Fossil-free living within one generation

VATTENFALL

The future is fossil free

At Vattenfall we exist to help our customers power their lives in ever climate smarter ways. The goal is to be free from fossil fuels within one generation.

Contents

About the report

The 2018 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 2–5, 8–11, 62–147 and are assured by our auditors. Pages 10–11, 14–17, 58–79, and 152–163 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 2018 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**.

● Administration report and financial statements ● Statutory sustainability report

Market trends

Sustainability and customer focus	Electrification	More decentralised energy solutions
Digitalisation	Changing demands on competences and capabilities	High cost efficiency requirements

Vattenfall is passionate about driving the transformation of the energy sector. Falling technology costs and greater focus on climate change are accelerating the development of renewable energy and incentivising electrification as a means of reducing CO_2 emissions. This entire development is underpinned by digitalisation, enabling companies to work smarter, faster, and more efficiently. Cost efficiency is a prerequisite for value creation and growth in an increasingly competitive market, and to that end companies need new competences, speed in learning and inclusive teams.

What this means for Vattenfall

Wind power continues to grow in all of Vattenfall's markets, both offshore and onshore.

Hydro power will continue to play a key role as a large-scale, on-demand and renewable energy source.

Energy storage systems such as batteries and pumped storage power plants are helping to manage the challenges presented by renewable and weather-dependent energy like wind and solar power.

Solar power will play an ever-greater role in the future energy system, in small customer installations as well as large-scale installations.

Electrification of roads and transportation will contribute to significant reductions in CO_2 emissions and noise in cities.

The city of the future is an emissions-free environment with sustainable heating solutions, solar panels on rooftops, a secure and flexible electricity grid, and electric vehicles on the streets.

Nuclear power will continue to play an important role in Sweden until it is decommissioned in the 2040s as a climate-neutral, cost-effective source of base load electricity.

Electrification of industries like steel, cement, chemicals, and refineries has the potential to dramatically reduce CO_2 emissions from industrial processes.

Fossil fuels will be phased out within one generation, and we are continuing on our path towards a complete phase-out of coal in our heat production by 2030.

Digitalisation is enabling development of better customer offerings along with more efficient operations and management of assets.

New competences, speed in learning and diverse and inclusive teams are critical for serving our customers in the energy transition.

Customer centricity and sustainability are key for us in attracting customers, talent and investors. Customers are increasingly considering climate impact, social and environmental performance, and energy efficiency when choosing energy solutions and suppliers.

Innovative energy sharing platforms will enable customers to sell and purchase renewable electricity.

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.

6,550,000
Electricity customers

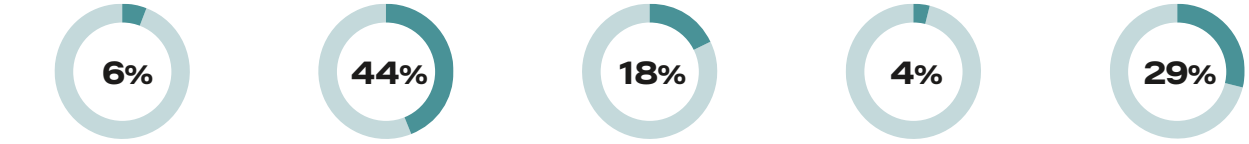
2,140,000
Heat customers

3,310,000
Electricity network customers

2,350,000
Gas customers

20,000
Employees

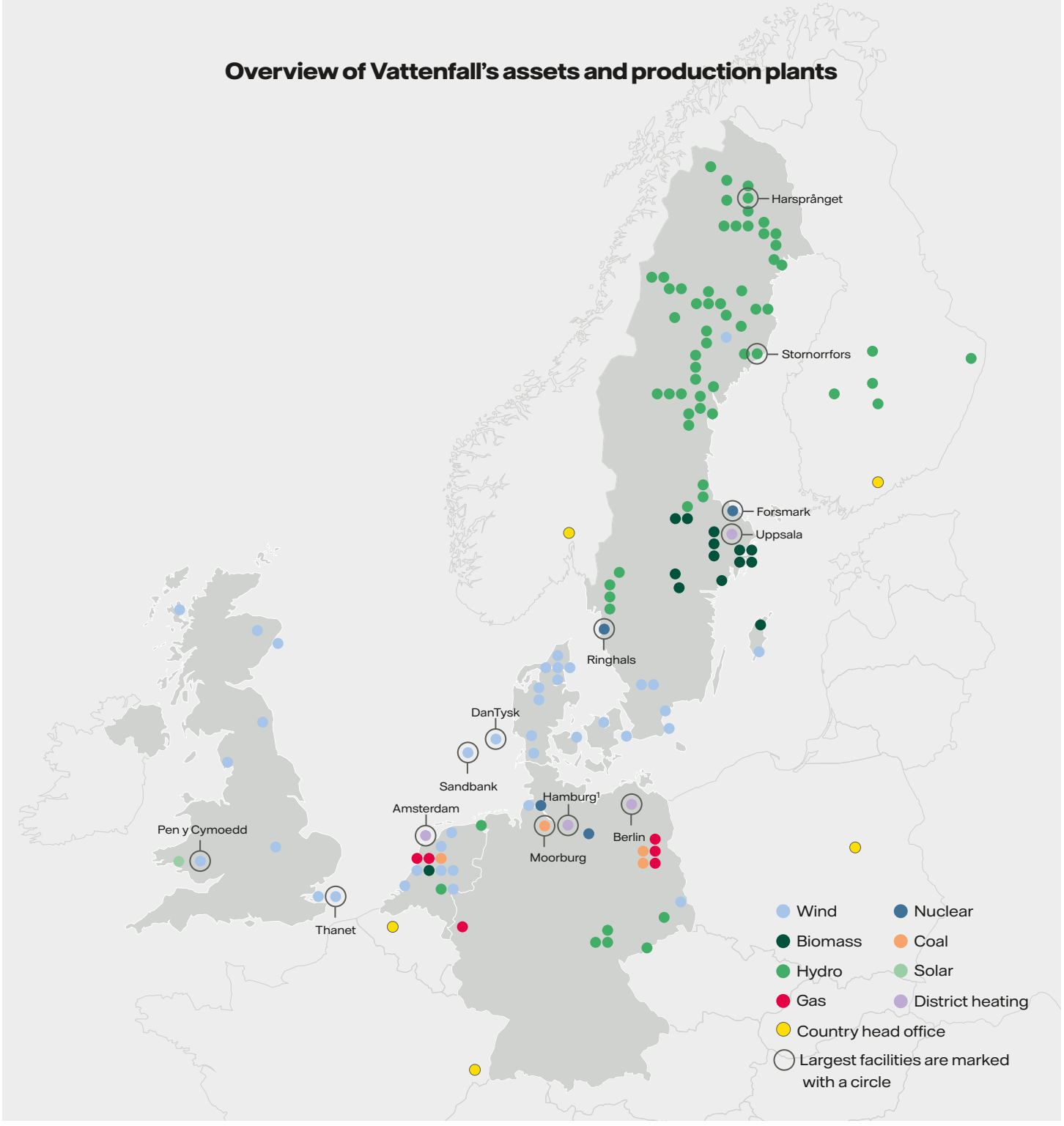
Operating segments – percentage share of underlying operating profit[1] 2018



SEK 19,883 million

[1] Operating profit excluding items affecting comparability.

Overview of Vattenfall's assets and production plants



Additional 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

E-mobility
Vattenfall operates 10,500 charging points throughout Sweden, Germany, and the Netherlands

Largest operations and plants

Wind farms

Thanet offshore wind farm, 300 MW
DanTysk offshore wind farm, 288 MW
Sandbank offshore wind farm, 288 MW
Pen y Cymoedd onshore wind farm, 228 MW

Power plants

Ringhals nuclear power plant, 3,952 MW
Forsmark nuclear power plant, 3,271 MW
Moorburg 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**, **Hamburg**[1] and **Uppsala**

[1] Operations to be sold to the City of Hamburg. Closing of the transaction is expected in 2019.

The year in numbers

Financial

SEK million

156,824 (135,114)
Net sales

19,883 (23,203)
Underlying operating profit[1]

17,619 (18,524)
Operating profit

12,007 (9,484)
Profit for the year

[1] Operating profit excluding items affecting comparability.

Social

64% (64)
Employee Engagement Index

1.9 (1.5)
LTIF (Lost Time Injury Frequency)

24% (23)
Share of female managers

+1 (+2)
Net Promoter Score (NPS)[1]

[1] NPS is a tool for measuring customer loyalty.

Environmental

22.0 Mtonnes (22.6)
CO_2 emissions

694 GWh (511)
Energy efficiency improvements[1]

101 MW (354)
Added renewables capacity

75% (75)
Share of fossil-free electricity generation

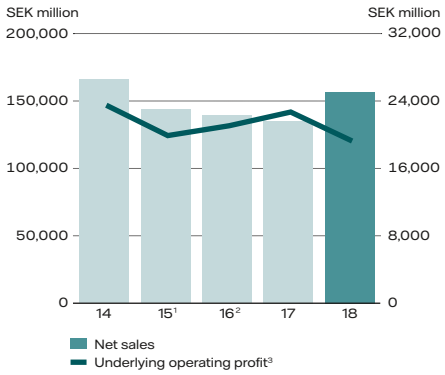
[1] Cumulative energy efficiency improvements since 2016.

“A stable Vattenfall continues to drive the transition to a fossil-free life.”

Magnus Hall, President and CEO

Performance trends

Net sales and underlying operating profit

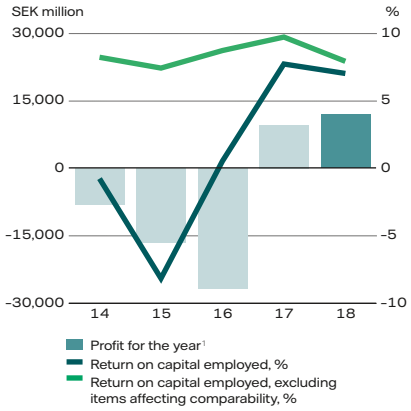


[1] The value for 2015 has been recalculated compared with information published in Vattenfall's 2015 Annual and Sustainability Report. This is because the lignite operations have been divested and are reported as a discontinued operation in accordance with IFRS 5.

[2] The value pertains to continuing operations.

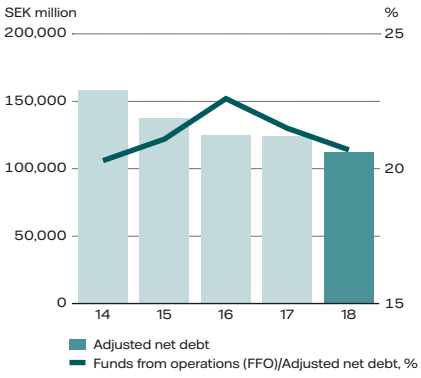
[3] Operating profit excluding items affecting comparability.

Earnings and return

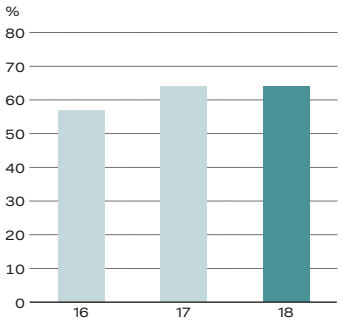


[1] Profit for the year attributable to owners of the Parent Company.

Adjusted net debt and funds from operations

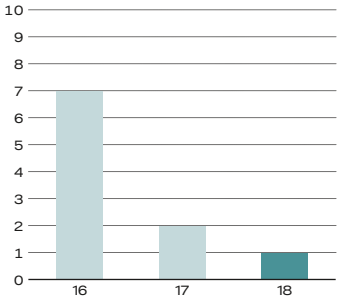


Employee engagement index[1]



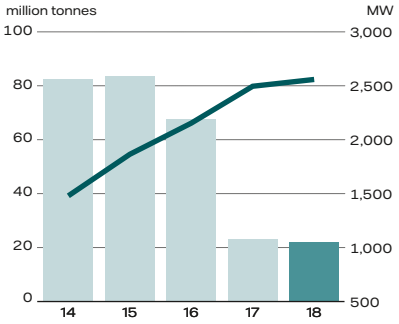
[1] Documentation for measurement of target achievement is derived from the results of an employee survey, which is conducted on an annual basis.

Net Promoter Score relative to peers[1]



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

CO_2 exposure and installed renewable capacity



A fossil-free future unites us

For more than 100 years Vattenfall has been a driver of electrification of society, which has contributed to a higher living standard, economic growth and modern life. We can be proud of our heritage and our leading role in this development. Much has changed through the years, but the benefits of electrification remain. Today we view it not only as a driving force behind further technological and economic progress. We are also convinced that continued electrification based on fossil-free electricity is a basic precondition for Vattenfall's customers to be fossil free within one generation. During 2018 we consciously implemented our strategy with the purpose of making this possible.

Results

Profit for the year amounted to SEK 12 billion, an increase of SEK 2.5 billion. The Board of Directors proposes a dividend of SEK 2 billion. The underlying operating profit decreased by SEK 3.3 billion to SEK 19.9 billion. Vattenfall made important progress during the year, but we also faced a number of challenges. We had very good production in both our nuclear and hydro power operations, but the high electricity prices did not have a corresponding impact on our earnings. This is because of the hedges we take out to ensure price stability over time. Last year they made a positive contribution, but not this year. Earnings from our heat operations were significantly lower due to higher prices of fuel and CO_2 emission allowances. This was partially offset by a profit increase in our wind operations.

The market is moving towards a fossil-free future

Despite sharp swings in the markets for fuel and CO_2 in 2018, structurally there is no doubt about the future direction. The Paris Agreement and the EU's climate goals are driving the shift towards more fossil-free power generation and lower carbon emissions. The Swedish energy agreement, which ensures that we make optimal use of our nuclear and hydro power generation resources, and the future ban on coal-fired power generation in the Netherlands, are further examples of initiatives that have been taken at the national level. Another is the coal phase-out proposal in Germany. Parallel with this, plans are being drawn for new renewable electricity generation with significant capacity entirely without government support. Vattenfall's winning bid for the Hollandse Kust Zuid 1 & 2 offshore wind farm (~700 MW) in the Netherlands is a prime example. The project has excellent prospects and is very attractive for Vattenfall at the same time that it supports the energy shift in the Netherlands.

In the energy industry we have thus already achieved a strong level of competitiveness for renewable energy sources, and growth has also exceeded many expectations. The challenges we see looking at tomorrow's energy system are now mainly a matter of meeting the demands that renewable energy sources inherently give rise to. The energy system must be made more flexible to be able to handle a large share of weather-dependent generation. This will require more energy storage, the ability to steer demand, higher

transmission capacities between markets, and an adaptation of the electricity grids. Vattenfall has strength through its large-scale and flexible hydro power generation in Sweden, but from a system perspective, major investments are needed in our electricity networks to accommodate the transition. We regret the Swedish government's decision on regulated revenues for Swedish electricity grid operators that will begin to take effect in 2020. This new regulation chokes the willingness to invest at a time when it is needed most.

At Vattenfall we continue to operate our hydro and nuclear power plants with ever-greater efficiency. Nuclear power generation achieved a record year, with 55 TWh of generation and 88.9% availability. Hydro power generation was stable at 35.5 TWh, in spite of volatile inflows following a very warm summer which was later compensated by a rainy autumn. We are dismantling our nuclear power plants in Germany in accordance with political decisions, and we are preparing for the responsible closure of Ringhals 1 and 2 at the end of 2020 and 2019, respectively. Sweden's climate goal of zero net emissions by 2045 is a challenging but possible mission. Our remaining reactors in Ringhals and Forsmark, together with our hydro power assets, are key to making this a reality.

Collaboration for change

No one alone can meet the challenges presented by climate change. Nations, cities, politicians, civil society and companies must all work together to achieve results. Over time Vattenfall has built up very strong ties and partnerships in society. We have a long-standing productive and rewarding partnership with the City of Berlin, for example. Together we set a target in 2009 to halve our carbon emissions by 2020 compared with 1990. We were happy to note earlier in 2018 that we had already achieved this goal three years earlier than promised. In Hamburg we would have preferred to continue as a partner, but now respect the city's decision to buy back Vattenfall's majority stake in the city's district heating network.

The list of Vattenfall's strategic partnerships today is long. Our vision of a life free from fossil fuels within one generation guides us in our active search for new partnerships. At the same time we see that these clearly strengthen our customer offerings. A superb example is InCharge, the European charging network for e-vehicles and plug-in hybrids, which today has more than 10,500 charging points. The initiative is owned by Vattenfall, but is now growing with participation by new partners. During the year, we expanded together with car maker Volvo Cars, the car-sharing service aimo, and the property companies Klövern and Diös, among others. Vattenfall has also entered into an agreement with McDonald's to install fast EV chargers in the Netherlands.

Vattenfall is also a driver in a number of industrial collaborations with great potential to reduce carbon emissions. Last summer we broke ground on a pilot plant for fossil-free steel production in Luleå, Sweden. Conducted under the name HYBRIT, the collaboration is a joint venture we are engaged in together with the mining company LKAB and the steel maker SSAB. With support from the Swedish Energy Agency, Vattenfall is also conducting project planning together with Preem on a large hydrogen gas plant in Gothenburg to enable fossil-free production of biofuels.

In March we formed an alliance in France to participate in a tendering process for offshore wind power in Dunkirk. This is being conducted together with the financial institution Caisse des Dépôts and the development company WPD. We are now also taking a step into the French end customer market. In Scotland I had the honour in September, together with First Minister Nicola Sturgeon, to inaugurate Vattenfall's European Offshore Wind Development Centre (97 MW), a testing and development centre in Aberdeen Bay. The project is supported by the Aberdeen Renewable Energy Group with co-financing from the EU. The wind turbines have an impressive size and feature what is today the world's highest commercial turbine capacity (8.8 MW).

> "No one alone can meet the challenges presented by climate change. Nations, cities, politicians, civil society and companies must all work together to achieve results."

Our employees and their safety first

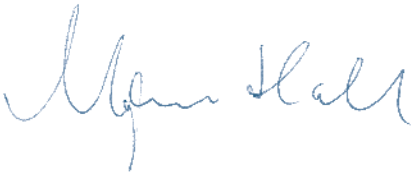
In September a tragic accident took place outside Kungsbacka, Sweden, in which an employee lost his life while attending to a downed power line during a storm. In October we received additional, tragic news that an employee died in connection with a routine work matter in Kiruna. My thoughts go out to these individuals' families and loved ones. Every workplace accident is an accident too many and requires both reflection and an exhaustive investigation to make sure it never happens again. A safe and sound work environment shall always be a matter of fact in our company, and together with suppliers and subcontractors, we must now work even harder to sharpen our focus on safety.

Responsibility to respect human rights

Vattenfall supports the UN's 17 Sustainable Development Goals and respects human rights, which is an important component of these goals. We are continuing our work to manage the most critical risks related to human rights, including work conditions in our supply chain in high-risk countries. For example, we have further elaborated upon the questions we use in our third-party audits of products and services in order to more thoroughly cover all human rights. The work coupled to our own fuel supply has also been made more in-depth. Among other things, we paid a follow-up visit related to our supply of coal from Colombia in order to continue the dialogue surrounding the measures we recommended in connection with our visit in 2017. We also conducted an evaluation and dialogue on human rights in connection with our audit of a Russian uranium supplier. This served as a pilot that will form the foundation for our continued work.

Well-positioned for a fossil-free life within one generation

It is clear and gratifying that our vision of a fossil-free future unites us all as employees, partners and customers. With continued stable production of district heating and fossil-free electricity from nuclear and hydro power, the expansion of renewable generation, digitalisation of our entire value chain, the phase-out of fossil fuels and increasingly attractive and competitive customer offerings, Vattenfall is well-positioned for the future. We welcome new collaborations along our journey that will make it possible to live free from fossil fuels within one generation. In closing I would like to extend great thanks to all our employees, customers and other stakeholders, who share in Vattenfall's successes.



Magnus Hall, President and CEO

Important events

Q1 2018

Winning bid for Hollandse Kust Zuid 1 & 2 offshore wind farm in the Netherlands – Vattenfall won the permit for what will be the first non-subsidised offshore wind farm in the Netherlands, Hollandse Kust Zuid 1 & 2. The wind farm has a planned capacity of approximately 700 MW and will be able to supply 1 to 1.5 million Dutch households with renewable energy.

Lease purchase agreement for solar panels in the Netherlands – Arrangement of the first lease purchase agreement for solar panels for a business customer in the Netherlands, where nearly 2,000 solar panels have been installed on a commercial building in the city of Harlingen.

Supply contract with Swedish food retailer Axfood – Vattenfall concluded a new supply contract with Axfood, Sweden's second largest food retailer. Starting 1 April 2018 Vattenfall will be delivering an annual volume of 280 GWh of renewable electricity to all of Axfood's Snabbgross, Hemköp and Willys stores in Sweden.

700 MW

planned capacity for Hollandse Kust Zuid 1 & 2

Vattenfall forms alliance for the French wind market – In early March Vattenfall took a further step into the European wind power market by forming an alliance with the finance group Caisse des Dépôts (CDC) and the developer WPD for the bid preparation in an offshore wind tender in Dunkirk, France.

Expansion of InCharge with Bilprovningen – The Swedish motor vehicle inspection company Bilprovningen chose to partner with Vattenfall InCharge to offer public charging at its inspection stations. The sites will be connected to Vattenfall InCharge, giving e-vehicle customers access to an extensive charging network.

Vattenfall arranged the first lease purchase agreement for solar panels for a business customer in the Netherlands where nearly 2,000 solar panels have been installed.

Q2 2018

Vattenfall entered into a partnership with Volvo Cars in Sweden where Volvo customers who buy an electric hybrid can choose the "InCharge Smart Hemma" charging solution.

Agreement with Facebook on supply of renewable electricity and power balancing – Vattenfall entered into a supply agreement with Facebook for supply of renewable electricity to two of Facebook's data centres in the Nordic countries. As part of the deal, Vattenfall will also provide market access and power balancing of electricity generation from three new Norwegian wind farms.

Construction start of the Blakliden/Fäbodberget wind farm – Construction started on the Blakliden/Fäbodberget onshore wind farm in Åsele and Lycksele municipalities in northern Sweden. Vattenfall is partnering with the Danish turbine manufacturer Vestas and the Danish pension fund PKA for ownership of the wind farm. The wind farm will have a capacity of 353 MW, and approximately 60% of production will be sold to Norsk Hydro.

Planned early closure of Hemweg 8 coal-fired power plant in the Netherlands – The Dutch government introduced a law that prohibits the use of coal as a fuel for electricity generation. As a result of this, Vattenfall's Hemweg 8 coal-fired power plant would need to be closed by year-end 2024 at the latest, which is ten years earlier than the plant's technical life span. This decision was later changed in March 2019 when the Dutch Government announced that Hemweg 8 should stop using coal as fuel by the end of 2019.

Partnership with Volvo Cars in Sweden on e-vehicle charging – Together with Volvo Cars in Sweden, Vattenfall entered into a new partnership on charging infrastructure. Volvo customers who purchase an electric hybrid car now have the option to choose the "InCharge Smart Hemma" charging solution.

Installation of a 22 MW battery at Pen y Cymoedd wind farm in the UK – Vattenfall's 22 MW battery installation became operational at the Pen y Cymoedd onshore wind farm in the UK in May. This is the largest co-located battery installation at a wind farm in the UK and will contribute to a stable and reliable network for British consumers.

Construction start of unique pilot plant for fossil-free steel production – Construction started on HYBRIT's pilot plant for manufacturng fossil-free steel in Luleå, Sweden. The plant is expected to be ready by 2020. Vattenfall, together with SSAB, LKAB and the Swedish Energy Agency, will invest a total of SEK 1.4 billion in the pilot plant. The goal is to have an industrial process for fossil-free steel production in place by 2035.

Q3 2018

Vattenkraftens Miljöfond Sverige AB established – In September 2018 Vattenkraftens Miljöfond Sverige AB was established by eight hydro power companies with the purpose to provide SEK 10 billion in financing for environmental mitigation measures according to a national plan during the coming 20 years.

Inauguration of Aberdeen Bay offshore wind farm in Scotland – The wind farm has an installed capacity of 97 MW and can supply 80,000 British households with renewable energy. The wind turbines have the largest turbine capacity in commercial operation in the world (8.8 MW) and use a new type of jacket foundation, so-called suction buckets.

Long term agreement with Novo Nordisk and Novozymes on supply of renewable electricity – Vattenfall entered into a long-term agreement with the global healthcare company Novo Nordisk and the biotechnology company Novozymes on the supply of renewable energy from the Kriegers Flak wind farm in Denmark. The agreement covers roughly a fifth of the wind farm's total anticipated generation.

Gold rating for sustainability performance – Vattenfall once again received a Gold rating for its corporate social responsibility (CSR) performance from EcoVadis, an independent agency that provides CSR ratings and scorecards. A total of 73 points were achieved, which is well above the industry average of 42 points.

-50%

Halving of CO_2 emissions in Berlin three years earlier than pledged

Halving of CO_2 emissions in Berlin three years earlier than pledged – In Berlin, Vattenfall achieved the goal of halving its CO_2 emissions from combined heat and power plants three years earlier than pledged. Work is now continuing to phase out hard coal by 2030.

Vattenfall enters French retail market – In October Vattenfall entered the French retail market, offering households climate-smart solutions including electricity and gas at competitive prices.

Power purchase agreement for renewable wind power and balancing services for Aquila Capital's Kråktorpet wind farm in Sweden – German-based Aquila Capital and Vattenfall signed a 15-year agreement for the purchase of renewable electricity from the Kråktorpet wind farm (163 MW) west of Sundsvall, Sweden. Vattenfall will also provide balancing services, market access and management of green certificates (Guarantees of Origin).

Q4 2018

Vattenfall decided to invest in a new heating plant in Uppsala and a total of SEK 3.5 billion will be invested in production facilities and grid infrastructure in Uppsala.

Nuon adopts the Vattenfall name – Vattenfall took a further step to strengthen its brand in Europe by changing the name of its Dutch subsidiary Nuon to Vattenfall. Nuon has been an integrated part of Vattenfall since 2009.

Generation record by Ringhals nuclear power plant – Ringhals nuclear power plant generated 30 TWh of fossil-free electricity in 2018, which is the highest level of annual electricity generation by a Nordic power plant ever and corresponds to 17% of Swedish electricity generation in 2018.

City of Hamburg to repurchase Vattenfall's stake in district heating system – The City of Hamburg decided to exercise its call option to take over Vattenfall's 74.9% stake in the city's district heating system, effective 1 January 2019. The contracted price is EUR 625 million, and the transaction is expected to close in 2019.

Acquisition of Vargträsk wind power project in Sweden – Vattenfall acquired the Vargträsk wind power project in Åsele and Lycksele municipalities in Sweden. The wind farm will have an installed capacity of approximately 80 MW and the potential to generate renewable energy for around 50,000 homes. The plan is for the wind farm to be operational in 2021/2022.

Industry leader sustainability award to Vattenfall – Vattenfall was rated as the most sustainable energy company in the Sustainable Brand Index B2B, the Nordic region's largest sustainability study. Vattenfall came in seventh place in the overall cross-sector ranking – a strong improvement from last year's twentieth position.

New heating plant in Uppsala – Vattenfall decided to invest in a new heating plant in Uppsala, Sweden, to provide residents of the city with fossil-free heating. A total of SEK 3.5 billion will be invested in production facilities and grid infrastructure in Uppsala.

Final investment decision for Kriegers Flak offshore wind farm – Vattenfall took the final investment decision for the Kriegers Flak offshore wind farm in Denmark. The investment amounts to approximately SEK 10.4 billion, and the wind farm will have a total capacity of 605 MW.

Vattenfall and Norwegian Elkem sign long-term electricity supply deal – Vattenfall and the Norwegian industrial group Elkem signed a long-term electricity supply agreement for the period 2020–2026. The deal is the first major supply agreement with Elkem and includes supply of 260 GWh yearly or a total of approximately 1.8 TWh.

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 change over to a long-term sustainable production portfolio. Vattenfall's Board of Directors has set six strategic targets, and Vattenfall's owner has set three financial targets for the Group.

Strategic targets

Vattenfall's strategy is built upon four strategic objectives. Vattenfall will be 1) Leading towards Sustainable Consumption and 2) Leading towards Sustainable Production. To achieve this, we must have 3) High Performing Operations and 4) Empowered and Engaged People. Effective 1 January 2016 Vattenfall's Board of Directors adopted the six strategic long-term targets for 2020 to better reflect our strategy.

Financial targets

The financial targets pertain to profitability, capital structure and the dividend policy, and were set by Vattenfall's owner at an extraordinary general meeting in December 2017. These targets are intended to ensure that Vattenfall creates value and generates a market rate of return, that the capital structure is efficient, and that financial risk is kept at a reasonable level.

Strategic targets

Strategic objective	Strategic targets for 2020		2018	2017	Comment
Leading towards Sustainable Consumption	Customer engagement, Net Promoter Score (NPS) relative[1] (customer satisfaction relative to competitors):	+2	+1	+2	Continued improvements at a slower pace. The Customers & Solutions operating segment achieved an NPS of +1 (+2) relative to competitors.
Leading towards Sustainable Production	Commissioned new renewables capacity 2016–2020:	≥ 2,300 MW	752 MW[2]	652 MW	A total of 101 MW (354) of new renewable capacity was installed in 2018. The Aberdeen Bay offshore wind farm (97 MW) in Scotland was commissioned. In addition, 4 MW of solar power was installed.
	Absolute CO_2 emissions pro rata:	≤ 21 MT	22.0 MT	22.6 MT	Absolute CO_2 emissions decreased in 2018 to 22.0 Mtonnes (22.6). The reduction is mainly explained by lower generation volumes.
High Performing Operations	Return On Capital Employed (ROCE)[3]:	≥ 8%	7.0%[4]	7.7%[4]	Return on capital employed was 7.0% (7.7%). A lower underlying operating profit had a negative impact on return on capital employed.
Empowered and Engaged People	Lost Time Injury Frequency[5] (LTIF):	≤ 1.25	1.9	1.5	Lost Time Injury Frequency (LTIF) was 1.9 (1.5). Two tragic fatalities took place in 2018, and a stronger focus on safety is required going forward.
	Employee Engagement Index[6]:	≥ 70%	64%	64%	The Employee Engagement Index was unchanged at 64% (64%).

Financial targets

Financial targets	Targets over a business cycle[7]		2018	2017	Comment
Profitability	Return On Capital Employed (ROCE)[3]:	≥ 8%	7.0%[8]	7.7%[8]	Return on capital employed was 7.0% (7.7%). A lower underlying operating profit had a negative impact on return on capital employed.
Capital structure	Funds from operations (FFO)/adjusted net debt:	22–27%	20.7%	21.4%	FFO/adjusted net debt decreased compared to 2017 and amounted to 20.7% (21.4%). FFO decreased due to lower underlying EBITDA.
Dividend policy	Dividend, share of the year's profit after tax:	40–70%	2 SEK billion[9]	2 SEK billion	The Board of Directors proposes a discretionary dividend of SEK 2 billion for 2018.

Notes to strategic targets

1 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.

2 Pertains only to wind and solar farms completed and commissioned between 1 January 2016 and 31 December 2018.

3 The target for Return On Capital Employed (ROCE) was changed from 9% to 8% by Vattenfall's owner at an extraordinary general meeting in December 2017.

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

Notes to financial targets

7 5–7 years.

8 The key ratio is based on average capital employed.

9 The proposed dividend will be voted on at the Annual General Meeting on 11 April 2019.

Market trends

Central to our strategy is the context in which we operate. Below we highlight six major trends that will shape the energy sector going forward and that Vattenfall is basing its strategy on.

Customer centricity and sustainability are key to attracting customers, talent and investors
Global attention on climate change driven by the IPCC report, the Paris Agreement and the UN's Global Sustainable Development Goals (SDGs) means that sustainability is critical for attracting customers, talent and investors. Customers are increasingly considering climate impact, social and environmental impacts, and energy efficiency when choosing energy solutions and suppliers. They want to minimise their carbon footprint both directly, through their choices of transportation and energy supply, and indirectly, through the businesses they support and engage with.

Further electrification is a key enabler for reduced CO_2 emissions
Electrification represents an opportunity to reduce CO_2 emissions in transportation, heating and industry. In the Nordic countries, electricity generation is already almost fossil free, while on the Continent, fossil fuels need to be phased out from the electricity system in parallel with further electrification. The key driver for electrification is a combination of cost efficiency and sustainability. Electricity has an increasingly important role to play in society, while suppliers of renewable electricity and heat play a key role in the work on combating climate change.

The future energy system will consist of both centralised and decentralised energy solutions
We will need both centralised and decentralised energy solutions. Lower costs and improved functionality are driving a shift towards decentralisation, which is creating opportunities for new competitors and business models along various parts of the value chain. The importance of flexible technologies such as batteries is increasing, and market shares for conventional and centralised generation are decreasing. However, centralised production and distribution will remain a system anchor for utilities also in the years ahead.

The entire energy value chain is being digitalised
Energy consumption is becoming increasingly smart, and new technologies are enabling loads to be steered to times when energy supply is high and price is low to relieve grid constraints. Efficient operation of energy utilities will require better data on the status and predictions of various loads and infrastructure, sophisticated forecasting techniques, and more powerful and complex algorithms for turning data into insights. Customers expect instant information, access and feedback, and customer service and interaction is moving from call centres to smartphone applications and internet-based solutions. Digitalisation and control of data, combined with advanced data analytics, are driving these developments.

New competences, speed in learning and diverse and inclusive teams are critical in the energy transition
As our industry transitions to new ways of interacting with customers, technology and society, new skill sets and competences are constantly required. Speed in learning and the ability to adapt to new ways of working are key competitive advantages that allow us to deliver new products and more efficient processes. To foster this learning environment and attract new talent, we are focusing on creating an inclusive company culture that is open to diverse viewpoints: we want to be the employer of choice. It is also key that we leverage external competence through partnerships and outsourcing of non-core processes.

Cost efficiency is a prerequisite for value creation and growth in an increasingly competitive market
Globalised markets and lower perceived risk in renewable energy have resulted in an increasingly competitive environment, which is putting pressure on margins in our industry. This is tempering return expectations in both our core and new businesses. Value creation is increasingly derived from improved efficiency throughout the value chain. Efficient operations require high utilisation of people and assets, lean and digital processes and high cost awareness. Being able to deliver more in the same time and with the same resources is essential.

Business model

Vattenfall is an integrated energy company with the customer at the centre. Sustainable growth is guiding us into the future. The following section describes our business model and the value we generate for our stakeholders by applying the six capital inputs of the International Integrated Reporting (IR) Framework. On pages 16 and 17 we describe our total impacts and our contributions to the UN's Global Sustainable Development Goals.

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 networks 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.

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 shift to fossil-free heating solutions, such as by integrating surplus or waste heat from third parties in our district heating networks.

Energy services and decentralised generation

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.

Inputs

Natural capital	Financial capital	Human capital	Manufactured capital	Social and relationship capital	Intellectual capital
• Hydro, wind and solar power • Coal and gas • Uranium • Biomass, waste	• Growth investments in renewables • Maintenance investments (e.g., in safety) • Investments in energy transition and smart grids	• Engineering and service skills • Market analysis, trading, and commodities market knowledge • Digital competence and technical innovation • Business development	• Renewable, thermal and nuclear power plants • Electricity networks • Decentralised solutions (e.g., solar panels, heat pumps, batteries and smart appliances)	• 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.	• Meteorology (weather-dependent sources) • Sustainability framework and integration in operations • New ways of working, structures and processes • Research and development

Vattenfall's business activities

- Power generation
- Electricity distribution
- Sales of electricity, heat, gas
- District heating
- Energy services and decentralised generation

Outputs

For customers	For partners	For society	For Vattenfall's owner and employees
• 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 with more than 10,500 charging points	• 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	• Approximately 100 TWh of fossil-free electricity generated • SEK 6.9 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	• Providing a livelihood for nearly 20,000 employees with an emphasis on inclusion, diversity and safety • Approximately 1.9 days of training per employee every year, and numerous employee development and leadership programmes • Dividend of SEK 2 billion proposed by the Board of Directors to our owner for 2018

Values

~100 TWh
of fossil-free electricity generated

>70 %
decrease in CO_2 emissions since 2014

20,000
employees and SEK 19.2 billion in personnel costs

~10 million
customers in distribution, electricity, gas, heat and energy solutions

3
industrial partnerships with potential to cut carbon emissions by 14 $MtCO_2e$

Vattenfall's total value creation

The calculation of total value creation is a tool for 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 a social and environmental perspective. It is not intended as a statement of reported financial development.

In 2017, we made a first attempt to quantify our full impacts on people and society – both positive and negative – from economic, social, and environmental perspectives. In 2018, we refined our methodology to also include other material, quantifiable aspects, namely "Training" and "Other emissions". 2017 data has been updated accordingly to provide an accurate comparison. We intend to further develop 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.

Updating 2017 for comparability, value creation increased from SEK 25.4 billion in 2017 to SEK 26.3 billion in 2018.

Economic

Our economic calculation follows standard accounting procedures and is based on net sales with remaining items deducted. Vattenfall's net economic contribution recorded here is equal to the company's profit. An increase in both electricity prices and sales was offset by higher fuel prices and the effects of our hedging. Lower corporate taxes also contributed to the increase in profit.

Economic value: SEK 12.0 billion
Change from 2017: + SEK 2.4 billion
Profit for the year

Social

We strive to capture our impacts on people and society, although many social values 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[1] from the financial reporting as well as costs for accidents in the calculation and have quantified the cost of an employee or contractor involved in an accident[2]. Investments in employee training are included to reflect the value of increased human capital.

The amount of value generated decreased in 2018. Personnel costs increased slightly, while taxes paid decreased. Unfortunately, LTI[3] increased for the first time in years, and there were two fatalities among Vattenfall's employees. Exhaustive investigations are being conducted, the results of which will be used to refocus our work to ensure it does not happen again.

Social value: SEK 26.0 billion
Change from 2017: – SEK 2.6 billion
Taxes + wages – (Number of accidents (LTI) x cost per accident) – (Number of fatalities x cost of fatality) + training

Environmental

Direct (Scope 1) emissions continue to be our most material environmental aspect. We have calculated the negative costs related to our emissions based on the CO_2 price in the EU and the ETS. The value given here is an additional negative value[4]. In 2018 we added the costs of "Other emissions" – specifically NO_x, SO_2, and particulates – to the calculation[5], and are developing a methodology to evaluate Scope 3 emissions as well. The quantification of certain benefits, such as renewable electricity generation or contributions to biodiversity and ecosystem research, remains under review, as do potential negative impacts including land use, ecosystem alterations, and others.

The amount of value generated in 2018 increased by SEK 1.1 billion, driven largely by the decrease in CO_2 emissions. As Vattenfall decarbonises on its path to make fossil-free living possible within one generation, the costs associated with CO_2 and other emissions 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.

Environmental value: – SEK 11.7 billion
Change from 2017: + SEK 1.1 billion
Cost of purchased emission allowances – (Cost of CO_2 x emissions) – (Cost of other emissions x emissions)

[1] For more information on taxes and wages, see page 158 and Note 42 to the consolidated accounts, Number of employees and personnel costs, respectively.

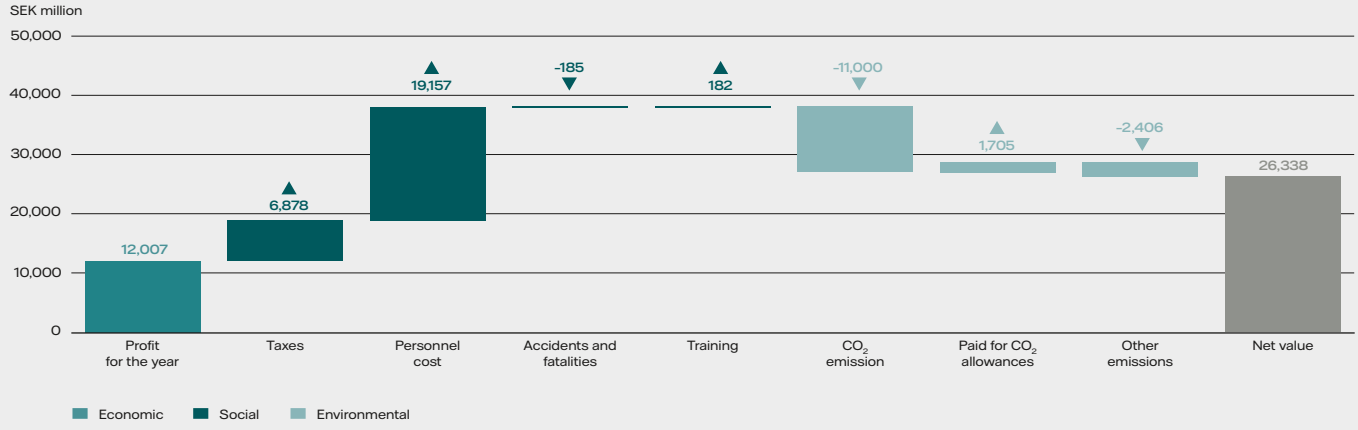
[2] SEK 1 million per accident and SEK 25.4 million per fatality (based on figures from the Swedish National Traffic Authority).

[3] LTI: Lost Time Injury. See page 159 for more information.

[4] 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.

[5] European Energy Agency, "Revealing the cost of air pollution from industrial facilities in Europe", 2011. Country-specific values were applied.

Value creation



The UN's Global Sustainable Development Goals (SDGs)

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. Though adopted by governments, our strong belief is that businesses and industries play a decisive role in the extent to which these goals are achieved. In 2016 we identified six SDGs that are most relevant for Vattenfall and where we can have the greatest global impact, and these remain valid internally, as reflected in our strategy, as well as for our stakeholders, as confirmed by our 2018 materiality analysis. Our contribution to these six goals is described below. Vattenfall also contributes to many other SDGs, including those in support of human rights, at the local level and indirectly through our supply chain[1].

Affordable and clean energy – We reduced our emissions intensity by 4%, from 157 to 150 grams CO_2 per kWh, and installed an additional 101 MW of new renewable energy in 2018. We also continued to work with the Dutch government to expand an early signalling programme that gives at-risk customers access to government assistance to manage their finances and pay critical bills like rent, heat, and electricity. The programme benefits customers, the government, and Vattenfall.

Industry, innovation and infrastructure – We undertook a massive electric grid modernisation programme for the Swedish island of Gotland, improving the capacity to integrate renewables and adapt to future energy system conditions. Unfortunately this modernisation caused a number of unplanned outages. We also began offering district heating and cooling in the UK, providing a less carbon intensive alternative to the standard natural gas boilers. In addition, our work in partnerships on industrial decarbonisation has continued.

Sustainable cities and communities – In 2018 we continued to expand our activities in new energy solutions, enabling individual companies, buildings and households to become more sustainable through the use of solar panels, heat pumps, batteries, and other decentralised solutions. Further, we greatly expanded our e-mobility activities, adding more than 2,000 new charging points across our core markets to enable electrified transport based on fossil-free electricity.

Sustainable consumption and production – Responsibility starts at home, and in 2018 we took a number of steps to ensure we meet expectations. We revised our Sustainability Policy and our Code of Conduct and Integrity. We also published our new Human Rights Policy, which outlines our commitment to respect human rights and details how we identify, assess, and manage human rights risks. We invested to minimise the impacts of our operations on biodiversity, for example in hydro and wind. We also increased operational efficiency, achieving 183 GWh of additional energy savings.

Climate action – Our commitment to enable a fossil-free life within one generation is the foundation of our climate action. We are also working closely with communities, customers, suppliers, and partners to support them in their climate work. We are on track or ahead of schedule to meet our climate commitments to our city partners in Berlin, Uppsala and Amsterdam.

Partnership for the goals – We continue to seek ways to maximise our positive impact through collaboration. In 2018 a number of partnerships in which we are active produced results, including establishment of the WindEurope Industry Principles. We also continued our partnerships to electrify industries, as we broke ground on the HYBRIT project[2], which we are conducting together with LKAB and SSAB to develop a fossil-free steel manufacturing process. We also dedicated resources to scaling up and spreading industrial partnerships to other sectors.

[1] See the website vattenfall.com/sustainability/un-sustainable-development-goals/
[2] See page 57 for more details.

Strategy

Vattenfall has formulated a strategy with the purpose to Power Climate Smarter Living and enable fossil-free living within one generation. This commitment to our customers, stakeholders and employees provides clear direction, engagement and focus as well as significant business opportunities.

Fossil-free living within one generation – a powerful message and clear direction

Vattenfall has been electrifying industries, powering homes and transforming lives through innovation and collaboration for over a hundred years, and we are now focused on the challenge of transitioning to fully fossil-free energy supply.

Vattenfall engages with customers, business leaders, governments and non-governmental organisations to define and visualise the road ahead – through R&D partnerships, policy discussions and innovative business endeavors. This brings a holistic understanding of customer needs, energy markets, the value chain and our social impact. Together with our partners we are taking responsibility for finding new, sustainable and innovative ways to power the lives of our customers and electrify the transportation sector, heating and cooling, core industrial manufacturing processes and other areas beyond our industry, to ultimately reduce or eliminate the use of fossil fuels in society.

We believe that electrification is a key enabler for reducing CO_2 emissions from heating and cooling, transportation, and the manufacturing industry, in turn leading to increased electricity demand. In combination with the phase-out of fossil-based electricity generation in our markets, this points to a strong, long-term market for fossil-free electricity generation. Therefore, a growing, sustainable and cost effective generation portfolio is strategically attractive. The build-out of our renewables portfolio and the CO_2 roadmap for phasing out coal in our heat operations are key components of the strategy. In addition, hydro and nuclear power generation play a key role in supporting the energy transition, stabilising the grid and supplying electricity based on fossil-free power generation. Electricity grids support the electrification of new sectors while ensuring reliable supply to our customers.

New business opportunities

We also see significant new business opportunities in decentralised, integrated and customised energy and network solutions. This is our response to customers wanting sustainable, affordable and convenient energy solutions, combined with significantly lower costs for solar panels and batteries and a growing need for reliable power.

New businesses mean new ways of interacting with customers, technology and society. Additional skills and competences are therefore required. In a highly dynamic environment we foster an inclusive company culture that encourages individual and organisational learning and that is open to diverse viewpoints and promotes active collaboration. We are also focusing on recruiting and retaining critical talent in a number of areas.

Cost and capital efficiency are prerequisites for success in an increasingly competitive environment. To increase efficiency Vattenfall is conducting a programme to cut costs of SEK 2 billion in staff and support functions by 2020. This is being implemented according to plan, and at year-end we had reduced the workforce by 400 full-time positions. Our existing businesses serve as our financial anchor for the period ahead while we invest in new opportunities.

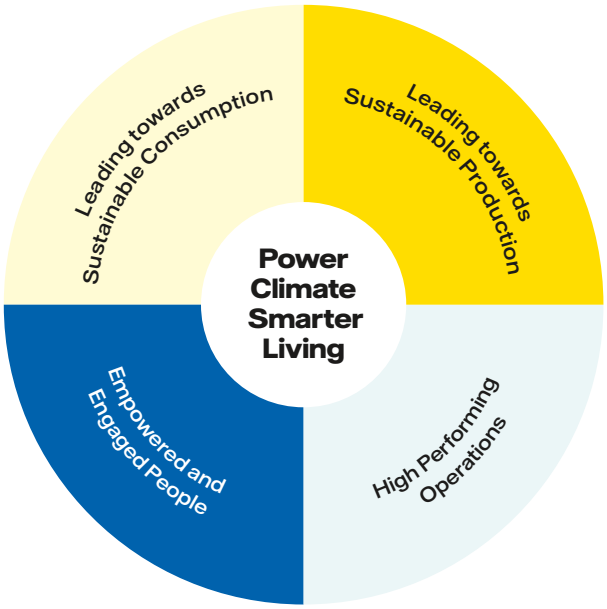
Vattenfall's strategy drives our contribution to the UN's Global Sustainable Development Goals

Our strategy and our purpose reflect the UN's Agenda 2030, in particular the Sustainable Development Goals for Affordable and clean energy (#7), Industry, innovation and infrastructure (#9), Sustainable cities and communities (#11), Responsible consumption and production (#12), Climate action (#13), and Partnerships for the goals (#17).

We are developing our existing business while building the new

Vattenfall's strategy builds on the goals set in our purpose, on future trends and on the competitive landscape in which we operate, combined with the requirements that are put on our business. Our updated materiality analysis confirms that our strategy is aligned with our stakeholders' expectations[1]. Vattenfall's strategy can be summarised in four strategic objectives:

[1] Read more on page 153.



Leading towards sustainable consumption by increasing customer centricity, building a sizeable position in decentralised energy and promoting electrification and a climate-smart society.

Leading towards sustainable production by growing in renewables and implementing our CO_2 roadmap to make fossil-free living possible within one generation.

Empowered and engaged people by being an attractive employer, developing an engaging and inclusive company culture and securing necessary competence through recruitment and continuous learning.

High performing operations by improving operational efficiency, accelerating digitalisation and taking social and environmental responsibility throughout the value chain.

Additional information about the strategy for each operating segment is presented on pages 32–51.

Our milestones towards fossil-free living within one generation

Vattenfall is committed to continually accelerating and powering the transition to further electrification and renewable energy. Our promise to our customers is that we will provide sustainable and fit-for-purpose energy solutions and that we will take the first step ourselves towards a fossil-free future.

These milestones are intended to show our contribution and commitment to a fossil-free future, and as our journey unfolds, more proof points will be added along the way.

2020

Fossil-free energy solutions available for all our customers.

2023

More renewable generation enabled by 600 MW of additional flexible hydro capacity.

Innovating for the future

Digitalisation has become one of the most important elements in any business strategy. Vattenfall has made great strides in recent years to stay ahead of the curve in being digitally well-equipped for the future. Extensive work has been carried out to explore new digital business opportunities in our rapidly changing energy landscape. We are advancing in many areas that can be grouped into ten trends that are currently shaping our business: Digital platforms, the Internet of Things (IoT), Big Data & Advanced Analytics, Artificial Intelligence (AI) & Deep Learning, Robotic Process Automation (RPA), Virtual & Augmented Reality, Cloud Computing, Blockchain, Drones, and Digital Trust. One example of our work with digitalisation is so-called battery peak shaving, where a control mechanism is used to steer the optimal use of battery power to minimise unexpected peak load. Another example is a customer engagement platform that enables our customers to combine their own apps with our services.

