7
Net debt/equity	43.3	54.6	69.3	66.7	59.2	54.5	69.1	66.8
Gross debt/gross debt plus equity	48.5	50.2	52.6	48.2	47.4	46.2	49.2	47.8
Net debt/net debt plus equity	30.2	35.3	40.9	40.0	37.2	35.3	40.9	40.0
Net debt/EBITDA, (x)	1.0	1.4	1.5	1.7	1.5	1.4	2.0	2.0
Adjusted net debt/EBITDA, (x)	2.6	2.9	3.0	3.2	3.1	3.0	3.7	3.7
Other information								
Investments	5,651	5,508	5,587	4,601	9,792	4,586	5,696	6,756
Electricity generation, TWh	30.5	25.0	24.1	33.1	34.7	28.7	30.9	35.9
Sales of electricity, TWh	44.0	37.9	36.7	45.5	42.9	38.7	42.4	45.4
Sales of heat, TWh	4.5	1.4	2.5	5.4	5.1	1.7	3.1	7.3
Sales of gas, TWh	18.9	5.9	9.3	22.7	19.7	6.3	9.0	24.3
Number of employees, full-time equivalents	19,859	19,773	19,755	20,009	19,815	19,786	20,272	20,202

[1] Based on Underlying operating profit, that is, Operating profit excluding items affecting comparability.

Ten-year overview

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Income statement items										
Net sales	181,040	167,313	172,253	165,945	143,576	139,208	135,114	152,091	166,360	158,847
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	54,538	54,271	43,554	41,038	30,604	27,209	34,399	34,341	42,445	46,507
Operating profit (EBIT)	23,209	25,958	-6,218	-2,195	-5,069	1,337	18,524	17,619	22,141	15,276
Underlying operating profit	30,793	27,530	28,135	24,133	20,529	21,697	23,203	19,883	25,095	25,790
Financial net	-8,911	-7,840	-9,037	-6,045	-4,776	-6,382	-5,755	-3,616	-3,819	-3,270
Profit before income taxes	14,298	18,118	-15,255	-8,240	-9,845	-5,045	12,769	14,003	18,322	12,006
Profit for the year	10,416	17,047	-13,543	-8,284	-19,766	-26,004	9,484	12,007	14,861	7,716
– of which, attributable to owners of the Parent Company	11,083	16,759	-13,668	-8,178	-16,672	-26,324	8,333	10,157	13,173	6,489
– of which, attributable to non-controlling interests	-667	288	125	-106	-3,094	320	1,151	1,850	1,688	1,227
Cash flow items										
Funds from operations (FFO)	38,256	34,419	31,888	32,131	29,009	28,186	26,643	23,275	34,949	35,024
Cash flow from operating activities	33,468	28,485	37,843	40,146	40,934	30,783	25,728	41,054	16,719	41,692
Free cash flow	17,637	12,619	23,579	23,234	25,013	19,217	13,091	27,575	1,571	29,153
Balance sheet items										
Cash and cash equivalents and short-term investments	28,685	46,495	27,261	45,068	44,256	43,292	26,897	40,071	33,155	56,222
Equity	138,931	149,372	130,718	128,462	115,956	83,800	92,332	103,597	108,522	111,192
– of which, attributable to owners of the Parent Company	131,988	140,764	120,370	115,260	103,984	68,272	77,085	88,096	93,631	97,724
– of which, attributable to non-controlling interests	6,943	8,608	10,348	13,202	11,972	15,528	15,247	15,501	14,891	13,468
Interest-bearing liabilities	170,350	160,261	126,488	125,928	110,585	96,667	87,154	88,275	97,627	104,775
Net debt	141,089	111,907	98,998	79,473	64,201	50,724	59,260	47,728	64,266	48,178
Adjusted net debt	176,031	154,335	162,590	158,291	137,585	124,741	124,360	112,324	132,014	121,480
Provisions	91,719	103,832	118,166	138,567	138,263	138,344	131,680	136,642	149,792	155,951
Noninterest-bearing liabilities	123,558	114,899	110,112	104,252	97,513	90,449	88,200	134,094	94,839	91,330
Capital employed, average	317,799	313,124	302,743	293,992	279,435	248,640	240,778	250,283	260,190	265,639
Balance sheet total	524,558	528,364	485,484	497,209	462,317	409,260	409,132	462,608	450,780	463,248
Key ratios										
In % unless otherwise stated. (x) means times.										
Operating margin	12.8	15.5	-3.6	-1.3	-3.5	1.0	13.7	11.4	13.3	9.6
Operating margin[1]	17.0	16.5	16.3	14.5	14.3	15.6	17.2	12.9	15.1	16.2
Return on equity	8.6	12.3	-11.4	-6.9	-16.8	-33.4	11.1	11.9	14.0	6.7
Return on capital employed	7	8	-2	-0.8	-1.8	0.5	7.7	7.0	8.5	5.8
Return on capital employed[1]	10	9	9	8.2	7.3	8.7	9.6	7.9	9.6	9.7
EBIT interest cover, (x)	2.6	3.7	-0.7	-0.1	-0.8	0.5	3.3	4.3	5.3	4.3
EBIT interest cover, (x)1	3.3	3.9	4.1	5.0	4.8	4.6	4.1	4.9	6.0	7.1
FFO interest cover, (x)	4.9	5.7	5.4	7.3	6.5	6.5	5.4	6.5	9.3	10.4
FFO interest cover, net, (x)	5.8	6.6	6.2	10.1	9.4	7.7	6.9	7.8	10.3	12.1
FFO/gross debt	22.5	21.5	25.2	25.5	23.2	27.8	30.6	26.4	35.8	33.4
FFO/net debt	27.1	30.8	32.2	40.4	39.9	53.0	45.0	48.8	54.4	72.7
FFO/adjusted net debt	22	22.3	19.6	20.3	18.6	21.6	21.4	20.7	26.5	28.8
Equity/total assets	26.5	28.3	26.9	25.9	25.1	20.5	22.6	22.4	24.1	24.0
Gross debt/equity	122.6	107.3	96.8	98.0	95.4	115.4	94.4	85.2	90.0	94.2
Net debt/equity	101.6	74.9	75.7	61.9	55.4	60.5	64.2	46.1	59.2	43.3
Gross debt/gross debt plus equity	55.1	51.8	49.2	49.5	48.8	53.6	48.6	46.0	47.4	48.5
Net debt/EBITDA, (x)	2.6	2.1	2.3	1.9	2.1	1.9	1.7	1.4	1.5	1.0
Adjusted net debt/EBITDA, (x)	3	2.8	3.7	3.9	4.5	4.6	3.6	3.3	3.1	2.6
Other information										
Dividend to owners of the Parent Company	4,433	6,774	–	–	–	–	2,000	2,000	3,623	4,000[2]
Investments	35,750	29,581	27,761	29,032	25,776	21,921	21,294	21,913	26,833	21,347
Electricity generation, TWh	166.7	178.9	181.7	172.9	117.4	119.0	127.3	130.3	130.3	112.7
Sales of electricity, TWh	209.4	205.5	203.3	199.0	197.2	193.2	157.3	174.1	169.4	164.1
Sales of heat, TWh	41.6	29.8	30.3	24.1	20.6	20.3	18.9	18.3	17.1	13.8
Sales of gas, TWh	53.8	52.4	55.8	45.5	50.7	54.8	56.3	60.7	59.2	56.8
Number of employees, full-time equivalents	37,679	33,059	31,819	30,181	28,567	19,935	20,041	19,910	19,815	19,859

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 2020.

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 of the operating result by excluding items affecting comparability that are of an infrequent nature.

FFO – Funds From Operations, see Consolidated Statement of Cash Flows.