2025

Entirely coal-free operations in the Netherlands[1].

We generate fossil-free energy to power more than 30 million homes.

We pilot 100 MW of green hydrogen gas production from fossil-free electricity.

2030

Coal is phased out from all our heat production.

Fossil-free Nordic electricity generation.

2035

More milestones under development...

[1] According to a decision from the Dutch Government in March 2019, Vattenfall's coal-fired power plant Hemweg 8 should stop using coal as fuel by the end of 2019, which means that the operations in the Netherlands would be coal-free at the same time.

Investment plan

Vattenfall continues to invest heavily in growth with a clear focus on renewable production, enabled by our successful efforts to reduce costs and achieve a stable capital structure.

Total planned investments in 2019 and 2020 are expected to amount to SEK 56 billion, with growth investments accounting for nearly 58% (SEK 32 billion). The investment strategy reflects our commitment to drive the transition to a fossil-free society.

Around SEK 24 billion of investments are planned for new wind farms, of which nearly SEK 18 billion is dedicated to offshore wind, mainly the Danish projects Kriegers Flak (605 MW), Vesterhav Syd and Vesterhav Nord (350 MW), and Horns Rev 3 (407 MW). The biggest onshore projects are Wieringermeer (180 MW) and Wieringermeer Extension (118 MW) in the Netherlands, Nørrekær Enge 2 (119 MW) and Nørre Økse Sø (54 MW) in Denmark, and South Kyle (212 MW) in the UK.

Vattenfall is also investing more than SEK 1 billion in solar and battery projects, including a large-scale solar plant in Haringvliet with 39 MW capacity. In addition, nearly SEK 2 billion will be invested in new energy solutions, mainly distribution network solutions and decentralised heat solutions, but also in a large power-to-heat storage plant in Germany (120 MW_{th}) and in e-mobility. Growth investments in electricity and heat grids, mainly to connect new customers and areas, amount to over SEK 5 billion.

Vattenfall is building a new waste wood-fired steam heat-only boilder in Uppsala.

Vattenfall is also investing heavily in maintenance and replacement of the existing assets, with planned investments of close to SEK 24 billion in 2019 and 2020. We are modernising the heat portfolio in line with our strategy to enable fossil-free living within one generation. This entails building a new waste wood-fired steam heat-only boiler in Uppsala (112 MW_{th}) and investing in two highly efficient gas-fired CHP plants in Berlin (in total 560 MW_{el}, 452 MW_{th}).

We continue to invest in the infrastructure of the new energy landscape by improving the quality and flexibility of our electricity networks in Sweden and Berlin (SEK 10 billion, included in maintenance and replacement investments). Further, we are securing the safe operation of our Swedish nuclear and hydro power plants (SEK 5 billion, included in maintenance and replacement investments) by completing nuclear safety measures at Ringhals and Forsmark and upgrading our hydro power plants to maintain availability and dam safety.

Vattenfall's investment plan 2019–2020

Total investments per type

- Growth investments, 32
- Maintenance investments, 13
- Replacement investments, 11

Growth investments per technology

- Wind power, 24
- Heat grids, 3
- Distribution, 2
- Solar & batteries, 1
- New businesses, 2[2]

Growth investments per country

- Denmark, 17
- Netherlands, 8
- Germany, 3
- Sweden, 2
- UK, 2

[1] Of which, SEK 0.5 billion pertains to investments during 2019 in the divested district heating business in Hamburg.
[2] Mainly decentralised solutions, energy storage and e-mobility.

Vattenfall is planning to invest around SEK 24 billion in both onshore and offshore wind power in 2019 and 2020.

Major investment projects - decided on and in progress

Project	Country	Type	Capacity	Estimated CO_2 reduction[1] (ktonnes)	Vattenfall's interest	Completion	Total investment	Total investment, SEK million[2]
Slufterdam	Netherlands	Wind, onshore	29 MW	35	100%	2019	35 MEUR	360
Wieringermeer	Netherlands	Wind, onshore	180 MW	300	100%	2020	215 MEUR	2,200
Wieringermeer Extension	Netherlands	Wind, onshore	118 MW	200	100%	2021	147 MEUR	1,500
Horns Rev 3	Denmark	Wind, offshore	407 MW	450	100%	2019	7,500 MDKK	10,300
Kriegers Flak	Denmark	Wind, offshore	605 MW	670	100%	2022	7,600 MDKK	10,400
Vesterhav Syd and Nord	Denmark	Wind, offshore	350 MW	390	100%	2020	5,200 MDKK	7,100
Lichterfelde CHP	Germany	Gas	300 MW_{el} 222 MW_{th}	170	100%	2019	390 MEUR	4,000
Marzahn CHP	Germany	Gas	260 MW_{el} 230 MW_{th}	350	100%	2020	305 MEUR	3,100
Replacement Reuter C	Germany	Gas/Electricity	240 MW_{th}	170	100%	2019	95 MEUR	970
Uppsala Carpe Futurum	Sweden	Biofuel	112 MW_{th}	n.a.	100%	2022	1,686 MSEK	1,686

[1] Estimated CO_2 reductions are based on expected annual CO_2 reductions from the respective projects in Vattenfall's portfolio or potential reductions outside of Vattenfall. For wind projects the reductions are based on a comparison of expected generation and average CO_2 emissions from the grid, thus representing expected CO_2 reductions in the grid. For heat projects the reductions are expressed as the expected CO_2 reduction in Vattenfall's portfolio.

[2] Year-end exchange rate as per 31 December 2018.

Markets and regulations

European Union

Finalisation of the **Clean Energy Package** dominated discussions also in 2018. The final outcomes of the 2030 target review are 32% renewable energy share and 32.5% improved energy efficiency. Following final adoption at EU level, the legislative files of the package will now be transposed into national legislation in the EU Member States. In addition, the Clean Mobility Package has widened decarbonisation goals to the transport sector. The EU institutions are scheduled to adopt all legislative files by spring 2019 at the latest.

EU ETS directive – On 8 April 2018 the revised EU ETS directive for Phase 4 (2021–2030) entered into force. In particular, it provides for a steeper annual decline of the ETS allowance cap from 2021, a faster removal of surplus ETS allowances into the Market Stability Reserve (MSR) from 2019, and a permanent cancellation of a large amount of ETS allowances by 2024. The reforms are far-reaching and have caused the European CO_2 price to increase by more than 200% since the agreement was reached, even though Phase 4 has not yet begun.

EU long-term climate strategy – In November 2018 the European Commission presented a new non-legislative initiative on an EU 2050 climate and energy strategy, updating the 2011 roadmap and offering a view of how to reach a carbon-neutral EU economy by 2050. Alignment with the 2015 Paris Agreement is one of several new preconditions for the EU as well as for many countries in other parts of the world. According to the Paris Agreement the EU is expected to communicate a new international climate pledge (NDC) and a mid-century low-CO_2 development strategy to the UNFCCC during the course of 2020.

European gas package – In 2017 the European Commission announced the introduction of a so-called gas package, reviewing the existing gas policy in the light of the Clean Energy Package. Apart from gas-related topics such as retail issues and tariff regulation, the gas package will include legislative proposals on the role of gas in the European energy transition as well as on hydrogen and sector coupling. Due to the appointment of the next European Commission in November 2019, a legislative proposal is expected at the end of 2019 at the earliest.

Sweden

Focus on climate and energy transition – Following the general elections to the Swedish Parliament in September 2018, a new government took office in January 2019. The government is a coalition between the Social Democrats and the Green Party supported by the Center Party and the Liberals. As one of its priorities the new government stated that the energy policy agreement from 2016 will be implemented. Moreover, the government announced that the climate policy framework, adopted by the Parliament in 2017, will remain.

Hydro power regulatory framework to improve environmental performance – New legislation to upgrade hydro power plants to modern environmental standards according to the EU Water Framework Directive entered into force on 1 January 2019. A national assessment mitigation plan for hydro power aims to ensure a proper balance between environmental and energy interests, recognising the importance of hydro power as a renewable energy source and its ability to regulate the entire electricity system. Together with seven hydro power operators, Vattenfall has established the Hydro Power Environmental Fund to help implement the plan.

New revenue framework regulation affects Distribution System Operators – As a consequence of the government's decision in 2018 on a new revenue framework regulation for Distribution System Operators (DSOs) for the period starting in 2020, Vattenfall Distribution's revenue framework will be substantially reduced. This will unfortunately impact Vattenfall's investment programme at a time when major networks upgrades and build-outs are needed to cope with growth of urban areas, a growing energy-intensive industry and more renewables.

Nuclear fuel waste management – The Swedish Radiation Safety Authority (SSM) recommends that the government grant a licence for a final repository for spent nuclear fuel at the Forsmark nuclear power plant. In January 2018 the Land and Environment Court submitted its opinion to the government. The court was positive in several important respects, for example, it approved issues relating to the Forsmark site, the bedrock, the buffer, the environmental impact statement and the facilities in Oskarshamn, but it calls for more documentation by the Swedish Nuclear Fuel and Waste Management Company (SKB) on the copper canisters, which serve as one of the protective barriers for the method of final storage. SKB expects to provide the required information to the government in April 2019.

Denmark

New energy policy 2020-30 – In 2018 all parties in the Danish Parliament agreed on a new energy policy towards 2030 which is to ensure that 55% of total energy consumption comes from renewable energy by 2030. The agreement further outlines three offshore wind farms with combined minimum capacity of 2.4 GW, and yearly technology-neutral tenders for solar and wind until 2024. In addition, the tax on electricity will be reduced to promote electrification especially in the heating sector.

Focus on fossil-free transportation in the government's Climate and Clean Air Plan – In 2018 the Danish government announced a new Climate and Clean Air Plan that outlines how Denmark will reach its EU 2030 39% CO_2 reduction target in transportation, agriculture and heating. Focus is on transportation, and the Parliament subsequently approved a delay in the previously announced phasing in of a registration tax for e-vehicles on 1 January 2019. This means that electric vehicles with a value of up to EUR 53,000 will be exempted from the newly phased-in registration tax in 2019 and 2020.

Probing for new offshore wind sites – The Danish Energy Agency is probing potential areas in the North Sea and the Baltic Sea, close to the Kriegers Flak offshore wind farm for a suitable site to develop an 800 MW wind farm. The probing is expected to be completed in early 2019, and the tender process is expected to start later the same year.

Netherlands

Concept Climate Agreement following a year of negotiations – The Dutch cabinet requested societal parties to come up with a climate agreement that contains measures that will jointly result in a CO_2 reduction of 49% by 2030. The agreement can be seen as a follow-up to the Energy Agreement of 2013 that runs until 2020. More than 100 parties from the private sector have joined the Climate Agreement negotiations along with civil society organisations and local authorities. The negotiations have taken place at five different sector tables, representing the various key segments in the energy landscape: electricity, built environment, industry, mobility and agriculture. The agreement creates opportunities for investments in renewables, sustainable heating, e-mobility and services. It should lead to more than 70% renewable power generation, 2 million electric cars and 1.5 million houses free of natural gas. The measures proposed by each sector table will be quantitatively assessed, and negotiations will continue in 2019. When adopted, the proposed measures of the Climate Agreement will be put into practice by the government through the introduction of new policy instruments, rules and regulations.

Ban on coal for electricity generation and Urgenda ruling – In May 2018 the Minister of Economic Affairs and Climate Policy announced that the Netherlands is moving to ban all coal in electricity generation. The direct ban on coal will be introduced by law and will come into force immediately. However, a transition period has been provided for in the draft act: the newest coal-fired power plants will be closed by 1 January 2030 at the latest. The two oldest plants, including Vattenfall's Hemweg 8 plant in Amsterdam, would need to close by year-end 2024. This decision was later changed in March 2019 when the Dutch Government announced that Hemweg 8 should stop using coal as fuel by end of 2019.

In October 2018 the Court of Appeal in the Hague upheld an earlier ruling ordering the Dutch government to reduce the country's CO_2 emissions by 25% by 2020 compared with 1990, the so-called Urgenda ruling. The Dutch government has announced that it will come up with additional measures to comply with this ruling.

Continuation of tender system for the Hollandse Kust Zuid 3 & 4 offshore wind farms – Vattenfall won the Hollandse Kust Zuid 1 & 2 tender with a zero-subsidy bid. In late 2018 the government opened the tender process for Hollandse Kust Zuid 3 & 4, and the process is again based on qualitative criteria. Subsequent tenders are to be based on auctioning after the new Offshore Wind Act has entered into force.

Germany

New German government – The coalition agreement between the Conservatives (CDU/CSU) and Social Democrats (SPD) provides a stable framework for Vattenfall's business investments with a predictable legislative framework. A binding climate protection law to ensure the 2030 sectoral climate targets is also planned. Germany's renewable target is set to be raised from an average 50% to 65% electricity share from renewable sources in 2030. The government will continue to implement the energy transition for reducing greenhouse gases and take decisions regarding a coal phase-out. Decarbonisation of the transport sector is progressing very slowly, but e-mobility will continue to be a political focus area. The increased renewable share will be discussed in the context of impacts on grid extension and optimisation requirements.

Coal phase-out – A special commission with a broad variety of stakeholders was established to devise a plan for the gradual reduction and an end date for coal-fired power generation. The commission presented its findings in early 2019, including its recommendation for 2038 as the final year of decommission and necessary financial support in the regions affected by the coal phase-out. The CHP Act supporting a fuel switch to gas is preferred, as it will cost society less than compensating coal operators with tax money.

Nuclear compensation – The nuclear phase-out legislation is unfavourable for Vattenfall as owner of the Brunsbüttel and Krümmel nuclear power plants. In 2018 the regulation allowed applications for certain financial compensation after 2022. Vattenfall considers the new legislation to be inadequate to remedy violations of the German Constitution and is considering further legal action. In a separate process, Vattenfall has sought compensation via the International Centre for Settlement of Investment Disputes (ICSID). No decision has yet been made on Vattenfall's case. In August 2018 the Court rejected Germany's objection that the ICSID lacks jurisdiction for this internal EU dispute.

UK

Decarbonisation – The UK continues to decarbonise its economy, although not fast enough to meet statutory targets. Progress in the power sector is masked by a failure to significantly reduce emissions in other sectors including transport and buildings. New schemes have been introduced to boost progress, including more funding to roll-out electric vehicles and heat networks, as well as an extension of the UK's Contracts for Difference scheme to support 1–2 GW of additional offshore wind capacity every year in the 2020s.

Brexit – Preparations continued for the UK to exit the EU including the passing of withdrawal legislation. A Transition Agreement was reached between the European Council and the UK in November, but was subsequently rejected by the UK Parliament. Prime Minister Theresa May has struggled to achieve a consensus on how to proceed, with the treatment of Northern Ireland a key sticking point. Parliament is split between those that want a "hard", "soft" or "No" Brexit, and there has been little clarity on when or how the UK will leave the EU. After Brexit, the UK and EU will start to negotiate their future trading arrangement.

Energy retail market – Following the introduction of a retail price cap for domestic prepayment customers in 2017, the regulator Ofgem extended the cap to around 1 million additional vulnerable customers in February 2018 and introduced a new cap on all standard variable tariffs (SVT) on 1 January 2019, which covers around 11 million households. The methodology used to set the SVT cap is subject to a legal challenge.

Competitive landscape

As awareness of climate change steadily increases, countries are stepping up their CO_2 reduction plans while the number of so-called prosumers (consumers that produce their own electricity and heat) is on the rise. Naturally, these plans are impacting the energy sector, but increasingly they are requiring other businesses to refocus as well, such as energy-intensive industries that have initiated a journey towards a low-carbon future, and a transport sector that is seeing a major drive towards electrification.

To obtain a position in fossil-free electricity generation, European energy companies continue to invest heavily in renewable energy, especially in wind and solar power. As renewable energy costs continue to drop, utilities are restructuring and rotating assets to remain competitive. Some energy companies have restructured from integrated utilities into wind or retail specialists, narrowing their scope while potentially pursuing global ambitions, whereas others are disposing of non-core assets to free up capital. As many technological developments are ongoing, the benefit of being integrated is to capture opportunities across the value chain while securing the natural hedge of both producing and selling in one portfolio, and enjoying the ability to harvest synergies.

In parallel, the major oil and gas companies are entering the sector to prepare themselves for a lower carbon and electrified energy system. Driven by declining traditional revenues and opportunities in e-mobility, they are reshaping their portfolios through downstream acquisitions and collaborative developments in renewable energy.

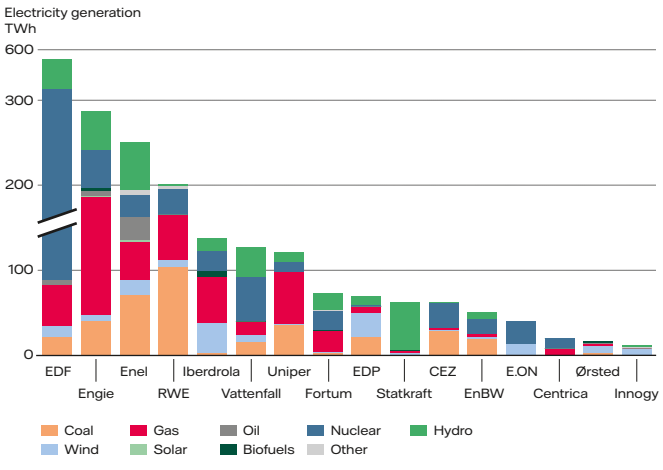
The transport sector is seeing a major drive towards electrification and Vattenfall is aiming to be one of the main suppliers of e-mobility charging solutions in northwest Europe.

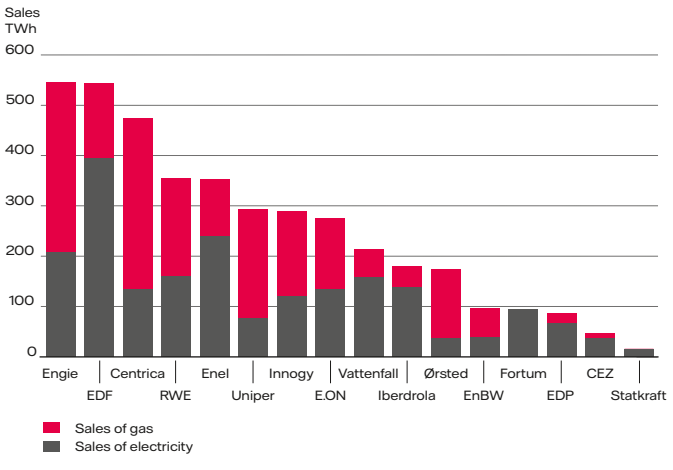
Digitalisation is leading to changes across the value chain for energy companies. In operations, the trend is to cut costs through automation and maintenance optimisation tools. To deal with intermittent and distributed energy supply, smart grids and recently also blockchain technology are modernising traditional energy operation management. Online customer portals and artificial intelligence chatbots are the new norm for improving customer service, reducing customer churn and lowering cost to serve.

Technology advancements are unlocking new opportunities, such as energy storage, enhanced demand response and e-vehicle charging. Lower battery costs are making stationary storage more commercially viable, providing a tool for industrial customers to partially curb peak usage and reduce electricity costs. Distributed energy solutions, such as heat pumps and residential batteries, are on the rise and are emerging as a new alternative to provide ancillary services in the form of aggregated demand response pools.

Vattenfall has decided to stay an integrated company with a diversified portfolio, giving us a strong position for the future. Our expertise and value chain knowledge enable us to capture early growth opportunities while understanding the larger picture of the entire energy transformation. With our leading role in sustainable energy, climate-smart solutions and e-mobility, and our eagerness to move beyond our traditional role, we are an attractive partner to society for enabling fossil-free living within one generation.

Europe's largest energy companies in electricity generation (energy mix), and in sales of electricity and gas[1]





[1] Source: Company annual reports for 2017.

Topical issue

Nuclear decomissioning

in Sweden and Germany

Preparations for the upcoming decommissioning of Vattenfall's nuclear power plants in Germany and Sweden are proceeding as planned. The time for a decision on the issue of the final repository for spent nuclear fuel in Sweden is also nearing as the Swedish Nuclear Fuel and Waste Management Company (SKB) is expected to submit additional information to the Government in April 2019.

There are two key elements of end-of-life planning for nuclear power plants: decommissioning and waste disposal. When operating nuclear reactors, by-products in the form of spent nuclear fuel and radioactive waste are produced. Due to the hazardous nature of this waste, both decommissioning and disposal are thoroughly regulated and must be done in a safe, long-term manner, with the safety of people and the environment being prioritised above all else.

Sweden

Extensive analysis and planning work is under way ahead of the upcoming decommissioning and dismantling of Vattenfall's Ringhals 1 and 2 reactors, where electricity generation will cease at the end of 2020 and 2019, respectively. Ringhals 3 and 4 as well as Forsmark 1, 2 and 3 are being upgraded to ensure safe, long-term operation, which places high demands on the planning of on-site operations going forward. These reactors will continue to provide a vital share of Sweden's fossil-free electricity generation for decades to come. High levels of safety and stable generation are a priority.

Vattenfall formed a special business unit for nuclear decommissioning in 2015, responsible for decommissioning the nuclear plants that Vattenfall will shut down. The unit brings together leading experts tasked with managing and leading safe, efficient, and responsible decommissioning.

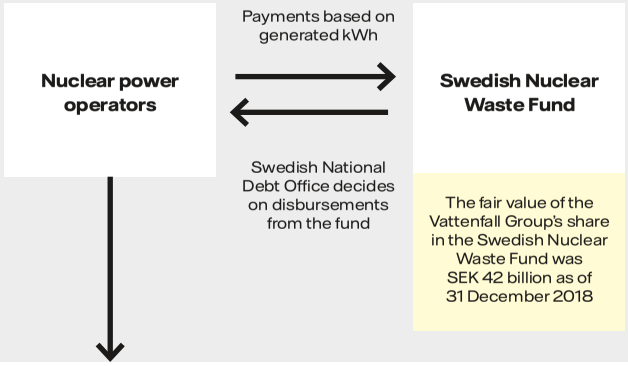
Any organisation in Sweden with a permit to own or run a nuclear installation is obligated to finance the costs for dismantling and management of spent nuclear fuel. The financing is handled by payment of fees for each generated kWh to the Swedish Nuclear Waste Fund, which manages paid-in funds. For Vattenfall, the average fee was 5.0 öre/kWh in 2018, with 3.3 öre/kWh for Forsmark and 5.2 öre/kWh for Ringhals, as decided by the government. More than 95% of the funding will thus be covered by the Swedish Nuclear Waste Fund, leaving only post-operational costs to be covered by Vattenfall. The fair value of the Vattenfall Group's share in the Swedish Nuclear Waste Fund was SEK 42 billion as of 31 December 2018. Owners of nuclear reactors are also required to provide financial guarantees for costs that are not covered by already paid-in capital, see Note 29 to the Parent Company accounts, Contingent liabilities, for further details.

SKB is owned by the nuclear power companies and is responsible for the long-term, safe handling of radioactive waste. It is an international role model thanks to the research

The financing system for post-operational nuclear costs

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

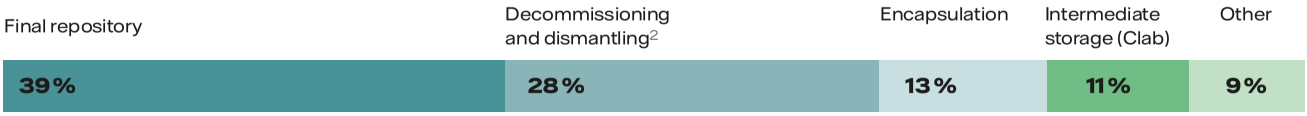
Sweden



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

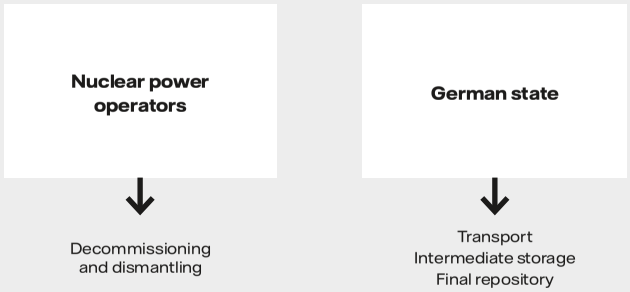
Remaining post-operational costs for the entire Swedish nuclear fleet

106
SEK billion[1]



[1] Remaining costs based on the latest calculation (Plan 2016).
[2] Decommissioning and dismantling are the responsibility of the nuclear power operators and are not included in SKB's operations.

Germany



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

and development work it is conducting to establish a storage site and safe handling method for radioactive waste, having in recent years developed a world-leading method and conducted thorough site investigations to construct a final repository that meets extremely high demands for at least 100,000 years. The method, called KBS-3, is based on three fundamental barriers which isolate the spent nuclear fuel and protect the surroundings. The technology has been developed and refined in a full-scale bedrock laboratory in Äspö, north of Oskarshamn in Sweden.

The Swedish Nuclear Waste Fund reimburses the owners of the reactors for payments to SKB as their obligations pursuant to Swedish law have been met. The Swedish National Debt Office decides on any payments from the Swedish Nuclear Waste Fund and proposes future fee levels to be decided by the government.

Germany

Following the nuclear accident in the Japanese town of Fukushima in 2011, Germany's government decided to shut down all of Germany's 17 nuclear power plants by 2022. Eight of these were ordered to be shut down by 2011, including Vattenfall's two plants in Krümmel and Brunsbüttel, while the remaining nine are scheduled to be shut down at different dates up to 2022. Vattenfall is responsible for the decommissioning and dismantling of Krümmel and Brunsbüttel, and provisions for future costs amounted to SEK 17.8 billion as of 31 December 2018.

Vattenfall's shutdowns in Germany have passed important milestones, as Brunsbüttel obtained the necessary decommissioning and dismantling licence, and all fuel from Brunsbüttel, as well as all but a few fuel pins and a dozen unused fuel elements from Krümmel, have been removed and put into interim storage. The next step will be the dismantling of the Brunsbüttel reactor internals, which is planned to start in 2019 subsequent to obtaining the required demolition permit. Decommissioning of Krümmel is planned to start in 2020 after defuelling has been completed and the decommissioning and dismantling licence has been granted.

The German state took over the responsibility for interim and final storage of low- and intermediate-level spent nuclear fuel (and other radioactive waste) in 2017, funded by the contributions that the country's nuclear power plant operators paid to a state-controlled fund. Vattenfall's contribution amounted to SEK 17.3 billion (EUR 1.8 billion).

The German Federal Council must agree on a suitable location for the permanent storage of spent nuclear fuel by 2031, and a final repository is scheduled to be completed by 2050. A final repository site for low- and intermediate-level waste has been decided on, and the facility is currently under construction. Until these are ready, spent nuclear fuel and radioactive waste must be stored in interim storage close to the nuclear power plants.

Operating segment overview

Operating segments

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

Number of employees[1]

2,962
Customers & Solutions

7,332
Power Generation

894
Wind

3,822
Heat

2,190
Distribution

2,710
Other[2]

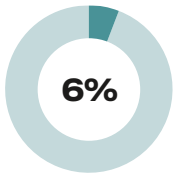
[1] Full-time equivalents.
[2] Pertains mainly to Staff Functions and Shared Service Centres.

Customers & Solutions

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

- One of the market leaders in Sweden with more than 900,000 electricity contracts
- One of the market leaders in the Netherlands with 3.7 million electricity and gas contracts
- Leading position in Berlin and Hamburg as an electricity supplier
- Activities in France expanded from business customers to also serve retail customers with electricity and gas
- Operates 10,500 e-mobility charging points in Sweden, Germany and the Netherlands
- Active in gas and electricity retail in the UK through our subsidiary iSupplyEnergy

78,883
External net sales, SEK million



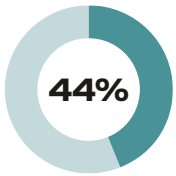
Share of underlying operating profit

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 7.2 GW nuclear capacity and 11.7 GW hydro power capacity across Sweden, Finland and Germany
- One of Europe's largest providers of fossil-free electricity, with 35.5 TWh from hydro power and 55.0 TWh from nuclear power
- Preparing for the decommissioning of Ringhals reactors 1 and 2 in 2020 and 2019, respectively
- Provides professional asset optimisation services and market access, and a leading player in PPA markets in northwest Europe

36,064
External net sales, SEK million



Share of underlying operating profit

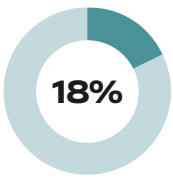
Wind

Responsible for development and operation of Vattenfall's wind farms as well as 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
- Inauguration of the Aberdeen Bay offshore wind farm (97 MW) in Scotland
- Winning bid for what will be the first non-subsidised offshore wind farm, Hollandsee Kust Zuid 1 and 2, in the Netherlands with a capacity of approximately 700 MW

8,003

External net sales, SEK million



Share of underlying operating profit

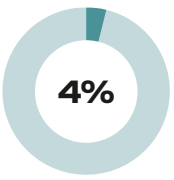
Heat

Responsible for Vattenfall's heat operations including sales, decentralised solutions and gas- and coal-fired condensing.

- One of Europe's leading producers and distributors of heat with more than 2 million end customers
- The City of Hamburg has decided to exercise its call option to take over Vattenfall's 74.9% stake in the city's district heating system
- Establishment of the Energy Solutions business unit, offering innovative, low CO_2-emitting energy solutions to real estate and commercial companies as well as municipalities
- Halving of CO_2 emissions in Berlin three years earlier than pledged

15,828

External net sales, SEK million



Share of underlying operating profit

Distribution

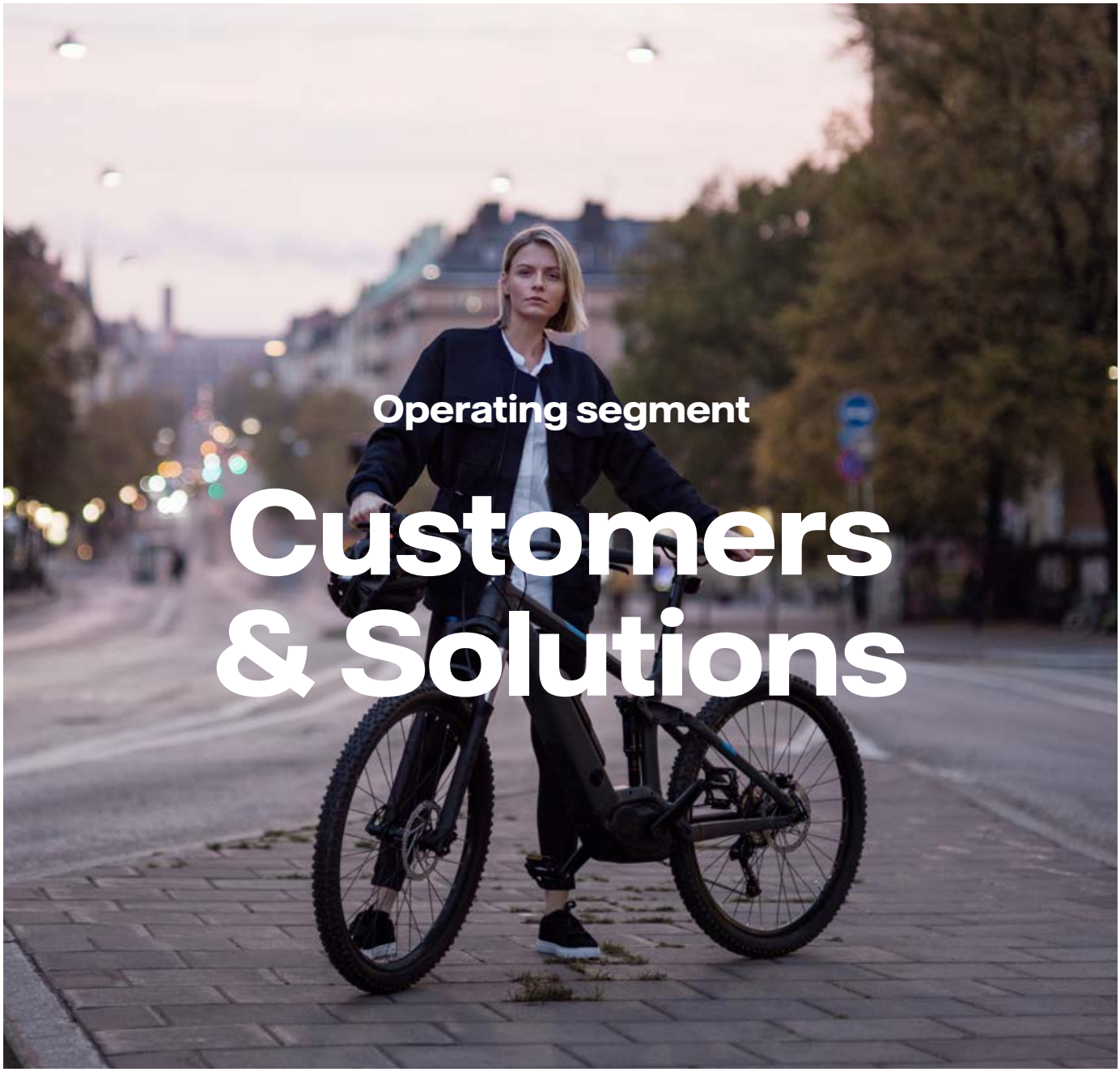
Responsible for Vattenfall's electricity distribution operations in Sweden, Germany (Berlin) and the UK.

- Leading owner and operator of electricity distribution networks in Sweden
- Approximately 3.3 million business and retail customers in Sweden and Berlin, Germany
- New legislation in Sweden resulting in significantly lower revenue frameworks starting with the next regulatory period, which starts in 2020
- Received final approval of a licence to operate as an Independent Distribution Network Operator (IDNO) in the UK

17,845

External net sales, SEK million

Share of underlying operating profit



Operating segment

Customers & Solutions

Operations

Vattenfall's Customers & Solutions business supplies electricity, gas and energy solutions to retail and business customers, with 9.7 million customer contracts in Europe. We are one of the market leaders in the retail and business segments in Sweden (with over 900,000 electricity contracts) and in the Netherlands (3.7 million electricity and gas contracts). In Germany we supply electricity and gas to retail customers (3.6 million contracts) and to the business segment with a focus on property companies. In the cities of Berlin and Hamburg we are market leader in the electricity retail segment. In Denmark, Finland, France and the UK our position is that of a challenger in sales of electricity and gas. We offer a broad range of energy solutions in most of our markets and are one of the largest solution providers in the Netherlands through our subsidiary Feenstra, with 830,000 customer contracts.

Key data

	2018	2017
Net sales (SEK million)	81,318	68,953
External net sales (SEK million)	78,883	67,402
Underlying operating profit[1] (SEK million)	1,269	1,866
Sales of electricity (TWh)	88.3	84.0
– of which, private customers	27.4	27.1
– of which, resellers	4.9	5.1
– of which, business customers	56.0	51.8
Sales of gas (TWh)	55.5	55.3
Net Promoter Score (NPS) relative to competitors[2]	+1	+2

[1] Operating profit excluding items affecting comparability.
[2] NPS was reported for the first time in 2016. For definition, see page 11.

Strategy

Our ambition is to be a leading customer-centric company, supplying a wide range of sustainable energy solutions and services to retail and business customers.

The following focus areas have been identified for Customers & Solutions:

- We aspire to help our customers live a climate-smart life by helping them reduce their carbon footprint. Our customers are offered products and services for sustainable, efficient and fossil-free energy consumption and production based on their individual energy needs. Our focus is on areas like smart data-based solutions, decentralised energy solutions and new customer interaction models. We are aiming for a top-three position in e-mobility charging solutions in northwest Europe.
- We are striving to optimise the customer experience by accelerating digitalisation and offering bundled, integrated and climate-smarter solutions. We want our customers to enthusiastically promote us as a means to maintain and grow our business.
- We are increasing the profitability of our commodity sales business by growing our customer base while reducing the cost to serve. Also, a diversified commodity portfolio is offered ranging from renewable electricity to products with certified environmental product declarations (EPD)[1].

[1] https://corporate.vattenfall.com/sustainability/policies-and-management/environmental-policy-and-management/life-cycle-management/

Developments in 2018

Sales of electricity and gas increased compared with 2017. The underlying operating profit decreased compared with 2017 mainly due to increased pressure on margins in the UK and growth activity in energy solutions. Our retail customer base grew by 973,000 contracts during the year, of which 830,000 were Feenstra contracts that are now included in Vattenfall's customer base. The customer base in Germany showed strong growth by 115,000 contracts. Powerpeers, Vattenfall's peer-to-peer platform for sharing renewable energy in the Netherlands, grew substantially from 16,000 contracts to more than 60,000. We improved our absolute Net Promoter Score (NPS[2]) during the year and stayed ahead of our average peer competitors as evidenced by our relative NPS of +1.

In anticipation of the abolition of regulated tariffs in the coming years in the French electricity and gas retail segment, we have extended our activities in France from business customers to also offer retail customers electricity and gas. In the UK, a price cap for variable tariffs was introduced and several energy obligation schemes were extended to smaller suppliers, effectively making the market more challenging.

Significant progress has been made in digitalisation, both for our customers and our internal operations. We further developed our digital energy sharing platform Powerpeers, and the virtual assistant Nina was launched in the Netherlands, featuring energy-related advice, fun and innovative challenges to save energy, and 100% mobile self-service. In Sweden, OneTonneFuture was launched – an app that helps consumers increase their awareness about their carbon footprint and how to reduce it through their daily choices as well as through offsets. In Germany we entered digital partnerships in city mobility with Berlin's public transport provider BVG, the electric scooter sharing service Emmy and the parking app We (a Volkswagen startup) to strengthen our position in Berlin and Hamburg and to make mobility in the cities more accessible and sustainable for our customers.

In 2018 we continued our work with smart energy solutions that improve customer access to fossil-free energy, help them increase their energy efficiency, and contribute to their safety and comfort. We increased our investment in the startup company tink to offer state-of-the-art smart home technologies to customers in Germany. We also increased our sales of e-mobility solutions in the Netherlands, Germany and Sweden, and started operations in the UK. We now operate more than 10,500 charging points, making the transition to sustainable, electrified transport easier.

During the year, agreements were concluded with Volvo Cars, the car-sharing service aimo, and the property companies Klövern and Diös. The Swedish motor vehicle inspection company Bilprovningen also chose Vattenfall's charging solution to offer public charging at its inspection stations, and we entered into an agreement with McDonald's to install fast e-vehicle chargers in the Netherlands.

Our sales of solar panels had very strong growth in Sweden and the Netherlands. In Germany we have begun selling solar panels directly to retail customers and see encouraging sales volumes. A partnership was entered into with BMW to combine our offer for solar panels, batteries and charging wallboxes with a leasing discount for electric cars, which can be charged with solar power from customers' roofs.

Vattenfall's partnerships to improve and digitalise city mobility are making mobility more accessible and sustainable, and are strengthening our position in our core markets.

[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

We are promoting customer centricity by focusing on customers' experiences and acting on customer feedback. Our portfolio of energy solutions will be scaled by establishing sales channels that support our growth targets coupled with automated low-cost operations. We are considering expanding our smart home offering from Germany to other selected markets and continue to grow our customer base while also working on retention initiatives. We will also act upon acquisition opportunities when they arise.

We plan to extend our e-mobility services to all our current customer markets, capturing significant benefits of scale and enhancing value for our customers and key partners, such as leasing companies and car makers. We will continue to meet and exceed our customers' sustainability expectations by promoting fossil-free energy, offering innovative energy solutions and services and by enabling our customers to switch to electric cars. We take sustainability into account in our procurement and we are engaging with internal and external partners to learn from each other.

Smart Energy Partner

Vattenfall supports skiing in becoming more climate smart

Vattenfall has a clear goal of helping its customers and partners to become fossil free within one generation. As the main sponsor of the Swedish Ski Association, Vattenfall has become the "Smart Energy Partner", joining forces with the association to make the sport more climate smart.

Sweden's Alpine national team has set the target to cut its carbon footprint in half by 2022. At the start of Vattenfall's partnership the Alpine national team's carbon emissions were four times higher per person than for an average Swede.

"We know that our sport is threatened by climate change and that we are contributing to this ourselves, since competing requires that we fly all over the world. Plus we have no control over the food we eat at hotels," says Tommy Eliasson Winter, Alpine director. "So, we want to help to reduce our carbon footprint and to learn from people who work with this issue on a daily basis."

Climate change is real for skiers

The reduction in the amount of snow on glaciers as a result of climate change affects skiers' opportunities to train and compete.

"In some places where I trained when I was active twenty years ago you can't train any longer," says Tommy Eliasson Winter.

Vattenfall is advising the Alpine national team, who have now started to climate compensate for their air travel, eat climate-smart food and take "eco-driving" courses.

The Cross-Country national team is also working to reduce its carbon footprint.

"Our cooperation with Vattenfall dates back 24 years, which by itself is sustainable and unique," says Johan Sares, Cross-Country director. The Cross-Country national team has called for the assistance of Vattenfall's climate coach Lasse Ejeklint on a number of occasions. One project involves selling used racing and training equipment and using the proceeds for continued climate work. The Cross-Country team also has plans for an entirely new World Cup tour with the Norwegian Ski Association, "Tour 2020", with the aim of creating the most sustainable Cross-Country events ever.

Personal responsibility

All skiers have a personal responsibility for their carbon footprint, but it can be hard for a person to appreciate how his or her lifestyle has an impact. This is where Vattenfall's app OneTonneFuture comes in handy. The app calculates a footprint based on the user's answers to questions about housing, travel, eating habits and consumption. Each answer shows immediately how big the carbon impact is. By means of personal advice, tips and challenges, users can find out how to be more climate smart in their everyday lives.

"What we're doing might seem like a drop in the ocean," says Alpine star Sara Hector, "but we have 60,000 members in Alpine associations around Sweden. And when the national team starts to talk, our young members listen. We're also looking at how we can get other associations to take notice. Then our efforts take on a whole new dimension."

Vattenfall's Peter Holmgrene is the driving force behind the project, and responsible for OneTonneFuture:

"The app is a tool for anyone who wants to get to grips with their climate impact: individuals, companies, municipalities, schools and organisations. With the app you can form groups and compete with other people. The competitive element motivates you to do more and help one another."

From personal competition to a climate-neutral Alpine World Championship in Sweden

At the Alpine Ski World Championship in Åre, Sweden, Vattenfall worked with the organisers in various ways to make the championship climate neutral. In addition to a 380 square metre solar cell roof on the World Cup organisation's office building, Vattenfall helped with charging infrastructure and new technology for sustainable energy consumption. Vattenfall's contribution included a smart energy storage facility where batteries cut capacity peaks when electric vehicles were being charged: electric cars, electrically-driven snow scooters, and service vehicles.

-50%

The national ski team's goal of reduced carbon footprint by 2022.

Operating segment

Power Generation

Operations

Vattenfall is one of the largest producers of fossil-free electricity in Europe. Safe, reliable and efficient electricity generation by hydro and weather-independent nuclear power plants serve as the backbone for northern Europe's electricity system. In 2018 the Power Generation operating segment produced a total of 90.5 TWh of electricity, where the Swedish part accounted for more than 55% of Sweden's total electricity generation. Optimisation and distribution of reliable and flexible power to the market is provided by the Markets Business Area, which handles hedging, sourcing and trading to ensure security of supply to Vattenfall's customers. Our service business develops and delivers maintenance services to both internal and external customers in the Nordic energy market.

Key data

	2018	2017
Net sales (SEK million)	99,970	79,566
External net sales (SEK million)	36,064	28,797
Underlying operating profit[1] (SEK million)	9,371	10,820
Electricity generation (TWh)	90.5	87.5
Sales of electricity (TWh)	28.7	23.7
– of which, resellers	24.6	20.5
– of which, business customers	4.1	3.2

[1] Operating profit excluding items affecting comparability.

Strategy

The Swedish energy agreement that was reached in 2016 enables our fossil-free and cost-effective nuclear power to play a key role in the phase-out of fossil fuels from the energy system. Our flexible hydro power is becoming increasingly important as a tool for balancing the growing share of weather-dependent electricity generation.

The following focus areas have been identified for Power Generation:

- Provide safe, reliable, and efficient hydro and nuclear power generation while proactively preventing incidents and accidents and mitigating the consequences of any accidents to employees, the general public and the environment. A target cost level of 19 öre/kWh has been set for 2021
- Ensure flexible operations that deliver high availability in our power plants and allow us to deliver electricity in periods with low production from weather-dependent energy sources
- Ensure effective dismantling of decommissioned nuclear power plants and develop systems and facilities for management and final disposal of spent nuclear fuel and radioactive waste
- Be a market leader in services and maintenance of Nordic power grids
- Be a leading provider of renewable energy to business customers in Europe and build up a portfolio of power purchase agreements (PPAs). The PPA portfolio currently amounts to nearly 5 GW, and the goal is to increase this to 7 GW by 2020
- Utilise digital technology to improve asset optimisation and drive cost efficiency through process automation

Developments in 2018

Net sales increased mainly as a result of higher electricity prices and higher nuclear power generation combined with higher sales of electricity and gas, and positive currency effects. However, the underlying operating profit decreased mainly due to hedging.

Hydro power

Our hydro power generated 35.5 TWh of electricity (35.6) in 2018. A rainy autumn partly compensated for an unusually dry summer, restoring Nordic reservoir levels to 55% (65%) of capacity by year-end 2018, which is 2 percentage points below normal. Investments have been focused on refurbishments and upgrades that increase availability, flexibility and dam safety. We continue to increase operational efficiency with new digital tools, such as remote condition assessment of equipment and mobile work management. We are undertaking a great number of initiatives to reduce the negative effects of hydro power on ecosystems and biodiversity, with the aim of maximising ecological benefit while minimising the impact on electricity generation.

Among activities are research studies of downstream migration of fish at our research facility in Älvkarleby, measures to improve migration of salmon and sea trout at Stornorrfors hydro power station, and development of new ways to attract fish to the fish passages, ensuring efficient pathways. Read more on page 39.

In Germany we finalised a major review of our hydro power operations, identified measures to ensure future profitability and are currently in the process of implementing them.

Nuclear power

Our nuclear power generation in 2018 amounted to 55.0 TWh of electricity (51.9). The average availability was 88.9% (84.9%).

In January 2018 the Swedish Radiation Safety Authority (SSM) recommended approval of the Swedish Nuclear Fuel and Waste Management Company's (SKB) licence application to build an encapsulation facility and a final repository for spent nuclear fuel. On the same day, the Land and Environmental Court stated that it could not approve SKB's application and requested more information about the copper canisters.

For information on the decommissioning of the Ringhals 1 and 2 reactors in Sweden and the Brunsbüttel and Krümmel nuclear power plants, see pages 28–29.

The work to secure operation of our remaining Swedish nuclear power plants continued during the year, including identification and mapping of competences and suppliers needed for operation until the 2040s.

Markets

2018 was characterised by high volatility in many of the markets where Vattenfall trades in spot and forward markets. Our diversified trading operations allowed us to benefit from these price movements. Vattenfall signed its first solar PPAs to buy the output from three solar farms in the Netherlands with a combined capacity of 38 MW. In May 2018 Vattenfall also signed an agreement with Facebook to provide market access and power balancing of electricity generation from three new Norwegian wind farms.

Vattenfall undertakes many initiatives to ensure it minimises or mitigates the impacts of its operations. In hydro, focus is on maximising the ecological value of each initiative we undertake.

Planned activities

The investment plan for our Swedish hydro power assets calls for plant refurbishment, maintenance and dam safety measures in the coming years.

The German hydro power organisation will further implement identified measures, such as automation and organisational changes, that are necessary for cost reductions and performance improvements.

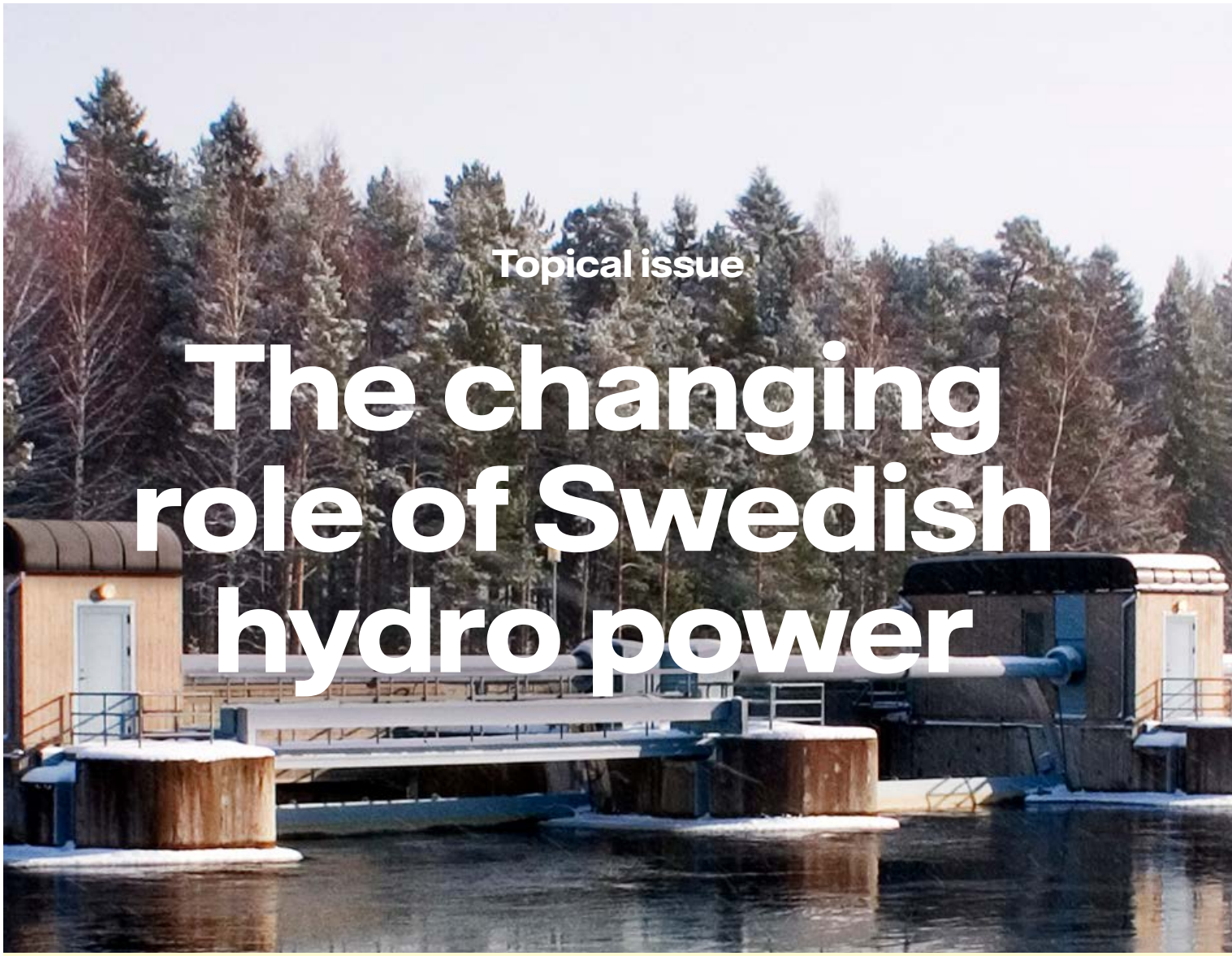
SKB will submit additional information to the government regarding the final repository of spent nuclear fuel before the end of April 2019, and the government's decision is expected in the first quarter of 2020.