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 definitions
Hybrid Capital – Perpetual subordinated securities, junior to all Vattenfall's unsubordinated debt instruments.

LTIF – Lost Time Injury Frequency (LTIF) is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality.

Calculations of key ratios

Operating margin, %	= 100 x	EBIT / Net sales	15,276 / 158,847	=	9.6
Operating margin excl items affecting comparability, %	= 100 x	Underlying EBIT / Net sales	25,790 / 158,847	=	16.2
Pre-tax profit margin, %	= 100 x	Profit before income taxes / Net sales	12,006 / 158,847	=	7.6
Pre-tax profit margin excl items affecting comparability, %	= 100 x	Profit before income taxes excl items affecting comparability / Net sales	22,521 / 158,847	=	14.2
Return on equity, %	= 100 x	Profit for the period attributable to owner of the Parent Company / Average equity for the period attributable to owner of the Parent Company excl the Reserve for cash flow hedges	6,489 / 97,556	=	6.7
Return on capital employed, %	= 100 x	EBIT / Capital employed, average	15,276 / 265,639	=	5.8
Return on capital employed excl items affecting comparability, %	= 100 x	Underlying EBIT / Capital employed, average	25,790 / 265,639	=	9.7
EBIT interest cover, (x)	=	EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	15,834 / 3,721	=	4.3
EBIT interest cover excl items affecting comparability, (x)	=	Underlying EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	26,348 / 3,721	=	7.1
FFO interest cover, (x)	=	FFO + financial expenses excl discounting effects attributable to provisions / Financial expenses excl discounting effects attributable to provisions	38,745 / 3,721	=	10.4
FFO interest cover, net, (x)	=	FFO + financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	38,187 / 3,163	=	12.1
Cash flow interest cover after maintenance investments, (x)	=	Cash flow from operating activities less maintenance investments + financial expenses excl discounting effects attributable to provisions and interest components related to pension costs / Financial expenses excl discounting effects attributable to provisions and interest components related to pension costs	32,336 / 3,183	=	10.2
FFO/gross debt, %	= 100 x	FFO / Interest-bearing liabilities	35,024 / 104,775	=	33.4
FFO/net debt, %	= 100 x	FFO / Net debt	35,024 / 48,178	=	72.7
FFO/adjusted net debt, %	= 100 x	FFO / Adjusted net debt	35,024 / 121,480	=	28.8
EBITDA/net financial items, (x)	=	EBITDA / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	46,507 / 3,163	=	14.7
EBITDA excl items affecting comparability/net financial items, (x)	=	EBITDA excl items affecting comparability / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	44,041 / 3,163	=	13.9
Equity/total assets, %	= 100 x	Equity / Balance sheet total	111,192 / 463,248	=	24.0
Gross debt/equity, %	= 100 x	Interest-bearing liabilities / Equity	104,775 / 111,192	=	94.2
Net debt/equity, %	= 100 x	Net debt / Equity	48,178 / 111,192	=	43.3
Gross debt/gross debt plus equity, %	= 100 x	Interest-bearing liabilities / Interest-bearing liabilities + equity	104,775 / 215,967	=	48.5
Net debt/net debt plus equity, %	= 100 x	Net debt / Net debt + equity	48,178 / 159,370	=	30.2
Net debt/EBITDA, (x)	=	Net debt / EBITDA	48,178 / 46,507	=	1.0
Adjusted net debt/ EBITDA, (x)	=	Adjusted net debt / EBITDA	121,480 / 46,507	=	2.6

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	79.9[3]	2.5	3.5	59.9[4]	18.1	0.2	164.1
Sales of Heat, TWh	2.6	–	–	9.5	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	–	26.8[4]	8.7	–	60.6
Number of network customers	970,513	–	–	2,379,422	–	–	3,349,935
Number of gas customers	–	–	–	607,165[4]	1,729,986	–	2,337,151
Electricity network							
Transited volume, TWh	70.3	–	–	12.3	–	–	82.6
Distribution network, km	136,541	–	–	35,281	–	–	171,822
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