The investment plan for our Swedish nuclear power reactors includes independent core cooling and investments to ensure availability of the nuclear power plants until the 2040s.

We will continue to identify the competences needed to ensure long-term operation of all our assets.

We will also continue to digitalise the business by implementing efficient IT process tools, using drones for remote inspection and inspection in hazardous environments, creating a virtual reality control room for simulations in the nuclear operations, and strengthening IT infrastructural interlinks to improve efficiency, optimise the business, and share critical competences.

Vattenfall is also developing a platform to operate and optimise small-scale decentralised energy solutions. These assets will then be aggregated into one combined virtual asset which will facilitate access to the wholesale markets. Automation and digitalisation of trading and asset optimisation activities, including supporting processes will further contribute to meeting customer demands as well as a higher level of efficiency.



Topical issue

The changing role of Swedish hydro power

The increased focus in society on climate change and CO_2 emissions is having a significant impact on the way Sweden's hydro power is used. Flexible hydro power plays an instrumental role in an energy system with more and more wind and solar power. Through interconnectors, this flexibility can be applied in other markets.

Since the first hydro power plant was built in Trollhättan in southern Sweden in 1909, hydro power has been a cornerstone in the Swedish energy system, generating base load electricity for industry, infrastructure and households. This role was maintained up through the 1950s, '60s and '70s, when more, large-scale hydro power plants were built to supply base load and cover daily and seasonal fluctuations in the demand for electricity. When nuclear power entered the scene in the 1970s and '80s, it took over a big part of the base load supply.

The intensified focus on climate change and CO_2 emissions has contributed to significant growth in installed capacity of renewable energy sources such as wind and solar power in Europe. However, the intermittent nature of these energy sources makes it necessary to have back-up capacity. Flexible hydro power can offer its huge reservoirs of stored water as a giant "green" battery for the Nordic region as well as internationally. Nordic water reservoirs hold 50% of the total hydro storage volume in Europe, providing unique flexibility through all time frames – from seconds to months – as well as grid stability services in the Nordic region.

Interconnectors vital for the energy transition

Interconnecting Nordic hydro power with neighbouring systems will offer flexible cross-border capacity, provide security of supply, improve market stability and enable the renewable agenda. This pertains especially to its potential for coping with the growing volumes of intermittent renewable generation in Germany and the UK. During times of low renewable generation on the Continent and in the UK, Nordic hydro power can be exported and thereby reduce dependence on flexible fossil fuels in these markets. Conversely, during times of surplus generation by Continental and UK renewables, the flow can be reversed, and any excess power generation can be sent to the Nordic market, thereby offering a remedy to overcapacity situations. A key initiative in this context is the 1,400 MW NorthConnect link that is planned between Norway and Scotland, a joint venture between Vattenfall and three Norwegian companies.

Strengthening the all-important flexibility

Harnessing the water in Swedish rivers is a highly efficient and cheap way to generate electricity. At the same time it is imperative that we deepen our understanding of the rivers, future precipitation trends, environmental considerations and technical ways to meet the new demands for fast response to fluctuations in electricity demand and generation.

Following a recent revision of waterflow models and data on the rivers in which Vattenfall has hydro power, it seems that we can expect to see a rise in the volume of steadily inflowing water. We have made necessary, precautionary investments in dam strength and height to make a worst-case scenario of a flood that could statistically be expected to happen every 10,000 years manageable. Based on available information, the hydro power plants will nevertheless be able to handle such a development with existing facilities and systems. Dam safety is always paramount in considering how to run turbines and reservoirs with a greater level of flexibility. Going forward it will therefore be necessary to regulate water flows a bit differently and apply stricter safety margins during parts of the year, especially for the plants highest up in the mountains.

Cutting edge technology

Vattenfall's R&D activities are key to ensuring the adaptability of hydro power in the evolving energy landscape. Covering for intermittent wind and solar power generation requires higher flexibility.

This entails relatively rapid operational changes with starts and stops and corresponding variations in reservoir water levels, with resultant wear and tear on dams, turbines and waterways inside the power plants.

Vattenfall's R&D work has resulted in a number of development strategies for hydro power in the future. While no new hydro power plants are likely to be built in Sweden, the capacity of existing stations can be increased to reach Vattenfall's goal of adding 600 MW of hydro power capacity by 2023. Monitoring and surveillance techniques are being improved through, among other things, machine learning and switching from periodic to predictive maintenance. Toward this end, Vattenfall's hydro power turbine test rig at the Älvkarleby R&D centre has been modified to test equipment that is exposed to this more flexible and transient mode of operation.

Maximising ecological benefit from environmental investments

The environmental adaptation to higher flexibility with larger fluctuations in water flows is a challenge for Sweden's hydro power plants and involves a trade-off between environmental considerations and the ability to provide society with renewable energy.

Against the backdrop of the stricter future requirements set out in the EU Water Framework Directive and the coming 2019 revision of the Swedish Environmental Code, Vattenfall has taken the initiative to set up a hydro power environmental fund together with seven other hydro power operators. The fund will invest SEK 10 billion over a period of 20 years, while making sure that environmental investments are made where the ecological benefit is the greatest and the impact on renewable electricity generation is as low as possible.

A biodiversity R&D programme has been developed to identify measures that improve biodiversity in relation to eels, salmon, trout, birds and habitats near Vattenfall's hydro power plants while maintaining high generation and regulation capacity. It is based on a stepwise process that allows a continuous assessment of the biological benefit of each measure.

Vital role in Europe's future energy system

With the strengthened flexibility, investments in new technology and targeted environmental measures, Vattenfall's hydro power plants will be able to maintain their role as the cornerstone of a Nordic and European energy system that features increasing amounts of renewable energy.

Laxelerator – By combining its expertise in hydraulics and biology, Vattenfall is gaining a greater understanding of fish behaviour. The "Laxelerator" test flume is a recent example of Vattenfall's environmental research work and has been built at Vattenfall's Älvkarleby R&D centre. The flume can be used to measure up- and downstream migration of fish and has two test sections that are 25 metres long and 4 metres wide and can reach water flows up to 16 m^3/second. It is a unique flume accredited to perform full-scale studies and tests with live fish and other aquatic organisms. For instance, tests have been performed to determine the optimal spacing between bars in grids designed to prevent fish from entering the turbines while at the same time avoiding accumulation of waste material that will reduce the plant's performance.

Vattenfall is one of the leading hydro power producers in the Nordic region with some 90 hydro power plants.

Generation: 30–35 TWh/year
Nordic capacity: 8,800 MW

Power purchase agreements

Rapidly growing interest in power purchase agreements

Power purchase agreements (PPAs) are increasingly used as an instrument for developers of renewable energy projects to secure long-term revenue and for companies to get a sustainable supply of energy for their businesses.

New wind and solar farms are being built throughout northwest Europe to meet the rising demand for renewable electricity from businesses and consumers. The important task of bringing customers and renewable production together is directly in line with Vattenfall's goal to enable a life free from fossil fuels within one generation. This is something that we can facilitate with our position as a major developer of renewable electricity generation and our large customer base. PPAs are an increasingly important tool that bridges the gap between customers and producers through contracts for stable, long-term supply and offtake of renewable electricity.

Long-term access to renewable energy

Erik Suichies, Head of Vattenfall's Business Unit Customers in the Markets Business Area explains: "Buying and selling electricity via power purchase agreements is nothing new in our industry. For decades we have had supply agreements in place with energy-intensive customers who want to fix their electricity prices long-term. What is new is that more and more customers have an interest in gaining access to renewable energy to meet their sustainability targets."

In addition to connecting customers to Vattenfall's own renewable electricity generation, Vattenfall can leverage its expertise and customer relationships to benefit other renewable energy developers as well.

Erik Suichies continues: "Third-party developers of renewable energy are interested in bringing their energy to the market to secure a long-term stable return. Most often they do not have any energy customers themselves, while we can connect our customers to renewable electricity generation for periods of up to ten years or even longer with corporate PPAs."

Vattenfall has contracted nearly 5 GW of renewable energy from third parties and aims to increase this to 7 GW by 2020.

Increased importance for PPAs

"Corporate PPAs will be an important tool for buying and selling renewable energy," notes Raija Seppälä, Senior Originator in Business Unit Customers. "A decrease in subsidies for renewable electricity production in many European countries or even zero subsidies in the offshore wind sector is driving the interest in PPAs from developers of renewable electricity generation. By selling their future production to a business customer, developers can unlock capital and hedge a large portion of their investment risk."

An attractive counterparty

Seppälä also stresses that Vattenfall is an attractive counterparty due to its clear purpose to make fossil-free living possible within one generation in combination with the company's high credit rating and large portfolio of renewable electricity generation. And risks are many in the energy sector.

"As part of the PPAs, we can take over risks such as power price, credit and imbalance costs for a fee. We have long experience in renewables, technical know-how and a large portfolio of renewables, on top of which we are a major trader in the power markets. We are therefore able to offer a full-service package to third-party developers as well as customers," Seppälä concludes.

15-year PPA for Kråktorpet

In September 2018 Vattenfall and German-based Aquila Capital signed a 15-year PPA for renewable electricity from the Kråktorpet wind farm in northern Sweden. Vattenfall will also provide balancing services, market access and management of green certificates (Guarantees of Origin).

"The agreements with Vattenfall are important parts in the realisation of the Kråktorpet wind farm project. The new wind farm will add 163 MW to our portfolio of renewable Nordic wind power, which already has surpassed 1 GW," says Roman Rosslenbroich, CEO and Co-Founder of Aquila Capital.

The Kråktorpet wind farm is currently under construction and is planned to be operational in October 2019.

Operating segment

Wind

Operations

Through its Wind business Vattenfall continues to be a leading player in the offshore wind power industry as well as one of the leading companies in onshore wind power in Europe, especially in Denmark and the Netherlands. We currently operate a portfolio of about 1,100 wind power turbines with total installed capacity of approximately 2,800 MW across five countries. In 2018 we continued our focus on solar energy (PV) technology and battery storage. We now operate 9 MW of solar power combined of decentralised and large-scale projects and have installed 23 MW of battery capacity.

Key data

	2018	2017
Net sales (SEK million)	11,852	9,438
External net sales (SEK million)	8,003	6,669
Underlying operating profit[1] (SEK million)	3,747	2,137
Electricity generation (TWh)	7.8	7.6
Investments (SEK million)	5,626	7,161

[1] Operating profit excluding items affecting comparability.

Strategy

Development and deployment of renewable power generation are key to achieving a sustainable energy system, unlocking the climate benefits of widespread electrification of society and ultimately reducing CO_2 emissions. We want to be a leader in the development, construction and operation of on- and offshore wind power. Our target is to add an additional 2,300 MW of commissioned wind and solar capacity between 2016 and 2020, bringing our estimated total capacity to 4,100 MW by 2020. To achieve this ambition and succeed in an increasingly competitive market environment, the following focus areas have been identified for Wind:

- Further strengthen the project pipeline by acquiring project development rights or entering into joint development agreements
- Become a leader in Levelised Energy Cost (LEC), for instance by leveraging procurement scale, standardising processes and improving site selection and design capabilities
- Innovate in operations and maintenance and keep focus on the 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 electricity delivery from the actual production

Developments in 2018

2018 was a highly successful year for Vattenfall's Wind business. Net sales and the underlying operating profit for 2018 increased compared with 2017 mainly as a result of positive price and currency effects and additional capacity. Electricity generation was stable compared to 2017 and amounted to 7.8 TWh (7.6).

In Scotland, off the coast of Aberdeen, Vattenfall inaugurated the offshore wind farm Aberdeen Bay. The wind farm consists of turbines with a capacity of 8.8 MW, which is the largest turbine capacity in commercial operation worldwide. All of the wind turbines have been installed using a newly deployed foundation design – the suction bucket foundation – to minimise the impact on noise-sensitive marine animals. The first electricity from the 97 MW offshore wind farm was generated three months ahead of schedule.

In March we won the tender for the Hollandse Kust Zuid 1 & 2 offshore wind farm with planned capacity of approximately 700 MW, which will be the first offshore wind farm worldwide with no guaranteed feed-in tariff. This is proof that our continuous efforts to reduce costs along our entire value chain are working successfully. The project has triggered keen interest from Dutch industry for renewable power purchase agreements (PPAs), which will further drive decarbonisation of Dutch industry.

In May, construction started on the 353 MW Blakliden/Fäbodberget wind farm in northern Sweden. Once commissioned in 2021/2022 it will be one of Sweden's largest onshore wind farms.

In Denmark, we took the final investment decision and signed the main contracts to start construction of the Kriegers Flak offshore wind farm (605 MW) in 2019. Installation of the Horns Rev 3 wind farm (407 MW) has started and will be completed in 2019.

We also decommissioned one of our oldest and smallest offshore wind farms in Sweden. All seven turbines and foundations of the Utgrunden wind farm (10 MW) were successfully removed from the site within two months.

Next to our wind activities, solar power and battery projects were developed during the year. Our 22 MW battery installation at the Pen y Cymoedd onshore wind farm in the UK became operational in 2018. This is the largest co-located battery installation at a wind farm in the UK. The battery will help the UK National Grid to enhance frequency response services, which will contribute to a stable and reliable electricity network for British consumers. Vattenfall is currently also installing solar panels at existing solar farms in Velsen, Eemshaven and Hemweg in the Netherlands with total capacity of 10 MW as well as 2 MW in Germany.

Vattenfall's efforts to reduce the cost of renewable electricity generation enabled us to win the tender for the world's first offshore wind farm with no guaranteed feed-in tariff.

Planned activities

Renewable energy is the key to supporting Vattenfall's purpose to Power Climate Smarter Living and realise the transition to a fossil-free energy system. We will continue to bid for tenders and invest in wind, solar, and battery projects in the coming years as well as optimise our operations to maximise renewable electricity generation in a sustainable manner. With respect to our existing wind farms, costs will be lowered by raising the level of standardisation, digitalisation, and data analysis for predictive maintenance and optimised marketing of the electricity produced. While renewable energy sources have a largely positive impact on the environment by replacing fossil-fuelled alternatives, they also have environmental impacts. We are working to minimise these impacts by continuously optimising our operations and technologies both internally and together with our suppliers and contractors. We want to go beyond just being compliant. Environmental and sustainable performance is more than merely following guidelines: it is a proactive mindset and a personal responsibility for each individual.

Investments are being made in research and development to better understand and be able to mitigate the impacts of our operations on the environment. The already running Vattenfall Environmental protection and wind power (ENWI) programme and the European Offshore Wind Deployment Centre (EOWDC) scientific research programme are assessing the impact of wind power on birds and bats as well as on marine mammals. The programmes are identifying whether – and if so, which – mitigation measures are meaningful to ensure an environmentally responsible renewable energy transition. Both programmes will continue their work throughout 2019 and beyond. Read more about our biodiversity initiatives on pages 160–161.

Optimising wind farm design

Layout optimiser driving increased efficiency and revenue

Identifying the optimal location of wind turbines has significantly improved offshore wind farm design at Vattenfall.

Wind power is a fast-evolving field that has attracted a lot of attention and investment in recent decades. Its development into a more mature and competitive market is making cost reduction and maximisation of power generation imperative already in the design phase of new wind farms.

"Lower costs and increased power generation can be achieved through the use of optimisation tools based on mathematical models. We have therefore introduced Operational Research (OR) methods to identify the optimal location of wind turbines in a given site in order to maximise performance and ultimately profits," says Martina Fischetti, PhD and Lead Engineer from the System Design Group in Vattenfall's Wind business.

As her doctoral dissertation, Martina Fischetti developed a new wind farm layout optimiser in close cooperation between the Technical University of Denmark and Vattenfall. The position of each turbine in a wind farm and the routing and choice of cabling are extremely important and must be optimised to take into account such various factors as water depths, erosion zones, foundation costs, physical obstacles, types of cables, cable loss and – most importantly – the wake effect, where one turbine casts a "wind shadow" on other turbines. All these factors can now be fully optimised and have a significant impact on the final layout and business case.

From a multi-step to an all in one process

Previously, wind farm design at Vattenfall was a multi-step process that was heavily dependent on the engineers' experience and standard tools. A preliminary layout was generated and checked for certain factors, the turbine locations were adapted, the layout was passed to another team for checking and adaptation of other factors and so on. This process was time consuming and could even cancel out the previous work done on optimisation of other factors. Now the process has been streamlined, as all factors are coded into the layout optimiser which runs overnight, making thousands of simulations considering all factors, and delivering the optimal layout and cable routing to be checked and finalised by experts.

To date the optimiser has been used for the two offshore wind power projects Kriegers Flak in Denmark and Hollandse Kust Zuid in the Netherlands, for example, and it was instrumental in winning both projects in international tenders.

Thomas Hjort, Head of System Design in the Offshore Wind Business Unit, explains: "I had never seen these techniques used for this type of problem before, and the results achieved compared to those of well-established tools are remarkable. What is very exciting about these OR-based tools is the momentum they gave to the team, giving us time to experiment and think out of the box, testing entirely new ideas and solutions by running the optimiser with various new design factors as input. Furthermore, we can now engage with suppliers in a new way and drive innovation in a longer perspective. Having such comprehensive optimisation tools is allowing us to test new ideas and alternative options straight away, and not least to quantify the impact of new design choices from the very first stages, which would not be possible in the more manual process."

Smarter way to increase profitability

All in all, the novel layout optimiser has contributed substantially to Vattenfall's competitiveness in offshore tenders by creating better layouts, quantifying the impact of new design choices and delivering alternative business case options for each wind farm. The layout optimiser can become an important tool in Vattenfall's ambitious plans for expansion in the wind sector.

Vattenfall's CFO, Anna Borg, summarises: "The use of these tools developed by Martina Fischetti and her colleagues in the Wind business can contribute more than EUR 10 million in increased productivity and reduced costs over the lifetime of each wind farm, allowing us to be more competitive in the energy market. This is a good example of a smarter way to increase our profitability while also reducing our costs, and it is the way we need to work going forward."

Fast simulations deliver results – Thousands of simulations are performed overnight by the wind farm layout optimiser, saving months of working hours and increasing profitability.

Operating segment

Heat

Operations

Vattenfall is active in district heating and decentralised energy solutions, and operates condensing and waste-to-energy plants. We are a leading supplier of heat in Berlin, Amsterdam and Uppsala, serving around 1.8 million end consumers. The district heating business in Hamburg, which accounts for approximately 0.5 million customers, will be sold to the city of Hamburg in 2019. District heating supply is mainly based on operation of large combined heat and power plants (CHPs). Our decentralised operations comprise more than 500 installed energy solutions in the range of 100 kWth up to 10,000 kWth. It includes customised combinations of e.g., mini-CHPs, heat pumps, boilers, storage options and solar panel installations.

Key data

	2018	2017
Net sales (SEK million)	33,970	30,724
External net sales (SEK million)	15,828	14,882
Underlying operating profit[1] (SEK million)	771	3,371
Sales of heat (TWh)	18.3	18.9
Electricity generation (TWh)	32.0	32.2
CO_2 emissions[2] (Mtonnes)	22.0	22.6
Nitrogen oxide, NO_x (ktonnes)	9.9	9.8
Sulphur dioxide, SO_2 (ktonnes)	4.2	4.1
Particulates (ktonnes)	0.2	0.3

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

Strategy

Society is increasingly demanding low-carbon energy solutions. We want to be the partner of choice for customers and communities to power their lives in ever climate smarter ways. Our Heat business will phase out coal by 2030 and will be fossil free by 2040. Accordingly, the focus areas for Heat include two major decarbonisation steps:

- Phase-out of coal and peat
- Replace fossil gas with renewable gas

Achievement of both of these steps will be possible by sector coupling to integrate renewable power generation (wind, solar) with Third Party Integration (waste heat) and renewable heat sources (biomass, solar, geothermal).

Vattenfall's Heat business will phase out all fossil fuels by 2040. As a first step, coal will be phased out by 2030.

For our target heat and cooling customers – real estate owners and developers (e.g., municipalities, commercial companies, tenant-owner housing cooperatives) – we want to be the preferred energy solutions provider by offering integrated, decentralised energy solutions with an improved customer focus based on modern digital solutions. We will focus on developing climate-smart energy solutions for these segments with the needs and expectations of their end customers (tenants and apartment owners) in mind.

Developments in 2018

Net sales increased as a result of higher electricity prices and positive currency effects. The underlying operating profit decreased mainly due to higher costs for CO_2 emission allowances and fuel, and positive one-off effects in 2017.

In 2018 the City of Hamburg decided to exercise its call option for the city's district heating system and purchase Vattenfall's 74.9% share, with financial effect from 1 January 2019. Closing of the transaction is expected to take place in 2019. We regret this decision, as we were eager to remain and show our ambition in the shift of heat systems in Hamburg. Nevertheless, we are investing in many other areas in Hamburg and in Germany in general, which continues to be one of our core markets.

In Moorburg, the supply of process heat to a nearby refinery saved more than 5,000 tonnes of CO_2 in 2018. In Berlin, Vattenfall achieved the goal of halving its coal-based CO_2 emissions from CHP plants three years earlier than pledged. A new heat-only-boiler (60 MWth) in which oil has been replaced with gas was commissioned in May 2018 in Berlin Wilmersdorf.

In the Netherlands, the municipality of Amsterdam has decided to renovate the city's northwest district. This provides growth opportunities, as this concession area is served mainly by gas heating systems but will now be connected to the joint municipal and Vattenfall district heating network.

In Sweden we finalised the conversion of two boilers from fossil fuel-based oil to bio-oil in Uppsala. Together with a hot water boiler conversion project and the phase out of peat, the project will reduce CO_2 emissions by more than 50%, from approximately 380,000 tonnes in 2013 to 156,000 tonnes in 2020.

SamEnergi is a Third Party Integration (TPI) initiative that focuses on teaming up with industrial and commercial facilities to capture surplus heat from their operations and connect them to the district heating network. Two pilots are ongoing, one with Dagab in Drefviken and one with Lindvalls Kaffe in Uppsala, and software is currently being developed for pricing of surplus heat.

During 2018, the Energy Solutions Business Unit was formed, with presence in Sweden, Germany, the Netherlands and the UK. The product portfolio includes an offering of reliable and sustainable heat and cooling, storage solutions and digital submetering services that are complemented with solar power and smart charging options for electric cars, either one by one or as fully integrated solutions.

With the launch of the Digital Accelerator Programme in 2018, the Heat operating segment has committed itself to accelerating the digital transformation and offering Vattenfall customers a comfortable home environment that takes into account their personal heating preferences as well as their environmental and cost concerns.

Planned activities

Our coal-fired Reuter C unit in Berlin will be replaced by a 120 MWth electric heat-only-boilier (HOB) and a 120 MWth gas HOB by 2020. A joint feasibility study for the phase-out of coal by 2030 at the latest has been started together with the City of Berlin and covers the replacement of the Reuter West and Moabit coal-fired power plants.

We are managing the carve-out process of the district heating business in Hamburg in a responsible manner while still growing our decentralised energy solutions business in the city. A feasibility study of power-to-heat at the Moorburg CHP plant has been successfully conducted and will be further investigated in 2019. With this power-to-heat solution, an additional 70,000 tonnes of CO_2 can be saved per year.

In the Netherlands, Vattenfall will stop production at the Hemweg 8 coal-fired plant by the end of 2019, fifteen years earlier than the plant's technical end of life, contributing to the CO_2 objectives of the Netherlands. The early closure is a result of the decision by the Dutch government in March 2019 that Hemweg 8 should stop using coal as a fuel for electricity production by the end of 2019.

In Sweden, our goal and promise to Uppsala Municipality is to reduce CO_2 emissions by 50% by 2020 compared to 2013. In early 2019 the existing hot water boiler will be converted from peat to wood pellets and the 2020 goal will thus be met already in 2019. The Carpe Futurum project with its new 112 MWth waste wood-fired steam HOB will provide the Uppsala heat cluster with a diversified, low cost, and sustainable fuel mix. It will be taken into commercial operation in 2021 and ensure the necessary heat supply. We are also looking into generating electricity in the future by adding a steam turbine.

During 2019 the Heat operating segment will test several new customer products. One example is the installation of more than 200 sensors at a real estate customer's properties and applying advanced analytics to reduce waste heat while improving the indoor climate for tenants.

Smart heat meters in Berlin

Boosting energy efficiency in Berlin with smart heat meters

Vattenfall is introducing smart district heat meters in Berlin's district heating network to improve energy efficiency, increase customers' energy consumption awareness and help the State of Berlin achieve its goal of climate neutrality by 2050.

Vattenfall is currently installing smart heat meters free of charge to some 1.2 million users throughout Berlin's district heating network for a capital expenditure of more than EUR 9 million. The business case for the smart meter project is based on improved load management and the resulting fuel savings, among other things, with the provision of consumption data for customers as a byproduct.

The first smart meters were installed in late January 2018 in Berlin's city hall, Rotes Rathaus, and will help customers, the City of Berlin and Vattenfall make the district heating system even more efficient. The meters are supplied by Berlin-based meter manufacturer Samson.

From 60 to 20,000 measuring points

Smart heat meters are the digital key to boosting energy efficiency and they enable a new level of energy management that will help the State of Berlin achieve its goal of becoming climate-neutral by 2050. The number of network data points in the district heating network will go from 60 in early 2018 to nearly 20,000 by year-end 2019, which will improve control of the close to 2,000 kilometres of piping in the district heating network.

Gunther Müller, CEO of Vattenfall Wärme Berlin, explains: "I regard smart heat meters as the key to efficient control of climate-smart district heating in Berlin. Household-specific heat consumption data such as temperature, pressure and flow are provided every 15 minutes via the mobile phone network to the district heat control centre, which then knows how much heat is needed at any given time and can precisely match supply and demand. This saves fuel, which again means lower CO_2 emissions."

The smart heat meters are thus putting an end to the era of manual meter reading. The acquired data simplifies billing, helps identify defective meters and enables better customer support. And additionally, the meters provide customers with the information necessary to optimise their energy consumption, leading to greater efficiency and lower costs.

Cooperation partners and customers welcome the new meters

Vattenfall's cooperation partner Björn Böhning, Governing Mayor of Berlin at the time of installation at the Rotes Rathaus, adds: "In an increasingly digitalised world, smart solutions for control of energy consumption are both necessary and possible. This applies equally well to private households and public buildings. Now we are putting this into action here at the Rotes Rathaus. In many regards, energy efficiency is an important topic in Berlin, as along with reducing harmful substances that pollute the air in Berlin, we can conserve precious resources. In this way, we are making a contribution to reach our goal of becoming a climate-neutral city by 2050."

Private sector customers also recognise the benefit of stepping into the digitalised world. Jörg Buberl, Building Services Manager of the Friedrichshain Building Society, which manages and maintains 7,500 flats in Berlin, welcomes the conversion to smart heat meters: "Naturally it makes things a lot easier when the heat meters can be read remotely. There are also advantages to making the data available on the online customer portal, so that heat quantities can be clearly understood for operating cost allocation. Access to the meter data gives us more transparency, since it allows us to monitor the fulfilment of our contractual heat delivery to our tenants even better."

With the new smart meters, the entire heating concept in Berlin is taking a huge step in a more sustainable direction by reducing production and the consequent emissions through an exact matching of supply and demand.

2050

The State of Berlin's target date for climate neutrality.

Operating segment

Distribution

Operations

Vattenfall's Distribution business owns and operates electricity distribution networks in Sweden and Germany (Berlin) and has approximately 3.3 million business and household customers. A new business has also been established in the UK which will work towards operation and ownership of new networks. Electricity distribution is primarily a regulated business that is supervised by the network regulators in the respective countries. In Sweden the revenue regulation will be stricter, and the revenue frameworks will be significantly lower from the next regulatory period, which starts 2020. Vattenfall has reviewed its investment plans to adjust to the new conditions while at the same time maintain focus on maximising the efficiency of investments.

We strive to minimise our impact on biodiversity in our distribution operations and make best use of the areas around our assets to aid protected or threatened species. Sustainable nature conservation and the protection of species are important aspects in the construction and operation of our electricity networks. We therefore place high demands on our suppliers and contractors to work according to our environmental policy.

Key data

	2018	2017
Net sales (SEK million)	22,374	21,430
External net sales (SEK million)	17,845	16,840
Underlying operating profit[1] (SEK million)	6,250	6,075
Investments (SEK million)	6,554	5,483

[1] Operating profit excluding items affecting comparability.

Strategy

Electricity distribution and its related infrastructure are essential for a sustainable society. Our customers and society have high expectations for the security and quality of their power supply. Even though we have made major investments in electricity networks for many years, we must continue to improve the quality of supply by reducing the average frequency of outages and their average duration. Furthermore, we need to increase the capacity of the network in many areas to be able to connect more customers and enable growth in society. The ageing network must be modernised to manage the growing volume of decentralised renewable power generation that needs to be connected. The Distribution System Operators (DSOs) are committed to enabling the adoption of smart meters, digital solutions and related customer information.

The following focus areas have been identified for Distribution:

- Continue with investments to improve availability and quality of supply, increase customer satisfaction, and accommodate renewable energy sources
- Be a digital DSO with smart, sustainable and customer-centric solutions such as digitalisation of customer interfaces and increased automation in the electricity network
- Safety has the highest priority in Distribution. We strive for a healthy and safe workplace for our employees and contractors through leadership and a culture of high health and safety awareness. We continously work with safety inspections of our facilities to prevent risks. In the event of incidents in the electricity grid, we report and cooperate with the relevant authorities and take the necessary measures to prevent similar events from occurring again. This is a continuous process with the long-term goal to have zero accidents

Developments in 2018

Net sales increased mainly due to higher tariffs in the local grid and higher revenues from the regional grid in Sweden. This was partly countered by lower net sales in Germany, with lower prices as a result of lower grid tariffs. The underlying operating profit increased over 2017 as a result of the higher revenues in Sweden. In 2018 we invested SEK 6.6 billion in electricity networks, of which SEK 4.7 billion in Sweden and SEK 1.7 billion in Berlin. A large share of investments in Sweden pertained to weatherproofing the electricity grid, particularly in the countryside, and improving the grid in growing cities. Measures such as insulating overhead power lines or replacing them with underground cables will reduce outage frequency and the duration of outages.

To further increase reliability of the electricity grid in Berlin, investments are being made to renew assets, for instance through substation upgrades and asset automation. During the year we announced a 6% increase in the electricity network price in Sweden and a slight decrease in Berlin, which are both effective from 1 January 2019. We won the contract for the operation, maintenance and repair of the public lighting system in Berlin. The process for the award of the electricity grid concession in Berlin is expected to continue in 2019. Meanwhile, we remain committed to guarantee the security of supply in Berlin, and we will continue our work on digitalising and modernising the network.

In Sweden, a major project to upgrade the control equipment for the link between Västervik on the mainland and Ygne on the island of Gotland was completed in the autumn. The new control equipment will provide higher operational reliability, reduce the risk of power outages, enable integration of renewable energy sources, and allow more than 20 years of additional operation. We regret that the repair work resulted in several outages for our customers. However, the project was needed to secure future stable supply to the island. Read more on page 53.

During the year, we established a new business in the UK which will work towards operation and ownership of new networks as an Independent Distribution Network Operator (IDNO) within the Private Networks Market. Code compliance that is required by the British energy regulator Ofgem was achieved during 2018. This now allows the IDNO to own and operate public electricity distribution networks. In addition to new networks we are also focusing on establishing Vattenfall as a provider of smart energy solutions in distribution and private electricity networks.

Vattenfall's investment to upgrade the infrastructure linking Gotland to the Swedish mainland will improve reliability, reduce outages, enable integration of more renewables, and allow more than 20 years of additional operation.

Planned activities

We will continue to invest in improved security of supply and in digitalisation of the network to ensure that we operate a smart, efficient and stable grid. This will improve our offering to customers, support the development of new business models and enable continued integration of renewable energy sources. We will continue to develop relationships with local stakeholders to foster an understanding of our social responsibility as a network owner. Environmental focus areas in the coming years include further proactive management of biodiversity in maintenance and construction activities, responsible handling of equipment to avoid oil spills, and the ambition to adopt new isolating technologies for high voltage breakers , with the purpose of avoiding the use of the greenhouse gas SF_6, when such technologies become commercially available. In Sweden, demand for electricity is growing faster in several areas than electricity generation capacity is being expanded. Vattenfall is developing innovative solutions that use demand and supply flexibility to connect customers as quickly as possible, despite the lack of available capacity. In Berlin we are continuing our commitment to the "WindNODE – showcase smart energy" project with the aim of integrating large amounts of renewable electricity into the energy system and at the same time keeping the power grids stable.

Distribution Gotland

Securing electricity supply on Gotland

Investments have been made on the island of Gotland in Sweden to ensure more reliable electricity supply. Modernisation of the grid is a precondition for the transition to a renewable energy system on the island.

To ensure secure and reliable electricity supply on Gotland, Vattenfall has replaced the equipment that controls the high-voltage direct current (HVDC) cables located between Västervik on the mainland and Ygne on Gotland. The control station is the heart of the Gotland link and ensures reliable energy transmission with the right amount of energy transferred between the mainland and the island. The old control station from the mid-1980s was approaching the end of its technical life, and the island was facing the risk of major disruptions in the future.

Modernisation of the control system involved replacing the old analogue technology with new digital technology, which was necessary for continued stable operation of the two cables. The actual replacement of the control system was done between mid-July and the end of September, as electricity consumption is relatively low during that period. Unfortunately, the work resulted in several outages that had a negative impact on our customers, which Vattenfall regrets. The modernisation has contributed to a more stable electricity grid and has made it possible to generate more local, renewable energy on Gotland in the future.

"With the new control station, we have obtained a very robust, safe and modern system that provides improved monitoring and faster troubleshooting in case of equipment failure," says Magnus Sundell, project manager for the rebuilding work at Vattenfall. "We will also be able to start up the Gotland cables remotely, which will shorten the shutdown time in the event of a cable failure."

Through the investments, which in total amount to approximately SEK 350 million, the Gotland link is equipped for more than 20 years of secure and reliable operation.

Innovation creates new opportunities

There is a great deal of interest from both solar and wind power developers to expand renewable power generation on Gotland. However, this requires additional capacity in the electricity network, and for Gotland, the cables to the mainland are the major limiting factor. On behalf of the Swedish Energy Agency, Vattenfall, together with its subsidiary Gotlands Energi AB, has conducted a study on how to both integrate more renewable energy and increase security of supply on Gotland. This will essentially turn Gotland into a pilot project for the transition to a renewable energy system in Sweden.

The study shows that if the existing electricity connections were supplemented with a battery pack in combination with a voltage increase in the power network from today's 70 kV to 130 kV, it would be possible to increase the installed amount of renewable capacity on Gotland by 150 MW and to increase security of supply as well. This will require different solutions consisting of battery storage, controllable wind power production and controllable electricity consumption, where for example larger business customers can disconnect their electricity consumption during a certain time period. The intention is to establish a digital marketplace for system services where customers can receive compensation for being flexible and thereby reduce power peaks, which in turn can reduce the lack of capacity in the network.

Karl Bergman, Vice President Research & Development, Vattenfall AB, summarises: "It is very positive that the study shows the possibilities of conversion to a renewable energy system on Gotland. The new smart technology offers immense potential, which will enable Gotland to contribute with renewable electricity generation to the Swedish electricity system on a larger scale."

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The Gotland link is equipped for more than 20 years of secure and reliable operation.

Research and development

Through innovative research activities, Vattenfall is driving development towards the goal of making fossil-free living possible within one generation, not only for ourselves, but also for our partners.

Through research and development (R&D), Vattenfall is accelerating the journey towards becoming fossil free, as well as other aspects of our strategy. More than ever before, R&D activities involve the use of digital technologies, including data analytics, machine learning and artificial intelligence. Digitalisation is not an end in itself, but a valuable tool that helps us develop new solutions for customers, optimise and improve our grid and production assets, and solve technical problems.

Around 120 people of more than 30 nationalities work in Vattenfall's dedicated R&D organisation, in addition to many more in the various Business Areas. Together they cover a very wide area of expertise. But partnering with others, including customers, suppliers, public stakeholders, universities, and institutes is also critical for successful innovation. During 2018 Vattenfall spent the equivalent of SEK 494 million on research and development.

Analytics

The R&D Data Analytics team supports Vattenfall's sustainability endeavors through machine learning and advanced analytics.

Reduction of NO_x emissions
Recently, the R&D Data Analytics team modelled an optimisation of the operation of the catalytic NO_x reduction process at a district heating plant in Uppsala. This process uses ammonia to catalytically convert nitrogen oxides in flue gas into nitrogen and water. But the efficiency of the catalytic converter drops as residue builds up, and eventually it needs to be taken offline and regenerated. The team began by predicting the efficiency loss in the process over time, and based on this it modelled an optimal schedule for regenerations, given the cost of the efficiency loss and the cost of regenerating the converter. The resulting model resulted in a 3% reduction in NO_x emissions while also cutting the cost of the entire process.

Using artificial intelligence to reduce maintenance at hydro power plants
In parallel with digitalisation of Vattenfall's hydro power plants, the R&D Data Analytics team is performing numerous tasks to increase plant efficiency and reduce environmental impacts.

To identify and possibly avoid degradation of the cooling system in a hydro power plant, a warning system has been implemented where the optimal range of parameters for running the system is monitored in real time. The resulting machine learning model distinguishes the periods of time when heat starts to build up in the generator and issues timely warnings to avoid overheating especially in the summer months, when river water temperatures rise and the system's cooling ability drops dramatically.

Predictive maintenance of the raw water heat exchanger in such cooling systems and detection of any oil leakage events in turbine control systems are two other examples currently in focus. In the former case, accumulative deposits of impurities from river water in the heat exchanger tubes result in a reduction of efficiency. Both of these events can be measured and monitored by computers, which in turn will eliminate the need for periodic inspections and increase reliability of the system. The models are currently being refined and adjusted to achieve this goal as additional historical data continues to be collected.

Optimising wind assets

Strengthening synergies of combined wind and solar farms through optimisation
To further increase the amount of sustainable electricity, Vattenfall is combining new solar farms with existing wind farms, among other measures. This reduces production costs for the solar farms, since they can share the grid connections and infrastructure. The combined farm can also be equipped with storage batteries (accumulators), which creates extra flexibility and enables other sources of income from network services or from preventing imbalances in the electricity grid.

Since such a combined system quickly becomes complex, Vattenfall's R&D department is continuously striving to develop new solutions to optimise and control future hybrid power plants to allow maximum use of network connections or offer different network-stability related services. For the optimisation and control algorithms to function effectively, they must have reliable electricity generation forecasts for the wind and solar farms as well as for demand, both of which depend heavily on the weather.

Weather-based forecasts
Along with the shift to intermittent renewable energy sources like wind and solar, Vattenfall's activities are becoming increasingly weather dependent. The variability of weather compounds the challenge of forecasting both demand and production. For the most accurate predictions, we must be able to use as much relevant data as possible and to continuously improve the techniques for interpreting that data. To address this, Vattenfall has built a database with both historical weather data and weather forecasts. The database consolidates different sources of information, simplifying the use of data and creating the possibility to analyse large amounts of information. To improve interpretation of data, forecasts for wind power generation are based on advanced algorithms and machine learning, among other things, which are both components of artificial intelligence. In machine learning, computers learn from their experiences and improve their own performance.

The ability to combine wind and solar power assets – and in some cases batteries – coupled with reliable forecasts of electricity demand, is enabling Vattenfall to plan better before a spike in demand and thus improve the stability of the electricity grid.

Sjöängen

Microgrid project shows lower costs and reduction in electricity capacity peaks
Sjöängen is one of Vattenfall's microgrid projects, where 600 square metres of solar panels connected to a battery storage are powering the Sjöängen Knowledge and Cultural Centre in the Swedish town of Askersund. The intelligent steering combines solar energy, battery storage, energy management and electric car charging in a locally integrated microgrid system.

The Soldrift Sjöängen ("Solar Operation at Sjöängen") project is a joint venture between Vattenfall, Askersund Municipality, the Swedish Energy Agency and the company Sustainable Innovation. The project is testing various operating strategies for the microgrid. Electricity peak shaving is being tested at Sjöängen's catering facility, where electricity is supplied from the battery as opposed to the grid, when capacity peaks arise. This enables the facility to use their own stored electricity, instead of buying electricity at times when it is expensive.

Sjöängen is a pilot project for what microgrid systems may look like in the future with decentralised energy solutions, electric car charging and energy storage, and has provided valuable insights for future microgrids and controlling strategies. These include how to control the charging and discharging of the energy storage facility, how to reduce the costs of power output from the electricity grid, and how to do all of this without wearing the battery out unnecessarily.

The project results show that the system can contribute to renewable power generation, backup power and lower power peaks, without adversely affecting operational reliability or power quality, for example. Thanks to the project, Askersund Municipality is seeing great interest in microgrids. In the coming years, the municipality plans to install solar power systems at several other properties.

Fossil-free steel production

HYBRIT spearheading electrification of industry

Electrification can reduce industry's carbon footprint dramatically. A new steel manufacturing method that Vattenfall is developing in cooperation with steel maker SSAB and mining company LKAB may reduce CO_2 emissions by more than 98%.

The world's steel industry alone accounts for 7% of all carbon dioxide emissions. Together with SSAB and LKAB, Vattenfall is developing HYBRIT, a pioneering fossil-free method of steel manufacturing that uses hydrogen gas produced from fossil-free electricity.

After two years of preparations, construction of the world's first fossil-free steelworks began in Luleå, Sweden in June 2018.

"We're really pleased that we've come a step closer to our goal of fossil-free steel manufacturing. The HYBRIT initiative is giving us an opportunity to reduce emissions and achieve the climate goals. In the pilot plant, we'll develop the technology closer to an industrial scale," says Mårten Görnerup, CEO of the joint venture company Hybrit Development.

The pilot plant in Luleå will go into operation in 2020, and the plan is to have an industrial process for fossil-free steel manufacturing ready by 2035.

Water replaces CO_2 emissions

SSAB is already the world's most CO_2-efficient steel manufacturer. Despite this, steel manufacturing accounts for more than 10% of CO_2 emissions in Sweden.

Traditionally, iron for steelmaking is manufactured using coal to reduce the oxygen in iron ore. In a blast furnace, the carbon in the coal combines with the oxygen in the ore and forms carbon dioxide. With the HYBRIT initiative, the oxygen will instead react with hydrogen, and the emissions will herefore consist of pure water.

All in all, HYBRIT can lower the CO_2 emissions from the manufacturing of one tonne of ore-based steel from about 1,600 kg to about 25 kg, a reduction of more than 98%.

Hydrogen gas and renewable energy – an ideal combination

Hydrogen gas, in turn, is produced by conducting direct current through water, so-called electrolysis. Vattenfall is now developing an efficient process for producing and storing hydrogen gas using fossil-free electricity, and to extend its application to other industries.

"Hydrogen production can be used to balance the demand for electricity when needed. This makes it ideal in a future energy system with a greater proportion of renewable and weather-dependent energy sources such as sun and wind," says Mikael Nordlander, portfolio manager at Vattenfall R&D with responsibility for HYBRIT and other energy-intensive industry partnership projects.

Sweden – a pioneering country

Electrification of industrial processes is an important part of Vattenfall's strategy of enabling a life free from fossil fuels within one generation. Vattenfall's current projects to electrify the manufacturing of steel (HYBRIT), cement (with Cementa) and biofuel (with Preem) have the potential to reduce Sweden's CO_2 emissions by a total of 30%.

"Sweden's energy system today is already nearly fossil-free, which makes Sweden an ideal forerunner for other countries when it comes to replacing fossil fuels with electrical power," says Mikael Nordlander. "Last autumn we noted that the European Commission's 2050 roadmap as well as reports from the Energy Transitions Commission (ETC) and Eurelectric have the same view as we do of the role of electrification to meet the Paris Agreement targets. This is highly encouraging for the future."

98%

Potential reduction of CO_2 emissions from steel manufacturing with HYBRIT.

17 PARTNERSHIPS FOR THE GOALS

Vattenfall's current projects to electrify basic industry have the potential to reduce Sweden's CO_2 emissions by a total of 30%, and similar plans are being drawn up for other core markets as well.

Our people

Vattenfall is building a new people-driven future.
We believe that we will be successful in our effort to Power Climate Smarter Living through our people.

Strategy

The foundation of our success is built on skilled and engaged people who thrive in a company that thinks more broadly than others and cares about individuals and our communities. We rely on a broad mix of people who each bring their unique talents to the team, forming a diversity that fuels our passion for enabling our customers to live fossil free within one generation.

To succeed with our purpose, we need both freshly graduated and experienced professionals with the right mindset. We offer our employees opportunities for continuous learning across the entire energy chain and vital, purposeful work together with bright colleagues in a supporting and inclusive work environment.

In general we are working actively with the following focus areas:

- Provide a safe and healthy work environment
- Secure the right and diverse competence
- Enable an engaging high-performance culture

Developments during 2018

Ensuring a safe and healthy work environment

Our goal is to have zero accidents. Despite our utmost efforts and relentless work on increasing strategic proactiveness in health and safety, sadly two fatal accidents occurred in 2018. Such accidents are unacceptable, and we are making every effort to identify the underlying causes and act to prevent similar accidents in the future. During 2018 we had a strong focus on organisational and social health (topics such as stress, burn out, management from a distance, etc.), including our goal to have zero harassment. At the same time, we made safety improvements through health and safety leadership initiatives. We monitor health and safety development both for our employees and our contractors. Lost Time Injury Frequency (LTIF) increased to 1.9 (1.5) in 2018. Sickness-related absences decreased slightly to 4.0% in 2018 from 4.1% in 2017, largely owing to development and improvements in our proactive health and safety work. Considering that sick leave rate in north-west Europe showed an upward trend in recent years, the decreasing trend in Vattenfall last year is a good result.

We can see the results of our continuous efforts to ensure that our people are treated fairly, regardless of gender, transgender identity or expression, ethnicity, religion or other faith, disability, sexual orientation or age. Harassment is clearly unacceptable, and Vattenfall takes all forms of harassment seriously. Routines for reporting and dealing with undesirable behaviour, including sexual harassment, have been in place for years. We have zero tolerance for all forms of harassment. During 2018 managers received extensive training and conducted team workshops to support anti-harassment work in their teams. A live-streamed session with an external presenter received over 3,000 views, indicating a high interest in working together to reach the zero harassment target. All Vattenfall employees in all our countries are free to join trade unions.

Securing the right and diverse competence

The number of employees decreased in 2018, from 20,041 to 19,910 full-time equivalents (FTEs).

To meet the challenge of attracting talent, we have sharpened our employer value proposition to attract people who share our purpose – to Power Climate Smarter Living. We are aiming to attract both local and global talent, welcoming people with the right skills and attitude, no matter their background. Particularly sought-after competences lie in the areas of digital know-how, nuclear power technology, analytics and various engineering specialties. A pilot campaign using our new Employer Brand was launched at the end of 2018 in Sweden, using different methods and channels to find and attract people with the competences that we are looking for. A new career website is also being developed. Vattenfall's transformation is both narrowing and expanding the business at the same time, which requires the ability to re-skill and re-train people in many different areas – which for many teams is one of the highest business priorities.

To meet this, Vattenfall promotes job rotation, talent networking, trainee and leadership programmes and transparent career paths for specialists, project managers and leaders. We run and participate in various programmes and initiatives that support broad aspects of diversity and inclusion, which we believe strengthen us as an employer and also enable us to better understand our customers' expectations and make us a better partner in the communities we serve.

We support career development and employability by making career opportunities transparent to help our employees find the next career step within Vattenfall when possible, or even outside the company when necessary. Staff reductions resulting from our transformation and rightsizing decisions will be handled in a socially responsible way. An example is Finance Accounting Services in Jokkmokk, whose tasks were outsourced during 2018. In this case, Vattenfall made a promise to come up with replacement jobs for the 32 affected employees. As a result, Vattenfall Distribution established a network-specific customer service centre in Jokkmokk, helping these employees get trained for the new jobs.

We work for an open and inclusive culture where our employees find their own role in driving the transition to a fossil-free society.

Enabling an engaging, high-performance culture

In 2017 we set out on a journey to transform our culture towards being more open, active and positive in a work environment committed to safety. We are now continuing our activation programme to drive change in the company culture and strengthen our employees' engagement. The programme strives to help each and every one of our people find their own role in driving the transition to a fossil-free society. It aims to unite all employees around our purpose and strategy, so they feel proud of our past but even prouder of our future. Cultural change and a high-performance organisation require a constant dialogue on goals and continuous feedback. In Vattenfall's annual employee survey, employee engagement was stable at 64% in 2018, the same as in 2017. Work still remains to be done to reach the target of 70% employee engagement in 2020, but we are moving in the right direction. When our employees are proud they talk about us in a positive light, which has a ripple effect on our business.

Vattenfall is working actively to provide a safe and healthy work environment and our goal is to have zero accidents.

Strategy execution is an integral part of Vattenfall Management Institute (VMI), our internal training organisation. According to the employee survey, this has resulted in a clear and continued improvement in the understanding and appreciation of Vattenfall's strategy and purpose. It is particularly gratifying that our employees feel they truly can make a difference in the success of our business, because they are the ones who will make fossil-free living within one generation possible.

We are working consciously to promote an open and inclusive culture that increases awareness throughout the company. Our goal is to have the same gender balance in management positions as in the company as a whole, thus enhancing equal leadership by narrowing the gap between female and male managers. In 2018 we came one step closer to our goal, as women represented more than 33% of all managerial hires, increasing the share of female managers to 24% from 23% in 2017, 22% in 2016 and 19% in 2015.

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 and e-learning tools 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 77.

Code of Conduct and Integrity
A new and updated version of the Vattenfall Code of Conduct and Integrity

was launched in August 2018. Substantial awareness activities were conducted in connection with the launch of the new Code. All employees must be familiarised with the new Code, both in text form and through e-learning.

Integrity training
All managers who have extensive contact with competitors are required to participate in the Vattenfall Integrity Programme (VIP). The VIP includes both e-learning and instructor-led training on the Code of Conduct and Integrity, antitrust/competition issues, anti-bribery and anti-corruption, conflicts of interest and inside information. 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. 957 employees attended the VIP in 2018 (2017: 698; 2016: 1,100), corresponding to nearly 3,900 hours of education. Integrity content is also part of our leadership programmes.

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. More than 400 managers complete the Vattenfall Integrity Survey every year. Based on the survey responses and various interviews, a range of activities may be initiated, such as monitoring compliance with our governing rules or providing tailor-made information material. One specific action in 2018 was to further educate employees in Finland and Denmark on integrity-related issues and to raise their awareness about the whistleblowing function.

Incidents
All suspected incidents are to be reported to the employee's immediate manager, to the Integrity organisation or to the Internal Audit department. Additionally, we have a Group-wide whistleblowing function with locally appointed external ombudsmen (lawyers) to whom employees, consultants and suppliers can anonymously report suspected improprieties.

All incident investigations are led by Vattenfall's Internal Audit unit. A total of 46 integrity-related incidents were reported in 2018 (2017:47; 2016: 40), of which 11 (2017:15; 2016: 10) led to disciplinary action. None of the incidents in 2018 were related to antitrust/competition issues. Currently there are no pending integrity-related cases against Vattenfall in court.

Most of the incidents were reported internally, while four cases were reported via the external ombudsmen (2017:8; 2016: 8). All reported incidents and violations are evaluated and subject to a lessons-learned process to ensure continuous improvement within the company. A description of how incidents are reported and investigated is provided in the box below.

Integrity risks
We have conducted and will continue to conduct risk assessments related to integrity. The two greatest integrity risks that we have identified are non-compliance with competition laws and corruption. In 2018 we had six reported incidents in these areas (2017:1; 2016: 7). 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. One example of a risk assessment conducted in 2018 pertained to the Wind operating segment, which included in-depth interviews with relevant managers.

Code of Conduct for Suppliers
Our integrity work is not just an internal issue – we also have corresponding requirements for our suppliers. 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. It is based on, among other things, the UN Global Compact, the UN Guiding Principles for Business and Human Rights, and the OECD Guidelines for Multinational Enterprises.

Reporting of incidents

Vattenfall encourages every employee to report any violation of law or the Vattenfall Code of Conduct and Integrity. Reports may be made to the employee's immediate manager, a national integrity coordinator or the Internal Audit department.

Additionally, an informant who suspects a serious violation but does not wish to report it internally may contact one of the external ombudsmen through the whistleblowing function. Whistleblowing is a procedure that is voluntarily implemented by Vattenfall. The ombudsmen are experienced external lawyers independent from the Vattenfall Group.

Reporting to the external ombudsmen provides the option to remain anonymous. Personal data and other information that an ombudsman receives from a whistleblower will be handled with strict confidentiality until the informant allows the ombudsman to pass on all or part of this information to the ombudsman's contact person at Vattenfall. It is prohibited to attempt to determine the identity of the informant in a whistleblowing matter.

The reports are most often investigated internally by the Internal Audit department. Every investigation is conducted under strict confidentiality. The investigation is concluded with a written report, sent to a member of the Executive Group Management (EGM) as well as to other relevant people in the organisation. The informant is always informed about the outcome.

Investigations may lead to recommendations on appropriate measures, including disciplinary actions.

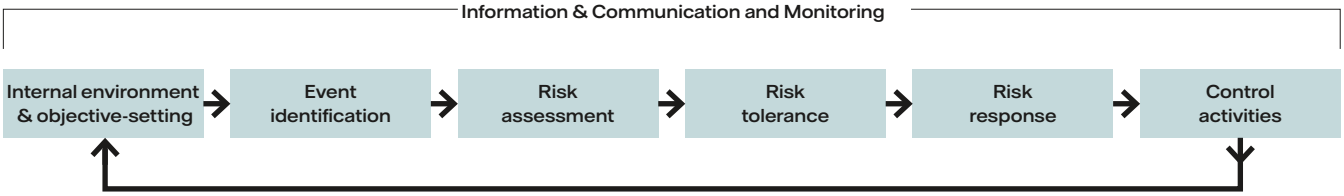
Risks and risk management

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 to support our strategy and achieve our long-term goals. In accordance with the Swedish Corporate Governance Code and the Board of Directors' Rules of Procedure, Vattenfall's risk management framework ensures thorough identification and management of our risks and an 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 of defence. ERM combines a top-down with a bottom-up approach.

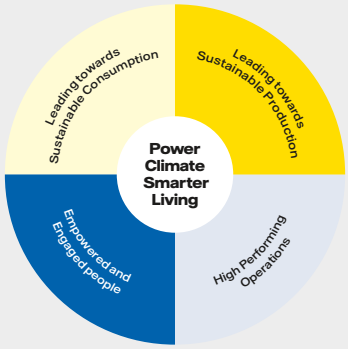
ERM process



Risks and risk management are part of the financial statements in accordance with the International Financial Reporting Standards (IFRS). Read more on pages 86–155.

ERM process

Vattenfall's strategy serves as the basis for setting objectives for the respective business units in the business planning process. When setting these objectives, risks that could hinder their achievement are identified. In our risk management process, risks are quantified and analysed with respect to both financial and non-financial consequences (e.g., concerning the environment, including climate change, as well as health and reputation). These risks are assessed against the company's risk tolerance and a decision is made on suitable risk measures to avoid, reduce, share or accept the risks. 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 renewables and continuous changes in the energy market structure (e.g., decentralisation, electrification and energy storage), as well as changes in energy policies, our risk/return profile is changing. However, these developments entail not only risks but also opportunities. The relative importance of market price risk is increasing for Vattenfall due to dramatic changes in support schemes – especially for offshore wind investments. The further diversification of our portfolio provides a well-functioning risk mitigation measure. In 2018 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 2019.

The likelihood of a hard Brexit arguably increased during 2018. We are assessing what this would mean for our business. While huge political uncertainty remains, the direct risks for Vattenfall are limited based on our initial assessment. The main impact would be at the operational level, mainly in the wind and the trading businesses. In addition, a number of Human Resource–related issues would need to be considered. Indirect effects of macroeconomic consequences are hard to predict at the moment.

The risk structure outlined in the following pages reflects the company's strategic objectives: Leading towards Sustainable Consumption, Leading towards Sustainable Production, Empowered and Engaged People, and High Performing Operations. The main risks we are exposed to are presented, as well as how we manage these risks. This section is accompanied by an example on how we assess and manage impacts caused by climate change. Certain financial risks are associated with more than one of the strategic objectives and are therefore addressed in a separate paragraph in the risk section.

Risks related to Sustainable Consumption

We are strongly focused on increasing customer centricity, meeting customer expectations and strengthening our position as a provider of comprehensive, sustainable solutions. This requires that we further improve the customer experience and accelerate digitalisation, which will allow our customers to take control of their consumption and production of electricity and heat.

Risks

- Inability to meet customer expectations (measured by a declining Net Promoter Score, NPS) or to develop and offer the demanded energy-efficient and sustainable solutions and services, possibly leading to loss of customers and market share.
- Failure to ensure satisfactory security of supply due to ageing and unreliable distribution networks or extreme weather conditions.
- Risk of discontinued concession for the distribution network in Berlin.

Risk management activities during the year

To be Leading towards Sustainable Consumption, we continue to develop energy solutions – such as charging solutions in the InCharge charging network and other digital offerings – to optimise and increase value for customers. A new business unit called Energy Solutions was established in 2018 to better coordinate efforts in decentralised energy solutions (e.g., Vattenfall InHouse, solar power and heat pumps). Our focus on hiring and developing digital competences ensures that we can continue to innovate and create climate-smart product solutions that customers value. Our solar and battery business continues to develop various products that enable customers to have solar/battery/charging solutions in their homes. Further, we have partnered with basic industries in Sweden to electrify and decarbonise their industrial processes. For example, in partnership with SSAB and LKAB, Vattenfall is running a hydrogen gas pilot project for a fossil-free steel industry. Read more on page 57. Another example is the production of renewable fuel in collaboration with Preem.

Additionally, we offer corporate power purchase agreements, PPAs as described on page 41 to supply large customers with renewable energy and help them achieve their sustainability goals (e.g., agreement with Novo Nordisk and Novozymes).To meet customer and regulatory demands on quality of supply, our distribution businesses are increasing their investments in networks, primarily in Sweden. In the Nordic region, we are working continuously to make the electricity grid less vulnerable by successively replacing overhead power lines with underground cables and replacing old equipment. In parallel with this, development of smart grid solutions is enabling us to reduce outage frequency and duration while allowing customers to monitor and steer their own energy use. Close cooperation and dialogue with our city partners – Berlin, Amsterdam and Uppsala – is strengthening our ability to develop the right solutions to meet their needs and be regarded as a reliable and trusted partner. One example is the signing of a ten-year contract with the City of Berlin for delivery of heat to municipal buildings.

Risks related to Sustainable Production

We will provide more renewable electricity generation and continue to develop, acquire and participate in projects and tenders for onshore and offshore wind farms. Vattenfall is prepared for the energy transition also in the heat and transportation sectors. We have developed a CO_2 roadmap with the purpose of fulfilling our commitment to enable a fossil free life within one generation. A key milestone on our journey is to phase out coal in our heat plants by 2030.

Risks

- Our competitiveness could be reduced by 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 a loss of market share.
- Offshore wind is becoming increasingly exposed to competition, entailing both profitability and growth risks.
- New players are entering the electricity value chain, leading to higher strategic risks and competition with subsequent squeeze on margins.
- Investment risks, especially long-term market risk, related to a possible delayed phase-out of coal in Germany and/or prices for fossil fuels and carbon emissions deviating from our expectations.

Risk management activities during the year

Achieving our strategic target of reducing our CO_2 exposure requires a stepwise phase-out of fossil fuels, starting with our most emissions-intensive assets. The switch from coal- to biomass- or gas-fired combined heat and power plants, as well as gas boilers, battery storage, and expansion of power-to-heat solutions, will provide greater flexibility and reduce CO_2 emissions. In Berlin, Vattenfall reached the 50% CO_2 emission reduction goal already by year-end 2017, three years earlier than initially agreed with the city. In 2018 we started a study on the financial, social, and environmental risks and opportunities associated with switching our coal-based assets to biomass. Our focus on integration of third-party heat will further decarbonise our district heating networks (e.g., producers of residual heat, such as Königliche Porzellan-Manufaktur in Berlin and data centres). To further diversify in renewables, we continue to invest in technologies other than wind power, including solar power and battery storage, and new business models. In 2018 we built multiple solar farms around existing assets, such as in the Netherlands. In addition, Vattenfall is launching various start-up initiatives and collaborations – internal (e.g., GreenHouse) and external (e.g., Caterva) – as a way of broadening the palette of customised products. As subsidy levels for wind, solar, and battery projects decrease, Vattenfall is using all its expertise (including its past experience in delivering offshore wind farms, combining projects to achieve economies of scale and further deploying operational excellence) to ensure that its Levelised Energy Cost (LEC) remains competitive and declines faster than that of its key competitors.

Risks related to Empowered and Engaged People

We must ensure a safe work environment that attracts, engages and develops people with the right competences. We will continue to develop our culture, values and brand in our work on strengthening our identity and being clear about who we are, what we stand for, and what our purpose is.

Risks

- Work environment risks for accidents and incidents not only affect the individuals concerned but also threaten workforce productivity and Vattenfall's attractiveness as an employer.
- An inability to attract and retain people with key competences, and the risk of lower employee engagement for Vattenfall in connection with outsourcing and/or cost-cutting.
- Violations of our Code of Conduct and Integrity. Fraud and integrity risks could lead to loss of value and harm to our reputation resulting from incidents related to e.g., the Group's assets, IT systems, information or personnel. The two greatest integrity risks identified within Vattenfall are non-compliance with competition laws and corruption.

Risk management activities during the year

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. Unfortunately two fatal accidents occurred during the year, and an increased focus on safety is required going forward. Lost Time Injury Frequency (LTIF) increased to 1.9 (1.5). The methodology for determining LTIF will be further examined in accordance with H&S incidents that occurred during the year. Monitoring and controlling H&S risks are covered in the various risk management systems of the respective Business Areas or Staff Functions. We perform thorough analyses of past accidents and create systems, routines and processes to detect and prevent future ones. To support our strategy of enabling fossil free living within one generation, we have put greater emphasis on hiring and developing talent in digitalisation and project management, among other areas. The developing 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. An employee activation programme is being used throughout the organisation to create clarity about our future goals and increase employee engagement.

The updated Code of Conduct and Integrity was adopted in 2018. We have zero tolerance for bribery and corruption. To ensure compliance, we have implemented integrity instructions and conducted training and e-learning programmes to increase awareness. Read more on page 61. The "four eyes principle" is applied to protect assets and information from improprieties and fraud.

Risks related to High Performing Operations

To be competitive and achieve our strategic objectives, we will intensify our activities. This includes raising our ambitions for efficiency and further reducing costs as well as focusing on sustainability throughout the value chain. Digitalisation will be crucial for achieving financially sustainable results.

Risks

- Operational asset risks – for example, nuclear power availability, dam failure, or damage to distribution networks – could have significant negative financial and non-financial consequences. Climate change also poses a risk for operations. See example on page 66.
- Political risks, e.g., changes in climate-related policy or environmental regulations, could negatively affect business development or restrict our operations or permits. This includes the decision on a new revenue regulation for Distribution System Operators in Sweden for the period 2020–2023, long permit procedures for wind power and the discussion in Sweden on the licence to build a final repository for spent nuclear fuel.
- Breaches of our Code of Conduct for Suppliers, such as human rights violations in the supply chain, could result in supply interruptions that delay construction projects or disrupt operations, negative impacts on the brand and trust, or could lead to the loss of our licence to operate.
- Environmentally hazardous emissions risks related to, for example, accidents or incidents resulting from an explosion, fire, oil spill or leak of hazardous substances, could have financial, non-financial, and regulatory repercussions.
- Given the data we collect, the smart services we offer and critical infrastructure we operate, we face many forms of cyber risk, including phishing and digital trust, as well as data and privacy breaches.

Risk management activities during the year

The 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.

Warm weather in Sweden forced us to temporarily shut down the Ringhals 2 nuclear reactor. This and other climate-related risks are managed within the Risk Management Framework.

We have a Code of Conduct for Suppliers and perform risk assessments and reviews of our suppliers. We expanded our human rights efforts internally and throughout our value chain.

Environmental risks are managed by the respective Business Areas. The Vattenfall Environmental Management System is part of our overarching Vattenfall Management System. See page 76. We monitor local or regional developments concerning environmental permits, which is important as our portfolio continues to diversify by region and technology.

Information is considered a critical asset, and information security is governed by our Information Security Management System. In the course of our activities we collect, store and process personal data about our employees, customers, suppliers and other third parties. Vattenfall has implemented appropriate technical and organisational measures to ensure that personal data is processed in accordance with data protection laws and regulations, such as the GDPR. Regarding cyber risk in critical infrastructure, information security and physical security measures are being implemented. These include, for example, separation of critical IT systems from other IT applications, restriction of physical access to selected personnel, background screening (vetting) of personnel and the setting up of Business Continuity Plans.

Rising mean temperatures could lead to reduced revenues due to lower sales of heat

Rising mean temperatures[1] for northern and Central Europe could negatively influence heat demand. This can be estimated by looking at the heating degree days (HDDs) in Europe, which decreased on average by 9.9 HDDs (0.45%) per year[2] from 1981 to 2014. Fewer HDDs could reduce demand for heat, and therefore sales.

A scenario analysis for 2030 shows a decrease in sales volume of heat by 1-2 TWh, corresponding to an estimated financial impact of SEK 1 billion (assuming the current European average price of approximately 200 SEK/GJ for district heating).

To compensate for this we are working to increase our customer base in both district heating and decentralised heating solutions and to broaden our product offering (e.g., cooling solutions). We have set ambitious targets for climate neutrality and will drive the transition towards fossil-free heating solutions together with cities and regions. During the period of 2019–2020, Vattenfall will invest SEK 3 billion in growth related to our district heating networks.

[1] The mean temperature is expected to increase by 0.5–2°C (2050) in northern and Central Europe depending on geographical location, according to the German Environmental Agency, UK Climate projections and the Swedish Energy Agency.

[2] EEA: https://www.eea.europa.eu/data-and-maps/indicators/heating-degree-days

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 commodity prices. Vattenfall's price hedging strategy is focused on the Nordic generation assets.

Risk management activities

Through our asset ownership and sales activities, we are exposed to electricity, fuel, and CO_2 emission allowance prices, which are affected by several fundamental 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. To measure electricity price risk, we use methods such as Value at Risk (VaR) and Gross Margin at Risk along with various stress tests. The 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. In addition, Vattenfall's operations generate a substantial share of regulated revenue from electricity distribution, heat and wind power, which reduces the total risk exposure on the Continent (Germany, the Netherlands and the UK). 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. The market price risk of Vattenfall's production assets and hedges for electricity, fuel prices and emissions as well as the ancillary trading market price risks are monitored daily.

Nordic market

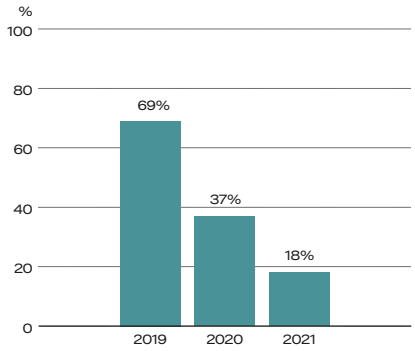
The table below shows the average prices achieved as per 31 December 2018, while the chart above at right shows the estimated achieved financial hedge ratio. The hedge ratio has been estimatee based on an internal risk management model that uses simulations to reflect – in a realistically interlinked way – both future possible price scenarios and the volume risk associated with hydro power generation.

Average indicative Nordic hedge prices as per 31 December 2018

EUR/MWh	2019	2020	2021
Nordic[1]	29	31	33

[1] Including remaining price hedges on the Continent.

Vattenfall's estimated Nordic hedge ratio (%) as per 31 December 2018



Continental market

Due to the combined effect various commodity price changes have on the Continental portfolio, the table below shows the individual impact of changes in commodity prices on expected future operating profit before tax as well as the observed yearly volatility of relevant commodities. 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.

The effect of price movements on future operating profit before tax increases as the share of exposure that is not hedged increases. The exposure for the next-coming year is hedged to a higher degree than the exposure that is expected three years ahead. The presented analysis is based on the assumption that risks are independent of each other. Prices and positions are stated as per 29 December 2018. For example, a movement of +10% in the price of electricity in 2019 would have an impact on operating profit of SEK +2,184 million. Observed yearly volatilities during 2018 are shown in the far-right column in the table to the left. The chart on the next page visualises the information shown in the sensitivity table.

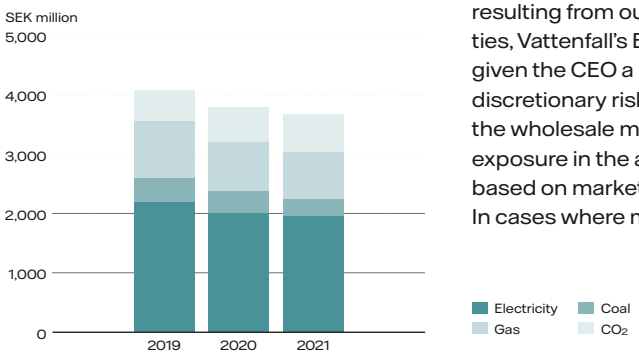
Market-quoted risks

	+/–10% impact on future profit before tax, SEK million[1]			Observed yearly volatility[2], %
	2019	2020	2021	
Electricity	+/- 2,184	+/- 2,006	+/- 1,962	21%–23%
Coal	-/+ 403	-/+ 355	-/+ 293	21%–24%
Gas	-/+ 964	-/+ 841	-/+ 790	18%–21%
CO_2	-/+ 513	-/+ 575	-/+ 623	46%–48%

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

[2] Observed yearly volatility in 2018 for daily price movements for each commodity, based on forward contracts for the period 2019–2021. Volatility normally declines the further ahead in time the contract pertains to.

Sensitivity analysis – impact of price movements (+/-10%) on operating profit



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 prices (mark-to-market). In cases where market prices cannot 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.

Volume risk

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

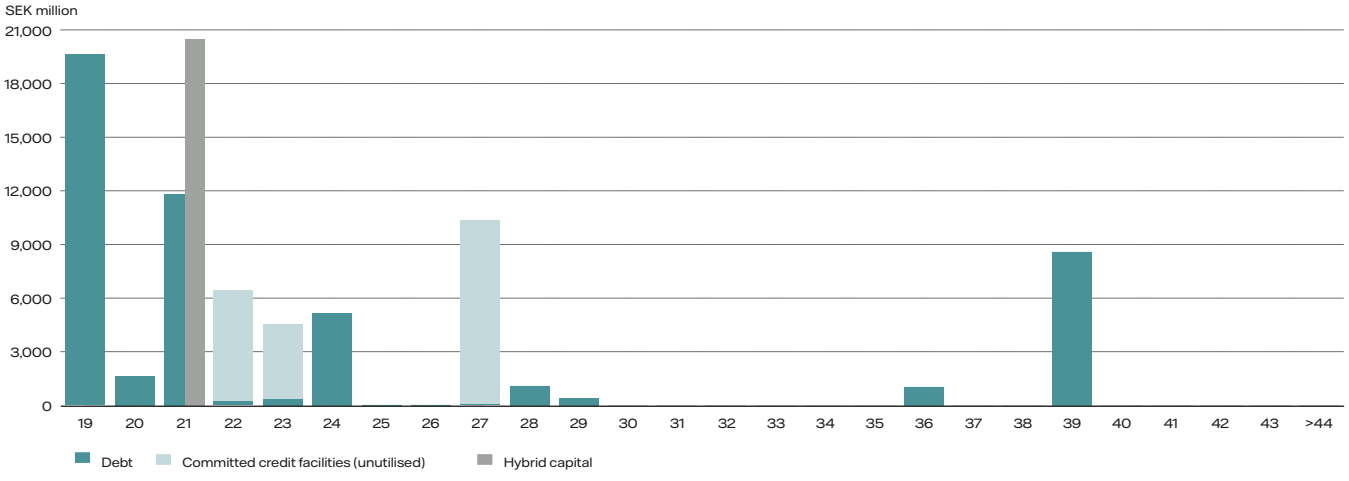
Risk management activities
In hydro power generation, volume risk is managed by analysing and forecasting historical weather data, including such factors as precipitation and snowmelt. District heating volumes are managed by improving and developing forecasts for heat consumption. There is a correlation between electricity prices and generated electricity volume. Volume risk also arises in the sales activities as deviations in the anticipated volumes against actual volumes delivered to customers. Here, too, improved monitoring and forecasting capabilities are the most efficient risk management instruments.

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 are 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 the 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 2018, available liquid assets and/or committed credit facilities amounted to 35% (28%) 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 8 November 2018 Standard & Poor's affirmed Vattenfall's long-term BBB+ rating and short-term A-2 rating. On 4 October 2018 Moody's affirmed Vattenfall's long-term A3 rating and Baa2 rating for hybrid bonds. The outlook for Vattenfall's rating was revised from negative to stable by both Moody's and Standard & Poor's in 2017. Vattenfall foresees a refinancing need at the end of 2019 at the earliest.

Maturity profile for Vattenfall's loans as per 31 December 2018[1]



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

Borrowing programmes and committed credit facilities

		Maximum aggregated amount		Maturity		Used portion, %		Reported external liabilities, SEK million	
	Currency	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Borrowing programmes									
Commercial paper	SEK	15,000	15,000	–	–	2	3	300	0
Euro Commercial paper	EUR	2,000	2,000	–	–	53	36	7,108	4,192
Euro Medium Term Note	EUR	10,000	10,000	–	–	37	43	40,699	45,516
Committed credit facilities									
Revolving Credit Facility[1]	EUR	2,000	2,000	–	–	–	–	–	–

[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 December 2021.

The maturity structure pertains to the debt portfolio excluding loans from minority owners and associated companies, which amounted to SEK 10,910 million (10,831) for 2018. 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 4 to 7 years is based on the company's current financing need and desired interest rate sensitivity in net interest income/expense. The duration of the Group's debt portfolio at year-end was 4.40 years (4.31) including Hybrid Capital. See the table for the remaining fixed rate term in our debt portfolio.

Remaining fixed rate term in debt portfolio

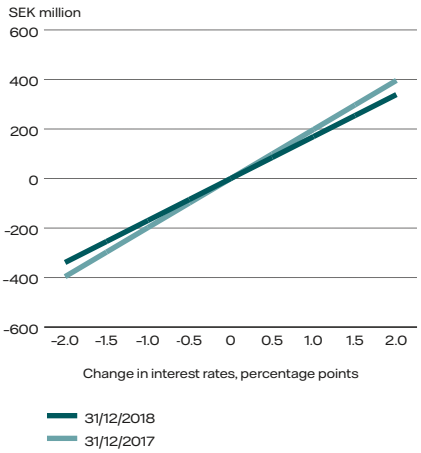
	Debt		Derivatives		Total	
SEK million	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
< 3 months	19,910	7,891	16,064	19,660	35,974	27,551
3 months–1 year	3,241	5,503	-2,894	1,558	347	7,061
1–5 years	20,049	26,411	-8,130	-10,901	11,919	15,510
> 5 years	26,867	29,814	-4,992	-9,930	21,875	19,884
Total	**70,067**	**69,619**	**48**	**388**	**70,115**	**70,007**

The debt 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 10,910 million for 2018 (10,831).

The average financing rate as per 31 December 2018 was 4.48% (4.45%). 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 gain/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 –132 million (–155), 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 76,999 million (2017: 71,333). Of this amount, 39% (43%) was hedged at year-end. For further information, see Note 38 to the consolidated accounts, Specifications of equity. With respect to currency movements, a 5% change in exchange rates, for example, would affect the Group's equity by approximately SEK 2.9 billion (2.7), 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.

Debt portfolio, breakdown per currency

	Debt		Derivatives		Total	
Original currency	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
DKK	2,148	0	-	-	2,148	0
EUR	42,026	43,843	5,830	5,597	47,857	49,440
GBP	11,724	11,457	-3,056	-2,958	8,668	8,500
JPY	1,874	1,925	-1,874	-1,925	0	0
NOK	564	547	-564	-547	0	0
PLN	0	0	-	-	0	0
SEK	8,148	8,563	3,294	3,504	11,442	12,068
USD	3,582	3,283	-3,582	-3,283	0	0
Total	**70,067**	**69,619**	**48**	**388**	**70,115**	**70,007**

The table shows currency risk in the debt portfolio and the currencies that Vattenfall is exposed to. The level of debt, and thus the currency risk, decreased in 2018 compared with 2017. Figures above are exclusive of loans from minority owners and associated companies, totalling SEK 10,910 million (10,831). All figures are in nominal amounts.

Consolidated operating income and expenses per currency, %

	Income		Expenses	
Currency	**2018**	**2017**	**2018**	**2017**
EUR	79%	83%	85%	69%
SEK	13%	14%	3%	11%
GBP	6%	1%	5%	16%
DKK	1%	1%	1%	1%
Other	1%	1%	6%	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.

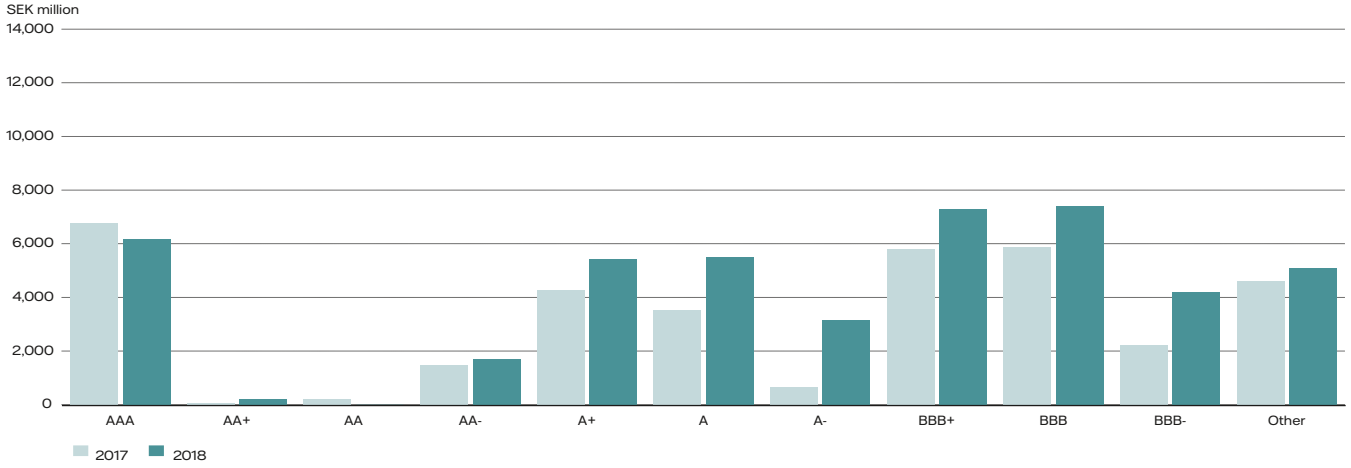
Credit risk

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

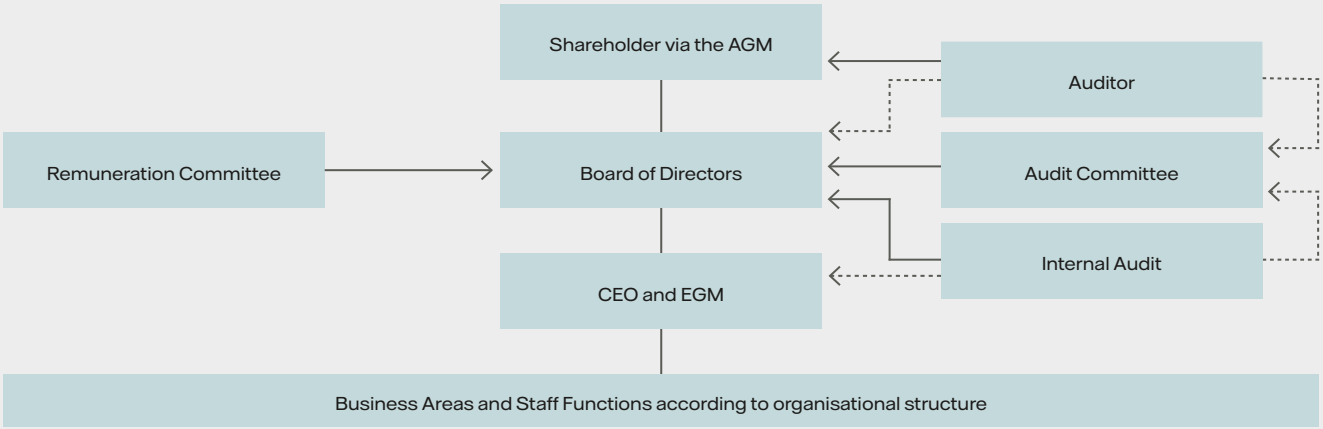


The chart shows exposures to Vattenfall's counterparties where the exposure is greater than SEK 50 million per counterparty, broken down per rating classification according to Standard & Poor's rating scale. Counterparties are reviewed and approved in line with Vattenfall's credit mandates and policies. Smaller exposures are considered to have such a large diversification effect that the net risk for Vattenfall is judged to be low. 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

The following pages include information on corporate governance during the 2018 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. 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 Board of Directors is elected by the Annual General Meeting. The Board, 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"). However, since Vattenfall is wholly owned by the Swedish state, certain stipulations in the Code are not applicable.
This applies to the matter of reporting on board members' independence, regulated in point 4.4 and 4.5, among other things. In addition, Vattenfall also deviates from the Code with respect to the following points:

Point 1.3, pertaining to the requirement that the nomination committee shall propose a person to serve as AGM chairman. Due to its ownership structure, Vattenfall has no nomination committee. 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.

Chapter 2, pertaining to the requirement that the company shall have a nomination committee. 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.

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
- The Swedish Corporate Governance Code ("the Code")
- Stock exchange rules[1]
- International Financial Reporting Standards (IFRS) and other accounting rules
- The Global Reporting Initiative (GRI) Standards and UN Global Compact

Internal rules
- The Articles of Association
- The Board's and committees' Rules of Procedure, including the CEO's 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

[1] Vattenfall follows the stock exchange rules that apply for companies that have fixed-income instruments registered on Nasdaq Stockholm and other marketplaces.

Vattenfall AB's Articles of Association and continuously updated information about corporate governance at Vattenfall are available on Vattenfall's website: vattenfall.com (original Swedish documents are available on 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 shareholder's right to make decisions about Vattenfall's affairs is exercised at the Annual General Meeting and other general meetings. Through a general meeting resolution on the content of the Articles of Association, the owner makes decisions on the company's operations. The Swedish state's ownership policy and the guidelines for external reporting in 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.

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. Notice of the AGM is issued not earlier than six weeks and not later than four weeks before the meeting is to be held.

Annual General Meeting 2018
Vattenfall held its 2018 AGM on 25 April. The company's owner, the Swedish state, participated at the AGM through its owner representative. The President, auditor and quorumed Board were also in attendance. Members of Parliament were given the opportunity to ask questions during the AGM, and an open Q&A session was arranged after the meeting, in accordance with the Swedish state's ownership policy. The AGM was open to the general public and was aired live via webcast.

The 2019 AGM will be held on 11 April in Solna, Sweden.

Duties of the Annual General Meeting

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

Board of Directors

The Board's duties
The Board's 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, allocation of duties between the Board, the President and the Board's committees, the Chairman's duties, the form and content of board meetings, and the evaluation of the work of the Board and the President.

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

Board meetings
According to the Board's Rules of Procedure, 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

The Board's yearly planning

Q1	Q2	Q3	Q4
Report from the auditors, nomination of auditor, annual accounts, dividend, reporting on major disputes and integrity reports	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 plan, R&D strategy, nuclear power and dam safety	Business, investment and financing plans, 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 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

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. The Executive Group Management participates at the board seminars.

The Board met ten times in 2018, including the statutory meeting.

Appointment of the Board

For companies that are wholly owned by the Swedish state, uniform and joint 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 competency needs are analysed on the basis of the company's operations, situation and future challenges as well as the Board's composition and evaluations of the Board that have been carried out. Included in the Government Offices' nomination process is a continuous evaluation of all state-owned company boards. Thereafter, any recruitment needs are determined and recruitment work is initiated. 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 pool in the aim of soliciting expertise of both women and men as well as persons with varying backgrounds and experience. Discrimination based on gender, transgender identity or expression, ethnic origin, religion or other faith, functional disability, sexual orientation or age may not take place.

At the 2018 AGM the owner's representative presented a motivating 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 conditions in general – was judged to be suitable and distinguished by diversity and breadth regarding the directors' competence, experience and backgrounds, as well as fulfilling the government's goal on gender balance.

More detailed information on the board nomination process is provided in the Swedish state's owner policy, at 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 2018 the Board was composed of eight directors elected by a general meeting. No member of the Executive Group Management (EGM) was a director on the Board. Lars G. Nordström was Chairman of 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 80–81.

Sustainability issues addressed by the Board

Based on a decision by the Swedish Parliament in 2010, Vattenfall AB's Articles of Association stipulate that Vattenfall shall operate 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 companies with state ownership shall integrate sustainability in their corporate governance and act exemplarily in this area. The companies are to operate in a manner that promotes sustainable development, i.e., "a development that meets the needs of today without jeopardising future generations' ability to meet their needs". Of particular importance is that companies with state ownership promote a healthy and safe work environment, respect for human rights, good and decent working conditions, equality and diversity, reduced climate and environmental impact, good business ethics and active work on anti-corruption, and that they ensure that no abuses occur due to their special status of being state-owned and exhibit responsible conduct in the tax area.

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. The Board has also stressed that Vattenfall's four strategic objectives in themselves constitute sustainability objectives and that one aim is that sustainability issues should be an integral part of Vattenfall's operations. Among others, sustainability issues 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 has adopted an overarching sustainability policy as a complement to individual policies, such as the human rights policy, the environmental policy and the Code of Conduct and Integrity. The sustainability policy stipulates 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. The sustainability policy also stipulates that Vattenfall's sustainability focus extends throughout its value chain, from suppliers to customers and partners as well. The company shall leverage partnerships to maximise its contribution to a fossil-free society.

The Board's main items of business in 2018

- Items according to the Rules of Procedure
- The energy transition to a fossil-free future
- New Code of Conduct and Integrity
- New Sustainability Policy, Environmental Policy and Human Rights Policy
- Owner's sustainability analysis of Vattenfall with focus area human rights
- Cost-cutting and cost-cutting targets
- Outsourcing in HR, Finance and Procurement
- Brand strategy
- Financing
- Investments in new wind farms
- District heating investments
- Divestment of the district heating business in Hamburg
- Acquisition items
- Research and development project on fossil-free steel ("HYBRIT")
- Office locations in Berlin and Hamburg as well as Nordic real estate items
- Issues related to the General Data Protection Regulation (GDPR)

Guidelines for directors' fees
Directors' fees and fees for committee work are set by the owner at the AGM, in accordance with the Swedish state's ownership policy. The 2018 AGM resolved in favour of increased fees to be paid to the Chairman and the directors on the Board, while the fees to be paid to committee members and chairs were unchanged. Information on directors' fees in 2018 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. The most recent board evaluation was begun at the board meeting on 29 October 2018. As in previous years, with the support of external consultants, the Board conducted a self-assessment using questionnaires, where the individual board members evaluated both their own and other board members' performance. This 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 6 February 2019. 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, which are described below, 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. In addition, the Board can, where necessary, establish other board committees or temporary work groups to address matters in defined areas. No such additional committees or temporary work groups were active in 2018. Information on the committees' composition is provided on pages 80–81.

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 organization and administration of the company's affairs is not constrained by the committees' work.

Audit Committee
The Audit Committee 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.

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 company's external auditors attend all regular meetings and report on their observations of the audit. During the entire year 2018, the committee had at least one member with accounting or auditing competence.

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 as well as about the conclusions of the Supervisory Board of Public Accountants' ("Revisorsnämnden") quality control of auditing activities performed by the company's auditor
- 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 guidelines 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 report on remuneration of senior executives in the annual report and, ahead of the Annual General Meeting, 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 AGM, by law, is required to decide on as well as the applicable remuneration structures and levels of remuneration in the company
- To conduct drafting work for the Board's decisions regarding overarching remuneration principles in general, 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 2018 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, Semcon AB and Polygon AB, 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 auditor's audit assignment includes a review of the annual report, the consolidated accounts, the corporate governance report and the sustainability reporting. The auditor has access to minutes of board meetings and board committee meetings, as stipulated in the Board's Rules of Procedure. The Audit Committee has approved guidelines for how procurement of other services than auditing shall take place from the auditor. Consulting services provided by Ernst & Young AB from 2016 to 2018 mainly pertained to tax and accounting issues and studies of organisational issues.

At the 2018 AGM the auditor reported on the audit work in 2017 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 2018 to the entire Board at the board meeting on 6 February 2019 (without the presence of any person from the Executive Group Management), and also reported on its observations at the board meeting on 17 December 2018. 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 2018.

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 14 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. The CEO in 2018 was Magnus Hall. An account of the President's remuneration is provided 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 is responsible for 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 of these bodies 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 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 are analysed (including the status of Vattenfall's sustainability related targets) with the top management of each business unit, to ensure that the organisation is performing in line with set targets and expectations. 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 82–83.

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 Internal Audit function is directly subordinate to the Board of Directors and Audit Committee and performs its work 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.

Internal governance

Principles and strategy

Vattenfall has formulated a strategy with the purpose to Power Climate Smarter Living and enable fossil-free living within one generation.

Vattenfall has four strategic objectives: The company shall be 1) Leading towards Sustainable Consumption and 2) Leading towards Sustainable Production. Achieving this requires 3) High Performing Operations and 4) Empowered and Engaged People. These four strategic objectives have been broken down into strategic targets. 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 11. Group scorecards break down the targets, for instance with regard to absolute CO_2 emissions, development of the "CO_2 roadmap" and internal energy savings. Reporting back to the Board is then 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.

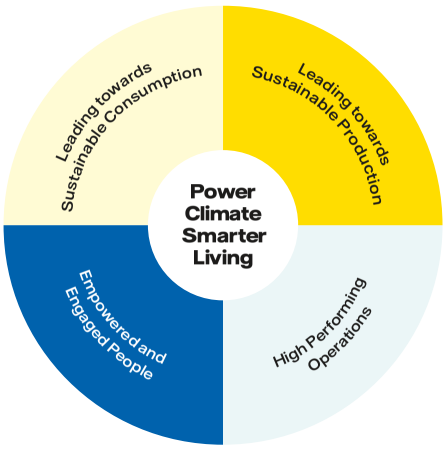
Governing business ethics

In 2018 the Board adopted a new Code of Conduct and Integrity, which replaces the previous code of conduct. The new Code 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 launched in the whole Group and is available on the intranet in several language versions, corresponding to the countries where Vattenfall has business operations. Information about the Code is provided in connection with new hiring and training. An e-learning programme on application of the Code has also been launched, which will be mandatory for all Vattenfall employees.

To ensure that the organisation acts in an ethical and non-corrupt manner, Vattenfall requires all employees to take personal responsibility by acting 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 training that is conducted within the Vattenfall Integrity Programme, which is described on page 61.

Four strategic objectives



The Code of Conduct and Integrity gives employees the opportunity to report incidents anonymously through a whistleblowing function staffed by locally appointed external ombudsmen (attorneys), to whom employees, consultants and contractors can turn to report suspected, serious improprieties that the whistleblower does not want to report internally via the normal reporting channels.

Read more about reported incidents in the Annual and Sustainability Report on page 61. Ongoing legal processes are described in Note 40 to the consolidated accounts, Contingent liabilities. Sustainability initiatives and principles that Vattenfall has aligned itself with or supports are listed on page 164.

Three lines of defence

Vattenfall applies the "three lines of defence" model, for management and control of risks in general. The model secures the principle of segregation of duties and includes different roles for risk ownership, control and independent reporting and assurance. In particular, it is applied in the internal control of the financial reporting and in the integrity organisation, as described further below.

The first line of defence consists of the business operations (Business Units and Staff Functions), which are responsible for managing risks.

The second line of defence consists of, among others, the risk organisation, which is headed by the Chief Risk Officer (CRO). The CRO is accountable for the risk management framework and is responsible for securing 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.

The third line of defence is made up of internal and external audit. Internal audit is an independent and objective function that oversees and evaluates the first and second lines of defence.

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 governance that is necessary in Vattenfall, while local management systems cover specific business governance. The VMS is documented in binding governance documents, consisting of policies and instructions. Certain central documents are approved by the Board of Directors of Vattenfall AB. 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

- remuneration,
- dam safety,
- nuclear safety and
- risk

as well as in the area of Sustainability, where Vattenfall's governance is based on the sustainability policy along with a number of other policies:

- The environmental policy. This was updated during 2018 and now clearly states Vattenfall's commitment to become climate neutral, to protection of nature and biodiversity and to sustainable use of resources. The environmental policy also states the principles for how Vattenfall shall perform its business within these areas.
- The health and safety policy.
- The human rights policy, which was approved in 2018 and addresses Vattenfall's commitment to respecting human rights. The policy identifies Vattenfall's salient human rights risks and describes how the company identifies, assesses, and manages its human rights risks.
- The Code of Conduct and Integrity, which is described above.
- The Code of Conduct for Suppliers, which addresses issues such as human

Three lines of defence

rights, work conditions, the environment and anti-corruption, based on the UN Global Compact. Vattenfall recognises its growing importance as an actor in a global value chain. With millions of customers, 25,000 suppliers and countless other stakeholders, Vattenfall's activities have impacts far beyond the boundaries of the Vattenfall organisation. Therefore, Vattenfall takes responsibility throughout the value chain. The Code of Conduct for Suppliers forms part of this work.

- Also, since 2017, the Board issues a general statement on Vattenfall's tax policy.

The Board of Directors approves all policies except the policies on dam safety, nuclear safety and health and safety. However, within these areas, regular reporting takes place to the EGM or to the Board of Directors. The policies are accessible to employees on the intranet and are also communicated externally. Vattenfall does not require any acknowledgement by employees or management that they have read the policies.

The content of the company's policies is concretised in instructions within the VMS, such as in special instructions for matters concerning competition law and for countering bribery and corruption. For instance, during 2018, work was ongoing on concretising issues concerning the environment, health and safety, and the work environment based on the updated policies. Instructions in the VMS can also include concretisations of the content of the Board's Rules of Procedure, such as with respect to the issuance of information as well as allocation of responsibilities and risk mandates. Instructions shall be implemented in the relevant organisation and acknowledged by the defined target group. Implementation and adherence to the instructions is regularly followed up, and identified issues are addressed.

Vattenfall's Environmental Management System is integrated in the VMS. At year-end 2018 nearly 100% of Vattenfall's production and distribution portfolios had certified environmental management systems in accordance with ISO 14001. In addition, all the Group's business units are certified for occupational health and safety in accordance with OHSAS 18001 or ISO 45001, and six business units have certified energy management systems in accordance with ISO 50001.

In 2018 continuing updates of the VMS were conducted. The evaluation with respect to knowledge about and compliance with the VMS has continuously been in focus, for instance through the annual survey and Subject Area Review, which is a self-assessment within certain areas of the VMS. Results from this evaluation are reported to the EGM and to the Audit Committee. In addition, self-assessments are conducted via the Staff Functions for certain stipulations within the VMS, including matters concerning integrity and competition law. During 2018 a routine was established to ensure that all VMS content is reviewed and updated at least every other year.

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 the coming years. For further information see pages 18–23.

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.

Integrity organisation

The aim of integrity work at Vattenfall is to uphold integrity and protect the Group's reputation. Toward this end, an organisational framework has been created which, within its area of responsibility, is tasked with ensuring transparency, understanding of applicable laws, guidelines and standards, and promoting compliance with these in all countries in which Vattenfall operates.

Integrity work at Vattenfall is organised according to the three lines of defence principle:

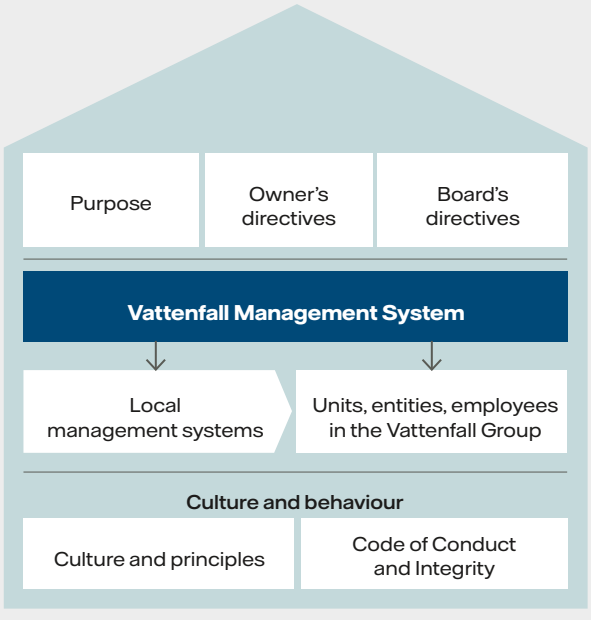
1. Ownership: The line organisation, which is responsible for compliance with laws and regulations within the unit
2. Control and advice: The integrity organisation, with reporting to the Group's General Counsel
3. Quality assurance: The Internal Audit unit

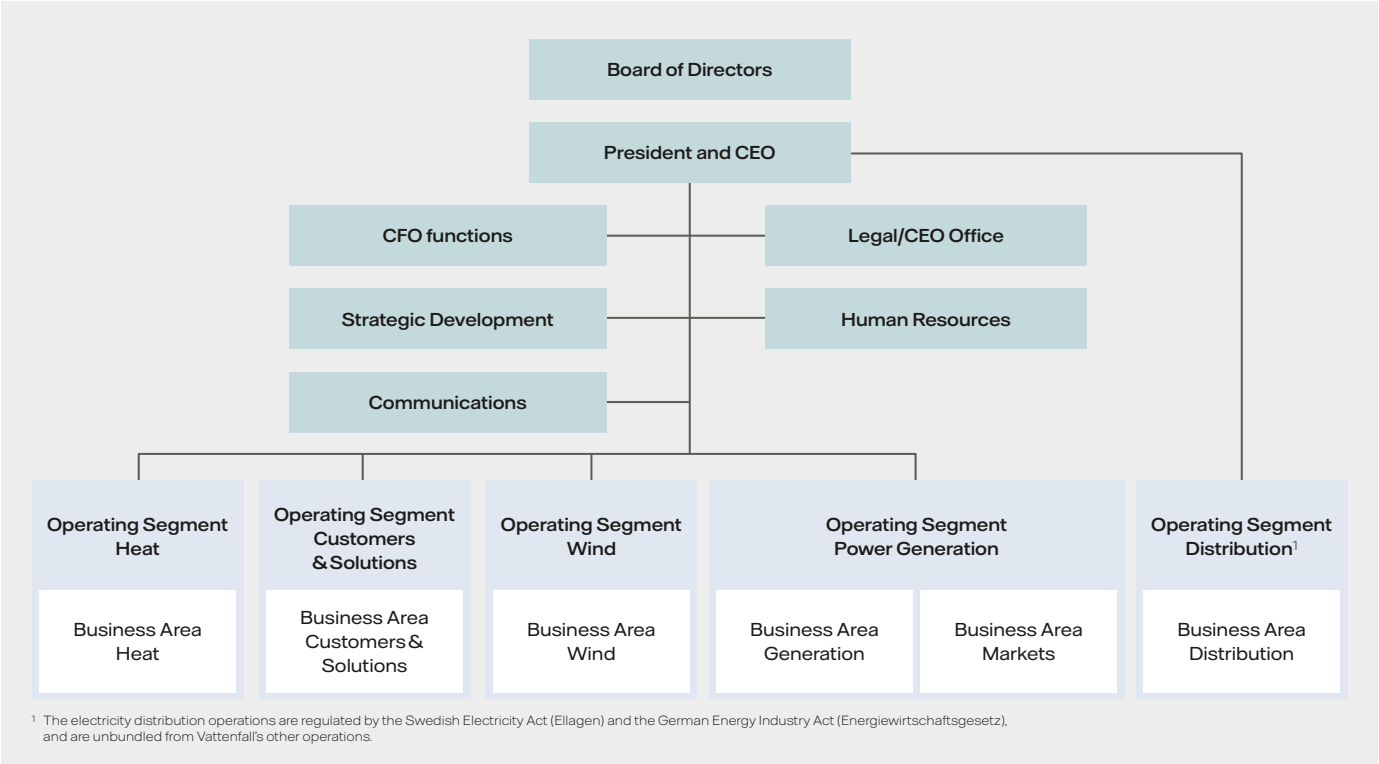
The Integrity organisation's area of responsibility covers competition matters, bribery and corruption, conflicts of interest, inside information, awareness of Vattenfall's Code of Conduct and Integrity, and coordination of Vattenfall's whistleblowing function.