Facts about Vattenfall's markets 2019[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2019							
Hydro power[2]	8,689	138	–	2,880	6	–	11,713
Nuclear power	7,182	–	–	–	–	–	7,182
Fossil-based power	699	–	–	3,598	4,067	–	8,364
– of which, gas	*–*	*–*	*–*	*1,293*	*3,417*	*–*	*4,710*
– of which, hard coal	*–*	*–*	*–*	*2,296*	*650*	*–*	*2,946*
– of which, oil and other	*699*	*–*	*–*	*9*	*–*	*–*	*708*
Wind power	358	–	719	588	273	1,077	3,015
Biomass, peat, waste	189	–	–	44	2	–	235
Solar power	–	–	–	10	14	5	29
Total	**17,117**	**138**	**719**	**7,119**	**4,362**	**1,082**	**30,538**
Installed capacity heat, MW, 31 December 2019	**2,144**	**–**	**–**	**5,639**	**1,079**	**–**	**8,861**
Generated electricity, TWh							
Hydro power[2]	32.2	0.3	–	3.3	–	–	35.8
Nuclear power	53.4	–	–	–	–	–	53.4
Fossil-based power	–	–	–	11.2	19.0	–	30.2
– of which, gas	*–*	*–*	*–*	*3.6*	*16.5*	*–*	*20.1*
– of which, hard coal	*–*	*–*	*–*	*7.5*	*2.4*	*–*	*9.9*
– of which, oil and other	*–*	*–*	*–*	*0.2*	*–*	*–*	*0.2*
Wind power	1.0	–	2.2	2.7	0.5	3.1	9.5
Biomass, peat, waste	0.2	–	–	0.2	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**86.8**	**0.3**	**2.2**	**17.4**	**19.5**	**3.1**	**129.3**
Production of heat, TWh							
Fossil-based heat	0.2	–	–	9.5	1.6	–	11.3
– of which, gas	*–*	*–*	*–*	*7.0*	*1.6*	*–*	*8.6*
– of which, hard coal	*–*	*–*	*–*	*1.7*	*–*	*–*	*1.7*
– of which, oil and other	*0.2*	*–*	*–*	*0.8*	*–*	*–*	*1.0*
Biomass, peat, waste	3.1	–	–	1.0	–	–	4.2
Total	**3.4**	**–**	**–**	**10.5**	**1.6**	**–**	**15.5**
Sales of electricity, TWh	34.33	9.7	1.1	51.04	18.6	0.6	169.4
Sales of Heat, TWh	3.0	–	–	12.3	1.7	–	17.1
Sales of gas, TWh	–	–	–	14.24	43.9	1.1	59.2
Number of retail customers	873,812	310,832	–	3,435,645	2,117,578	112,872	6,850,739
Electricity volume, TWh retail customers	8.2	2.1	–	10.14	6.9	0.6	27.9
Electricity volume, TWh resellers	5.0	0.6	0.8	22.9	–	–	29.3
Electricity volume, TWh businesses	23.83	6.7	–	22.44	8.9	–	61.8
Number of network customers	967,681	–	–	2,366,891	–	–	3,334,572
Number of gas customers	–	–	–	534,7764	1,851,618	81,162	2,467,556
Electricity network							
Transited volume, TWh	72.2	–	–	12.9	–	–	85.1
Distribution network, km	135,240	–	–	34,972	–	–	170,212
Number of employees (full-time equivalents)							
Per country	9,138	84	329	5,903	3,540	524	19,518
Group total							19,814
CO_2 emissions per country, Mtonnes	0.3	–	–	9.4	8.6	–	18.2
CO_2 emission allowances received, Mtonnes CO_2/year	0.2	–	–	0.7	0.1	–	1.0

[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.

Pro rata[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

Footnotes: For explanations, see page 185.