Within its area of responsibility, the Integrity organisation supports Vattenfall in identifying, avoiding, managing and monitoring the risk for non-compliance with laws, other legal stipulations, regulations, norms and codes of conduct that are relevant for operations. Work within the Integrity organisation is carried out in accordance with an annual plan, which is approved by an Integrity Committee consisting of EGM members and others. 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 2018 are described in more detail in the Annual and Sustainability report on pages 60–61.

Structure for the VMS and other governing rules





[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

Vattenfall AB applies the Swedish Government Offices' "Guidelines for remuneration and other terms of employment for senior executives in state-owned companies", decided by the government on 22 December 2016. These guidelines are available on the Government Offices' website: regeringen.se.

In line with previous years, the 2018 AGM approved Vattenfall's application of the guidelines with the deviation 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 2017 Annual and Sustainability Report, on page 84.

Based on the AGM's definition, in 2018 a total of 12 persons, excluding the President, were covered by the stipulations on contracts with senior executives. Actions taken with respect to agreements with these executives were continuously reported to the Remuneration Committee and the Board, which also decided on the entering into such agreements. Remuneration of senior executives and compliance with the adopted guidelines are described in more detail in the Annual and Sustainability Report, Note 42 to the consolidated accounts, Number of employees and personnel costs.

The Board and Remuneration Committee's report on compliance with the guidelines for remuneration of senior executives set by the AGM is posted on vattenfall.se (English translation is available on vattenfall.com). The proposed guidelines ahead of the 2019 AGM are shown on page 84.

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 COSO framework, which has been developed by the Committee of Sponsoring Organizations of the Treadway Commission. Vattenfall's risks and risk management are further described in the Annual and Sustainability Report on pages 62–69.

Control environment

The control environment is based on the allocation 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 employee conduct.

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 76) 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 "grandfather principle" and "four eyes principle" for decision-making. 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 both financial and non-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 regular reporting on tests performed of defined control points. 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 Committees' 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 of defence" model (described on page 76) for internal control over financial reporting. In this context, the second line of defence 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 of defence. Information about these risks is provided to the risk organisation.

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

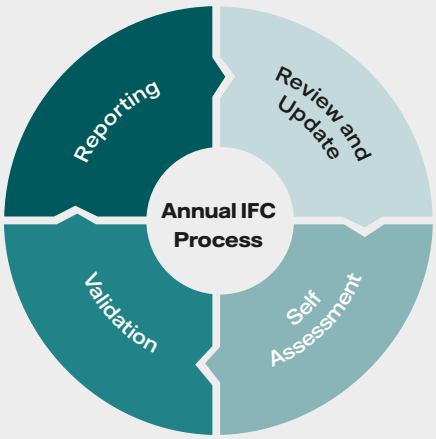
The Group's steering documents are accessible via Vattenfall's intranet. The forms for handling internal and external communication are documented in a VMS instruction which aims to ensure that Vattenfall is in compliance with legal as well as stock exchange rules, the state's ownership policy (including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

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



Review and Update
Implement improvements and correct errors in the IFC process and the IFC framework (list of IFC controls). Define the IFC scope for the forthcoming year.

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

Board of Directors

LARS G. NORDSTRÖM (1943)
Chairman of the Board
Education: Law studies
Other assignments: Chairman of the Finnish-Swedish Chamber of Commerce. Deputy Chairman of Nordea Bank. Board member of Viking Line Abp, the Swedish-American Chamber of Commerce and SNS. 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). Various positions with Skandinaviska Enskilda Banken (1970–1993), including as Executive Vice President (1989–1993)
Elected: 2011
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 10/10
Committee meeting attendance: Remuneration Committee: 3/3

FREDRIK ARP (1953)
Board member
Education: B. Sc. Econ., Honorary Doctor of Economics
Other assignments: Chairman of Nolato AB and Bravida Holding AB. Board member of Swedfund
Previous positions: President and CEO of Volvo Car Corporation (2005–2008). CEO of Trelleborg AB (1999–2005), PLM AB (1996–1999), Trelleborg Industrier AB (1989–1996) and Boliden Kemi AB (1988–1989). Various positions in Trelleborg AB (1986–1989) and Tarkett (1979–1986)
Elected: 2014
Committee assignment: Audit Committee chair
Board meeting attendance: 9/10
Committee meeting attendance: Audit Committee: 5/5

VIKTORIA BERGMAN (1965)
Board member
Education: Communication Executive Program at IFL/ Stockholm School of Economics. Berghs School of Communication
Other assignments: Chairman Galber AB. Board member of Trianon AB
Previous positions: Member of Group Management and Senior Vice President Stakeholder Management & Corporate Sustainability E.ON Nordic. Board member of E.ON Försäjning, E.ON Kundsupport and E.ON Smart Living (2012–2014). Positions in Trelleborg Group (2002–2011), member of Group Management and Senior Vice President Corporate Communications Trelleborg Group (2005–2011). Various positions in Falcon Breweries/Unilever (1989–1996), Cerealia Group (1987–1989)
Elected: 2015
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 10/10
Committee meeting attendance: Remuneration Committee: 3/3

HÅKAN ERIXON (1961)
Board member
Education: B. Sc. International Business Administration and Economics
Other assignments: Chairman of Capacent Holding AB and Hemnet Group AB. Board member of Alfvén & Didrikson Invest AB and Opus Group AB
Previous positions: Chairman of Orio AB (publ) (formerly Saab Automobile Parts AB) (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) and 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). Kansallis-Osake-Pankki, London (1991–1992). Citicorp Investment Bank Ltd, London (1989–1991)
Elected: 2011
Committee assignment: Member of the Audit Committee
Board meeting attendance: 10/10
Committee meeting attendance: Audit Committee: 5/5

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. Board member of Sustainable Energy Angels AB and The Research Council of Norway. Senior Advisor GEIDCO, Beijing. Affiliate professor at Chalmers University of Technology
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 attendance: 10/10
Committee meeting attendance: Audit Committee: 5/5

JENNY LAHRIN (1971)
Board member
Education: Master of Laws. Executive MBA
Current position: Investment Director and Deputy Head of Division, Division for State-Owned Enterprises, Ministry of Enterprise and Innovation
Other assignments: Board member of AB Göta kanalbolag
Previous positions: Board member of SOS Alarm Sverige AB (2015–2016), Swedavia AB (2012–2015) and RISE Research Institutes of Sweden AB (2012–2013). Legal Counsel at the Division for State-Owned Enterprises, Ministry of Enterprise/Ministry of Finance (2008–2012). Legal Director at Veolia Transport Northern Europe AB (2003–2008) and admitted to the Bar Association (2001–2002)
Elected: 2013
Committee assignment: Member of the Audit Committee
Board meeting attendance: 10/10
Committee meeting attendance: Audit Committee: 5/5

FREDRIK RYSTEDT (1963)
Board member
Education: M. Sc. Business and Economics
Current position: Executive Vice President and CFO, 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: Member of the Audit Committee
Board meeting attendance: 9/10
Committee meeting attendance: Audit Committee: 5/5

ÅSA SÖDERSTRÖM WINBERG (1957)
Board member
Education: B. Sc. Economics
Other assignments: Chairman of Delete OY and Scanmast AB. Board member of JM AB, FIBO AS, OEM International AB, Nordic Home Improvement AB and Balco Group AB. Member of the Royal Swedish Academy of Engineering Sciences (IVA)
Previous positions: President SWECO Theorells AB (2001–2006) and Ballast Väst AB (1997–2001). Marketing Manager NCC Industry (1994–1997), and Communications Manager NCC Bygg AB (1991–1993)
Elected: 2013
Committee assignment: Remuneration Committee chair
Board meeting attendance: 9/10
Committee meeting attendance: 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 attendance: 10/10

ROLF OHLSSON (1961)
Employee representative
Education: Mechanical M. Sc., KTH Royal Institute of Technology
Current position: Employee representative for Akademikerrådet at Vattenfall. Employed at Forsmarks Kraftgrupp AB since 1998, currently as full-time representative for Akademikerna
Other assignments: Employee representative on Forsmarks Kraftgrupp AB's board. Chairman of Akademikerrådet at Vattenfall
Elected: 2017
Committee assignment: Member of the Audit Committee
Board meeting attendance: 10/10
Committee meeting attendance: Audit Committee: 3/3

JEANETTE REGIN (1965)
Employee representative
Education: Secondary school diploma and two-year education in healthcare
Current position: Employee representative for Unionen. Currently head of customer service/office services for Gotlands Energi AB
Elected: 2011
Board meeting attendance: 9/10

LENNART BENGTSSON (1958)
Employee representative (deputy)
Education: Two-year secondary school degree in mechanics and network technology training in IT
Current position: Employee representative for SEKO Facket för Service och Kommunikation. Vattenfall employee since 1979, currently as IT technician
Elected: 2018
Board meeting attendance: 8/8

JOHNNY BERNHARDSSON (1952)
Employee representative (deputy)
Education: Engineering studies with supplementary coursework in economics
Current position: Employee representative for Unionen. Vattenfall employee since 1970, currently in Human Resource Service at Vattenfall Business Services
Other assignments: Chairman of the European Works Council
Elected: 1995
Board meeting attendance: 10/10

CHRISTER GUSTAFSSON (1959)
Employee representative (deputy)
Education: Four-year education in technology
Current position: Employee representative for Ledarna (the Association of Management and Professional Staff). Vattenfall employee 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 attendance: 10/10

Directors who left the Board in 2018:
The employee representative Ronny Ekwall, elected in 1999, resigned in connection with the Annual General Meeting on 25 April.

Executive Group Management

MAGNUS HALL (1959)
President and CEO
Vattenfall employee since: 2014
Education: M. Sc. Industrial Engineering and Management
Previous positions: President and CEO of the forestry group Holmen
Other assignments: Chairman of NTM AB and Vice President of Eurelectric
In 2018 Magnus Hall did not have any significant shareholdings in companies with which Vattenfall has business relations.

KERSTIN AHLFONT (1971)
Senior Vice President, Human Resources
Vattenfall employee since: 1995
Education: M. Sc. Eng.
Previous positions: Head of Finance Region Nordic (2014–2015), Vice President Controlling (2012–2013), Acting HR Director (2011–2012), Head of Project Management Office (2010–2011), Business Group Pan Europe (2009–2010), various positions and manager positions within Vattenfall (1995–2009)

ANNA BORG (1971)
Senior Vice President, Chief Financial Officer
Vattenfall employee since: 2017 and 1999–2015
Education: Master's in Economics and Political Science
Previous positions: 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 and Project Management, Vattenfall (2003–2009). Head of Strategy and Business Development, Vattenfall Trading (1999–2003)
Other assignments: Board member of Gunnebo AB

GUNNAR GROEBLER (1972)
Senior Vice President, Head of Wind Business Area
Vattenfall employee since: 1999
Education: Mechanical Engineering
Previous positions: Vice President, Business Unit Renewables, Region Continental/UK, Vattenfall (2014–2015). Head of Business Unit Hydro Germany, Vattenfall (2011–2013). Head of Corporate Development & M&A, Business Group Central Europe, Vattenfall Europe AG (2009–2010). Head of Mergers & Acquisitions, Business Group Central Europe, Vattenfall Europe AG (2008–2009). Head of Corporate Restructuring, Vattenfall Europe AG (2007–2008). Head of Purchasing, Vattenfall Europe Hamburg AG (2005–2007)

ANNE GYNNERSTEDT (1957)
Senior Vice President, General Counsel and Secretary to the Board of Directors
Education: LL. B.
Vattenfall employee since: 2012
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, Business Area Customers & Solutions
Vattenfall employee since: 2003
Education: M. Sc. Industrial Engineering and Management
Previous positions: Head of Heat Continental/UK, Vattenfall (2014–2015). Head of Customer Service, Vattenfall (2011–2013). Head of Customer Care Centre, Nuon (2008–2010). Program Director Unbundling, Nuon (2006–2007). Nuon Consultancy Group & Lean Competence Center, Nuon (2005–2006). Head of Customer Care B2B, Nuon (2003–2004). Management Consultant, Accenture (1996–2002)
Other assignments: COO Nuon Netherlands

TUOMO HATAKKA (1956)
Senior Executive Vice President, Business Area Heat
Vattenfall employee since: 2002
Education: B. Sc. Economics, MBA
Previous positions: Head of Business Division Production (2010–2013). Head of Business Group Central Europe (2008–2010). Head of Business Group Poland (2005–2007)
Other assignments: Board member of PKP Energetyka S.A.

NIEK DEN HOLLANDER (1973)
Senior Vice President, Business Area Markets
Vattenfall employee since: 2014
Education: Master's in Financial Econometrics. MBA
Previous positions: Head of Business Unit Trading, Vattenfall Energy Trading GmbH (2014–2017). Head of Trading, Statkraft Markets GmbH (2008–2014). Head of Long-term Energy Management, Statkraft Markets B.V. (2006–2006). Head of Asset Management, Statkraft Markets B.V. (2005–2006). Various trading positions, Statkraft Markets B.V. (2002–2005). Various trading positions in the financial sector (1997–2002)

KARIN LEPASOON (1968)
Senior Vice President, Group Communications
Vattenfall employee since: 2016
Education: LL.M. in Swedish law and an LL.M. in EU law
Previous positions: Director of Sustainability, Communications and HR, Nordic Capital (2015–2016). Executive Vice President and member of the Group Senior Executive Team (full member since 2008), Skanska (2006–2015). Vice President Group Communications, Gambro (1999–2006)
Other assignments: Board member of Energiföretagen Sverige – Swedenergy – AB

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, Northvolt AB and Hybrit AB

TORBJÖRN WAHLBORG (1962)
Senior Executive Vice President, Business Area Generation
Vattenfall employee since: 1990
Education: M. Sc. Eng.
Previous positions: Head of Business Region Nordic (2014–2015). Head of Business Division Nuclear (2012–2013). Head of Business Division Distribution and Sales (2010–2012). Head of Business Group Nordic (2010). Positions in Vattenfall's Polish operations (1997–2010), including as country manager (2008–2009)
Other assignments: Board member of the Confederation of Swedish Enterprise. Chairman EnergiFöretagens Arbetsgivareförening (EFA) AB

AGM proposal

Proposed principles for compensation and other terms of employment for senior executives
The Annual General Meeting resolved on 25 April 2018 to adopt the Board's proposed guidelines for compensation of senior executives. The Board proposes that the 2019 Annual General Meeting resolves to adopt the Board's proposal which corresponds to the government's guidelines for terms of employment for senior executives of state-owned companies, adopted by the government on 22 December 2016 (www.regeringen.se), with the deviation set out below.

In accordance with a resolution by the Annual General Meeting on 25 April 2018, Vattenfall deviates from the definition of senior executive of a subsidiary. Instead of using the definition of senior executive set forth in the Swedish Companies Act, senior executives shall be defined based on whether they have significant influence on the Group's earnings. Through application of the International Position Evaluation (IPE) model, executives with positions of IPE 68 and higher shall be considered to be senior executives.

The Board certifies that the compensation in question is in compliance with the guidelines set by the Annual General Meeting, in the following respects: Before a decision is made on compensation 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 put to the Board for a decision. The company's auditors shall perform a review to ensure that the set compensation levels and other terms of employment have not been exceeded and, in accordance with the 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.

The Board's explanation for deviations from the guidelines
The deviation decided on by the owner at the 2018 Annual General Meeting entails use of a generally accepted ranking model instead of the definition of senior executive of a subsidiary in the Swedish Companies Act. The Board is of the opinion that the following, special reasons exist for deviating from the guidelines.

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 guidelines 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 48,617,698,593.
The Board of Directors and President propose that the profits be distributed as follows:

To be distributed to the shareholder:	SEK 2,000,000,000
To be carried forward:	SEK 46,617,698,593

The proposed distribution corresponds to a dividend of SEK 15.19 per share. The dividend is proposed for payment on 25 April 2019.

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 discretionary dividend, totalling SEK 2,000,000,000, to be carefully considered and justified, and that the proposal adheres to the principles of the adopted dividend policy (page 11).

The Board of Directors' and the President's assurance upon signing the Annual and Sustainability Report for 2018
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 164–167, has been prepared in accordance with the GRI Standards, and has been adopted by the Board of Directors.

Solna, 19 March 2019

Lars G. Nordström, Chairman of the Board

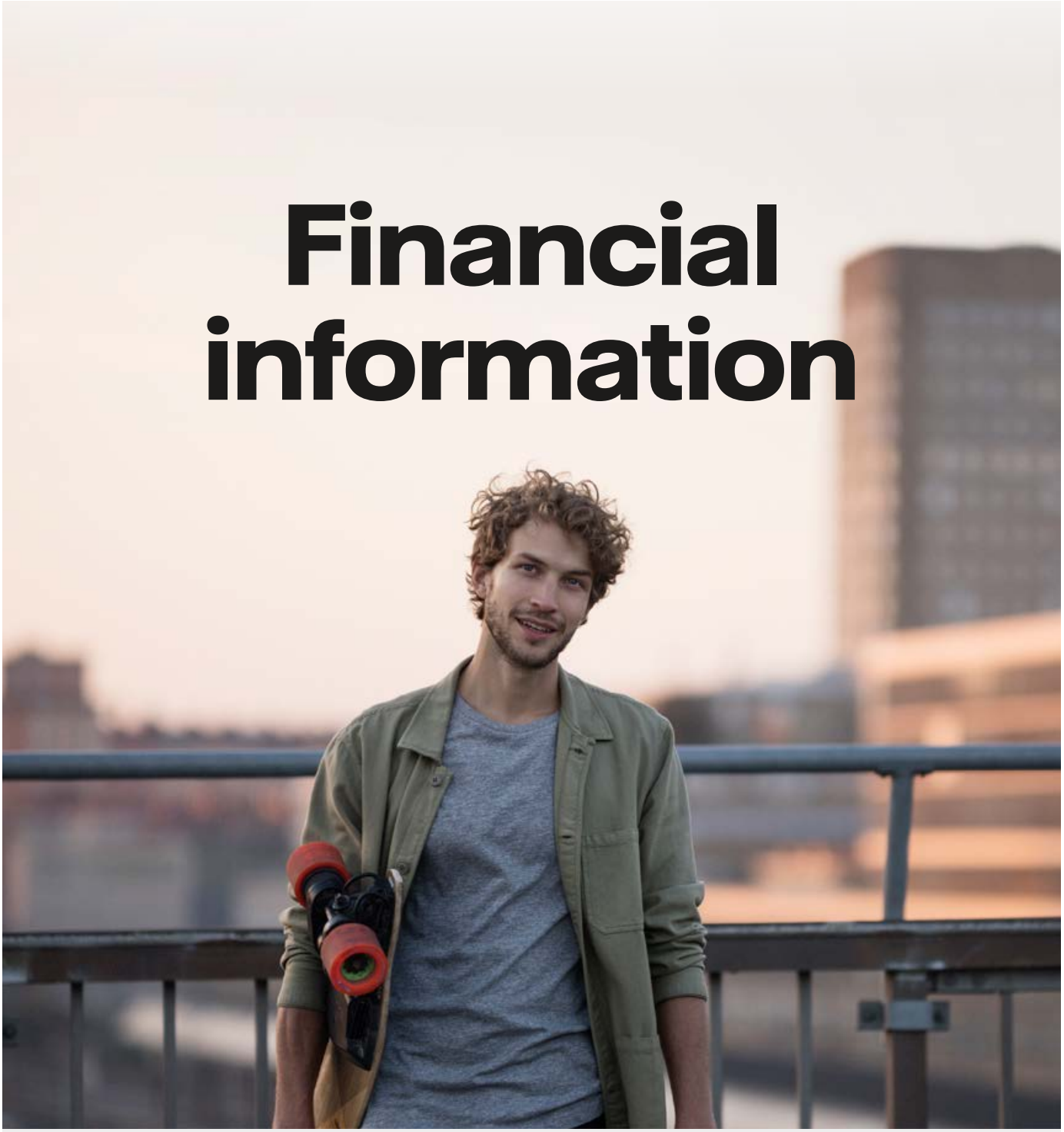
Fredrik Arp	Viktoria Bergman	Håkan Erixon	Tomas Kåberger	Jenny Lahrin
Robert Lönnqvist	Rolf Ohlsson	Jeanette Regin	Fredrik Rystedt	Åsa Söderström Winberg

Magnus Hall, President and CEO

Our auditor's report was submitted on 19 March 2019
Ernst & Young AB

Staffan Landén, Authorised Public Accountant

Financial information



Contents

Vattenfall's financial performance

The underlying operating profit was SEK 19.9 billion in 2018, a decrease of SEK 3.3 billion compared with 2017. Lower earnings contributions from the Heat and Power Generation operating segments had a negative effect on underlying operating profit. This was offset in part by a higher earnings contribution from the Wind operating segment.

Amounts in SEK million	2018	2017
Net sales	156,824	135,114
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[1]	34,341	34,399
Underlying operating profit before depreciation, amortisation and impairment losses[1]	36,469	38,644
Operating profit (EBIT)[1]	17,619	18,524
Underlying operating profit[1]	19,883	23,203
Profit for the year	12,007	9,484
Funds from operations (FFO)[1]	23,275	26,643
Net debt[1]	47,728	59,260
Adjusted net debt[1]	112,324	124,360
Electricity generation, TWh	130.3	127.3
– of which, hydro power	35.5	35.6
– of which, nuclear power	55.0	51.9
– of which, fossil-based power	31.6	31.9
– of which, wind power	7.8	7.6
– of which, biomass, waste	0.4	0.4
Sales of electricity, TWh[2]	174.1	157.3
Sales of heat, TWh	18.3	18.9
Sales of gas, TWh	57.2	56.3
CO_2 emissions, Mtonnes	22.0[4]	22.6[4]
Work-related accidents, number (LTIF)[3]	1.9	1.5
Number of employees, full-time equivalents	19,910	20,041
Key ratios		
Return on capital employed, %	7.0[5]	7.7[5]
Net debt/equity, %	46.1	64.2
FFO/adjusted net debt, %	20.7	21.4
Adjusted net debt/EBITDA, times	3.3	3.6

[1] See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.
[2] Sales of electricity also include bilateral trading on the Nordic electricity exchange.
[3] Lost time Injury Frequency (LTIF) is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality. The measure pertains only to Vattenfall empolyees.
[4] Pro rata values, corresponding to Vattenfall's share of ownership.
[5] The key ratio is based on average capital employed.

Sustainability reporting
In addition to reporting on financial performance, Vattenfall also reports on its sustainability performance. In accordance with the Annual Accounts Act, 6 chapter 11§ Vattenfall has chosen to develop the statutory sustainability report as a report separated from the annual accounts and consolidated accounts. The statutory sustainability report was delivered to the auditor at the same time as the annual accounts. The statutory sustainability report, which can be found on pages 10–11, 14–17, 58–79 and 152–163, pertains to Vattenfall and its subsidiaries.

Wholesale price trend
Average Nordic spot prices were 49% higher in 2018 than in 2017, mainly owing to higher prices for fuel and CO_2 emission allowances, and a lower hydrological balance. Average spot prices in Germany and the Netherlands were 30% and 34% higher, respectively, than in 2017, mainly owing to higher prices for fuel and CO_2 emission allowances.

Futures prices for electricity for delivery in 2019 and 2020 were 31% to 50% higher, respectively, than in 2017, mainly owing to higher prices for fuel and CO_2 emission allowances and a lower hydrological balance.

Futures prices for coal and gas were 18% and 22% higher, respectively, than in 2017, while the price for CO_2 emission allowances was 172% higher than a year ago. The higher price for CO_2 emission allowances is partly attributable to the Market Stability Reserve (MSR), which will be in effect in 2019 to manage the surplus of CO_2 emission allowances.

Electricity generation
Total electricity generation in 2018 was 130.3 TWh, compared with 127.3 TWh in 2017.

Hydro power generation amounted to 35.5 TWh (35.6). A rainy autumn partly compensated for the dry summer weather, and at year-end Nordic reservoir levels were at 55% (65%) of capacity, which is 2 percentage points below normal.

Nuclear power generation increased by 3.1 TWh to 55.0 TWh (51.9), which is a historical generation record. The increase is mainly attributable to higher availability. Combined availability for Vattenfall's nuclear power plants in 2018 was 88.9% (84.9%). Forsmark had availability of 88.1% (87.9%) and generation of 24.9 TWh (24.5). Ringhals had availability of 89.5% (82.2%) and generation of 30.1 TWh (27.4).

Electricity generation from wind power increased to 7.8 TWh (7.6) in 2018. New commissioned capacity was offset by less favourable wind conditions. During 2018 the European Offshore Wind Deployment Centre (EOWDC) was commissioned. EOWDC is an offshore wind farm located in Aberdeen, Scotland, with a capacity of 97 MW.

Fossil-based power generation totalled 31.6 TWh (31.9).

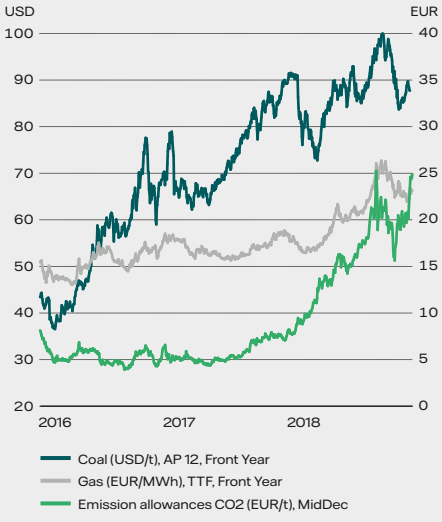
Sales of electricity, heat and gas
Sales of electricity to private customers decreased slightly compared with 2017, to 27.4 TWh (26.9). Sales of heat decreased by 0.6 TWh to 18.3 TWh (18.9), mainly owing to warmer weather. Sales of gas increased by 0.9 TWh to 57.2 TWh (56.3) as a result of the entry to the UK market in July 2017.

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. Following the sale of the lignite operations, Vattenfall's portfolio and risk exposure have changed substantially. The dominant risk exposure is now related to price exposure for Nordic nuclear and hydro power base load generation. In addition, Vattenfall's continuing operations generate a higher share of regulated revenue from distribution, heat and tendered wind power, which reduces the total risk exposure. On the Continent (Germany and the Netherlands) and in the UK, Vattenfall continues to have some price exposure related to the price difference between electricity and used fuel. This exposure has a lower risk profile than in the Nordic countries. Based on this, Vattenfall has decided to decrease its price hedging activity and to focus on hedging its Nordic generation. Read more on Vattenfall's price hedging in the Risks and risk management section on the pages 62–69.

Electricity spot prices in the Nordic countries, Germany and the Netherlands, monthly averages

Electricity futures prices in the Nordic countries, Germany and the Netherlands

Price trend for coal, gas and CO2 emission allowances



Comments on the consolidated income statement

Sales

	External net sales		Internal net sales		Total net sales	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Customers & Solutions	**78,883**	**67,402**[2]	**2,435**	**1,551**	**81,318**	**68,953**[2]
Power Generation	**36,064**	**28,797**[3]	**63,906**[4]	**50,769**[4]	**99,970**	**79,566**[3]
Wind	**8,003**	**6,669**	**3,849**	**2,769**	**11,852**	**9,438**
Heat	**15,828**	**14,882**[2]	**18,142**	**15,842**	**33,970**	**30,724**[2]
Distribution	**17,845**	**16,840**[2]	**4,529**	**4,590**	**22,374**	**21,430**[2]
– of which, Distribution Germany	6,265	5,970	4,053	4,141	10,318	10,111
– of which, Distribution Sweden	11,462	10,870[2]	493	449	11,955	11,319[2]
Other[1]	**201**	**524**	**5,054**	**4,427**	**5,255**	**4,951**
Eliminations	**–**	**–**	**-97,915**	**-79,948**	**-97,915**	**-79,948**
Total	**156,824**	**135,114**[2]	**–**	**–**	**156,824**	**135,114**[2]

[1] "Other" pertains mainly to all Staff functions including treasury activities and Shared Service Centres.

[2] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

[3] Starting in 2018, purchases from the Nordic electricity exchange made under assignment by the sales operations are offset in the Power Generation segment (previously at the Group level) against sales of production to the Nordic electricity exchange.

[4] Pertains mainly to Tradings' sales of electricity, fuel and CO2 emission allowances to other segments within Vattenfall.

Consolidated net sales increased by SEK 21.7 billion (of which, positive currency effects of SEK 6.5 billion) compared with 2017. The increase is mainly attributable to higher sales volumes in Germany, France and the UK. Added to this were positive price effects in the Nordic countries and the Netherlands, and higher nuclear power generation.

Underlying operating profit

Amounts in SEK million	**2018**	**2017**
Operating profit (EBIT)	17,619	18,524
Depreciation, amortisation and impairment losses	16,722	15,875
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	**34,341**	**34,399**
Items affecting comparability excl. impairment losses and reversed impairment losses	2,128	4,245
Underlying operating profit before depreciation, amortisation and impairment losses	**36,469**	**38,644**
Operating profit (EBIT)	17,619	18,524
Items affecting comparability[1]	2,264	4,679
Underlying operating profit	**19,883**	**23,203**

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

The underlying operating profit decreased by SEK 3.3 billion, which is mainly explained by the following:

- Lower earnings contribution from the Heat operating segment (SEK –2.6 billion), mainly owing to lower production margins and positive one-off items in 2017 of approximately SEK 800 million, partly related to subsidies for gas-fired combined heat and power plants in Germany
- Lower earnings contribution from the Power Generation operating segment (SEK –1.4 billion), mainly owing to negative effects of price hedges. Contracts coupled to the Continental market are successively expiring, but together with Nordic price hedges also had negative impact during the year
- Higher earnings contribution from the Wind operating segment (SEK 1.6 billion) as a result of positive price and currency effects
- Other items, net (SEK –0.9 billion)

Operating segments

	Operating profit (EBIT)		Underlying operating profit	
	2018	**2017**	**2018**	**2017**
Customers & Solutions	**1,139**	**1,772**[2]	**1,269**	**1,866**[2]
Power Generation	**6,711**	**6,138**	**9,371**	**10,820**
Wind	**3,681**	**1,713**	**3,747**	**2,137**
Heat	**393**	**3,533**[2]	**771**	**3,371**[2]
Distribution	**6,218**	**6,276**[2]	**6,250**	**6,075**[2]
– of which, Distribution Germany	950	948	985	962
– of which, Distribution Sweden	5,257	5,335[2]	5,254	5,120[2]
Other[1]	**-526**	**-849**	**-1,528**	**-1,007**
Eliminations	**3**	**-59**	**3**	**-59**
Total	**17,619**	**18,524**[2]	**19,883**	**23,203**[2]

	2018	**2017**
Underlying operating profit	19,883	23,203
Items affecting comparability	-2,264	-4,679
Financial income and expenses	-3,616	-5,755
Profit before income taxes	**14,003**	**12,769**

[1] "Other" pertains mainly to all Staff functions including treasury activities and Shared Service Centres.

[2] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

The underlying operating profit for the Customers & Solutions operating segment decreased by SEK 0.6 billion compared with 2017, mainly owing to higher margin pressure in the UK and growth activities in energy solutions. The underlying operating profit for the Power Generation operating segment decreased by SEK 1.4, mainly due to hedging. Contracts coupled to the Continental market are successively expiring, but together with Nordic price hedges also had a negative impact during the year. The underlying operating profit for the Wind operating segment improved by SEK 1.6 billion, mainly owing to positive price and currency effects and added capacity. The underlying operating profit for the Heat operating segment decreased by SEK 2.6 billion, mainly owing to higher costs for CO_2 emission allowances and fuel, and a positive one-off effect of approximately SEK 800 million in 2017, partly related to subsidies for gas-fired combined heat and power (CHP) plants in Germany. The underlying operating profit for the Distribution operating segment improved by SEK 0.2 billion, mainly owing to higher gross margins in Sweden and lower costs in Germany. 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	**2018**	**2017**
Capital gains	1,067	728
Capital losses	-111	-89
Impairment losses	-136	-438
Reversed impairment losses	–	4
Provisions	-1,649	-2,438
Unrealised changes in the fair value of energy derivatives	-156	-3,637
Unrealised changes in the fair value of inventories	61	10
Restructuring costs	-554	-348
Other infrequent items affecting comparability	-786	1,529
Total	**-2,264**	**-4,679**

Items affecting comparability amounted to SEK -2.3 billion in 2018. Provisions of SEK -1.6 billion were mainly related to nuclear power decommissioning, partly owing to adjusted discount rates. Capital gains of SEK 1.1 billion pertain mainly to sales of properties in Hamburg and Berlin, and the sale of 70% of the Blakliden/Fäbodberget wind farm.

Items affecting comparability in 2017 totalled SEK -4.7 billion. Unrealised changes in the market value of energy derivatives and inventories totalled SEK -3.6 billion and were mainly attributable to temporary effects related to sourcing activities. Provisions amounted to SEK -2.4 billion and were mainly related to the nuclear power operations.

Read more about impairment losses in Note 9 to the consolidated accounts, Impairment losses and reversed impairment losses.

Costs for CO_2 emission allowances
Costs for CO_2 emission allowances for own use amounted to SEK 2.1 billion in 2018, compared with SEK 1.4 billion in 2017. The increase is mainly attributable to higher prices for CO_2 emission allowances.

Research and development
Vattenfall conducts research and development (R&D) to contribute to and support the execution of the company's strategy in both the short and long term. In 2018 Vattenfall invested SEK 494 million (547) in R&D. For further information on Vattenfall's R&D activities, see pages 54–55.

Financial items
Financial items amounted to SEK 3.6 billion, which is SEK 2.1 billion lower than in 2017. The improvement is mainly attributable to a remeasurement of shares in the Swedish Nuclear Waste Fund at fair value and the repurchase of a bond during the fourth quarter of 2017.

Taxes
The Group reported a tax expense of SEK 2.0 billion for 2018 and an effective tax rate of 14.3%. The low tax expense and effective tax rate are mainly attributable to two positive one-off effects. The adjusted tax rate in Sweden reduced the tax expense by SEK 0.6 billion as a result of remeasurement of deferred tax assets and deferred tax liabilities to a lower tax rate. In addition, a change in the tax law in Germany that allows for earlier loss-carryforwards can be used retroactively, which reduced the tax expense by SEK 0.5 billion. For 2017 the Group reported a tax expense of SEK 3.3 billion and an effective tax rate of 25.7%. For further information, see Note 13 to the consolidated accounts, Income taxes.

Comments on the consolidated balance sheet

Assets and capital employed

Amounts in SEK million	31 December 2018	31 December 2017
Intangible assets: current and non-current	18,792	20,137
Property, plant and equipment	238,801	227,257
Participations in associated companies and joint arrangements	5,429	4,985
Deferred and current tax assets	14,144	13,332
Non-current noninterest-bearing receivables	3,657	2,910
Contract assets	214	237
Inventories	13,647	15,687
Trade receivables and other receivables	26,003	23,437
Prepaid expenses and accrued income	8,427	7,010
Unavailable liquidity	5,596	6,978
Other	624	1,566
Total assets excl. financial assets	**335,334**	**323,536**
Deferred and current tax liabilities	-15,969	-16,286
Other noninterest-bearing liabilities	-2,305	-2,371
Contract liabilities	-7,935	-7,533
Trade payables and other liabilities	-29,482	-23,872
Accrued expenses and deferred income	-16,485	-13,161
Total noninterest-bearing liabilities	**-72,176**	**-63,223**
Other interest-bearing provisions not related to adjusted net debt[1]	-11,589	-11,316
Capital employed[2]	**251,569**	**248,997**
Capital employed, average	**250,283**	**240,778**

[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 53.5 billion compared with the level at 31 December 2017, to SEK 462.6 billion (409.1). Short-term derivative assets increased by SEK 12.9 billion. Property, plant and equipment increased by SEK 11.5 billion, mainly owing to investments and exchange rate effects. Cash and cash equivalents increased by SEK 8.3 billion as a result of a positive cash flow after invstements.

Financial position

Amounts in SEK million	2018	2017
Cash and cash equivalents, and short-term investments	40,071	26,897
Committed credit facilities (unutilised)	20,510	19,688

Cash and cash equivalents, and short-term investments increased by SEK 13.2 billion compared with the level at 31 December 2017.

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires on 10 December 2021. As per 31 December 2018, available liquid assets and/or committed credit facilities amounted to 35% 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	2018	2017
Hybrid Capital[1]	-19,832	-19,118
Bond issues, commercial paper and liabilities to credit institutions	-50,303	-52,113
Present value of liabilities pertaining to acquisitions of Group companies	-51	-161
Liabilities to associated companies	-504	-462
Liabilities to owners of non-controlling interests	-10,406	-10,369
Other liabilities	-7,179	-4,931
Total interest-bearing liabilities[1]	**-88,275**	**-87,154**
Cash and cash equivalents	17,094	8,805
Short-term investments	22,977	18,092
Loans to owners of non-controlling interests in foreign Group companies	476	997
Net debt[1]	**-47,728**	**-59,260**

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

Total interest-bearing liabilities increased by SEK 1.1 billion compared with the level at 31 December 2017. The increase is mainly attributable to the weaker Swedish krona, which had a negative effect on debt by SEK 3.3 billion.

Net debt decreased by SEK 11.5 billion compared with the level at 31 December 2017, mainly owing to a positive cash flow after investments.

Adjusted gross and net debt as per 31 December

Amounts in SEK million	2018	2017
Total interest-bearing liabilities	-88,275	-87,154
50% of Hybrid Capital[1]	9,916	9,559
Present value of pension obligations	-39,686	-41,962
Provisions for gas and wind operations and other environment related provisions	-7,656	-6,507
Provisions for nuclear power (net)[2]	-31,920	-30,716
Margin calls received	3,370	3,312
Liabilities to owners of non-controlling interests due to consortium agreements	9,195	9,189
Adjustment related to assets/liabilities held for sale	-1,743	–
Adjusted gross debt	**-146,799**	**-144,279**
Reported cash and cash equivalents and short-term investments	40,071	26,897
Unavailable liquidity	-5,596	-6,978
Adjusted cash and cash equivalents and short-term investments	**34,475**	**19,919**
Adjusted net debt[3]	**-112,324**	**-124,360**

[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 12.0 billion, mainly owing to the lower level of net debt.

Equity

The Group's equity increased by SEK 11.3 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	2018	2017
Funds from operations (FFO)	23,275	26,643
Cash flow from changes in operating assets and operating liabilities (working capital)	17,779	-915
Cash flow from operating activities	41,054	25,728

Funds from operations (FFO) decreased by SEK 3.4 billion in 2018 to SEK 23.3 billion (26.6), mainly owing to a lower underlying profit before depreciation/amortisation and impairment losses.

Cash flow from changes in working capital amounted to SEK 17.8 billion (-0.9) in 2018, which is mainly explained by a net change in margin calls (SEK 8.9 billion) and changes related to CO_2 emission allowances (SEK 4.6 billion). Changes in inventories contributed SEK 1.5 billion, mainly related to consumption of nuclear fuel.

Cash flow from investing activities

Amounts in SEK million	2018	2017
Maintenance/replacement investments	13,479	12 637
Growth investments	8,434	8 657
Total investments	**21,913**	**21,294**
Total divestments	**1,569**	**2,795**
– of which, shares	99	1,731

Investments are specified in the table below. Divestments in 2018 pertained mainly to properties in Berlin and Hamburg.

Specification of investments

Amounts in SEK million	2018	2017
Hydro power	1,109	1,317
Nuclear power	2,389	1,885
Coal power	305	168
Gas	259	228
Wind power	7,902	5,445
Biomass, waste	112	32
Total electricity generation	**12,076**	**9,075**
Fossil-based power	3,028	1,830
Biomass, waste	148	114
Other	1,776	1,515
Total CHP/heat	**4,952**	**3,459**
Electricity networks	6,449	5,306
Total electricity networks	**6,449**	**5,306**
Purchases of shares, shareholder contributions	-223	1,237
Other	1,267	1,359
Total investments	**24,521**	**20,436**
Accrued investments, unpaid invoices (-)/release of accrued investments (+)	-2,608	858
Total investments with cash flow effect	**21,913**	**21,294**

Cash flow from financing activities

Cash flow from financing activities amounted to SEK -9.5 billion (-18.3) in 2018. The majority pertains to dividends to owners and minority owners (SEK -4.6 billion) and a change in short-term investments (SEK -4.5 billion). During 2017 cash flow from financing activities was affected by payment to the German fund for managing radioactive waste (SEK -17.3 billion) and repayment of a large bond issue (SEK -2.8 billion).

Consolidated income statement

Amounts in SEK million, 1 January–31 December	Note	2018	2017[7]
Net sales	6, 7, 8	156,824	135,114
Cost of purchases		-85,196	-65,206
Other external expenses	10	-19,375	-19,466
Personnel expenses		-19,157	-18,063
Other operating incomes and expenses, net		925	1,655
Participations in the results of associated companies	19	320	365
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	7	**34,341**	**34,399**
Depreciation, amortisation and impairments		-16,722	-15,875
Operating profit (EBIT)[1, 6]	7, 8, 9, 14, 15	**17,619**	**18,524**
Financial income[2, 5]	11	2,887	2,670
Financial expenses[3, 4, 5]	12	-6,503	-8,425
Profit before income taxes		**14,003**	**12,769**
Income taxes expense	13	-1,996	-3,285
Profit for the year		**12,007**	**9,484**
Attributable to owner of the Parent Company		10,157	8,333
Attributable to non-controlling interests		1,850	1,151
Supplementary information			
Underlying operating profit before depreciation, amortisation and impairment losses[6]	7, 8	36,469	38,644
Underlying operating profit[6]	7, 8	19,883	23,203
Financial items, net excl. discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund		-3,407	-4,538
[1] Including items affecting comparability.[6]		-2,264	-4,679
[2] Including return from the Swedish Nuclear Waste Fund.		2,030	1,138
[3] Including interest components related to pension costs.		-844	-820
[4] Including discounting effects attributable to provisions.		-2,239	-2,355
[5] Items affecting comparability recognised as financial income and expenses, net.		2,040	7

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

[7] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Consolidated statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2018	2017
Profit for the year	**12,007**	**9,484**[1]
Other comprehensive income		
Items that will be reclassified to profit or loss when specific conditions are met		
Cash flow hedges – changes in fair value	7,776	4,442
Cash flow hedges – dissolved against income statement	-6,066	-2,844
Cash flow hedges – transferred to cost of hedged item	3	1
Hedging of net investments in foreign operations	-2,177	-1,147
Translation differences and exchange rate effects net, divested companies	2	17
Translation differences	4,193	2,360[1]
Income taxes related to items that will be reclassified	-237[2]	-217[2]
Total Items that will be reclassified to profit or loss when specific conditions are met	**3,494**	**2,612**
Items that will not be reclassified to profit or loss		
Remeasurement pertaining to defined benefit obligations	-415	-659
Income taxes related to items that will not be reclassified	-5[2]	169[2]
Total Items that will not be reclassified to profit or loss	**-420**	**-490**
Total other comprehensive income, net after income taxes	**3,074**	**2,122**
Total comprehensive income for the year	**15,081**	**11,606**
Attributable to owner of the Parent Company	12,821	10,228
Attributable to non-controlling interests	2,260	1,378

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

[2] See row Income taxes related to other comprehensive income in the Consolidated statement of change in equity.

Consolidated balance sheet

Amounts in SEK million	Note	31 December 2018	31 December 2017[1]
Assets			
Non-current assets			
Intangible assets: non-current	16	18,082	18,292
Property, plant and equipment	17	238,801	227,257
Participations in associated companies and joint arrangements	19	5,429	4,985
Other shares and participations		331	148
Share in the Swedish Nuclear Waste Fund	20	42,038	38,591
Derivative assets	36	13,951	12,801
Prepaid expenses		28	20
Deferred tax assets	13	11,719	12,535
Contract assets	6	44	99
Other non-current receivables		5,538	3,964
Total non-current assets		**335,961**	**318,692**
Current assets			
Inventories	21	13,647	15,687
Intangible assets: current	22	710	1,845
Trade receivables and other receivables	23	26,003	23,437
Contract assets	6	170	138
Advance payments paid	24	2,926	3,600
Derivative assets	36	23,955	11,029
Prepaid expenses and accrued income	25	8,427	7,010
Current tax assets	13	2,425	797
Short-term investments	26	22,977	18,092
Cash and cash equivalents	27	17,094	8,805
Assets held for sale	28	8,313	–
Total current assets		**126,647**	**90,440**
Total assets	7	**462,608**	**409,132**
Equity and liabilities			
Equity attributable to owners of the Parent Company			
Share capital		6,585	6,585
Reserve for cash flow hedges		450	-541
Other reserves		2,466	455
Retained earnings incl. profit for the year		78,595	70,586
Total equity attributable to owners of the Parent Company	38	**88,096**	**77,085**
Equity attributable to non-controlling interests		**15,501**	**15,247**
Total equity		**103,597**	**92,332**
Non-current liabilities			
Hybrid Capital	29	19,832	19,118
Other interest-bearing liabilities	29	43,981	54,335
Pension provisions	30	39,686	41,962
Other interest-bearing provisions	31	93,222	86,001
Derivative liabilities	36	14,042	12,798
Deferred tax liabilities	13	15,119	15,032
Contract liabilities	6	6,883	6,435
Other noninterest-bearing liabilities	32	2,305	2,371
Total non-current liabilities		**235,070**	**238,052**
Current liabilities			
Trade payables and other liabilities	33	29,482	23,872
Contract liabilities	6	1,052	1,098
Advance payments received	34	15,293	8,745
Derivative liabilities	36	27,245	13,200
Accrued expenses and deferred income	35	16,485	13,161
Current tax liabilities	13	850	1,254
Other interest-bearing liabilities	29	24,462	13,701
Interest-bearing provisions	31	3,734	3,717
Liabilities associated with assets held for sale	28	5,338	–
Total current liabilities		**123,941**	**78,748**
Total equity and liabilities		**462,608**	**409,132**

[1] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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	2018	2017[3]
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		34,341	34,399
Tax paid		-3,698	-3,218
Capital gains/losses, net		-956	-639
Interest received		343	289
Interest paid		-3,046	-4,896
Other, incl. non-cash items	37	-3,709	708
Funds from operations (FFO)[1]		**23,275**	**26,643**
Changes in inventories		1,549	-481
Changes in operating receivables		-790	-3,387
Changes in operating liabilities		8,128	-2,250
Other changes		8,892	5,203
Cash flow from changes in operating assets and operating liabilities		**17,779**	**-915**
Cash flow from operating activities		**41,054**	**25,728**
Investing activities			
Acquisitions in Group companies		-31	-1,491
Investments in associated companies and other shares and participations		254	254
Other investments in non-current assets	37	-22,136	-20,057
Total investments		**-21,913**	**-21,294**
Divestments	37	1,569	2,795
Cash and cash equivalents in acquired companies		5	48
Cash and cash equivalents in divested companies		-43	-213
Cash flow from investing activities		**-20,382**	**-18,664**
Cash flow before financing activities		**20,672**	**7,064**
Financing activities			
Changes in short-term investments		-4,523	5,646
Changes in loans to owners of non-controlling interests in foreign Group companies		562	1,700
Loans raised[2]		8,720	6,088
Amortisation of other debt		-9,562	-13,438
Payment to the nuclear energy fund in Germany		–	-17,322
Effect of early termination of swaps related to financing activities		-122	105
Dividends paid to owners		-3,299	-865
Contribution/repaid contribution from owners of non-controlling interests		-1,260	-243
Cash flow from financing activities		**-9,484**	**-18,329**
Cash flow for the year		**11,188**	**-11,265**
Cash and cash equivalents			
Cash and cash equivalents at start of year		8,805	19,995
Cash and cash equivalents included in assets held for sale		-2,992	–
Cash flow for the year		11,188	-11,265
Translation differences		93	75
Cash and cash equivalents at end of year		**17,094**	**8,805**

Supplementary information

Amounts in SEK million, 1 January–31 December	2018	2017[3]
Cash flow before financing activities	**20,672**	**7,064**
Financing activities		
Effects from terminating swaps related to financing activities	-122	105
Dividends paid to owners	-3,299	-865
Contribution from owners of non-controlling interests	-1,260	-243
Cash flow after dividend	**15,991**	**6,061**
Cash flow from operating activities	41,054	25,728
Maintenance investments	-13,479	-12,637
Free cash flow[1]	**27,575**	**13,091**
Analysis of change in net debt		
Net debt at start of year	-59,260	-50,724
Cash flow after dividends	15,991	6,061
Changes as a result of valuation at fair value	387	1,474
Interest-bearing liabilities/short-term investments acquired/divested	–	-146
Changes in liabilities pertaining to acquisitions of Group companies, discounting effects	–	-110
Cash and cash equivalents included in assets held for sale	-2,992	–
Interest-bearing liabilities associated with assets held for sale	781	–
Translation differences on net debt	-2,635	-141
Reclassification	–	-15,674[4]
Net debt at end of year	**-47,728**	**-59,260**

	Liquid funds bank overdraft	Short-term investments	Non-current receivables	Financial leasing agreements	Current liabilities	Non-current liabilities	Total
Net debt as at 1 January 2017	**19,995**	**25,924**	**24**	**-642**	**-13,970**	**-82,055**	**-50,724**
Cashflow	-11,265	-7,883	537	–	16,619	8,054	**6,062**
Translation differences on net debt	75	474	13	20	-462	-262	**-142**
Acquired/divested interest-bearing liabilities/ short-term investments	–	–	–	–	-144	-2	**-146**
Other non-cash items	–	–	–	–	-15,674[4]	1,364	**-14,310**
Net debt as at 31 December 2017	**8,805**	**18,515**	**574**	**-622**	**-13,631**	**-72,901**	**-59,260**
Cashflow	11,188	4,524	-563	1	-10,937	11,778	**15,991**
Translation differences on net debt	93	414	-11	20	-615	-2,536	**-2,635**
Assets held for sale	-2,992	–	–	–	781	–	**-2,211**
Other non-cash items	–	–	–	–	-11	398	**387**
Net debt as at 31 December 2018	**17,094**	**23,453**	**–**	**-601**	**-24,413**	**-63,261**	**-47,728**

[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.

[3] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

[4] Reclassification of provisions for nuclear power in Germany.

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 2018	**6,585**	**-541**	**455**	**70,586**	**77,085**	**15,247**	**92,332**
Profit for the year	**–**	**–**	**–**	**10,157**	**10,157**	**1,850**	**12,007**
Cash flow hedges – changes in fair value	–	7,776	–	–	**7,776**	–	**7,776**
Cash flow hedges – dissolved against income statement	–	-6,074	–	–	**-6,074**	8	**-6,066**
Cash flow hedges – transferred to cost of hedged item	–	3	–	–	**3**	–	**3**
Hedging of net investments in foreign operations	–	–	-2,177	–	**-2,177**	–	**-2,177**
Translation differences and exchange rate effects net, divested companies	–	–	2	–	**2**	–	**2**
Translation differences	–	–	3,707	–	**3,707**	486	**4,193**
Remeasurement pertaining to defined benefit obligations	–	–	–	-310	**-310**	-105	**-415**
Income taxes related to other comprehensive income	–	-714	479	-28	**-263**	21	**-242**
Total other comprehensive income for the year	**–**	**991**	**2,011**	**-338**	**2,664**	**410**	**3,074**
Total comprehensive income for the year	**–**	**991**	**2,011**	**9,819**	**12,821**	**2,260**	**15,081**
Dividends paid to owners	–	–	–	-2,000	**-2,000**	-1,299	**-3,299**
Group contributions from (+)/to (–) owners of non-controlling interests	–	–	–	–	**–**	743	**743**
Contribution to/from minority interest	–	–	–	–	**–**	-1,260	**-1,260**
Other changes in ownership	–	–	–	190	**190**	-190	**–**
Total transactions with equity holders	**–**	**–**	**–**	**-1,810**	**-1,810**	**-2,006**	**-3,816**
Balance carried forward 2018	**6,585**	**450**	**2,466**	**78,595**	**88,096**	**15,501**[1]	**103,597**

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 2017	**6,585**	**-1,711**	**-733**	**64,131**	**68,272**	**15,528**	**83,800**
Transitional effect of adoption of new accounting rules (IFRS 9, 15)	–	–	–	-1,550	**-1,550**	-84	**-1,634**
Profit for the year	**–**	**–**	**–**	**8,333**	**8,333**[2]	**1,151**	**9,484**
Cash flow hedges – changes in fair value	–	4,442	–	–	**4,442**	–	**4,442**
Cash flow hedges – dissolved against income statement	–	-2,827	–	–	**-2,827**	-17	**-2,844**
Cash flow hedges – transferred to cost of hedged item	–	1	–	–	**1**	–	**1**
Hedging of net investments in foreign operations	–	–	-1,147	–	**-1,147**	–	**-1,147**
Translation differences and exchange rate effects net, divested companies	–	–	17	–	**17**	–	**17**
Translation differences	–	–	2,065	–	**2,065**[2]	295	**2,360**
Remeasurement pertaining to defined benefit obligations	–	–	–	-585	**-585**	-74	**-659**
Income taxes related to other comprehensive income	–	-473	253	149	**-71**	23	**-48**
Total other comprehensive income for the year	**–**	**1,143**	**1,188**	**-436**	**1,895**	**227**	**2,122**
Total comprehensive income for the year	**–**	**1,143**	**1,188**	**7,897**	**10,228**	**1,378**	**11,606**
Dividends paid to owners	–	–	–	–	**–**	-865	**-865**
Group contributions from (+)/to (–) owners of non-controlling interests	–	–	–	–	**–**	-153	**-153**
Contribution to/from minority interest	–	–	–	–	**–**	-243	**-243**
Changes as a result of changed ownership	–	–	–	–	**–**	-179	**-179**
Total transactions with equity holders	**–**	**27**	**–**	**108**	**135**	**-1,575**	**-1,440**
Balance carried forward 2017	**6,585**	**-541**	**455**	**70,586**	**77,085**	**15,247**[1]	**92,332**

[1] Of which, reserve for hedges SEK 35 million (29).

[2] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Interim reports and 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts.

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

Vattenfall's year-end report for 2018 was approved for publication on 6 February 2019 in accordance with a decision by the Board of Directors. The Annual and Sustainability Report was approved in accordance with a decision by the Board of Directors on 19 March 2019. 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 11 April 2019. 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 2017
As shown in Note 3 to the consolidated accounts, Accounting policies, new accounting rules apply as from 2018 in accordance with IFRS 9 – "Financial Instruments" and IFRS 15 – "Revenue from Contracts with Customers". The changes in IFRS 9 and 15 entail that the consolidated financial statements for the comparison year 2017 have been recalculated. The effect on the balance sheet total is an increase by SEK 1.1 billion as per 1 January 2017 and an increase by SEK 1.3 billion as per 31 December 2017. The effect on the profit for the year 2017 is a decrease by SEK 87 million.

Presentation of Consolidated income statement and Consolidated statement of cash flows
Starting with the first quarter of 2018 Vattenfall has changed the presentation of the income statement from a function of expense method to a nature of expense method. The external presentation of the income statement has thereby been aligned with the internal governance of Vattenfall's business. In addition, relevant items such as depreciation and amortisation and personnel-related expenses are now directly visible in the income statement. Since operating profit before depreciation, amortisation and impairment losses (EBITDA) is presented as a separate line item in the income statement, EBITDA is now used as the starting point for the consolidated statement of cash flows instead of profit before income taxes. This affects some line items within FFO (funds from operations), but FFO remains unchanged. The comparative figures have been adjusted accordingly.

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 2018
Presented below are the new accounting standards that have a material impact on the Vattenfall's Group's financial statements.

IFRS 9 – "Financial Instruments"
IFRS 9 – "Financial Instruments", which began to be applied on 1 January 2018, replaces IAS 39 – "Financial Instruments: Recognition and Measurement". IFRS 9 includes new principles for classification and measurement of financial instruments, changed principles for impairment of credit losses, and new rules for hedge accounting. Vattenfall has chosen to apply IFRS retrospectively and has restated the comparative figures for 2017. The effect on equity of changed accounting policies as per 1 January 2017 was only SEK 1 million and was attributable solely to the changed rules for recognition of impairment losses under IFRS 9. The small effect is due to the counterparties' good credit ratings. As per 31 December 2017 the effect in the income statement was SEK -1 million and was attributable solely to impairment. A small portion of short-term investments has been remeasured. With respect to hedge accounting, no comparison figures have been calculated for 2017. The new hedge accounting rules have had only a marginal effect on Vattenfall's financial statements. IFRS 9 has not entailed any change in the reporting of financial liabilities for Vattenfall.

The principles for classification and measurement of financial instruments, recognition of impairments of financial assets and hedge accounting, are 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.

IFRS 15 – "Revenue from Contracts with Customers"
IFRS 15 – "Revenue from Contracts with Customers", which began to be applied on 1 January 2018, is a new revenue recognition standard that provides a single, principles-based model for all revenue recognition, regardless of the type of transaction or sector. IFRS 15 replaces all previously issued standards and interpretations that address revenue recognition, including IAS 11, IAS 18, and the related IFRICs 13, 15 and 18. The core principle in IFRS 15 is that revenue should be recognised in a way that reflects the transfer of control of goods or services to the customers in an amount that reflects the consideration to which we expect to receive. IFRS 15 introduces a five step model to be applied when recognising revenue in accordance with the core principle. The standard also contains special rules concerning the recognition of costs related to the obtaining of contracts with customers.
Changes compared with the previous revenue recognition standard, IAS 18 (including IAS 11), are in the following areas:

- Discounts and bonuses: Vattenfall offers customers discounts and bonuses primarily on sales of electricity through various campaigns. Various types of discounts and bonuses are offered in different countries. According to IFRS 15, discounts and bonuses are to be reported when the performance obligation to the customer is satisfied, which in general is when the customer consumes the electricity.
- Cost to obtain contracts: Vattenfall sells its products through various sales channels and incurs various types of costs in connection with this. According to IFRS 15, incremental costs to obtain contracts are to be capitalised and amortised over the terms of the contracts. Prior to implementation of IFRS 15, some of these costs have been expensed.
- Connection fees: Under IFRS 15, the connection fees paid by customers for connecting them to the grid are recognised as revenue over time since Vattenfall is responsible for maintenance and repairs of the assets used in the physical connection. For some of Vattenfall's units, connection fees were recognised as revenue upon connection under IAS 18.

The combined effects for the Vattenfall Group of implementation of IFRS 15 on the restated financial statements for 2017 are a decrease in revenue by SEK 181 million and a decrease in costs by SEK 62 million, plus certain effects on deferred taxes. The effect on equity as per 1 January 2017 is a decrease by SEK 1,634 million.

New IFRSs and interpretations effective as from 2019 and later
A number of accounting standards and interpretations have been published, but have not become effective. Below are the changes in standards that will affect the Vattenfall Group's financial statements. Other revised accounting standards and interpretations are not considered to have a material impact on the Vattenfall Group's financial statements.

IFRS 16 – "Leases"
IFRS 16 – "Leases" replaces IAS 17 – "Leases" along with the accompanying interpretations. IFRS 16 becomes effective as from 2019. Vattenfall is transitioning to the new leasing standard by applying the modified retrospective approach, and therefore the 2018 financial statements will not be restated. Starting 1 January 2019, a right-of-use asset along with a lease liability will be recognised on the balance sheet for all lease contracts except for leases for which the underlying asset is of low value and short-term leases. Short-term leases are leasing contracts with a duration of 12 months or less.

As per 1 January 2019, a lease liability will be recognised for leases that were previously classified as operating leases through application of IAS 17. The lease liability is measured as the present value of the remaining lease payments discounted by Vattenfall's currency and term specific incremental borrowing rate as per 1 January 2019. The right-of-use asset is recognised initially at the same value as the lease liability. In the income statement, the lease expenses will be replaced by depreciation of the right-of-use asset and interest expense on the lease liability. The implementation of IFRS 16 also entails a positive effect on operating cash flows and a negative effect on cash flow from financing activities.

In its capacity as a lessee, Vattenfall mainly has lease contracts relating to real estate leases (42%), land right leases (41%) and car leases (7%).

Definition of a lease
Previously, Vattenfall determined at inception whether a contract contained a lease under IAS 17 and IFRIC 4. Starting on 1 January 2019 the Group applies the definition under IFRS 16 to determine whether or not a contract contains a lease.

As a lessee
Under IAS 17, Vattenfall classified leases as either operating leases or finance leases. Under IFRS 16 this distinction is no longer made for lessees. A right-of-use asset along with a corresponding liability will be created for all leases except for leases for which the underlying asset is of low value and short-term leases.

Impact on the Vattenfall's Group's financial statements
Implementation of IFRS 16 entails an increase of the Group's property, plant and equipment and interest-bearing liabilities by SEK 4.6 billion. IFRS 16 has no effect on equity.

Lease liabilities as per 1 January 2019 amount to SEK 5.2 billion. The difference between the operating lease commitment as per 31 December 2018 according to IAS 17 and lease liabilities as per 1 January 2019 according to IFRS 16 is shown below:

Operating lease commitment as per 31 December 2018 (See note 14)	5,830
Recognition exemption for short-term leases and leases of low-value assets	-202
Effect of discounting operating lease commitment	-1,019
Lease liabilities as a result of IFRS 16 implementation	**4,609**
Finance lease liabilities recognised as per 31 December 2018	601
Lease liabilities as per 1 January 2019	**5,210**

In 2019, EBITDA is expected to increase by approximately SEK 750 million and EBIT is expected to increase by approximately SEK 100 million.

As a lessor
Vattenfall's lessor accounting remains mainly unchanged with application of the new leasing standard IFRS 16.

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 2018

In 2018, no major acquisitions of operations were made by Vattenfall.

Acquisitions 2017

The main acquisitions in 2017 were of I Supply Energy Ltd, a gas and electricity supplier based in Bournemouth, UK and Windcollectief Wieringermeer B.V., a wind project in the Netherlands. The total of the net assets acquired in 2017 was SEK 1,439 million and the total purchase consideration paid was SEK 1,561 million.

Divested operations

Divestments in 2018

In January 2018 Vattenfall divested Forst Briesnig, a small onshore wind project in Germany. In March 2018, 100% of the shares were sold in Vattenfall Europe Netcom GmbH, a provider of telecommunication services based in Germany. In October 2018, Vattenfall sold 70% of the shares in Blakliden/Fäbodberget onshore wind farms in Sweden. Together with the partners, Vattenfall has joint control over the project and will classify Blakliden/Fäbodberget as a joint venture.

Total net assets divested in 2018 amount to SEK 88 million. The effect on cash flow for the year was SEK 99 million. A capital gain of SEK 316 million was recognised, which includes revaluation of remaining holdings of Blakliden/Fäbodberget in accordance with IFRS 10, Consolidated Financial Statements.

Divestments in 2017

Divestments in 2017 consisted mainly of the sales of T.A. Lauta GmbH & Co. oHG, IKWR Industriekraftwerk Rüdersdorf GmbH and Västerbergslagens Kraft AB.

Note 5 Exchange rates

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

		Average rate		Balance sheet date rate	
	Currency	2018	2017	31 December 2018	31 December 2017
Euro countries	EUR	10.2591	9.6392	10.2548	9.8438
Denmark	DKK	1.3765	1.2958	1.3733	1.3222
Norway	NOK	1.0641	1.0316	1.0308	1.0004
Poland	PLN	2.4074	2.2659	2.3841	2.3567
UK	GBP	11.5785	11.0311	11.4639	11.0950
USA	USD	8.6988	8.5405	8.9562	8.2080

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.

	2018	2017
Sales of electricity	93,384	77,038
Sales of gas	17,212	15,039
Sale of heat and steam	13,315	12,540
Distribution	15,951	15,538
Sale of service and consulting services	5,783	5,027
Total revenues from contracts with customers	**145,645**	**125,182**
Other revenues	11,179	9,932
Total	**156,824**	**135,114**

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	2018	2017
Contract assets	214	237
– of which, released as cost from opening balance during the year	446	564
Contract liabilities	7,935	7,533
– of which, released as revenue from opening balance during the year	577	425

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, optimisation and trading operations.

The Wind operating segment is responsible for Vattenfall's wind power operations.

The Heat operating segment comprises Vattenfall's heat operations, including all thermal operations.

The Distribution operating segment comprises Vattenfall's electricity distribution operations in Sweden and Germany (Berlin).

The financial steering key performance indicators for the operating segments are return on capital employed, underlying operating profit, operating expenses and cash flow. The financial information in the IFRS reporting is used to calculate these key performance indicators.

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	
	2018	2017	2018	2017	2018	2017
Customers & Solutions	**78,883**	**67,402**[2]	**2,435**	**1,551**	**81,318**	**68,953**[2]
Power Generation	**36,064**	**28,797**[3]	**63,906**[4]	**50,769**[4]	**99,970**	**79,566**[3]
Wind	**8,003**	**6,669**	**3,849**	**2,769**	**11,852**	**9,438**
Heat	**15,828**	**14,882**[2]	**18,142**	**15,842**	**33,970**	**30,724**[2]
Distribution	**17,845**	**16,840**[2]	**4,529**	**4,590**	**22,374**	**21,430**[2]
– of which, Distribution Germany	6,265	5,970	4,053	4,141	10,318	10,111
– of which, Distribution Sweden	11,462	10,870[2]	493	449	11,955	11,319[2]
Other[1]	**201**	**524**	**5,054**	**4,427**	**5,255**	**4,951**
Eliminations	**–**	**–**	**-97,915**	**-79,948**	**-97,915**	**-79,948**
Total	**156,824**	**135,114**[2]	**–**	**–**	**156,824**	**135,114**[2]

	Operating profit before depreciation, amortisation and impairment losses (EBITDA)		Underlying operating profit before depreciation, amortisation and impairment losses	
	2018	2017	2018	2017
Customers & Solutions	**2,650**	**2,913**[2]	**2,663**	**3,006**[2]
Power Generation	**10,170**	**9,254**	**12,830**	**13,936**
Wind	**8,277**	**6,404**	**8,328**	**6,397**
Heat	**4,071**	**7,114**[2]	**4,448**	**6,951**[2]
Distribution	**9,260**	**9,164**[2]	**9,292**	**8,963**[2]
– of which, Distribution Germany	1,923	1,822	1,957	1,835
– of which, Distribution Sweden	7,299	7,349[2]	7,297	7,135[2]
Other[1]	**-90**	**-391**	**-1,095**	**-550**
Eliminations	**3**	**-59**	**3**	**-59**
Total	**34,341**	**34,399**[2]	**36,469**	**38,644**[2]

	Operating profit (EBIT)		Underlying operating profit	
	2018	2017	2018	2017
Customers & Solutions	**1,139**	**1,772**[2]	**1,269**	**1,866**[2]
Power Generation	**6,711**	**6,138**	**9,371**	**10,820**
Wind	**3,681**	**1,713**	**3,747**	**2,137**
Heat	**393**	**3,533**[2]	**771**	**3,371**[2]
Distribution	**6,218**	**6,276**[2]	**6,250**	**6,075**[2]
– of which, Distribution Germany	950	948	985	962
– of which, Distribution Sweden	5,257	5,335[2]	5,254	5,120[2]
Other[1]	**-526**	**-849**	**-1,528**	**-1,007**
Eliminations	**3**	**-59**	**3**	**-59**
Total	**17,619**	**18,524**[2]	**19,883**	**23,203**[2]

	2018	2017
Underlying operating profit	19,883	23,203
Items affecting comparability (for specification, see page 89)	-2,264	-4,679
Financial income and expenses	-3,616	-5,755
Profit before income taxes	**14,003**	**12,769**

	Investments		Assets	
	2018	2017	2018	2017
Customers & Solutions	**785**	**711**	**51,016**	**47,187**[2]
Power Generation	**3,759**	**3,419**	**305,567**	**263,820**
Wind	**5,626**	**7,161**	**67,505**	**59,381**
Heat	**5,125**	**4,215**	**106,745**	**101,343**[2]
Distribution	**6,554**	**5,483**	**61,900**	**57,622**[2]
– of which, Distribution Germany	1,735	1,490	16,278	16,076
– of which, Distribution Sweden	4,717	3,993	45,180	41,546[2]
Other[1]	**127**	**311**[2]	**168,124**	**148,478**
Eliminations	**-63**	**-6**	**-298,249**[5]	**-268,699**[5]
Total	**21,913**	**21,294**[2]	**462,608**	**409,132**[2]

[1] "Other" pertains mainly to all Staff functions including treasury activities and Shared Service Centres.

[2] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

[3] Starting in 2018, purchases from the Nordic electricity exchange made under assignment by the sales operations are offset in the Power Generation segment (previously at the Group level) against sales of production to the Nordic electricity exchange.

[4] Pertains mainly to Tradings' sales of electricity, fuel and CO_2 emission allowances to other segments within Vattenfall.

[5] 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	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Sweden	47,785	43,364[2]	8,677	4,417	56,462	47,781[2]
Germany	75,082	63,489[2]	56,156	59,824	131,238	123,313[2]
Netherlands	26,204	22,300	38,713	58,514	64,917	80,814
Other countries	7,753	5,961[1]	3,626	5,720	11,379	11,681
Eliminations	–	–	-107,172	-128,475	-107,172	-128,475[2]
Total	**156,824**	**135,114[2]**	**–**	**–**	**156,824**	**135,114[2]**

	Operating profit (EBIT)		Underlying operating profit		Intangible assets: non-current, property, plant and equipment and investment property	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Sweden	13,085	11,861[2]	16,177	14,275[2]	119,086	113,444
Germany	2,155	6,980[2]	1,456	7,283[2]	70,147	71,741
Netherlands	1,235	-799[2]	1,098	1,092[2]	35,541	34,371[2]
Other countries	1,144	482	1,152	553	32,109	25,993
Total	**17,619**	**18,524[2]**	**19,883**	**23,203[2]**	**256,883**	**245,549[2]**

[1] Starting in 2018, purchases from the Nordic electricity exchange made under assignment by the sales operations are offset in Other countries (previously at the Group level) against sales of production to the Nordic electricity exchange.

[2] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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:

	2018		2017	
	Before tax	**After tax**	**Before tax**	**After tax**
Discount rate regulated business, %	4.8–6.1	3.8–4.7	5.9	4.5
Discount rate non-regulated business, %	6.6–9.4	4.9–7.0	6.7–9.5	5.1–7.2

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 need to recognise additional impairment losses of approximately SEK 1 billion.

Electricity prices and margins for generation assets represent another major value driver. Electricity prices are relevant for hydro 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 fossil-based assets in Germany and the Netherlands by between 12% and 22%, depending on the type of asset. This would lead to recognition of further impairment losses of approximately SEK 1 billion. 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.

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.

No previously recognised impairment losses were reversed in the income statement in 2018.

Impairment losses 2018

Impairment losses charged against operating profit in 2018 amounted to SEK 136 million. Of this total, SEK 117 million is attributable to the Customers & Solutions operating segment.

Impairment losses 2017

Impairment losses charged against operating profit in 2017 amounted to SEK 438 million. Of this total, SEK 436 million is attributable to the Wind operating segment.

Note 10 Other external expenses

	2018	2017
Purchased services	10,887	10,286
IT expenses	1,950	1,669
Consulting expenses	4,175	3,686
Rent and lease expenses	1,090	1,039
Marketing and selling expenses	1,209	976
Other	64	1,810
Total	**19,375**	**19,466**

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

	2018	2017
Return from the Swedish Nuclear Waste Fund	-7	1,138
Revaluation of the Swedish Nuclear Waste Fund to fair value through profit or loss	2,037[1]	–
Interest income attributable to investments	513	238
Net change in value from remeasurement of derivatives	264	1,194
Dividends	74	88
Capital gains from divestments of shares and participations	6	12
Total	**2,887**	**2,670**

[1] Due to changed investment policy for the Swedish Nuclear Waste Fund in the second quarter of 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.

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 pertaining to finance leases 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

	2018	2017
Interest expenses attributable to loans	3,206	5,088
Interest effects attributable to provisions	2,239	2,355
Interest expenses for the net of pension provisions and plan assets	844	820
Exchange rate differences, net	214	144
Net change in value from remeasurement of other financial assets	–	18
Total	**6,503**	**8,425**

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 Provisions. The outcome of these may deviate from the estimations made by Vattenfall.

Financial information

Break down of the reported income tax

	2018	2017
Current tax expense (–)/ tax income (+)		
Current taxes pertaining to the period:		
Sweden	-1,449	-1,578
Germany	-601	-1,461
Netherlands	-267	-172
Other countries	-269	-22
Adjustment of current tax for prior periods:		
Sweden	-9	2
Germany	831	-342
Netherlands	58	–
Other countries	-7	16
Total current tax	**-1,713**	**-3,557**
Deferred tax expense (–)/ tax income (+)		
Sweden	-149	-1[1]
Germany	145	229[1]
Netherlands	-359	52[1]
Other countries	80	-8[1]
Total deferred tax	**-283**	**272**[1]
Total income tax expense	**-1,996**	**-3,285**[1]

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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

	2018		2017	
	%		%	
Profit before tax		14,003		12,769[3]
Swedish income tax rate at 31 December	22.0	-3,081	22.0	-2,809[3]
Difference in tax rate in foreign operations	0.1	-7	1.8	-229[3]
Tax adjustments for previous periods	-3.9	539	3.5	-444
Revaluation of previously non-valued losses and other temporary differences	-0.9	119	0.0	-2
Tax-loss carryforwards from current year that are not valued	0.4	-50	0.3	-40
Other non-taxable income[1]	-1.3	181	-2.4	298
Other non-deductible expenses	2.0	-275	1.5	-185
Participations in the results of associated companies	-2.0	281	-0.9	116
Changed tax rates[2]	-2.1	297	-0.1	10[3]
Effective tax rate	**14.3**	**-1,996**	**25.7**	**-3,285**[3]

[1] Of which capital gains amounts to SEK 90 million (26).

[2] Of which SEK 573 million relates to a decrease of the deferred tax liability due to the reduction of the Swedish income tax rate as of 1 January 2019 and 2020 and SEK -281 million to a decrease of the deferred tax asset due to the reduction of the Netherlands income tax rate as of 1 January 2020 and 2021.

[3] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Balance sheet reconciliation of current tax

	2018	2017
Balance brought forward net asset (+)/ net liability (–)	-679	-626
Translation differences, acquisitions, disposals and assets held for sale	-1	5
Interest and discounting effects on non-current tax items	1	-12
Change via income statement	-1,713	-3,557
Tax effect through equity[1]	269	293
Taxes paid, net	3,698	3,218
Balance carried forward net asset (+)/ net liability (–)	**1,575**	**-679**

[1] Of which, equity hedge amounts to SEK 479 million (250).

Break down of the deferred tax

	2018	2017
Non-current assets	-25,454	-24,402[1]
Current assets	-9,732	-5,306[1]
Provisions	19,361	19,425[1]
Other non-current liabilities	1,570	1,996[1]
Current liabilities	10,953	5,932[1]
Cash flow hedges	-1,085	-341
Tax losses carried forward	987	199
Total	**-3,400**	**-2,497**[1]

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Accumulated tax-loss carryforwards

	2018	2017
Sweden	56	56
Germany	11,341	7,410
Netherlands	83	114
Other countries	1,208	1,780
Total	**12,688**	**9,360**

The tax-loss carryforwards fall due as follows:

	2018
2019	9
2020-2023	66
2024 and beyond	86
No time limit	12,527
Total	**12,688**

The tax-loss carryforwards correspond to a potential deferred tax asset of SEK 2,224 million, of which SEK 987 million is booked on the balance sheet as of 31 December 2018. Tax-loss carryforwards not included in the computation of deferred tax represent a tax value of SEK 1,238 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
Expenses paid for operating leases are reported in the income statement on a straight-line basis over the leasing period. Leases are classified as either finance or operating leases. A finance lease exists when the economic risks and benefits associated with ownership are, in essence, transferred to the lessee. If this is not the case, it is classified as an operating lease.

The new accounting standard IFRS 16 "Leases" becomes effective as from 2019. See Note 3 to the consolidated accounts, Accounting policies for the new standards effects on Vattenfall.

Leased assets
Assets leased under finance leases are reported as assets on the consolidated balance sheet. The commitment to pay future leasing charges is reported as a non-current or current liability. The leased assets are depreciated on a straight-line basis over the shorter of the leasing period or useful life, while the leasing payments are reported as interest and amortisation of the debts.

Operating leases normally entail recognition of the leasing charge as an expense on a straight-line basis over the leasing period.

Assets leased out
Assets that are 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.

Financial information
Leasing expenses
Machinery and equipment leased by the Group through finance leasing and reported as Property, plant and equipment comprises:

	2018	2017
Cost	975	975
Accumulated depreciation according to plan	-398	-342
Total	**577**	**633**

Future payment commitments, as of 31 December 2018, for leasing contracts and rental contracts are broken down as follows:

	Finance leasing, nominal	Finance leasing, present value	Operating leasing
2019	77	49	898
2020	572	552	772
2021	–	–	591
2022	–	–	521
2023	–	–	449
2024 and beyond	–	–	2,599
Total	**649**	**601**	**5,830**

The current year's leasing expenses amounted to SEK 1,164 million (1,033).

Leasing revenues
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 2018, cost of assets reported under operating leases amounted to SEK 5,957 million (5,739). Accumulated depreciation amounted to SEK 3,787 million (3,507) and accumulated impairment losses amounted to SEK 318 million (280).

Future payments for this type of facility are broken down as follows:

	Operating leasing
2019	1,086
2020	1,050
2021	1,025
2022	995
2023	971
2024 and beyond	1,978
Total	**7,105**

Note 15 Auditors' fees

	2018	2017
Annual audit assignment		
EY	39	39
Audit-related activities besides the annual audit assignment		
EY	4	3
Tax consulting		
EY	–	1
Other assignments		
EY	26	12

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

	2018					
	Development costs	Goodwill	Concessions and similar rights with finite useful lives	Costs to obtain a contract	Renting rights and similar rights with finite useful lives	Total
Cost						
Cost brought forward	2,194	43,356	17,345	941	831	**64,667**
Acquired companies	–	-89	–	–	–	**-89**
Investments	75	–	151	505	1	**732**
Transfer from development projects in progress	-4	–	–	–	–	**-4**
Divestments/disposals	–	-258	-7	-315	-9	**-589**
Reclassifications	-34	-119	27	52	-619	**-693**
Assets held for sale	-15	–	-29	–	-31	**-75**
Divested companies	–	–	-31	–	–	**-31**
Translation differences	55	1,792	661	39	5	**2,552**
Accumulated cost carried forward	**2,271**	**44,682**	**18,117**	**1,222**	**178**	**66,470**
Amortisation according to plan						
Amortisation brought forward	-1,701	–	-11,172	-512	-189	**-13,574**
Amortisation for the year	-45	–	-1,092	-371	-5	**-1,513**
Divestments/disposals	–	–	5	315	9	**329**
Reclassifications	16	–	3	-15	112	**116**
Assets held for sale	15	–	29	–	31	**75**
Divested companies	–	–	26	–	–	**26**
Translation differences	-53	–	-426	-21	-4	**-504**
Accumulated amortisation according to plan carried forward	**-1,768**	**–**	**-12,627**	**-604**	**-46**	**-15,045**
Impairment losses						
Impairment losses brought forward	-212	-30,032	-1,974	–	-583	**-32,801**
Impairment losses for the year	–	–	-82	-35	–	**-117**
Divestments/disposals	–	258	–	–	–	**258**
Reclassifications	–	119	–	–	507	**626**
Translation differences	–	-1,236	-73	–	–	**-1,309**
Accumulated impairment losses carried forward	**-212**	**-30,891**	**-2,129**	**-35**	**-76**	**-33,343**
Residual value according to plan carried forward	**291**	**13,791**	**3,361**	**583**	**56**	**18,082**

	2017					
	Development costs	Goodwill	Concessions and similar rights with finite useful lives[1]	Costs to obtain a contract[1]	Renting rights and similar rights with finite useful lives	Total
Cost						
Cost brought forward	2,026	41,908	15,273	645	896	**60,748**
Acquired companies	34	232	1,470	–	–	**1,736**
Investments	119	–	201	289	1	**610**
Transfer from development projects in progress	-4	–	–	–	–	**-4**
Divestments/disposals	-19	–	-52	-18	-69	**-158**
Reclassifications	–	-33	31	–	–	**-2**
Divested companies	–	–	-1	–	–	**-1**
Translation differences	38	1,249	423	25	3	**1,738**
Accumulated cost carried forward	**2,194**	**43,356**	**17,345**	**941**	**831**	**64,667**
Amortisation according to plan						
Amortisation brought forward	-1,639	–	-9,981	-241	-250	**-12,111**
Amortisation for the year	-44	–	-960	-276	-6	**-1,286**
Divestments/disposals	19	–	60	18	69	**166**
Reclassifications	–	–	3	–	–	**3**
Divested companies	–	–	1	–	–	**1**
Translation differences	-37	–	-295	-13	-2	**-347**
Accumulated amortisation according to plan carried forward	**-1,701**	**–**	**-11,172**	**-512**	**-189**	**-13,574**
Impairment losses						
Impairment losses brought forward	-212	-29,027	-1,937	–	-583	**-31,759**
Impairment losses for the year	–	-148	-1	–	–	**-149**
Reclassifications	–	–	-2	–	–	**-2**
Translation differences	–	-857	-34	–	–	**-891**
Accumulated impairment losses carried forward	**-212**	**-30,032**	**-1,974**	**–**	**-583**	**-32,801**
Residual value according to plan carried forward	**281**	**13,324**	**4,199**	**429**	**59**	**18,292**

[1] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Contractual commitments for acquisitions of non-current intangible assets amounted to SEK 0 million (0) as per 31 December 2018.

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

	2018				
	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]	56,367	453,270	12,473	26,467	**548,577**
Acquired companies	–	–	1	–	**1**
Investments[4]	44	1,557	297	22,022	**23,920**
Reversed investments	–	–	–	-95	**-95**
Advance payments capitalised	–	–	–	186	**186**
Capitalised/reversed future expenses for decommissioning, restoration	60	3,134	–	367	**3,561**
Transfer from construction in progress	1,260	15,305	218	-16,779	**4**
Divestments/disposals	-706	-2,381	-572	-1,592	**-5,251**
Other reclassifications	4	-10	-35	-8	**-49**
Assets held for sale	-2,071	-18,023	-318	-593	**-21,005**
Divested companies	–	-398	-36	-24	**-458**
Translation differences	1,114	10,893	408	640	**13,055**
Accumulated cost carried forward	**56,072**	**463,347**	**12,436**	**30,591**	**562,446**
Depreciation according to plan					
Depreciation brought forward	-25,896	-214,688	-8,977	–	**-249,561**
Depreciation for the year	-931	-13,482	-661	–	**-15,074**
Divestments/disposals	219	1,912	493	–	**2,624**
Assets held for sale	1,708	14,333	271	–	**16,312**
Divested companies	–	305	33	–	**338**
Translation differences	-677	-5,234	-296	–	**-6,207**
Accumulated depreciation according to plan carried forward	**-25,577**	**-216,843**	**-9,148**	**–**	**-251,568**
Impairment losses					
Impairment losses brought forward	-3,813	-65,730	-402	-2,002	**-71,947**
Impairment losses for the year	-4	-15	–	–	**-19**
Divestments/disposals	301	78	-6	1,525	**1,898**
Assets held for sale	–	–	–	158	**158**
Divested companies	–	1	–	–	**1**
Translation differences	-122	-2,113	-16	-17	**-2,268**
Accumulated impairment losses carried forward	**-3,638**	**-67,779**	**-424**	**-336**	**-72,177**
Residual value according to plan carried forward	**26,857**	**178,725**	**2,864**	**30,255**	**238,701**
Advance payments to suppliers					**100**
Total					**238,801**

	2017				
	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]	55,116[5]	428,068[5]	12,084	26,072	**521,340**
Acquired companies	–	–	5	207	**212**
Investments[4]	76[5]	908	463	17,018	**18,465**
Reversed investments	–	–	–	-53	**-53**
Advance payments capitalised	–	–	–	621	**621**
Capitalised/reversed future expenses for decommissioning, restoration	16	4,563	–	–	**4,579**
Transfer from construction in progress	871	16,590	120	-17,577	**4**
Divestments/disposals	-311	-2,607	-482	-154	**-3,554**
Other reclassifications	-26	8	7	6	**-5**
Divested companies	-235	-1,245	-10	-11	**-1,501**
Translation differences	789	6,985	286	338	**8,398**
Accumulated cost carried forward	**56,296**	**453,270**	**12,473**	**26,467**	**548,506**
Depreciation according to plan					
Depreciation brought forward	-24,753	-201,185	-8,592	–	**-234,530**
Acquired companies	–	–	-1	–	**-1**
Depreciation for the year	-920	-12,628	-605	–	**-14,153**
Divestments/disposals	239	2,172	429	–	**2,840**
Other reclassifications	-14	-45	-7	–	**-66**
Divested companies	74	424	8	–	**506**
Translation differences	-476	-3,426	-209	–	**-4,111**
Accumulated depreciation according to plan carried forward	**-25,850**	**-214,688**	**-8,977**	**–**	**-249,515**
Impairment losses					
Impairment losses brought forward	-3,704	-64,087	-399	-2,000	**-70,190**
Impairment losses for the year	–	-18	–	-245	**-263**
Reversed impairment losses for the year	–	4	–	–	**4**
Transfer from construction in progress	–	-249	–	249	**–**
Divestments/disposals	6	31	1	2	**40**
Other reclassifications	–	64	7	–	**71**
Translation differences	-90	-1,475	-11	-8	**-1,584**
Accumulated impairment losses carried forward	**-3,788**	**-65,730**	**-402**	**-2,002**	**-71,922**
Residual value according to plan carried forward	**26,658**	**172,852**	**3,094**	**24,465**	**227,069**
Advance payments to suppliers					**188**
Total					**227,257**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 12,482 million (12,599), which are not subject to depreciation.

[2] Borrowing costs during the construction period have been reported as an asset in the amount of SEK 254 million (253) for the year. The average interest rate for 2018 was 2.33% for borrowings in SEK, 4.76% for borrowings in EUR and 4.65% for borrowings in GBP.

[3] Government grants received, balance brought forward, amount to SEK 7,338 million (7,121).

[4] Government grants received during the year amounted to SEK 192 million (195).

[5] The amount has been changed compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report.

At 31 December 2018, contractual commitments for the acquisition of property, plant and equipment amounted to SEK 10,827 million (13,168).

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 2018	Participation in % 2018	Carrying amount Parent Company 2018	Carrying amount Parent Company 2017
Sweden						
Alltid AB	559030-1148	Borås	100	100	39	–
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	524	200
Gotlands Energi AB	556008-2157	Gotland	112,500	75	13	13
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 Biomass Liberia AB	556809-8809	Stockholm	5,000	100	–	–
Vattenfall Business Services Nordic AB	556439-0614	Stockholm	100	100	130	130
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	11	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	15	15
Vattenfall Power Management AB	556573-5940	Stockholm	6,570	100	12	12
Vattenfall Research & Development AB Liquidated	556390-5891	Älvkarleby				17
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	515
Vattenfall Energy Trading A/S	310 811 81	Copenhagen	500	100	49	49
Vindstød A/S	340 451 43	Århus	1,333,333	70[2]	37	37
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						
N.V. Nuon Energy	33292246	Amsterdam	136,794,964	100	44,138	44,138
Other countries						
Parc Eolien En Mer des Bancs de Flandre SAS	2018B02593	Boulogne Billancourt	53	1[3]	–	–
Vattenfall UK Sales Limited	05461926	London	104,000,400	100	288	288
Vattenfall Reinsurance S.A., Luxembourg Liquidated	(B) 49528	Luxembourg			–	150
Total					**149,564**	**149,850**

[1] The Group owns a further 30% via Forsmarks Kraftgrupp AB.
[2] The remaining 30% of the shares will be paid in three tranches: 2019, 2020 and 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 % 2018
Sweden		
Vattenfall Indalsälven AB	Bispgården	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
MVR Müllverwertung Rugenberger Damm GmbH & Co. KG	Hamburg	55
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 Kundenservice 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
Vattenfall Wärme Hamburg GmbH	Hamburg	75

	Registered office	Participation in % 2018
Netherlands		
Feenstra N.V.	Amsterdam	100
Feenstra Verwarming B.V.	Lelystad	100
N.V. Nuon Duurzame Energie	Arnhem	100
N.V. Nuon Energy Sourcing	Amsterdam	100
N.V. Nuon Klantenservice	Arnhem	100
N.V. Nuon Sales	Amsterdam	100
N.V. Nuon Sales Nederland	Amsterdam	100
N.V. Nuon Warmte	Amsterdam	100
Nuon Epe Gas Service B.V.	Amsterdam	100
Nuon Power Generation B.V.	Utrecht	100
Nuon Power Projects I B.V.	Amsterdam	100
Nuon Renewables NSW I B.V.	Amsterdam	100
Nuon Storage B.V.	Amsterdam	100
Nuon Windpark Wieringermeer EXT B.V.	Amsterdam	100
Vattenfall Energy Trading Netherlands N.V.	Amsterdam	100
Zuidlob Wind B.V.	Amsterdam	100
UK		
Kentish Flats Ltd	London	100
Nuon UK Ltd	Cornwall	100
Pen Y Cymoedd Wind Farm Ltd.	Cornwall	100
Thanet Offshore Wind Ltd	London	100
Vattenfall Wind Power Ltd	London	100
Ormonde Energy Ltd	London	51
Aberdeen Offshore Wind Farm Ltd	Aberdeen	100
I Supply Energy Ltd	Poole	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 2018 amounted to 24.9 TWh (24.5), and the average availability for Forsmark was 88.1% (88.0%).

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 2018 amounted to 30.1 TWh (27.4), and the average availability for Ringhals was 89.5% (82.2%).

DanTysk Sandbank Offshore Wind

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

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

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

	2018			2017		
	Forsmarks Kraftgrupp	**Ringhals**	**DanTysk Sandbank Offshore Wind**	**Forsmarks Kraftgrupp**	**Ringhals**	**DanTysk Sandbank Offshore Wind**
Income statements in summary						
Net sales	6,132	7,701	5,457	6,535	7,476	4,819
Profit for the year	936	1,711	2,582	606	237	1,705
– of which allocated to non-controlling interests	206	76	1,265	103	24	835
Balance sheets in summary						
Non-current assets	57,871	43,545	18,975	53,324	39,875	19,798
Current assets	4,813	4,074	1,082	4,867	3,458	1,245
Total assets	**62,684**	**47,619**	**20,057**	**58,191**	**43,333**	**21,043**
Equity	12,090	435	18,993	10,497	-863	19,793
Liabilities	50,593	47,184	1,064	47,694	44,196	1,250
Total equity and liabilities	**62,683**	**47,619**	**20,057**	**58,191**	**43,333**	**21,043**
Statement of cash flows in summary						
Cash flow for the year	-64	356	-131	72	-152	61

Note 19 Participations in associated companies and joint arrangements

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

	Corporate Identity Number	Registered office	Participation in % 2018	Carrying amount Group 2018	Carrying amount Group 2017	Carrying amount Parent Company 2018	Carrying amount Parent Company 2017
Associated companies and joint ventures owned by the Parent Company Vattenfall AB							
Sweden							
BrainHeart Energy Sweden Holding AB	556813-3846	Stockholm	35	45	41	47	41
Hybrit Development AB	559121-9760	Stockholm	33	7	–	12	–
Norway							
NorthConnect KS	996625001	Kristiansand	33	42	14	42	14
NorthConnect AS	995878550	Kristiansand	30	6	2	6	–
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	240	–	–	–
Taggen Vindpark Elnät AB	556701-3981	Gothenburg	50	–	–	–	–
V2 Plug-In Hybrid Vehicle Partnership HB	969741-9175	Gothenburg	50	350	499	–	–
UK							
East Anglia Offshore Wind Ltd	06990367	Hexham	50	46	45	–	–
Germany							
Solytic GmbH	HRB 190395 B	Berlin	36	25	29	–	–
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	HRA 200395	Oldenburg	26	116	155	–	–
GASAG Berliner Gaswerke AG	HRB 44343	Berlin	32	4,105	3,719	–	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	HRA 99143	Hamburg	20	–	–	–	–
Kernkraftwerk Stade GmbH & Co. oHG	HRA 99146	Hamburg	33	–	–	–	–
Netherlands							
B.V. Nederlands Elektriciteit Administratiekantoor	09018339	Arnhem	23	66	76	–	–
C.V. Groettocht	37085868	Amsterdam	50	2	2	–	–
C.V. Oudelandertocht	37085867	Amsterdam	50	2	3	–	–
C.V. Waardtocht	37085866	Amsterdam	50	1	1	–	–
C.V. Waterkaaptocht	37085865	Amsterdam	50	2	2	–	–
C.V. Windpoort	34122462	Heemskerk	40	5	4	–	–
NoordzeeWind C.V.	34195602	Ijmuiden	50	157	196	–	–
V.O.F. Windpark Oom Kees	09210903	Amsterdam	13	2	2	–	–
Westpoort Warmte B.V.	34121626	Amsterdam	50	101	69	–	–
Windpark Hoofdplaatpolder B.V.	22053732	Sluis	70	88	102	–	–
V.O.F. Noordpier Wind	51173441	Heemskerk	50	5	4	–	–
Vliegasunie B.V.	30123419	De Bilt	20	16	20	–	–
Total				**5,429**	**4,985**	**107**	**55**

Participations in the results of associated companies

	2018	2017
Sweden		
Blakliden Fäbodberget Wind Holding AB	-22	–
V² Plug-In Hybrid Vehicle Partnership HB	315	295
UK		
East Anglia Offshore Wind Ltd	–	14
Germany		
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	-20	5
GASAG Berliner Gaswerke AG	91	81
Netherlands		
B.V. Nederlands Elektriciteit Administratiekantoor	-13	–
NoordzeeWind C.V.	-48	-34
Westpoort Warmte B.V.	29	14
Windpark Hoofdplaatpolder B.V.	-14	-17
Vliegasunie B.V.	6	19
Other associated companies	-4	-12
Total	**320**	**365**

Note 20 Share in the Swedish Nuclear Waste Fund

	2018	2017
Balance brought forward	38,591	36,199
Payments	2,421	1,903
Disbursements	-1,004	-649
Returns	-7	1,138
Revaluation of the Swedish Nuclear Waste Fund to fair value through profit or loss	2,037	–
Balance carried forward	**42,038**	**38,591**

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 59,904 million (53,830). 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 (except for inventories held for trading) 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.

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

Financial information

	2018	2017
Inventories held for own use		
Nuclear fuel	5,749	6,853
Materials and spare parts	2,818	2,794
Fossil fuel	803	1,377
Biological assets	20	17
Other	402	460
Total	**9,792**	**11,501**
Inventories held for trading		
Fossil fuel	1,952	1,131
CO_2 emission allowances/certificates	1,850	2,997
Biomass	53	58
Total	**3,855**	**4,186**
Total inventories	**13,647**	**15,687**

Inventories recognised as an expense in 2018 amount to SEK 16,726 million (23,497). Impairment losses for inventory for own use amounted to SEK 4 million (68) during the year. Reversed impairment amounted to SEK 0 million (15).

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. 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. The liability is valued at the amount at which it is expected to be settled.

Financial information

	CO_2 emission allowances		Certificates		Total	
	2018	**2017**	**2018**	**2017**[1]	**2018**	**2017**[1]
Balance brought forward	1,579	10	266	305	1,845	315
Purchases	4,128	3,240	428	408	4,556	3,648
Received free of charge	–	–	194	111	194	111
Sold	-3,745	-481	-8	-82	-3,753	-563
Redeemed	-1,705	-1,223	-494	-476	-2,199	-1,699
Translation differences	67	33	–	–	67	33
Balance carried forward	**324**	**1,579**	**386**	**266**	**710**	**1,845**

[1] Values attributable to certificates in 2017 have been adjusted compared with information previously published in Vattenfall's 2017 Annual and Sustainability Report.

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

	2018	**2017**
Accounts receivable – trade	20,334	18,146[1]
Receivables from associated companies	81	148
Other receivables	5,588	5,143
Total	**26,003**	**23,437**[1]

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Age analysis

The collection period is normally between 10 and 30 days.

	2018			2017		
	Receivables, gross	**Impaired receivables**	**Receivables, net**	**Receivables, gross**	**Impaired receivables**	**Receivables, net**
Accounts receivable – trade						
Not due	18,216	19	18,197	16,559	5	16,554
Past due 1–30 days	1,071	11	1,060	750	9	741
Past due 31–90 days	373	13	360	276	14	262
Past due >90 days	1,517	800	717	1,446	857	589
Total	**21,177**	**843**	**20,334**	**19,031**	**885**	**18,146**
Receivables from associated companies						
Not due	80	–	80	148	–	148
Past due >90 days	2	1	1	2	2	–
Total	**82**	**1**	**81**	**150**	**2**	**148**
Other receivables						
Not due	5,578	–	5,578	5,123	–	5,123
Past due 1–30 days	2	–	2	1	–	1
Past due 31–90 days	–	–	–	1	–	1
Past due >90 days	27	19	8	35	17	18
Total	**5,607**	**19**	**5,588**	**5,160**	**17**	**5,143**

Note 24 Advance payments paid

	2018	2017
Margin calls paid, energy trading	2,330	2,054
Other advance payments	596	1,546
Total	**2,926**	**3,600**

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

	2018	2017
Prepaid expenses and accrued income, electricity	5,207	4,467
Prepaid expenses, other	1,740	1,374
Accrued income, other	1,480	1,169
Total	**8,427**	**7,010**

Note 26 Short-term investments

	2018	2017
Interest-bearing investments	20,541	15,343
Margin calls paid, financing activities	2,436	2,749
Total	**22,977**	**18,092**

Note 27 Cash and cash equivalents

	2018	2017
Cash and bank balances	8,286	6,125
Cash equivalents	8,808	2,680
Total	**17,094**	**8,805**

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 2018 refer to Vattenfall Wärme Hamburg. As per 31 December 2017 there were no assets held for sale.

	2018	2017
Property, plant and equipment	4,535	–
Other non-current assets	445	–
Trade receivables and other receivables	341	–
Cash and cash equivalents	2,992	–
Total assets	**8,313**	**–**
Other interest-bearing provisions	3,954	–
Deferred tax liabilities	234	–
Trade payables and other liabilities	1,150	–
Total liabilities	**5,338**	**–**

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:

	2018	2017
Balance brought forward	19,118	19,164
Effects from hedge accounting	4	5
Translation differences	710	-51
Balance carried forward	**19,832**	**19,118**

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	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Bond issues	12,410	21,319	18,297	18,839	**30,707**	**40,158**	9,992	5,358	**40,699**	**45,516**
Commercial paper	–	–	–	–	**–**	**–**	7,408	4,192	**7,408**	**4,192**
Liabilities to credit institutions	1,401	2,256	–	–	**1,401**	**2,256**	795	149	**2,196**	**2,405**
Liabilities pertaining to acquisitions of subsidiaries	51	161	–	–	**51**	**161**	–	–	**51**	**161**
Liabilities to owners of non-controlling interests	–	157	10,406	10,212	**10,406**	**10,369**	–	–	**10,406**	**10,369**
Liabilities to associated companies	–	–	–	–	**–**	**–**	504	462	**504**	**462**
Other liabilities	710	735	706	656	**1,416**	**1,391**	5,763[1]	3,540[1]	**7,179**	**4,931**
Total interest-bearing liabilities excl. Hybrid Capital	**14,572**	**24,628**	**29,409**	**29,707**	**43,981**	**54,335**	**24,462**	**13,701**	**68,443**	**68,036**
Hybrid Capital	9,577	5,991	10,255	13,127	**19,832**	**19,118**	–	–	**19,832**	**19,118**
Total	**24,149**	**30,619**	**39,664**	**42,834**	**63,813**	**73,453**	**24,462**	**13,701**	**88,275**	**87,154**
Derivatives (swaps) attributable to the above interest-bearing liabilities	262	-288	-941	-358	**-679**	**-646**	-141	150	**-820**	**-496**

[1] Of which, margin calls within financing activities SEK 3,370 million (3,312).