2019	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2019							
Hydro power[2]	8,482	138	–	2,880	6	–	11,506
Nuclear power	4,914	–	–	282	–	–	5,196
Fossil-based power	699	–	–	3,596	4,067	–	8,362
– of which, gas	*–*	*–*	*–*	*1,293*	*3,417*	*–*	*4,710*
– of which, hard coal	*–*	*–*	*–*	*2,296*	*650*	*–*	*2,946*
– of which, oil and other	*699*	*–*	*–*	*8*	*–*	*–*	*707*
Wind power	287	–	717	322	345	1,004	2,675
Biomass, peat, waste	189	–	–	33	2	–	224
Solar power	–	–	–	10	14	5	29
Total	**14,571**	**138**	**717**	**7,122**	**4,434**	**1,009**	**27,991**
Installed capacity heat, MW, 31 December 2019	**2,034**	**–**	**–**	**5,536**	**1,079**	**–**	**8,649**
Generated electricity, TWh							
Hydro power[2]	31.2	0.3	–	3.3	–	–	34.8
Nuclear power	36.5	–	–	1.9	–	–	38.4
Fossil-based power	0.0	–	–	11.2	19.0	–	30.2
– of which, gas	*–*	*–*	*–*	*3.6*	*16.5*	*–*	*20.1*
– of which, hard coal	*–*	*–*	*–*	*7.5*	*2.4*	*–*	*9.9*
– of which, oil and other	*0.0*	*–*	*–*	*0.2*	*–*	*–*	*0.2*
Wind power	0.8	–	2.2	1.4	0.7	2.8	7.9
Biomass, peat, waste	0.2	–	–	0.2	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**68.7**	**0.3**	**2.2**	**18.0**	**19.6**	**2.8**	**111.7**
Produced heat, TWh	**3.2**	**–**	**–**	**10.2**	**1.6**	**–**	**15.0**
CO_2 emissions per country, Mtonnes	0.3	–	–	9.3	8.6	–	18.2

Footnotes 1–4: For explanations, see page 185.

Glossary

APX – Amsterdam Power Exchange. An energy exchange for the Netherlands, the UK and Belgium.

Aspect – GRI term that describes sustainability areas based on the categories Environment, Economic and Social.

Availability – Actual electricity generation in relation to the maximum possible generation.

Biomass – Renewable fuel, such as wood, bark and pine oil.

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.

CO_2 – Carbon dioxide.

Derivative instrument – A financial instrument that is commonly used to manage risk. Its value and change in value are related to the underlying (derived) instrument. Examples of derivative instruments are options, forward contracts and swaps.

DMA – Disclosures on Management Approach. Describes why certain sustainability aspects are identified as material for the company and how steering and monitoring of these are conducted.

EEX – The European Energy Exchange. The German electricity exchange.

Efficiency – An efficiency rating indicates the relationship between energy output and the energy input 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.

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.

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

IED (Industrial Emissions Directive) – An EU directive that sets higher demands on lowering emission levels and spills to soil and water.

IFRS – International Financial Reporting Standards – Vattenfall has been reporting in accordance with IFRS since 2005.

Indicator – GRI term that provides qualitative or quantitative information about the performance and development of the aspects that are identified as material for the company.

Installed capacity – The performance according to design data for power plants. Commonly measured in MW (Megawatt).

Intrapreneurship – An innovative process within an organisation, typically larger companies.

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.

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 – Marginal security that the holding of a derivative position must pledge to cover the credit risk of its counterparty (OTC or exchange).

Merit order – The order in which production capacity at plants is used.

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.

OTC (Over the Counter) – Trading outside of exchanges (directly or via brokers) in physical and financial contracts.

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.

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.

SO_2 – Sulphur dioxide.

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

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 2021	Annual General Meeting
29 April 2021	Interim report January–March
20 July 2021	Interim report January–June
28 October 2021	Interim report January–September
4 February 2022	Year-end report for 2021 (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 2020 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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