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	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Interest-bearing liabilities	31,845	39,396	48,228	52,567	**80,073**	**91,963**	27,473	16,987	**107,546**	**108,950**
Derivatives (swaps)	-110	-752	-1,783	-1,931	**-1,893**	**-2,683**	-307	-178	**-2,200**	**-2,861**
Trade payables and other financial liabilities	561	855	1,744	1,516	**2,305**	**2,371**	29,482	23,872	**31,787**	**26,243**
Total	**32,296**	**39,499**	**48,189**	**52,152**	**80,485**	**91,651**	**56,648**	**40,681**	**137,133**	**132,332**

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

Type	Issued	Currency	Nominal amount	Coupon %	Maturity
Euro Medium Term Note	2008	EUR	645	6.750	2019
Euro Medium Term Note	2009	GBP	273	6.125	2019
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	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 2018 was unchanged at 2.5%. 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 2018 was also unchanged at 1.75%.

Financial information
Swedish pension plans
The Swedish pension plans supplement the Swedish social insurance system and are the result of agreements between employer and employee organisations. Essentially all Vattenfall employees in Sweden are enrolled in the collectively bargained ITP-Vattenfall pension plan. For employees born in 1978 and earlier, the plan is mostly a defined benefit solution, while for employees born in 1979 and later, the plan is entirely a defined contribution solution.

In defined benefit pension solutions, the employee is guaranteed a lifetime pension that corresponds to a set percentage of the employee's final salary. Defined benefit pensions are secured through provisions on the balance sheet, and the obligation is covered by credit insurance with PRI Pensionsgaranti. In addition, certain pensions attributable the time prior to Vattenfall's incorporation are covered by a government guarantee via the Swedish National Debt Office. Defined contribution pensions are secured through insurance with any of the insurance companies that are electable within the framework of the ITP plan.

Certain of Vattenfall's obligations in the ITP plan such as spousal benefits and disability pensions are secured through an insurance policy from Alecta. According to a statement (UFR 10) issued by the Swedish Financial Reporting Board, this plan is a multi-employer defined benefit plan. As in previous years, Vattenfall has not had access to such information to make it possible to report this plan as a defined benefit plan. The pension plan according to ITP secured by insurance in Alecta is therefore reported as a defined contribution plan. This year's share of the total savings premium in Alecta is 0.32061%, while Vattenfall's share of the total number of actively insured in Alecta is 1.23214%. Alecta's surplus can be distributed among the policyholders and/or the insured. At the end of 2018, Alecta's surplus in the form of its so-called collective funding amounted to 142% (154%). 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 employed before 1 April 1991 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

	2018			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	12,786	448	19,834	**33,068**
Present value of fully or partly funded obligations	–	15,198	160	**15,358**
Present value of obligations	**12,786**	**15,646**	**19,994**	**48,426**
Fair value of plan assets	–	8,620	120	**8,740**
Net defined benefit liability	**12,786**	**7,026**	**19,874**	**39,686**

	2017			
		Germany		
	Sweden	Plan Berlin	Plan Hamburg	Total
Present value of unfunded obligations	11,624	455	22,607	**34,686**
Present value of fully or partly funded obligations	–	16,052	172	**16,224**
Present value of obligations	**11,624**	**16,507**	**22,779**	**50,910**
Fair value of plan assets	–	8,824	124	**8,948**
Net defined benefit liability	**11,624**	**7,683**	**22,655**	**41,962**

Changes in obligations

	2018	2017
Balance brought forward	50,910	49,665
Benefits paid by the plan	-2,349	-2,164
Service cost	692	667
Contributions by plan participants	4	5
Actuarial gains (–) or losses (+) due to changes in financial assumptions	787	490
Actuarial gains (–) or losses (+) due to changes in demographic assumptions	890	–
Actuarial gains (–) or losses (+) due to plan experience	-1,486	105
Current interest expense	1,002	975
Divested companies	-62	–
Liabilities associated with assets held for sale	-3,604	–
Translation differences	1,642	1,167
Balance carried forward	**48,426**	**50,910**

Changes in plan assets

	2018	2017
Balance brought forward	8,948	9,021
Benefits paid by the plan	-521	-458
Contributions by employer	21	21
Contributions by plan participants	4	5
Interest income	158	155
Difference between calculated and actual return	-226	-64
Divested companies	-18	–
Translation differences	374	268
Balance carried forward	**8,740**	**8,948**

Plan assets consist of the following

	2018	2017
Shares and participations	4,384	4,091
Interest-bearing instruments	2,705	3,368
Property	1,318	1,157
Other	333	332
Total	**8,740**	**8,948**

Payments for employer contributions to defined benefit plans during 2019 are estimated at SEK 21 million.

Pension costs

	2018	2017
Defined benefit plans:		
Current service cost	661	644
Interest expenses	1,002	975
Interest income	-158	-155
Past service cost	31	23
Total cost for defined benefit plans	**1,536**	**1,487**
Cost for defined contribution plans	862	822
Total pension costs	**2,398**	**2,309**

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

	Sweden		Germany	
	2018	**2017**	**2018**	**2017**
Discount rate	2.50	2.50	1.75	1.75
Future annual salary increases	3.00	3.00	2.50	2.50
Future annual pension increases	2.00	1.50	0.0–2.0	0.0–2.0

Sensitivity to key actuarial assumptions

	Sweden				Germany			
	2018		2017		2018		2017	
		%		**%**		**%**		**%**
Impact on the defined benefit obligation at 31 December of a:								
Increase by 50 basis points in the discount rate	–1,060	–8.3	–950	–8.2	–2,536	–6.5	–2,593	–6.6
Decrease by 50 basis points in the discount rate	1,200	9.4	1,056	9.1	2,843	7.3	2,952	7.5
Increase by 50 basis points in the annual pension increases	1,200	9.4	1,056	9.1	2,109	5.4	2,280	5.8
Decrease by 50 basis points in the annual pension increases	–1,060	–8.3	–950	–8.2	–2,025	–5.2	–2,195	–5.6

At 31 December 2018 the weighted duration of pension obligations was 13.9 (14.5) years for Germany and 19.0 (17.3) 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 3.00% (3.25%) and in Germany to 1.00% (1.25%) 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 tax and legal disputes, or other provisions, the following discount rates are used: Sweden 3.00% (3.25%), Germany 0.50–2.75% (0.75–3.00%), Netherlands 0.75% (1.00%), Denmark 2.75% (3.00%) and the UK 3.50% (3.75%).

Financial information

	Non-current portion		Current portion		Total	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Provisions for future expenses of nuclear power operations	75,533	70,104	2,155	1,765	**77,688**	**71,869**
Provisions for future expenses of gas and wind operations and other environmental measures/undertakings	7,594	6,465	63	43	**7,657**	**6,508**
Personnel-related provisions for non-pension purposes	4,949	4,542	1,330	1,113	**6,279**	**5,655**
Provisions for tax and legal disputes	2,268	2,218	118	359	**2,386**	**2,577**
Other provisions	2,878	2,672	68	437	**2,946**	**3,109**
Total	**93,222**	**86,001**	**3,734**	**3,717**	**96,956**	**89,718**

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 42,038 million (38,591).

	Sweden	Germany	Total
Balance brought forward	53,830	18,039	**71,869**
Provisions for the period	2,984	1,049	**4,033**
Interest effects	1,693	235	**1,928**
Revaluations versus non-current assets	2,730	–	**2,730**
Reversed provisions	–	-1,166	**-1,166**
Provisions used	-1,333	-1,127	**-2,460**
Translation differences	–	754	**754**
Balance carried forward	**59,904**[1]	**17,784**[2]	**77,688**

[1] Of which, approximately 32% (28%) pertains to the dismantling of nuclear power plants and approximately 68% (72%) to the handling of spent radioactive fuel.
[2] Of which, approximately 69% (67%) pertains to the dismantling of nuclear power plants and approximately 31% (33%) 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 tax and legal disputes	Other provisions
Balance brought forward	6,508	5,655	2,577	3,109
Provisions for the period	365	1,565	44	220
Interest effects	190	60	39	1
Reclassified to/from other provision	–	153	–	-153
Revaluations	831	-9	-159	-89
Provisions used	-73	-1,068	-25	-39
Provisions reversed	-47	-292	-168	-175
Divested companies	–	-4	-9	–
Assets held for sale	-352	–	–	–
Translation differences	235	219	87	72
Balance carried forward	**7,657**	**6,279**	**2,386**	**2,946**

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 tax and legal disputes
Provisions are made for possible future tax expenses due to ongoing tax audits and for 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 tax and legal disputes	Other provisions	Total
2-5 years	3,881	176	2,381	2,268	2,195	**10,901**
6-10 years	5,880	984	1,425	–	683	**8,972**
11-20 years	5,564	4,817	1,056	–	–	**11,437**
Beyond 20 years	303	1,617	87	–	–	**2,007**
Total	**15,628**	**7,594**	**4,949**	**2,268**	**2,878**	**33,317**

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.

Note 32 Other noninterest-bearing liabilities (non-current)

Of total liabilities of SEK 2,305 million (2,371), SEK 1,744 million (1,516) falls due after more than five years. Of the total liabilities, SEK 1,905 million (1,886) pertains to deferred income and SEK 400 million (485) to other liabilities.

Note 33 Trade payables and other liabilities

	2018	2017
Accounts payable – trade	20,824	16,198
Liabilities to associated companies	146	136
Other liabilities	8,512	7,538
Total	**29,482**	**23,872**

Note 34 Advance payments received

	2018	2017
Margin calls received, energy trading	15,293	8,745
Total	**15,293**	**8,745**

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

	2018	2017
Accrued personnel-related costs	2,333	2,270[1]
Accrued expenses, CO_2 emission allowances	4,744	1,582
Accrued nuclear power-related fees and taxes	397	795
Accrued interest expense	2,134	2,203
Other accrued expenses	4,264	3,676
Deferred income and accrued expenses, electricity	2,359	2,110[1]
Other deferred income	254	525[1]
Total	**16,485**	**13,161**[1]

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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 forward exchange rate contracts and 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 62–69 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.

	2018		2017	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets at amortised cost				
Other non-current receivables	5,538	5,567	3,964	3,990
Short-term investments	3,283	3,283	3,627[1]	3,628[1]
Financial liabilities at amortised cost				
Hybrid Capital, non-current interest-bearing liability	19,832	19,957	19,118	19,799
Other non-current interest-bearing liabilities	43,981	48,886	54,335	61,155
Current interest-bearing liabilities	24,462	24,635	13,701	13,833

[1] The value has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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 2018

				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	5,599	–	5,599	2,294	3,290	15
Derivatives, commodity contracts	96,766	64,927	31,839	–	15,068	16,771
Total	**102,365**	**64,927**	**37,438**	**2,294**	**18,358**	**16,786**
Derivatives, not subject to offsetting	468	–	468	–	–	468
Total derivative assets			**37,906**			**17,254**

Assets 31 December 2017

				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	6,039	–	6,039	2,715	3,265	59
Derivatives, commodity contracts	51,751	34,855	16,896	–	8,568	8,328
Total	**57,790**	**34,855**	**22,935**	**2,715**	**11,833**	**8,387**
Derivatives, not subject to offsetting	895	–	895	–	–	895
Total derivative assets			**23,830**			**9,282**

Liabilities 31 December 2018

	Gross amounts of recognised financial liabilities	Gross amounts of recognised financial assets set off on the balance sheet	Net amounts of financial liabilities presented on the balance sheet	Related amounts not set off on the balance sheet: Financial assets, not intended to be settled net[1]	Related amounts not set off on the balance sheet: Cash collateral pledged	Net amount
Derivatives, financial operations	4,659	–	4,659	2,294	2,337	28
Derivatives, commodity contracts	98,637	64,927	33,710	–	2,330	31,380
Total	**103,296**	**64,927**	**38,369**	**2,294**	**4,667**	**31,408**
Derivatives, not subject to offsetting	2,918	–	2,918	–	–	2,918
Total derivative liabilities			**41,287**			**34,326**

Liabilities 31 December 2017

	Gross amounts of recognised financial liabilities	Gross amounts of recognised financial assets set off on the balance sheet	Net amounts of financial liabilities presented on the balance sheet	Related amounts not set off on the balance sheet: Financial assets, not intended to be settled net[1]	Related amounts not set off on the balance sheet: Cash collateral pledged	Net amount
Derivatives, financial operations	5,473	–	5,473	2,715	2,695	63
Derivatives, commodity contracts	52,255	34,855	17,400	–	2,176	15,224
Total	**57,728**	**34,855**	**22,873**	**2,715**	**4,871**	**15,287**
Derivatives, not subject to offsetting	3,125	–	3,125	–	–	3,125
Total derivative liabilities			**25,998**			**18,412**

[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 2018

	Level 1	Level 2	Level 3	Total
Assets				
Share in the Swedish Nuclear Waste Fund	42,038			**42,038**
Derivative assets	–	37,905	1	**37,906**
Short-term investments, cash equivalents, other shares and participations	15,471	13,361	–	**28,832**
Total assets	**57,509**	**51,266**	**1**	**108,776**
Liabilities				
Derivative liabilities	–	41,191	96	**41,287**
Total liabilities	**–**	**41,191**	**96**	**41,287**

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2017

	Level 1	Level 2	Level 3	Total
Assets				
Derivative assets	–	23,701	129	**23,830**
Short-term investments, cash equivalents, other shares and participations	10,700	6,592[1]	–	**17,292**
Total assets	**10,700**	**30,293**	**129**	**41,122**
Liabilities				
Derivative liabilities	–	25,900	98	**25,998**
Total liabilities	**–**	**25,900**	**98**	**25,998**

[1] The value has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

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 2018 of +/-10% would change the fair value of Vattenfall's electricity and fuel derivatives by -/+ SEK 664 million (-/+ 387) in other comprehensive income (hedge-accounted derivatives) and +/- SEK 4,987 million (+/-2,902) 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 CDM, virtual gas storage contracts and gas swing contracts. The net value as per 31 December 2018 has been calculated at SEK -95 million (31) 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 35 million (+/-15).

Financial instruments: Effects on income by category
Net gains (+)/losses(-) and interest income and expenses for financial instruments recognised in the income statement:

	2018			2017		
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	-5,866	2,077	56	-3,215	117	-34
Financial assets measured at amortised cost	33	–	–	100	1,138[2]	–
Financial liabilities at fair value through profit or loss	-131	106	–	-202	115[2]	–
Financial liabilities measured at amortised cost	-377	–	-3,246	312	–	-5,018
Total	**-6,341**	**2,183**	**-3,190**	**-3,005**	**1,370**	**-5,052**

[1] Exchange rate gains and losses are included in net gains/losses.
[2] The value has been adjusted compared with information previously published in Vattenfall's 2017 Annual and Sustainability Report.

Derivative assets

	Non-current portion, maturity 1-5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Financial contracts	1,074	1,549	3,718	3,817	**4,792**	**5,366**	808	673	**5,600**	**6,039**
Commodity and commodity-related contracts	9,156	7,241	3	194	**9,159**	**7,435**	23,147	10,356	**32,306**	**17,791**
Total	**10,230**	**8,790**	**3,721**	**4,011**	**13,951**	**12,801**	**23,955**	**11,029**	**37,906**	**23,830**

Derivative liabilities

	Non-current portion, maturity 1-5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Financial contracts	1,216	1,199	2,759	3,460	**3,975**	**4,659**	685	815	**4,660**	**5,474**
Commodity and commodity-related contracts	9,269	7,479	798	660	**10,067**	**8,139**	26,560	12,385	**36,627**	**20,524**
Total	**10,485**	**8,678**	**3,557**	**4,120**	**14,042**	**12,798**	**27,245**	**13,200**	**41,287**	**25,998**

Note 37 Specifications of the cash flow statement

Other, including non-cash items

	2018	2017
Undistributed results from participation in associated companies	-200	-287
Unrealised foreign exchange gains/losses	-22	107
Unrealised changes in values related to derivatives	152	3,494
Changes in the Swedish Nuclear Waste Fund	-1,597	-1,254
Changes in provisions	-1,908	-1,581
Other	-134	229
Total	**-3,709**	**708**

Dividends received totalled SEK 98 million (166).

Other investments in non-current assets

	2018	2017
Investments in intangible assets: non-current, including advance payments	-731	-609
Investments in property, plant and equipment, including advance payments	-21,405	-19,448
Total	**-22,136**	**-20,057**

Divestments

	2018	2017
Divestments of shares and participations	99	1,731
Divestments of intangible assets: non-current	28	–
Divestments of property, plant and equipment	1,442	1,064
Total	**1,569**	**2,795**

Note 38 Specifications of equity

Share capital
As of 31 December 2018 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 to the right:

	2018		2017	
	Cash flow	Income statement	Cash flow	Income statement
Within 1 year	-1,475	985	2	416
Between 1-5 years	1,243	1,297	-174	69
Total	**-232**	**2,282**	**-172**	**485**
Other	-17	–	-191	–
Total	**-249**	**2,282**	**-363**	**485**

The change in the reserve for hedges relating to Cash flow hedges – dissolved against income statement amounted to SEK 6,066 million (2,844), of which SEK 6,079 million (2,846) 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	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
EUR	76,999	71,333	30,354	30,392	46,645	40,941	45,521	39,345
DKK	3,450	3,692	–	–	3,450	3,692	3,598	3,216
GBP	11,946	15,897	4,471	6,491	7,475	9,406	8,925	6,850
Other currencies	–	–	–	–	–	–	–	104
Total	**92,395**	**90,922**	**34,825**	**36,883**	**57,570**	**54,039**	**58,044**	**49,515**

Note 39 Collateral

	2018	2017
Shares 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	5,103	2,235
Blocked bank funds as security for guarantees issued by bank	–	1
Total	**12,398**	**9,531**

In addition to the collateral mentioned above, Vattenfall has the following significant commitments:

To fulfil the requirements for security in the derivative market, in its energy trading and financial operations Vattenfall has pledged security to counterparties for the negative fair value of derivative positions. As per 31 December 2018 this security amounted to SEK 2,330 million (2,054) for energy trading and SEK 2,436 million (2,749) for the financial operations. The amounts are reported as assets on the balance sheet under Advance payments (Note 24 to the consolidated accounts, Advance payments paid) and under Short-term investments (Note 26 to the consolidated accounts, Short-term investments). The counterparties are obligated to repay this security to Vattenfall in the event the negative fair value decreases.

In a similar manner, Vattenfall's counterparties in energy trading and the financial operations have pledged security to Vattenfall. Security received as per 31 December 2018 amounted to SEK 15,293 million (8,745) for energy trading and SEK 3,370 million (3,312) 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

As per 31 December 2018 contingent liabilities amounted to SEK 993 million (1,086). The contingent liabilities mainly consist of the following:

- Vattenfall Wind Power Ltd., together with Scottish Power Renewables Ltd., takes part in developing up to 7,200 MW of wind capacity off the coast of East Anglia as part of The Crown Estate's Round Three wind programme, known as East Anglia Offshore Wind Ltd. The issued guarantees related to East Anglia Offshore Wind amounts to SEK 63 million per 31 December 2018
- Pending legal issues
- Pension commitments PRI
- Various contingent liabilities in relation to eSett Oy, the Swedish Nuclear Waste Fund, Forsmark, Ringhals and Nord Pool Spot A/S

In addition to the contingent liabilities mentioned above, Vattenfall has the following significant commitments.

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 2018, such compensation deliveries amounted to 0.8 TWh (0.8), for a value of approximately SEK 354 million (249).

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 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 2018 is as follows:

	Share %	Total liabilities	Of which reported in Vattenfall's consolidated statements
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	66.7	11,660	11,660
Kernkraftwerk Krümmel GmbH & Co. oHG	50.0	14,018	7,009
Kernkraftwerk Stade GmbH & Co. oHG	33.3	2,784	–
Kernkraftwerk Brokdorf GmbH & Co. oHG	20.0	17,019	–

Atomic liability in Sweden is strict and limited to 300 million Special Drawing Rights (SDRs) (rate 12,4768), corresponding to SEK 3,743 million (3,517), 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. The obligatory atomic liability insurance for this amount is issued by the 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 approximately 2025 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 2018 Vattenfall reported a provision of SEK 43 million (34) for its share of Period 1 activities.

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 2018, 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 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:

	2018			2017		
	Men	Women	Total	Men	Women	Total
Sweden	6,567	2,322	**8,889**	6,582	2,226	**8,808**
Denmark	230	60	**290**	204	51	**255**
Germany	5,142	1,421	**6,563**	5,332	1,505	**6,837**
Netherlands	2,577	822	**3,399**	2,623	852	**3,475**
UK	324	140	**464**	275	123	**398**
Other countries	229	76	**305**	198	70	**268**
Total	**15,069**	**4,841**	**19,910**	**15,214**	**4,827**	**20,041**

Average number of employees during the year, full-time equivalents:

	2018			2017		
	Men	Women	Total	Men	Women	Total
Sweden	6,563	2,271	**8,834**	6,536	2,201	**8,737**
Denmark	216	55	**271**	195	51	**246**
Germany	5,259	1,475	**6,734**	5,379	1,541	**6,920**
Netherlands	2,586	829	**3,415**	2,671	858	**3,529**
UK	300	137	**437**	198	90	**288**
Other countries	213	75	**288**	175	68	**243**
Total	**15,137**	**4,842**	**19,979**	**15,154**	**4,809**	**19,963**

Personnel costs:

	2018	2017
Salaries and other remuneration	13,931	12,989
Social security costs[1]	5,226	5,074
Total	**19,157**	**18,063**

[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

Amounts in SEK thousands	2018 Directors' fees and base salary including vacation pay	2018 Other remuneration and benefits	2018 Pension and severance costs	2017 Directors' fees and base salary including vacation pay	2017 Other remuneration and benefits	2017 Pension and severance costs
Board of Directors						
Lars G. Nordström, Chairman of the Board	768	–	–	710	–	–
Fredrik Arp, board member	441	–	–	395	–	–
Viktoria Bergman, board member	389	–	–	365	–	–
Håkan Erixon, board member	412	–	–	382	–	–
Tomas Kåberger, board member	414	–	–	382	–	–
Jenny Lahrin, board member	–	–	–	–	–	–
Åsa Söderström Jerring, board member	410	–	–	380	–	–
Fredrik Rystedt, board member	414	–	–	267	–	–
Employee representatives	–	–	–	–	–	–
Former board members[1]	–	–	–	399	–	–
Total, Board of Directors	**3,248**	**–**	**–**	**3,280**	**–**	**–**

Amounts in SEK thousands	2018 Directors' fees and base salary including vacation pay	2018 Other remuneration and benefits	2018 Pension and severance costs	2017 Directors' fees and base salary including vacation pay	2017 Other remuneration and benefits	2017 Pension and severance costs
Executive Group Management						
Magnus Hall, President and CEO	15,242	68	4,507	14,876	68	4,375
Anna Borg, CFO	6,625	92	2,020	4,710	–	1,357
Torbjörn Wahlborg, Head of Generation Business Area	7,309	67	2,149	7,129	67	2,107
Tuomo Hatakka, Head of Heat Business Area	13,132	94	2,821	12,242	92	2,651
Kerstin Ahlfont, Head of Human Resources Staff Function	4,283	18	1,274	4,225	18	1,249
Gunnar Groebler, Head of Wind Business Area	5,961	97	1,181	5,494	91	979
Anne Gynnerstedt, Head of Legal & CEO Office Staff Function and Secretary to the Board of Directors	4,802	54	1,438	4,917	55	1,410
Martijn Hagens, Head of Customers & Solutions Business Area	7,181	38	1,754[2]	6,487	135	774
Niek den Hollander, Head of Business Area Markets	7,181	4,524[3]	1,293	1,125	2,383[4]	202
Andreas Regnell, Head of Strategic Development Staff Function	4,575	74	1,354	4,541	42	1,327
Karin Lepasoon, Head of Communication	4,482	28	1,318	4,740	32	1,293
Other senior executives[2]						
Björn Linde, Head of Business Unit Nuclear Generation	2,941	77	878	2,700	58	799
Annika Viklund, Head of Distribution Business Area	4,791	34	1,474	4,768	30	1,405
Former senior executives						
Other former senior executives[1]	–	–	–	8,913	118	2,193
Total Executive Group Management and senior executives	**88,505**	**5,265**	**23,461**	**86,867**	**3,189**	**22,121**
Total Board of Directors, Executive Group Management and other senior executives	**91,753**	**5,265**	**23,461**	**90,147**	**3,189**	**22,121**

[1] See Vattenfall's 2017 Annual and Sustainability Report, pages 137–139.

[2] The pension cost was higher in 2018 due to a one-time adjustment in 2018 of payments made in 2016 and 2017.

[3] Of this amount, SEK 4,391 thousand pertains to payment of variable remuneration received in 2018 related to a previous position at Vattenfall.

[4] Of this amount, SEK 2,366 thousand pertains to payment of variable remuneration received in December 2017 related to a previous position at Vattenfall.

Board of Directors

As of 25 April 2018 the Annual General Meeting resolved in favour of increasing these fees by 8.0% and 6.1%, respectively, entailing that directors' fees for the period until the end of the next Annual General Meeting shall amount to SEK 740 thousand for the Chairman of the Board and SEK 350 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 90 thousand shall be paid to the respective committee chairs and SEK 70 thousand to the other committee members. For service on the Remuneration Committee, a fee of SEK 60 thousand shall be paid to the respective committee chairs 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 70–84.

President and Chief Executive Officer

Magnus Hall received a salary of SEK 15,242 thousand in 2018. The value of other benefits in 2018 amounted to SEK 68 thousand and pertains to the benefit of an annual pass with SJ. Magnus Hall has no variable salary component in his employment as President and CEO of Vattenfall AB.

Magnus Hall has a defined contribution pension solution. Premiums paid for 2018 totalled SEK 4,507 thousand, which corresponds to 30% of his 2018 salary excluding benefits. The retirement age for Vattenfall's CEO is 65 years. Magnus Hall's term of employment is until further notice, with a mutual notice period of six months. In the event Vattenfall serves notice,

Magnus Hall is entitled to a maximum of 18 months' severance pay after the notice period, but not longer than until his 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 Magnus Hall 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 to be paid out monthly. Magnus Hall'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 (11), the sum of salaries and other remuneration for 2018, including the value of company cars and other benefits, was SEK 70,617 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 2018, including the value of company cars and other benefits, was SEK 7,843 thousand.

Retirement benefits

Kerstin Ahlfont, Gunnar Groebler, Anne Gynnerstedt, Tuomo Hatakka, Andreas Regnell, Torbjörn Wahlborg, Björn Linde, Annika Viklund, Karin Lepasoon, Anna Borg and Niek den Hollander all 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.

[1] Based on new guidelines from the government. Contracts entered into before the Annual General Meeting 27 April 2017 have severance pay corresponding to a maximum of 18 months.

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 2018	Payment 2017
Type of programme:		
Profit-sharing	217,754	187,404
Short-term incentive programmes	294,599	219,837
Long-term incentive programmes	26,376	24,038

Note 43 Gender distribution among senior executives

	Women, %		Men, %	
	2018	2017	2018	2017
Gender distribution among board members	29	29	71	71
Gender distribution among other senior executives	36	36	64	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 2018 and associated receivables and liabilities as per 31 December 2018 are described below.

Kernkraftwerk Brokdorf GmbH & Co. oHG

This is a nuclear power plant from which Vattenfall purchases electricity. Purchases amounted to SEK 446 million (–1,536, of which SEK –1,760 million pertains to refund of Nuclear Fuel tax). Operating revenue from the company amounted to SEK 0 million (0). Vattenfall's interest expense to the company amounted to SEK 2 million (23). Loan liabilities amounted to SEK 156 million (0).

GASAG Berliner Gaswerke AG

The company sells, distributes and stores natural gas in the Berlin area. Vattenfall received SEK 282 million (213) in operating revenue from the company, and purchases from the company totalled SEK 13 million (12). Trade liabilities amounted to SEK 0 million (98). Vattenfall's part of contingent liabilities of the company amounted to SEK 123 million (127).

Note 45 Events after the balance sheet date

Vattenfall has acquired 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.

The storm Alfrida, which hit Sweden's Roslagen region and the Stockholm archipelago on the night of January 1, had severe consequences and caused major damage to the electricity grid. At most, 65,000 Vattenfall customers experienced power outages. The last customers had their electricity service restored on 23 January. Repair work will continue for several months.

On 5 March 2019 the City of Berlin announced that its municipal energy company Berlin Energie will be awarded the new concession for the electricity grid in Berlin. Vattenfall has had the concession rights, through its subsidiary Stromnetz Berlin GmbH and previously Bewag, for more than 20 years. Stromnetz Berlin GmbH today owns and operates the electricity grid in Berlin, which among other things includes around 35,000 kilometres distribution network and more than 2.3 million network customers. Vattenfall will analyse the selection statement in advance of a decision about our further course of action.

On 8 March 2019 the Dutch Government announced that Vattenfall's Hemweg-8 power plant in Amsterdam should stop using coal as a fuel for electricity production by the end of 2019. This will mean that the Hemweg-8 power plant will have to stop operating without the previously announced transitional period of 5 years. The Dutch Government has indicated that the level of the compensation for losses will be further discussed with Vattenfall.

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 2018
A condensed income statement and balance sheet for the Parent Company are presented below.

- Net sales amounted to SEK 42,450 million (31,271).
- Profit before appropriations and income taxes was SEK 1,400 million (6,397).
- Earnings were negatively affected by higher futures prices for the unrealized derivatives compared with the same period a year ago. Higher electricity generation and higher spot prices have had a positive effect on earnings. The result from participations in subsidiaries was SEK 3,389 million (4,855), of which SEK 2,904 million pertains to a dividend from N.V. Nuon Energi. The remaining amount consists of dividends, impairment losses and the result from liquidations. The change in other financial expenses is mainly attributable to currency effects.
- Changed tax rules in Sweden, have required a remeasurement of Vattenfall AB's deferred tax assets, with an earnings effect of SEK –80 million.
- The balance sheet total was SEK 278,819 million (255,092).
- Investments during the period amounted to SEK 1,318 million (5,204), of which SEK 4,000 million of the amount for 2017 pertains to a shareholder contribution to Vattenfall Vindkraft AB.
- Cash and cash equivalents, and Short-term investments amounted to SEK 39,798 million (23,621). The increase 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 2,000 million (0).

Parent Company income statement

Amounts in SEK million, 1 January–31 December	Note	2018	2017[1]
Net sales	5, 6	42,450	31,271
Cost of purchases	6	-34,751	-20,370
Other external expenses		-3,745	-3,246
Personnel expenses		-2,053	-1,933
Other operating incomes and expenses, net		71	564
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	13, 14	**1,972**	**6,286**
Depreciation, amortisation and impairments	7	-501	-496
Operating profit (EBIT)		**1,471**	**5,790**
Result from participations in subsidiaries	8	3,389	4,855
Other financial income	9	1,403	1,445
Other financial expenses	10	-4,863	-5,693
Profit before appropriations and income taxes		**1,400**	**6,397**
Appropriations	11	919	1,037
Profit before income taxes		**2,319**	**7,434**
Income taxes	12	135	-607
Profit for the year		**2,454**	**6,827**

[1] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Parent Company statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2018	2017[1]
Profit for the year	2,454	6,827
Total other comprehensive income	–	–
Total comprehensive income for the year	**2,454**	**6,827**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Parent Company balance sheet

Amounts in SEK million	Note	31 December 2018	31 December 2017[1]
Assets			
Non-current assets			
Intangible assets: non-current	15	193	187
Property, plant and equipment	16	4,563	4,277
Shares and participations	17	149,779	149,914
Deferred tax assets	12	1,921	1,040
Other non-current receivables	18	63,366	59,388
Total non-current assets		**219,822**	**214,806**
Current assets			
Inventories	19	269	221
Intangible assets: current		337	246
Current receivables	20	17,949	16,092
Current tax assets	12	644	106
Short-term investments	21	22,129	17,205
Cash and cash equivalents	22	17,669	6,416
Total current assets		**58,997**	**40,286**
Total assets		**278,819**	**255,092**
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		1,341	1,322
Non-restricted equity			
Retained earnings		46,163	41,355
Profit for the year		2,454	6,827
Total equity		**94,532**	**94,078**
Untaxed reserves	11	**11,753**	**12,284**
Provisions	23	**5,256**	**5,194**
Non-current liabilities			
Hybrid capital	24	19,837	19,126
Other interest-bearing liabilities	24	39,171	50,401
Other noninterest-bearing liabilities	25	11,196	9,895
Total non-current liabilities		**70,204**	**79,422**
Current liabilities			
Other interest-bearing liabilities	24	86,207	57,308
Other noninterest-bearing liabilities	26	10,867	6,806
Total current liabilities		**97,074**	**64,114**
Total equity, provisions and liabilities		**278,819**	**255,092**

[1] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

See also information on Collateral (Note 28), Contingent liabilities (Note 29) and Commitments under consortium agreements (Note 30), in the notes to the Parent Company accounts.

Parent Company cash flow statement

Amounts in SEK million, 1 January–31 December	Note	2018	2017[1]
Operating activities			
Operating profit before depreciation, amortisation and impairment losses		1,972	6,286
Tax paid		-1,284	-1,308
Interest received		1,452	1,513
Interest paid		-3,110	-4,946
Other, incl. non-cash items	34	6,101	412
Funds from operations (FFO)		**5,131**	**1,957**
Changes in inventories		-48	34
Changes in operating receivables		-6,416	2,259
Changes in operating liabilities		2,696	-1,366
Cash flow from changes in operating assets and operating liabilities		**-3,768**	**927**
Cash flow from operating activities		**1,363**	**2,884**
Investing activities			
Investments in subsidiaries		-364	-4,289
Investments in associated companies and other shares and participations		-147	-66
Other investments in non-current assets		-807	-849
Total investments		**-1,318**	**-5,204**
Divestments		383	358
Cash flow from investing activities		**-935**	**-4,846**
Cash flow before financing activities		**428**	**-1,962**
Financing activities			
Changes in short-term investments		-4,924	1,552
Loans raised		26,933	12,923
Amortisation of other debts		-14,118	-31,262
Dividend paid to owner		-2,000	–
Effect of early termination of swaps related to financing activities		-122	105
Amortisation received from subsidiaries		–	5,982
Dividend received from subsidiaries		3,670	230
Group contributions received/paid		1,386	1,894
Cash flow from financing activities		**10,825**	**-8,576**
Cash flow for the year		**11,253**	**-10,538**
Cash and cash equivalents			
Cash and cash equivalents at start of year		6,416	16,954
Cash flow for the year		11,253	-10,538
Cash and cash equivalents at end of year		**17,669**	**6,416**

[1] Certain amounts for 2017 have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

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 2017	6,585	37,989[2]	1,316	43,619	**89,509**
Transitional effect of adoption of new accounting rules (IFRS9, 15)	–	–	–	-2,258	**-2,258**
Fund for development costs	–	–	6[3]	-6[3]	**–**
Profit for the year	–	–	–	6,827	**6,827**
Balance carried forward 2017	**6,585**	**37,989**	**1,322**	**48,182**	**94,078**
Dividend paid to owners	–	–	–	-2,000	**-2,000**
Fund for development costs	–	–	18[3]	-18[3]	**–**
Profit for the year	–	–	–	2,454	**2,454**
Balance carried forward 2018	**6,585**	**37,989**	**1,340**	**48,618**	**94,532**

[1] Other reserves consist of Statutory reserve SEK 1,286 million (1,286) and Fund for development costs SEK 54 million (36).

[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 2018 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 2018 Annual Report was approved in accordance with a decision by the Board of Directors on 19 March 2019. 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 11 April 2019.

Note 2 Proposed distribution of profits

The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 48,617,698,593. 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	2,000,000,000
To be carried forward	46,617,698,593
Total	**48,617,698,593**

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
As described in Note 3 to the consolidated accounts, new accounting standards apply as from 2018: IFRS 9 – "Financial Instruments" and IFRS 15 – "Revenue from Contracts with Customers". With respect to IFRS 9 the Parent Company has stopped applying the exception provided in RFR 2 and has switched over to reporting in accordance with IFRS 9. IFRS 15 applies without the exception provided in RFR 2, entailing that the Group's changes also have an effect on the Parent Company. The areas that remain and that are affected in the Parent Company are BA Customers & Solutions and BA Heat. The changes in IFRS 9 and 15 entail that the Parent Company's financial statements for the comparison year 2017 have been recalculated. The combined effect on the balance sheet total is an increase by SEK 12.3 billion (of which IFRS 9 SEK 12.2 billion) as per 1 January 2017 and an increase by SEK 9.4 billion (of which IFRS 9 SEK 9.3 billion) as per 31 December 2017. The effect on profit for the year for 2017 is a decrease by SEK 0.1 million (of which IFRS 9 SEK 0.1 million).

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 17 to the Parent Company, Shares and participations.

Significant accounting policies applicable as from 1 January 2019
As from 2019, no changed accounting standards and interpretations are considered to have any material effect on the Parent Company's financial statements. The Parent Company will report leasing in accordance with the exception rule for IFRS 16 provided in RFR 2, which entails no change compared with the current year.

Note 4 Exchange rates

See Note 5 to the consolidated accounts, Exchange rates.

Note 5 Net sales

Net sales per geographical area	2018	2017[1]
Nordic	33,162	27,378
Germany	9,116	3,488
Netherlands	402	352
Other countries	-230	53
Total	**42,450**	**31,271**

Net sales for products and services	2018	2017
Sales of electricity	36,459	26,205
Sale of heat and steam	1,947	1,909
Service and consulting	1,922	1,744
Total Revenues from contracts with customers	**40,328**	**29,858**
Other Revenues	2,122	1,413
Total	**42,450**	**31,271**

Contract balances	2018	2017
Contract assets	2	11
– of which, released as cost from opening balance during the year	–	–
Contract liabilities	213	218
– of which, released as revenue from opening balance during the year	-12	–

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 6 Intra Group transactions

Of the Parent Company's total income from sales and total purchase costs, transactions with subsidiaries account for 29% (21%) of sales and 64% (40%) of purchase costs.

Note 7 Impairment losses

No impairment was recognised of intangible non-current assets or of property, plant and equipment 2018 or 2017 financial years.

Note 8 Result from participations in subsidiaries

	2018	2017
Dividends	3,670	230
Impairment losses[1]	-482	–
Capital gains/losses on divestments	201	132
Reversed debt to subsidiaries	–	4,493
Total	**3,389**	**4,855**

[1] The impairment losses pertain to dividend received from Vattenfall A/S..

Note 9 Other financial income

	2018	2017
Interest income from subsidiaries	1,341	1,306
Other interest income	62	139
Total	**1,403**	**1,445**

Note 10 Other financial expenses

	2018	2017[1]
Interest expenses to subsidiaries	39	32
Other interest expenses	3,222	5,171
Foreign exchange gains and losses, net	1,602	490
Total	**4,863**	**5,693**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 11 Appropriations and untaxed reserves

Appropriations

	2018	2017
Group contributions paid	-2,625	-2,774
Group contributions received	3,013	2,800
Provision/Dissolution of untaxed reserves, net	531	1,011
Total	**919**	**1,037**

Untaxed reserves

	Balance brought forward	Provision (+)/ dissolution (-)	Balance carried forward
Accelerated depreciation	2,272	-287	1,985
Tax allocation reserves for 2012-2018 tax years	10,012	-244	9,768
Total	**12,284**	**-531**	**11,753**

Note 12 Income taxes

The reported tax income/tax expense is broken down as follows:

	2018	2017[1]
Current tax	-746	-681
Deferred tax	881	74
Total	**135**	**-607**

The tax effect of the standard interest on tax allocation reserves amounts to SEK 8 million (9).

The difference between the nominal Swedish tax rate and the effective tax rate is explained as follows:

	2018		2017[1]	
	%		%	
Profit before tax		2,319		7,434
Swedish income tax rate at 31 December	22.0	-510	-22.0	-1,636
Current tax adjustment attributable to previous years	0.2	-4	0.0	3
Capital gains, non-taxable	-1.9	44	0.0	–
Non-taxable income	-34.8	808	13.8	1,045
Impairment losses, non-deductible	4.6	-106	0.0	–
Interest expence, non-deductible	0.5	-13	0.0	–
Other non-deductible expenses	0.2	-4	-0.3	-19
Tax rate change	3.4	-80	0.0	–
Effective tax rate in Sweden	**-5.8**	**135**	**-8.5**	**-607**

Balance sheet reconciliation – Deferred tax:

	Balance brought forward		Changes via income statement		Balance carried forward	
	2018	2017[1]	2018	2017[1]	2018	2017[1]
Non-current assets	-1,425	-1,914	1,317	489	-108	-1,425
Current assets	-401	-459	-834	58	-1,235	-401
Provisions	126	153	-15	-27	111	126
Other non-current liabilities	2,119	2,382	-1,148	-263	971	2,119
Current liabilities	621	804	1,561	-183	2,182	621
Total	**1,040**	**966**	**881**	**74**	**1,921**	**1,040**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 13 Leasing

Leasing expenses

Future payment commitments, as of 31 December 2018 for leasing contracts and rental contracts are broken down as follows:

	Operating leases
2019	57
2020-2023	563
2024 and beyond	–
Total	**620**

Leasing expenses for the year amounted to SEK 83 million (71).

Leasing revenues

In early 2017 the heating plant in Munksund was sold. As a result of this sale the Parent Company no longer receives any leasing revenue.

Note 14 Auditors' fees

Annual audit assignment:

Annual audit assignment	2018	2017
EY	7	7

Auditing activities besides the annual audit assignment	2018	2017
EY	2	1

Note 15 Intangible assets: non-current

	2018			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	356	936	–	**1,292**
Investments	22	63	–	**85**
Divestments/disposals	–	-13	–	**-13**
Accumulated cost carried forward	**378**	**986**	**–**	**1,364**
Amortisation according to plan				
Amortisation brought forward	-193	-796	–	**-989**
Amortisation for the year	-4	-75	–	**-79**
Divestments/disposals	–	13	–	**13**
Accumulated amortisation according to plan carried forward	**-197**	**-858**	**–**	**-1,055**
Impairment losses				
Impairment losses brought forward	-116	–	–	**-116**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**65**	**128**	**–**	**193**

	2017[1]			
	Capitalised development costs	Concessions and similar rights and cost to obtain a contract	Renting and similar rights	Total
Cost				
Cost brought forward	342	851	68	**1,261**
Investments	8	90	–	**98**
Transfer from construction in progress	5	–	–	**5**
Divestments/disposals	–	-4	-68	**-72**
Reclassifications	1	-1	–	**–**
Accumulated cost carried forward	**356**	**936**	**–**	**1,292**
Amortisation according to plan				
Amortisation brought forward	-189	-712	–	**-901**
Amortisation for the year	-4	-86	–	**-90**
Divestments/disposals	–	2	–	**2**
Accumulated amortisation according to plan carried forward	**-193**	**-796**	**–**	**-989**
Impairment losses				
Impairment losses brought forward	-116	–	-68	**-184**
Divestments/disposals	–	–	68	**68**
Accumulated impairment losses carried forward	**-116**	**–**	**–**	**-116**
Residual value according to plan carried forward	**47**	**140**	**–**	**187**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

At 31 December 2018 there were no contractual commitments for the acquisition of intangible non-current assets.

Note 16 Property, plant and equipment

	2018				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,182	8,091	509	865	**10,647**
Investments	–	–	96	626	**722**
Transfer from construction in progress	11	294	13	-318	**–**
Divestments/disposals	–	-8	-176	–	**-184**
Accumulated cost carried forward	**1,193**	**8,377**	**442**	**1,173**	**11,185**
Depreciation according to plan					
Depreciation brought forward	-695	-5,331	-341	–	**-6,367**
Depreciation for the year	-29	-305	-88	–	**-422**
Divestments/disposals	–	7	163	–	**170**
Accumulated depreciation according to plan carried forward	**-724**	**-5,629**	**-266**	**–**	**-6,619**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Accumulated impairment losses carried forward	**-1**	**-2**	**–**	**–**	**-3**
Residual value according to plan carried forward	**468**	**2,746**	**176**	**1,173**	**4,563**
Accumulated accelerated depreciation	–	-1,985	–	–	**-1,985**
Carrying amount	**468**	**761**	**176**	**1,173**	**2,578**

	2017				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,212	8,278	440	508	**10,438**
Investments	–	–	102	649	**751**
Transfer from construction in progress	52	231	5	-292	**-4**
Divestments/disposals	-84	-418	-39	–	**-541**
Accumulated cost carried forward	**1,180**	**8,091**	**508**	**865**	**10,644**
Depreciation according to plan					
Depreciation brought forward	-716	-5,271	-297	–	**-6,284**
Depreciation for the year	-27	-300	-79	–	**-406**
Divestments/disposals	48	240	38	–	**326**
Accumulated depreciation according to plan carried forward	**-695**	**-5,331**	**-338**	**–**	**-6,364**
Impairment losses					
Impairment losses brought forward	-1	-2	–	–	**-3**
Accumulated impairment losses carried forward	**-1**	**-2**	**–**	**–**	**-3**
Residual value according to plan carried forward	**484**	**2,758**	**170**	**865**	**4,277**
Accumulated accelerated depreciation	–	-2,272	–	–	**-2,272**
Carrying amount	**484**	**486**	**170**	**865**	**2,005**

At 31 December 2018 there were no contractual commitments for the acquisition of property, plant and equipment.

Note 17 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

	2018				2017			
	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	149,850	56	8	**149,914**	145,571	13	2	**145,586**
Investments	24	11	–	**35**	1	41	6	**48**
Shareholder contributions	340	29	102	**471**	4,000	19	–	**4,019**
New share issue	–	5	–	**5**	288	–	–	**288**
Divestments	–	–	–	**–**	-10	–	–	**-10**
Profit participations in associated companies	–	3	–	**3**	–	-17	–	**-17**
Liquidation	-167	–	–	**-167**	–	–	–	**–**
Impairment losses	-482	–	–	**-482**	–	–	–	**–**
Balance carried forward	**149,565**	**104**	**110**	**149,779**	**149,850**	**56**	**8**	**149,914**

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 18 Other non-current receivables

	2018					2017[1]				
	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	52,180	5	6,473	730	**59,388**	58,162	–	8,708	736	**67,606**
New receivables	5,126	24	–	11	**5,161**	–	5	–	9	**14**
Payments received	–	–	–	–	**–**	-5,982	–	–	–	**-5,982**
Derivative changes	–	–	-1,149[2]	–	**-1,149**	–	–	-2,235[2]	–	**-2,235**
Other changes	3	–	–	-37	**-34**	–	–	–	-15	**-15**
Balance carried forward	**57,309**	**29**	**5,324**	**704**	**63,366**	**52,180**	**5**	**6,473**	**730**	**59,388**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

[2] Net change and measurement at fair value.

Note 19 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 20 Current receivables

	2018	2017[1]
Advance payments paid	123	116
Accounts receivable – trade	1,866	1,489
Receivables from subsidiaries	9,093	8,411
Receivables from associated companies	1	–
Other receivables	2,106	1,522
Derivative assets	1,456	1,795
Prepaid expenses and accrued income	3,304	2,759
Total	**17,949**	**16,092**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Age analysis of current receivables

The collection period is normally 30 days.

	2018			2017		
	Receivables gross	Impaired receivables	Receivables net	Receivables gross	Impaired receivables	Receivables net
Accounts receivable - trade						
Not due	1,719	–	**1,719**	1,416	–	**1,416**
Past due 1–30 days	126	–	**126**	63	–	**63**
Past due 31–90 days	5	–	**5**	8	–	**8**
Past due >90 days	34	18	**16**	39	37	**2**
Total	**1,884**	**18**	**1,866**	**1,526**	**37**	**1,489**

Receivables from subsidiaries, Receivables from associated companies, and Other receivables include no receivables that are due for payment.

Note 21 Short-term investments

	2018	2017[1]
Fixed-income investments	19,693	14,456
Margin calls, financing activities[2]	2,436	2,749
Total	**22,129**	**17,205**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

[2] With respect to pledged assets, see Note 28 to the Parent Company accounts, Collateral.

Note 22 Cash and cash equivalents

	2018	2017[1]
Cash and bank balances	8,891	3,766
Cash equivalents	8,778	2,650
Total	**17,669**	**6,416**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 23 Provisions

Accounting policies

The Parent Company's defined benefit pension plans are reported in accordance with the simplification rule. For the pension plans that are subject to the Act on Safeguarding of Pension Obligations, ("Tryggandelagen"), the calculation of future obligations to pay pensions is made in accordance with the stipulations of the Act. For other pension plans, the obligations are calculated on the basis of actuarial principles. See also Note 30 to the consolidated accounts, Pension provisions.

Financial information

	2018	2017
Pension provisions[1,2]	4,205	4,160
Personnel-related provisions for non-pension purposes	483	487
Provisions for environmental measures/undertakings	40	52
Other provisions	528	495
Total	**5,256**	**5,194**
[1] Of which, information registered by PRI	3,794	3,718
[2] Of which, covered by credit insurance with FPG/PRI	4,201	4,153

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 24 Other interest-bearing liabilities

	Non-current portion maturity 1–5 years		Non-current portion maturity >5 years		Total non-current portion		Current portion		Total	
	2018	**2017**[1]	**2018**	**2017**[1]	**2018**	**2017**[1]	**2018**	**2017**[1]	**2018**	**2017**[1]
Bond issues	12,902	22,161	17,165	17,705	**30,067**	**39,866**	13,088	5,494	**43,155**	**45,360**
Commercial paper	–	–	–	–	**–**	**–**	7,408	4,192	**7,408**	**4,192**
Liabilities to credit institutions	1,401	2,256	–	–	**1,401**	**2,256**	795	149	**2,196**	**2,405**
Liabilities to subsidiaries	576	596	–	–	**576**	**596**	54,771	40,905	**55,347**	**41,501**
Derivative debts	5,207	4,220	1,920	3,463	**7,127**	**7,683**	6,550	2,954	**13,677**	**10,637**
Other liabilities (margin calls within financing activities)[2]	–	–	–	–	**–**	**–**	3,595	3,614	**3,595**	**3,614**
Total interest-bearing liabilities excluding Hybrid capital	**20,086**	**29,233**	**19,085**	**21,168**	39,171	50,401	**86,207**	**57,308**	125,378	107,709
Hybrid capital[3]	9,582	6,000	10,255	13,126	**19,837**	**19,126**	–	–	**19,837**	**19,126**
Total	**29,668**	**35,233**	**29,340**	**34,294**	59,008	69,527	**86,207**	**57,308**	145,215	126,835

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018See Note 3 to the Parent Company accounts, Accounting policies.

[2] With respect to pledged assets, see Note 28 to the Parent Company accounts, Collateral.

[3] See Note 29 to the consolidated accounts, Interest-bearing liabilities and related financial derivatives.

Note 25 Other noninterest-bearing liabilities (non-current)

	2018	**2017**[1]
Liabilities to subsidiaries	10,921	9,643
Contract debts	212	206
Other liabilities	63	46
Total	**11,196**	**9,895**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

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 12 million (19) falls due after more than five years.

Note 26 Other noninterest-bearing liabilities (current)

	2018	**2017**[1]
Accounts payable – trade	412	651
Liabilities to subsidiaries	5,775	2,800
Other liabilities	1,008	431
Accrued expenses and deferred income	3,672	2,924
Total	**10,867**	**6,806**

Breakdown of accrued expenses and deferred income:

	2018	**2017**
Accrued personnel-related costs	298	306
Accrued interest expenses	1,638	1,760
Other accrued expenses	1,095	361
Deferred income and accrued expenses, electricity	609	483
Other deferred income	32	14
Total	**3,672**	**2,924**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 27 Financial instruments by measurement category

The measurement categories for assets and liabilities below correspond to the categories described in Note 36 to the consolidated accounts, Financial instruments by measurement category, offsetting of financial assets and liabilities, and financial instruments' effects on income.

Presented below are assets and liabilities where the carrying amount differs from the fair value.

	2018		2017	
	Carrying amount	Fair value	Carrying amount[1]	Fair value[1]
Financial assets at amortised cost				
Other non-current receivables	63,366	66,798	59,388	59,656
Short-term investments	22,129	22,129	17,205	17,207
Total	**85,495**	**88,927**	**76,593**	**76,863**
Financial liabilities at amortised cost				
Hybrid capital	19,837	19,957	19,126	19,798
Other non-current interest-bearing liabilities	39,171	44,618	50,401	57,400
Other non-current interest-bearing liabilities	86,207	86,394	57,308	57,313
Total	**145,215**	**150,969**	**126,835**	**134,511**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

Note 28 Collateral

Collateral and pledged assets (given)

	2018	2017
Shares pledged to the Swedish insurance company PRI Pensionsgaranti as security for credit insurance for pension obligations in Vattenfall's Swedish operations	7,295	7,295
Pledged security to counterparties (derivative market)[1]	2,435	2,749
Blocked bank funds as security for trading on Nord Pool, ICE and EEX	4,822	2,017
Blocked bank funds as security for guarantees issued by bank	–	1
Total	**14,552**	**12,062**

Collateral and pledged assets (received)

	2018	2017
Pledged security from counterparties (derivative market)[1]	3,370	3,312

[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.

Note 29 Contingent liabilities

Guarantees pertaining to:

	2018	2017
Swedish Nuclear Waste Fund	15,448	15,448
Contractor guarantees provided by order of subsidiaries	5,974	10,038
Guarantees provided as collateral for the subsidiaries within Vattenfall Energy Trading's energy trading	8,712	5,760
Other contingent liabilities	11,793	11,497
Total	**41,927**	**42,743**

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. However, as the wording of the new guarantees have not been finally approved by the government, they have not yet been issued. Instead, the previously existing guarantees for the lower amounts (15,448, see annual report 2017 for details) are still valid. 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 22 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 5,974 million (10,038), mainly attributable to obligations in the Wind Business Area, which decreased significantly in 2018.

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 42,083 million (36,099) for energy trading conducted by the subsidiary Vattenfall Energy Trading. As per 31 December 2018 a total of SEK 8,712 million (5,760) of these guarantees had been utilised, which is included in the reported amount of contingent liabilities.

Other contingent liabilities

Other contingent liabilities SEK 11,793 million (11,497) consists mainly of guarantees that Vattenfall AB has issued for the Customers & Solutions and Wind Business Areas (for the latter, see Note 44 to the consolidated accounts, Contingent liabilities), and pension obligations, which amounted to SEK 1,382 million (1,294).

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 2025 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 2018 Vattenfall reported a provision of SEK 43 million (34) for its share of Period 1 activities.

Atomic liability in Sweden is strict and limited to 300 million Special Drawing Rights (SDRs) (rate 12,4768), corresponding to about SEK 3,743 million (3,517), 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.

Note 30 Commitments under consortium agreements

See note 41 to the consolidated accounts, Commitments under consortium agreements.

Note 31 Average number of employees and personnel costs

Average number of employees

	2018			2017		
	Men	Women	Total	Men	Women	Total
Sweden	1,106	537	**1,643**	1,129	530	**1,659**

Personnel costs

	2018	2017
Salaries and other remuneration	1,195	1,199
Social security expenses	829	778
– of which pension costs[1]	274	322
Total	**2,024**	**1,977**

[1] SEK 4,5 million (15) of the pension costs are attributable to senior executives, i.e., the current and former Presidents and Executive Vice Presidents. The company's outstanding pension obligations attributable to these executives amounted to SEK 0 million (0).

None of the board members receive any pension benefits in connection with their board duties.

Salaries and other remuneration:

	2018			2017		
	Senior executives[1]	Other employees	Total	Senior executives[1]	Other employees	Total
Sweden	65	1,130	**1,195**	73	1,126	**1,199**

[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 32 Gender distribution among senior executives

See Note 43 to the consolidated accounts, Gender distribution among senior executives.

Note 33 Related party disclosures

See Note 44 to the consolidated accounts, Related party disclosures.

Note 34 Specification of the cash flow statement

Other, including non-cash items

	2018	2017[1]
Realised foreign exchange gains/losses	3,028	473
Changes in provisions	62	-113
Other	3,011[2]	52[2]
Total	**6,101**	**412**

Financial liabilities

	Current	Non-current
Financial liabilities at 1 January 2017[1]	**64,688**	**68,971**
Cashflow	-10,938	-8,485
Non-cash effecting currency effects	717	264
Other non-cash flow effecting items	2,841	8,777
Financial liabilities at 31 December 2017[1]	**57,308**	**69,527**
Cashflow	12,276	-756
Non-cash effecting currency effects	1,356	2,002
Effect of unrealized gains/losses on derivatives	4,192	-658
Other non-cash flow effecting items	11,075	-11,107
Financial liabilities at 31 December 2018	**86,207**	**59,008**

[1] The amount has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 3 to the Parent Company accounts, Accounting policies.

[2] Including the value of unrealiased derivatives in operating profit before depreciation, amortisation and impairment losses (EBITDA), totalling SEK 3,041 million (-53).

Note 35 Events after the balance sheet date

See Note 45 to the consolidated accounts, Events after the balance sheet date.

Auditor's Report

To the general meeting of the shareholders of Vattenfall AB, corporate identity number 556036-2138

Report on the annual accounts and consolidated accounts

Opinions

We have audited the annual accounts and consolidated accounts of Vattenfall AB (publ) except for the corporate governance statement on pages 70–84 for the year 2018. The annual accounts and consolidated accounts of the company are included on pages 2–5, 8–11, 62–147 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 2018 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 2018 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 70–84. 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, 2018 reported value of fixed tangible and intangible assets amounts to SEK 256,883 million, which equals 55.5 % of the Group´s total assets. Of the carrying value, SEK 13,791 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 individual 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 and in Note 9 the main assumptions, such as future market prices of electricity, fuel and CO_2 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 2018, the company wrote down a total of SEK 136 million in Business Area 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 calculation. 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, 2018 the provisions for future expenses of nuclear power operations amounts to SEK 77,688 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, 6–7, 12–61 and 153–181. 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 2018 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 70–84 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 2–7 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, 19 March 2019
Ernst & Young AB

Staffan Landén
Authorized Public Accountant

Non-financial information

Contents

Our target is to make fossil-free living possible within one generation and to do so responsibly, while maintaining our commitment to respect the environment and human rights throughout our value chain, from our suppliers to our customers and the communities we work in. The chapters on Strategy and Operating Segments describe how we implement this in our businesses, and the following sections provide additional details and supporting context.

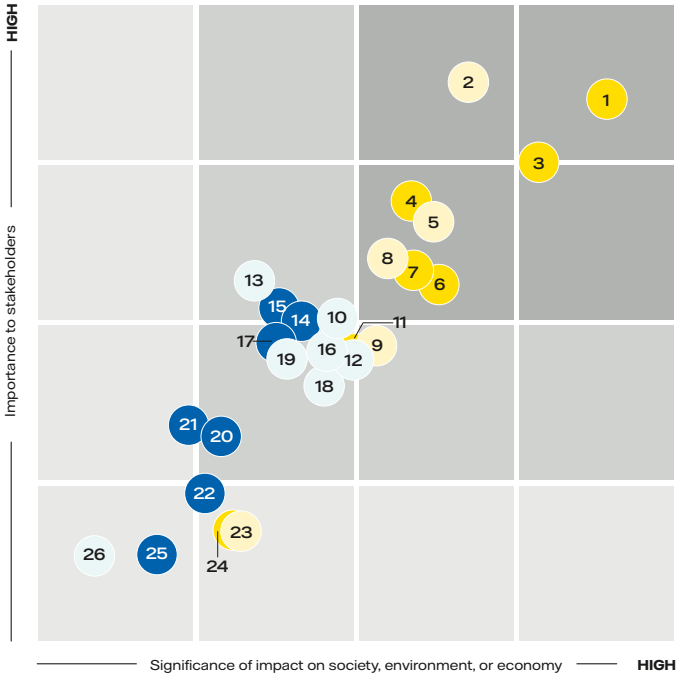
Materiality analysis

Between April and June 2018 we collected feedback from more than 2,700 stakeholders representing all of Vattenfall's various stakeholder groups and countries of operation. We conducted panels, surveys, and interviews, both internally and externally, in order to ensure we understand our stakeholders' expectations on us, our strategy, and our sustainability focus areas. We then mapped the results against our four strategic objectives and our prioritised Sustainable Development Goals (SDGs) in order to benchmark alignment.

The results confirm that Vattenfall's strategic direction reflects topics stakeholders consider most important and to which Vattenfall can make the greatest positive global and local contributions. The results also reflect the view that our key business focus areas, such as achieving a fossil-free production portfolio and enabling sustainable consumption for our customers, are most impactful, while topics linked to operations and employees are considered as hygiene factors fundamental to achieving our business goals.

Eight material topics emerged, of which three clearly distinguished themselves as the most material (see matrix, numbers 1-8, below).

Materiality matrix



- Empowered and Engaged People
- High Performing Operations
- Leading towards Sustainable Production
- Leading towards Sustainable Consumption

1. Reducing CO_2 and fossil fuel dependency, see pages 36-39, 42-49
2. Providing affordable energy[1], see pages 17, 43
3. Increasing renewables, see pages 42-43
4. Protecting nature and species (biodiversity)[1], see pages 160-161
5. Developing new, sustainable heat & electricity services and solutions (incl. digitally), see pages 32-33, 46-47
6. Minimising emissions (other than CO_2) into air, water and land, see page 162
7. Safe disposal of nuclear waste, see pages 28-29
8. Providing affordable and stable grid infrastructure[1], see pages 50-53
9. Developing decentralised solutions (heat pumps, solar installations, battery storage)
10. Responsible procurement and sourcing of fuels (respecting human rights in the value chain)
11. Providing smart and flexible grid infrastructure for future needs
12. Ensuring efficiency in own operations, including energy/fuel and water use
13. Openness and transparency
14. Ensuring decent work and working conditions, including fair pay and working hours
15. Fair and ethical business practices, including anti-corruption and bribery
16. Ensuring sustainable lifecycle of operations
17. Ensuring occupational safety, health and well-being
18. Sustainability in restructuring, investment decisions
19. Efficient waste management
20. Competence development and retention
21. Employee engagement
22. Promoting diversity and gender equality, including to special groups such as disabled, youth, and immigrants
23. Developing solutions in the field of e-mobility
24. Engaging with local communities (i.e., through dialogue)
25. Supporting good causes, including local sponsorships
26. Transparent tax management

[1] More emphasised than in 2016.

Stakeholders

Active dialogue with our stakeholders
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 assets. Moreover, 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 is affecting 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.

As a company with both local and global impacts, we have countless stakeholders. They include employees at our power plants, families that are kept warm by the heat we produce, and investors who help finance our operations. They are our owner, authorities and city partners we work with to set climate ambitions, our customers and industrial partners with and for whom we develop new solutions, the NGOs that help us address critical environmental and social issues in our value chain, and many more. 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, valid throughout the Group, ensure that the various local interests are taken into account 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.

Feedback
While the updated materiality analysis confirmed our strategy is in line with stakeholder expectations, priorities among certain stakeholders and stakeholder groups vary, and we must strive to achieve balance between sometimes conflicting priorities.

For example, while both business and retail customers desire renewable or low-CO_2 offerings, they also clearly demonstrate that affordability of energy is still priority number one. We recognise this and seek to strike the correct balance to meet all expectations. While we continue to expand our renewable capacity, we simultaneously strive to be a leader in Levelised Energy Cost, meaning the lifetime cost of installing and operating a wind or solar farm. Winning the permit for what will be the first non-subsidised offshore wind farm in the Netherlands, Hollandse Kust Zuid 1 and 2, demonstrates solid progress. Further, we are constantly developing our decarbonisation plans for our fossil assets, emphasising a focus on cost-efficient and commercially viable measures that enable rapid CO_2 reductions while protecting customers from unnecessary price increases.

Stakeholders' views

Olivier Aubert Vestas

Vice President Global Procurement – Head of Supplier Quality and Development at Vestas Wind Systems A/S
Vestas is a global leader in the wind energy industry, with 101 GW of wind turbines installed across 80 countries.

"Despite steady and significant growth, the wind power industry is still relatively young and in the process of maturing. One aspect of this maturation is the discovery of and focus on new risks, some of which are related to sustainability. As an industry leader, Vestas takes an active role in driving sustainability improvements throughout its value chain," says Olivier Aubert, Vice President of Global Procurement for Vestas.

"When driving sustainability matters, collaboration and leverage are key," he continues. "In recent years, we've seen both investors and customers also raising their expectations with regards to sustainability. This, in turn, gives us the chance to further demonstrate our engagement together with our suppliers to improve sustainability in our supply chain."

"At Vestas, we see sustainability as an opportunity to improve our partnership with all our stakeholders. Our customers are increasingly thorough regarding sustainability requirements while at the same time being very engaged and open to collaborating to achieve our collective goals. In this respect, Vattenfall has been an excellent counterpart and more of a partner. For example, Vattenfall responded positively to our invitation to join our global supplier conference at Vestas, representing the voice of the customer and helping us drive home the importance of sustainability to our own suppliers. This way, we think Vattenfall can use its position as a wind developer and as one of the leaders in the sustainability field to further drive change. Through our mutual discussions, Vattenfall's willingness to engage honestly with us makes them a valuable partner. We look forward to finding more opportunities for collaboration in the future."

Karin Gregow Forum Syd

Policy Advisor at Forum Syd
Forum Syd is a development organisation focused on improving human and civil rights. Based in Sweden, Forum Syd has approximately 140 members and works with local NGOs and civil society organisations to promote human rights in a number of specific countries, including Colombia. Together with local partners, Forum Syd investigates adverse environmental and human rights impacts, and works with them to support rights-holders in getting these adverse impacts addressed.

"Colombia has a number of human rights issues, many of which are linked to coal mining, one of the country's main industries. Companies are responsible for all aspects of their operations, including the impacts of the products they source. Vattenfall sources coal from Colombia, and in that respect has a responsibility to address these issues," says Gregow. "Since Vattenfall is the largest state-owned company in Sweden, we believe they have a duty to work with civil society to understand the adverse human rights impacts of the products they are sourcing, and to put pressure on the mining companies to address these impacts."

"We first engaged with Vattenfall on the topic of Colombian coal a number of years ago. We quickly felt that Vattenfall was engaging earnestly, listening to what we and other stakeholders said and participating in a constructive dialogue. We welcomed Vattenfall's independent impact assessment in Colombia in 2017 and are pleased that they have engaged more utilities on the topic and can thus increase the leverage they have as a group to work with the mining companies and address the issues. It's important that they live up to the commitments set forth in the report, for example agreeing on action plans with the mining companies, and important that they remain alert to other issues that may arise and affect their supply chains, such as threats to human rights defenders. Vattenfall is a leader in the European energy utility sector, and if they remain committed to engage with NGOs and civil society organisations in a constructive way, we believe they will remain in the forefront."

Human rights

Our commitment
At Vattenfall we acknowledge that we have a responsibility to respect all internationally recognised human rights and that we are in a position to make a positive impact on human rights issues. We base our work on the UN Global Compact, the International Labor 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 included in our Code of Conduct and Integrity, our Code of Conduct for Suppliers, and in our statement on slavery and human rights in accordance with the UK Modern Slavery Act. Further, ensuring social responsibility throughout the value chain is a key focus area of Vattenfall's overall strategy.

Vattenfall's Code of Conduct and Integrity defines how we are to act with integrity within the company in the course of our business. A whistleblowing function is in place for employees to report suspected violations of this Code.

We strive to work with others who are committed to doing business in an ethically sound manner. Our Code of Conduct for Suppliers[1] (CoCfS) defines the company's basic requirements and expectations for suppliers with respect to sustainability. This includes requiring that our suppliers agree with the ten principles laid out in the UN Global Compact. The CoCfS was updated in 2017 and explicitly addresses modern slavery and forced labour. Embedded in the CoCfS are specific clauses regarding community engagement and development, child labour and young workers, modern slavery and forced labour, working hours, wages and benefits, health and safety, freedom of association and collective bargaining, non-discrimination, protection of third-party rights, and information security. Our suppliers shall respect the rights of indigenous and tribal peoples and their social, cultural, environmental, and economic interests, including their connection with lands and other natural resources.

Vattenfall conducts its operations primarily in northwest Europe (Sweden, Germany, the Netherlands, Denmark, the UK, France, and Finland). All of these countries have confirmed that they adhere to the ILO's eight fundamental conventions.

At Vattenfall we strive to conduct due diligence by regularly and systematically identifying and assessing human rights, environmental and business ethics-related risks and impacts in our value chain, and to use this information to avoid, mitigate or remedy the impacts.

Human rights impact and risk screening, and action plan for mitigation
We have performed screenings of human rights impacts and risks across our value chain together with an independent third party. The latest screening showed that 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 contractors' working conditions, local communities' livelihood, indigenous people, and privacy (personal data and information).

Activities in 2018
- Increased internal awareness through workshops and dialogues to find the right priorities for human rights.
- Published an updated statement on slavery and human rights in accordance with the UK Modern Slavery Act[2].
- Published the first edition of our Human Rights Policy[3] in which we detail our commitment to respect human rights and the way we identify, assess, and manage human rights risks.
- Developed an action plan outlining the 11 key steps we need to take in the coming years to improve our efforts in relation to human rights.
- Expanded the scope of our due diligence process by including more human rights elements into our standard review process.
- Performed a pilot human rights dialogue in Russia and a follow-up visit to Colombia. Read more on page 157.
- Continued participation in external initiatives and seminars with focus on human rights in order to raise awareness, share best practices and discuss challenges going forward, including by helping establish wind Industry Principles with WindEurope and by contributing to the development of a potential Dutch covenant on supply chain sustainability with NWEA, the Dutch wind energy association.

Planned activities
- Further increase awareness and conduct internal training in human rights.
- Identify key focus areas and actions for each business area.
- Execute our human rights action plan.
- Collaborate in Bettercoal's Russia and Colombia country working groups to accelerate and expand the ways in which human rights are addressed.
- Participate in a broader industry benchmarking study to identify best practices and areas for improvement in addressing sustainability issues – in particular human rights – in the supply chain.

[1] See corporate.vattenfall.com/globalassets/corporate/about_vattenfall/suppliers/code_of_conduct_for_suppliers_EN_pdf
[2] For more details, see corporate.vattenfall.com/sustainability/policies-and-management/statement-on-slavery
[3] See corporate.vattenfall.com/sustainability/policies-and-management/

Sustainable supply chain

Our responsibility and commitment to act sustainably is valid not just within our operational boundaries, but extends to our supply chain as well. By focusing on environmental and social aspects throughout our supply chain, we can gain long-term advantages, principally by reducing risk, reducing cost, and improving our brand value. Through our supplier engagement strategy, sustainability assessments, and collaborations in specific industry initiatives, we are striving to increase our influence in the supply chain, to strengthen relationships with our suppliers, and to improve our suppliers' sustainability performance.

Vattenfall's Code of Conduct and Integrity governs the way Vattenfall employees interact with our suppliers. Our Code of Conduct for Suppliers (CoCfS) defines the company's requirements and expectations for suppliers with respect to sustainability.

Diverse supplier base

Vattenfall has approximately 33,000 suppliers across our four primary sourcing and purchasing streams: goods and services, commodity fuels (coal, biomass, gas and oil), directly sourced heat fuels, and nuclear fuel.

As Vattenfall has so many suppliers and purchases such a wide range of goods, services and fuels, with varying risk profiles and legal and sustainability requirements, implementation of our CoCfS varies. Regardless, we ensure that contracts either include an ethical clause linked to our CoCfS, are aligned with relevant industry initiatives such as Bettercoal or the Sustainable Biomass Program, or some combination of these.

Developments in 2018

Particular focus was directed to improving Vattenfall's sourcing and purchasing methodologies, increasing internal awareness, and updating methods and documents. The outsourcing of certain procurement processes has given us an opportunity to develop and strengthen sustainability elements in the supply chain, including to develop further internal supporting guidelines for our processes, create new training material for buyers and business, and revise and strengthen our monitoring and reporting systems. In doing so, our sustainable supply chain work will become both more efficient and more comprehensive, leading to greater results.

More than ever, we believe partnership and collaboration with our various stakeholders offer the greatest opportunity to affect change. Accordingly, we continue to dedicate resources to both national and industry supply chain initiatives, as well as increasing our dialogue with e.g., NGOs, which continues to be a good way for identifying and mitigating social and environmental risks.

Key achievements

- Together with Bettercoal and other Bettercoal members, we established country working groups for Colombia and Russia to facilitate direct dialogue with mining companies regarding improvements in the mines. We also aligned our efforts in Colombia with Bettercoal and together we paid a follow-up visit to Colombia to start a conversation with mining companies on the recommendations in our Colombia report[1], to obtain updates from Colombian stakeholders, and to offer an update[2] to our Colombian stakeholders of developments since the publication of our Colombia report.
- Expanded supply chain engagement through dialogues on human rights with a nuclear fuel supplier and other local stakeholders in Russia.
- Continued to increase transparency surrounding our fuel sourcing activities by publicly reporting on our direct coal suppliers over the last three years[3].
- Set up a Sustainable Procurement Board (SPB), which provides guidance on strategic topics and deviating individual cases in order to balance purchasing strategy with sustainability aspects.
- Developed a new, expanded version of our sustainability audit checklist to be used by Vattenfall's contracted 3rd party audit company while conducting audits of Vattenfall's suppliers.
- Developed a roadmap to guide and accelerate a long-term strengthening and embedding of a sustainable supply chain for goods and services within Vattenfall.
- Actively participated in the creation of WindEurope's new Sustainability Industry Principles, which were approved in 2018.

Activities planned for 2019:

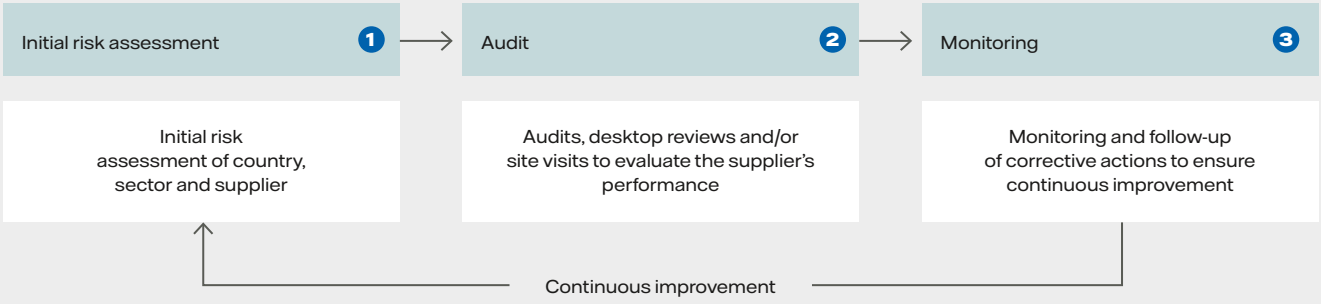
- Increase audits and engagement around identified risk issues.
- Increase our efforts in Russia to address risks in our supply chain covering primarily coal and nuclear power.
- Improve internal governance and focus on more accurate measurement of new and existing KPIs and better reporting supported by new IT tools.
- Further anchor sustainable supply chain processes in the business by training our buyers to take responsibility for sustainability.
- Conduct an internal benchmark of ways of working across our purchasing streams to identify best practices, gaps, and potential synergies and opportunities for standardisation.
- Begin a phased rollout of a category risk assessment tool to strengthen our risk assessment and management capabilities.

[1] See corporate.vattenfall.com/globalassets/corporate/sustainability/doc/vattenfall_colombia_coal_report_english.pdf

[2] See corporate.vattenfall.com/globalassets/corporate/sustainability/doc/vattenfall_coalsupplychainresponsibilitycolombia_updatejuly2018.pdf

[3] See corporate.vattenfall.com/globalassets/corporate/sustainability/doc/origin_of_hard_coal_sept2018.pdf

Implementation process for Vattenfall's Code of Conduct for Suppliers



Purchasing categories
Vattenfall's sourcing and purchasing activities are conducted in four streams: goods and services, commodity fuels (coal, biomass, gas and oil), directly sourced heat fuels, and nuclear fuel. We took several steps to improve and strengthen our processes in 2018, with an overview of the current state of our activities presented below.

Goods and services

- The main sourcing countries are Sweden, Germany and the Netherlands, with a small but increasing share of suppliers in Asia.
- New suppliers from high-risk countries are assessed via third-party site audits. All suppliers with total volume of more than SEK 3,000 are subject to sanction list screening (to the extent permitted by Swedish law). As part of this process, we identified some current and potential suppliers that are owned or controlled by suspected corrupt persons. In discussions with relevant internal stakeholders, mitigation of the risks was recommended, and several activities have been initiated including enhanced supplier risk assessment, continued sustainability audits and dialogues, and shortened payment time to ensure deliveries.
- In most audits conducted in Asia, significant risks continue to be identified in work environment–related areas, such as severe levels of overtime with respect to suppliers' employees. Evidence and/or strong indications of forced labour was found in several audits in Malaysia and Thailand during 2017 and 2018. However, after intense collaboration with both suppliers, these issues were corrected, leading to successful cooperation with both of them in 2018.
- Developing an overtime guideline to be implemented in 2019.
- In 2018 internal checks revealed that an existing supplier had recently been placed on international sanction lists. This was discussed with relevant internal experts and resulted in the decision to stop working with this supplier until the sanctions are lifted.
- The annual Share & Learn sessions conducted towards the end of 2017 with global strategic suppliers generated a variety of follow-up activities that were implemented throughout 2018, including initiatives on transparency of the CO_2 footprint in the value chain.

Number of suppliers: **~33,000**
Number of site audits conducted: **6**
Share of new suppliers that have undergone social/environmental assessments: **94%**[1]
Share of new suppliers from high-risk countries that have undergone social/environmental assessments: **100%**

[1] Scope includes suppliers from high-risk countries and those with contracts over EUR 10 million.

Commodity fuels

- Primary fuels include coal and biomass. Purchases of gas and oil are limited.
- The main sourcing countries are Russia (75%), USA (19%) and Colombia (6%) for coal, and Estonia, Latvia, and USA for biomass.
- The scope of sustainability assessments was not only broadened but also deepened:
  - We performed a follow-up visit to Colombia with Bettercoal and other Bettercoal Members. During the visit we engaged with, among others, relevant Colombian Ministries, mining companies, local communities and labour unions.
  - At the end of 2018, eight of the ten suppliers we publicly report on went through the Bettercoal assessment process, while the other two undertook to do so in the near future. The eight suppliers that went through the assessment process are in different stages, with some implementing the corrective action plan. For more information on where each of the companies is located, please see the Bettercoal website[1].
- We engaged external stakeholders both directly and through Bettercoal. Examples include:
  - Meetings with stakeholder organisations such as PAX and Forum Syd.
  - Meetings with government representatives, including the Dutch and Swedish Ministries of Foreign Affairs, Colombia's Minister of Mining, human rights advisors to the President of Colombia, and the Swedish, Dutch, and German embassies in Colombia, as well as SIDA and NIR.
  - Meetings with various mining companies throughout the year, including Drummond, CNR, Prodeco and Cerrejon, on our Colombia report.

[1] https://bettercoal.org/bettercoal-suppliers/

Number of suppliers: **28**
Number of site audits conducted: **9**
Share of new suppliers that have undergone social/environmental assessments: **0%**[2]
Share of new suppliers from high-risk countries that have undergone social/environmental assessments: **No new suppliers from high-risk countries**

[2] Coal only. One new supplier in 2018, from USA, that was not assessed.

Heat fuels

- Primary fuels include biomass and waste. Purchases of peat are limited.
- Approximately 80% of heat fuels are sourced locally from the respective countries of operation. In Sweden there was one new supplier from a medium-risk country in 2018. No new suppliers from high-risk countries to Sweden or Germany in 2018.
- Continued integrating sustainability aspects in purchasing activities, especially human rights aspects.
- Developed a holistic view of the supply chain view with regard to human rights and the environment.
- The new Code of Conduct for Suppliers is implemented in all new contracts and contract renewals.
- Performed screening audits of all new suppliers in Germany, including desktop assessments and/or site visits.

Number of suppliers: **~120**
Number of site audits conducted: **11**
Share of new suppliers that have undergone social/environmental assessments: **58%**
Share of new suppliers from high-risk countries that have undergone social/environmental assessments: **No new suppliers from high-risk countries**

Nuclear fuel

- Uranium supplies are, over time, equally spread among Namibia, Canada, Australia, Kazakhstan and Russia. In a single year we may receive deliveries from a number of these countries.
- 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.
- Screening and approval of all nuclear fuel suppliers that made deliveries in 2018 were performed prior to delivery.
- Positive experience and gained insight from applying updated audit procedures that further integrate human rights issues. This will be used as a model for future audits based on a risk analysis.
- All findings and recommendations from audits are followed up between the regular audits.
- Management systems were generally at a high standard at nuclear fuel production facilities. No major findings were noted in 2018 among performed audits.
- Even in high-risk countries, we experienced transparency and access to all facilities included in our audit programmes.
- No sanctions currently affecting the nuclear supply chain.

Number of suppliers: **10**
Number of site audits conducted: **7**
Share of new suppliers that have undergone social/environmental assessments: **100%**
Share of new suppliers from high-risk countries that have undergone social/environmental assessments: **100%**

Taxes

Taxes are a key issue for us and for our stakeholders. We regard taxes as an important component of our commitment to grow in a sustainable, responsible, and socially inclusive way.

As a business we are subject to taxation in the countries we work in. The tax laws in these countries differ and are often complex and subject to interpretation by management and government authorities. Developments in the international tax area can lead to changes in the tax systems in the countries we work in, which can lead to added uncertainty. 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 strategy and provides updates on tax regulations and the main challenges we face. The Board and Audit Committee receive quarterly updates on significant tax issues, such as the Group's effective tax rate, tax provisions and compliance.

Tax trends

In recent years we have seen a positive trend toward a more tax transparent landscape, which Vattenfall supports. Vattenfall's Tax function participates in various CSR and tax transparency projects and networks.

Vattenfall has submitted the country-by-country reporting that is required by law in all of the countries where Vattenfall operates.

Vattenfall's tax strategy

To be able to assess the tax effects of business transactions across the Vattenfall Group, management and employees need a basic understanding of Vattenfall's view of tax risks.

Vattenfall's tax strategy is approved by the Board of Directors and is to be updated and approved on a yearly basis. The tax strategy focuses on compliance and efficiency. Vattenfall conducts tax planning to the extent required to secure an efficient handling of taxes within the constraints of the 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 also to be transparent towards other external stakeholders. When possible, Vattenfall enters into country-specific tax enhanced relationship systems, with the benefits of a direct contact in the local Tax Authority, higher tax certainty, and no tax audit risks or exposures.

For more details about the tax strategy and policy, see corporate.vattenfall.com/about-vattenfall/strategy-and-objectives/.

Vattenfall as a taxpayer

Vattenfall's business generates considerable tax revenue for the national, regional, and local authorities in the countries we work in. In addition to corporate income tax, Vattenfall pays taxes on production, employment and property. In many of the countries in which we operate, these non-income-based taxes account for a majority of the tax revenues. In the income statement they are included 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 2018 amounted to SEK 6.9 billion and are outlined below. Corporate income taxes amounted to SEK 1.7 billion.

Effective tax rate

Vattenfall's effective tax rate in 2018 was 14.3%, expressed as a percentage of consolidated profit before tax. This corresponds to SEK 1,996 million. See Note 13 to the Consolidated accounts 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 2018 income statement, SEK 6.9 billion

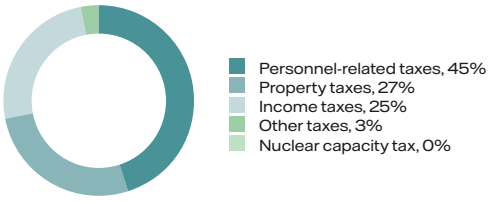
SEK million	Sweden	Germany	Netherlands	Other	Total
Personnel-related taxes[1]	1,926	859	267	53	3,105
Property tax	1,745	45	25	69	1,884
Income tax[2]	1,458	-230	209	276	1,713
Other taxes	103	47	26	0	176
Nuclear capacity tax	0	0	0	0	0
Total taxes paid	**5,232**	**721**	**527**	**398**	**6,878**

[1] Including social security costs.

[2] Does not include deferred income taxes.

Total taxes 2018

SEK 6.9 billion, shown per tax type



Total taxes paid by region

Tax history by country

SEK million	Sweden	Germany	Netherlands	Other	Total
2018	5,232	721	527	398	6,878
2017	7,473	2,729	457	95	10,754
2016	9,894	2,157	316	53	12,419

Human Resources

Diversity & Inclusion (D&I) at Vattenfall

Vattenfall is a strong advocate for human rights and equal opportunity. We have integrated gender equality in recruitment strategies and governance principles, and we strongly believe that diversity and inclusion enables us to better understand customers' expectations and makes us a better partner in the communities we serve. Vattenfall's D&I strategy enables us to work for an open and inclusive culture, increasing awareness throughout our company.

In 2018 we committed to a number of different D&I initiatives. The first, Equal by 30, promotes equal pay, equal leadership, and equal opportunities for women in the energy transition. Our goal is to have the same gender composition in management positions as the company as a whole, thus enhancing equal leadership and contributing to the UN Sustainable Development Goal of Gender Equality. One target area in our strategy is to decrease the gap between female and male managers. In 2018 women represented more than 33% of all managerial hires, increasing the share of female managers to 24% from 23% in 2017 (compared to 24% for the company as a whole in 2018).

The second initiative is a commitment to include equal rights for LGBTIs into our business and to develop policies to make equal rights and opportunities more visible and practical for our employees and customers. We believe that having diversity in work groups results in a greater variety of perspectives, which leads to more innovation and better results. To ensure equal opportunities and raise awareness, we have developed training material for our employees, and all executive managers have participated in a D&I workshop. In addition, we run a female coaching programme, participate in several mentoring programmes, and collaborate with external partners to enhance our knowledge.

Vattenfall has also appointed a Diversity & Inclusion Officer, on a two-year rotation among members of the Executive Group Management. In September 2018 we celebrated Diversity Day at Vattenfall for the first time, honouring diversity and inclusion through various activities such as panel discussions, lectures, and exhibitions displaying our figures on gender representation. We measure inclusion among all employees through targeted questions in our employee surveys and support our company-wide "Diverse Energy" networks.

Vattenfall's remuneration policy

Vattenfall's remuneration policy supports the Group's strategic direction and HR strategy. It aims to enable the organisation to foster an engaging and high-performance culture while securing relevant and diverse competences and talents.

The remuneration policy outlines the general guidelines for compensation and benefits at Vattenfall and draws from the guidelines for Swedish state-owned companies.

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. 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.

Developing competent and engaged employees
We encourage our employees to actively develop their skills and competences as part of our work on building a high-performance culture. Employee development is key to Vattenfall's future success, and we rely on our people to take personal initiative for their continuous development. Toward this end, we offer a wide range of training opportunities including a carefully selected pallet of courses in a number of topic areas to strengthen both their professional and personal skills. In line with our strategic direction to accelerate digitalisation in Vattenfall, we also offer different kinds of e-learning courses and e-books.

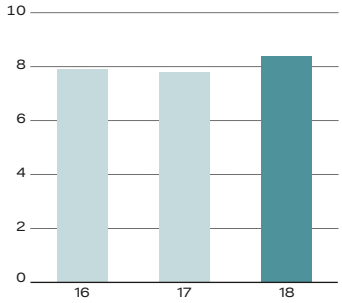
[1] 98% of employees are covered by collective bargaining agreements at the Group level.

Employee key ratios[1]

	No. of employees	Women	Men	-29	30-49	50-
Managers	1,833	24%	76%	1%	56%	43%
Country						
Sweden	8,890	26%	74%	10%	50%	40%
Germany	6,563	22%	78%	10%	41%	48%
Netherlands	3,398	24%	76%	7%	58%	35%
Other	1,058	26%	74%	17%	67%	17%
Total	**19,910**	**24%**	**76%**	**10%**	**49%**	**41%**
Of which, part-time	1,650	20%	5%			
Of which, temporary	618	3%	3%			

[1] The composition of the Board of Directors is 29% women and 71% men. See pages 80-81.

Employee turnover, %

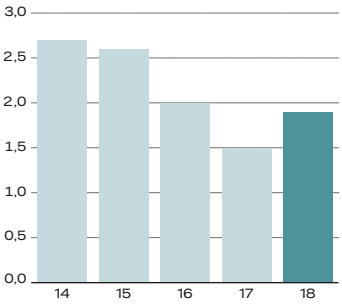


LTIF[1] - Lost Time Injury Frequency for employees

	Sweden	Germany	Netherlands	Total[2]
LTIF internal employees	1.9	1.8	2.4	1.9
Fatal accidents	2	0	0	2
LTI external (contractors)[3]	35	20	8	71
Fatal accidents	0	0	0	0
Sick leave per country 2018				
Men	2.0%	5.2%	4.2%	3.5%
Women	4.3%	6.8%	6.9%	5.4%
Total	**2.6%**	**5.6%**	**4.8%**	**4.0%**

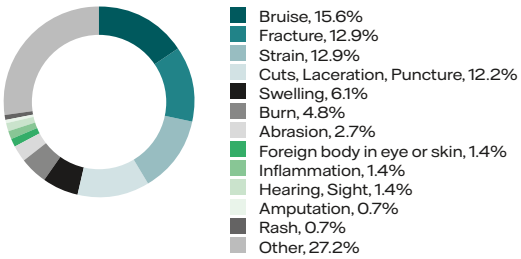
[1] LTIF is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality. Pertains only to Vattenfall's employees.
[2] Includes Denmark and the UK.
[3] Since the contractor LTIF cannot be calculated with sufficient reliability, only LTI is reported.

LTIF internal employees 2014-2018



During the year a Health & Safety maturity model was implemented in parts of the organisation, which contributed to a reduction in LTIF. The model enables more proactive Health & Safety work. The maturity model will continue to be rolled out to other parts of the organisation in the coming years.

Types of injuries



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

Training and education

	Sweden	Germany	Netherlands	Total
Training days per employee	1.6	2.3	2.8	1.9
Training cost per employee (EUR)	831	1,011	776	890

Environment

We have set a goal to make fossil free living possible within one generation. This goal, together with our purpose – to Power Climate Smarter Living – is driving our transformation, whereby we are gradually phasing out fossil fuels, increasing the share of renewables and improving resource efficiency. Reducing climate impact is one of the top priorities in Vattenfall's strategy and one of our most important environmental aspects.

To further strengthen our environmental work, we adopted a new environmental policy in 2018 that includes strong commitments in three important areas: Become climate neutral, Protect nature and biodiversity, and Sustainable use of resources. To make it even clearer and show how we deliver on the policy commitments in a short-term perspective, an action plan for internal work has been developed. The plan consolidates 15 key actions that are ongoing and planned within the three focus areas in the policy. The new policy aims to inspire us internally, but also our partners and customers.

The foundation for success in reaching our goal and purpose is a strong environmental management and culture, which is why the plan also has a fourth focus area including environmental awareness on all levels of the company.

Goals coupled to the EU 2020 targets

Vattenfall informs the Swedish Parliament yearly via the Government Offices on the company's progress in relation to the EU's 2020 targets. The three relevant targets for Vattenfall are the CO_2 emissions reduction target, the renewable energy target, and the energy efficiency target.

Environmental management

Vattenfall's environmental management system is part of the Vattenfall Management System (VMS). At year-end 2018, 99.8% of our electricity generation and 98.0% of our heat production came from facilities with certified environmental management systems, all of them according to ISO 14001 or EMAS. The remaining facilities pertain to a very limited number of back-up installations. Our environmental activities are governed by our environmental policy and operational instructions that describe the principles for environmental governance and environmental management. Accountability within environment is also described in the management systems. Being certified is an important part in gaining authorities' trust and in delivering on customers' requirements.

Vattenfall's environmental governance and activities are also assessed by independent research and ratings companies that supply investors and customers with information. For example, in 2018 we kept our EcoVadis Gold Rating[1] and received an improved overall score and an environmental score that corresponds to the top three per cent of assessed companies in our category.

Reduce climate impact

Reducing climate impact includes taking a holistic view on climate-related emissions. Our main environmental impact comes from the CO_2 emissions from our operations, but our measures cover our entire value chain.

CO_2 emissions

By reducing our emissions to 21 million tonnes of CO_2 by 2020 and being CO_2-neutral in the Nordic countries by 2030, Vattenfall is taking concrete steps towards the Group-wide ambition of making fossil free living possible within one generation. The target for 2020 is set on a pro rata basis to reflect Vattenfall's share of ownership in the various operations.

We believe that openness and transparency are a central part of our environmental work, and as part of this we have chosen to voluntarily report climate-related data and information to CDP[2]. Our Climate Score has improved significantly from year to year since we first began reporting to CDP, and we are striving to continue this upward trend. In 2018 we scored an A- (on a scale of A to F), which is above the industry average and among the leading utilities.

Direct emissions still make up our largest impact, but upstream and downstream emissions also account for a significant share in our value chain. We will therefore continue to work on reducing these emissions together with our suppliers, customers and partners. With a special focus on transports, we have committed to electrifying our own vehicle fleet until end of 2021, and we already compensate for our business travel through purchases and cancellation of CO_2 certificates in the UN's Clean Development Mechanism system. In 2018, this compensation amounted to about 25,000 tonnes of CO_2.

Renewable energy

Our renewable energy target is to install at least 2,300 MW of a cumulative new capacity from 2016 to 2020. In 2018 Vattenfall installed 101 MW of new renewable energy capacity, resulting in combined new capacity of 752 MW from 2016 to 2018. The Aberdeen Bay (97 MW) offshore wind farm in Scotland was inaugurated in September. We have also installed 3.8 MW of solar capacity. For more information, see the Wind section on page 43.

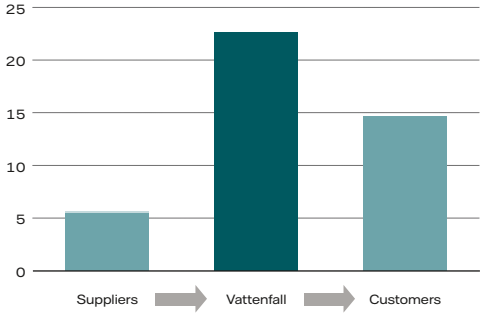
Biodiversity

Our operations have direct impacts on biodiversity, such as through land use, alteration of natural landscapes, and emissions. We therefore assess biodiversity early in the planning of new projects, and we always strive to minimise any negative impacts. For impacts that cannot be fully avoided or mitigated, compensation measures are considered in discussion with the authorities and other stakeholders (such as local communities) as part of the permitting process. A responsible approach to these issues is important for nature conservation and for gaining acceptance from local communities. It also reduces the risk for project delays and permitting obstacles.

[1] See corporate.vattenfall.com/globalassets/corporate/sustainability/doc/ecovadis_sustainability_profile_20-8-2018.pdf

[2] Formerly Carbon Disclosure Project.

Vattenfall's carbon footprint, $MtCO_2e$



Scope 1: 22.6 Mton, Emissions include CO_2, SF_6 och N_2O. 0.2 Mton CO_2-equivavlents consist of SF_6 and N_2O.

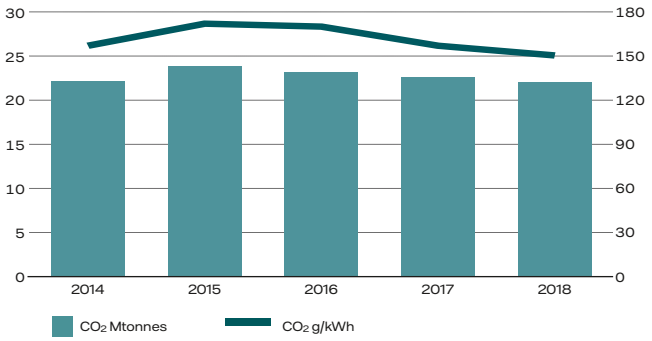
Scope 2: 0.1 Mton (market based emission factors), the majority of energy used is bought from Vattenfall's own production facilities and therefore booked as Scope 1.

Scope 3: 19.8 Mton, Emissions in Scope 3 includes fuel production and transports, non-fuel procurement, business travel and emissions linked to fuel sales to customers.

Emissions factors have been obtained from the IPCC Fifth Assessment Report, average national grid factors from the Association of Issuing Bodies and Scope 3 emissions calculated from lifecycle data and information from suppliers.

All numbers are consolidated.

CO_2 emissions[1]



[1] Data for 2014 to 2016 does not include the lignite operations.

Vattenfall's total CO_2 emissions in 2018 amounted to 22.0 Mtonnes pro rata.

In Vattenfall's 2018 materiality analysis, stakeholders raised the importance of protecting nature and species. Collaboration and communication of nature protection activities are important for increasing transparency and meeting stakeholders' expectations. We also work together with our suppliers to limit indirect impacts in our value chain. We strive to impact our suppliers by setting requirements and, where possible, requesting alternative products with lower impacts on biodiversity.

Vattenfall is active in biodiversity research and is involved in a number of projects, mainly associated with wind and hydro power. The aim is to gain knowledge in order to better conduct our operations with the least possible impact. We are also involved in various types of environmental projects focused on the preservation, promotion and/or restoration of biodiversity values.

Protection of species and habitats in the wind power sector

Vattenfall strives to close knowledge gaps of environmental impacts during a wind farm's lifecycle and implement environmental improvement and mitigation measures.

An example of initiatives we are taking to increase our understanding of how we can limit our impacts is the integration of various R&D measures at the Aberdeen Bay offshore wind farm in Scotland, which was inaugurated in September 2018. The wind farm is also known as the European Offshore Wind Deployment Centre (EOWDC) and consists of eleven turbines and features a number of innovations and new technologies for the industry. One such innovation was the use of suction bucket jackets in the installation of the foundations to reduce underwater noise and thereby also the impact on the marine environment. The results show that noise levels were successfully reduced compared to impulse pile driving, when the piles are hammered into the seabed.

The EOWDC is also facilitating a EUR 3 million scientific research programme[3] to improve the basic understanding of how various species are affected by wind power installations. Ongoing projects include increasing our understanding of bottlenose dolphins' lifecycles, movement patterns of the guillemot and razorbill seabirds, and salmon and sea trout migration routes. In November 2018 the EOWDC scientific research and monitoring programme won the Sustainable Development Award at the Nature of Scotland Awards. The awards recognise excellence, innovation and outstanding achievements in nature conservation and are a great recognition for the research programme.

We are also working with biodiversity through our habitat management plans. At the Ray onshore wind farm in the UK, a re-wetting scheme has been set up with the aim to increase biodiversity of the floral communities, which in turn will help improve invertebrate assemblages used as a food source for a number of birds of conservation concern in the local region. Furthermore, Vattenfall has been working in collaboration with a local bird ringing group within the wind farm to monitor and help improve the conservation status of the merlin, Britain's smallest bird of prey.

Biodiversity and hydro power

Large-scale hydro power is of vital importance for Sweden's energy system, as its flexible characteristics can be used to balance a growing amount of intermittent electricity generation in the system. Construction of hydro power plants and dams has resulted in large impacts on the landscape and natural environment. The effects of hydro power on biodiversity have been specifically addressed in the EU Water Framework Directive, the Habitat Directive, and the Eel Regulation. To identify measures for improving biodiversity near our hydro power plants, while maintaining high production and regulation capacity, we have developed a biodiversity action programme based on a process with stepwise adding of knowledge. One area where we have acquired new knowledge is when we have combined our competences in hydraulics and biology, where we can learn about fish behaviour using a new test flume in the Älvkarleby Laboratory. This is applied when looking at measures to increase attraction to the old river channel downstream the Stornorrfors hydro power station in the Ume älv river for spawning migrating salmon and sea trout to the Vindelälven river.

In addition to the action programme we are working with conservation measures in our protected areas. Our newest protected area, "Kungsådran-Älvkarleby", was inaugurated in June 2018. The area was chosen by Vattenfall because of its unique combination of calcareous soil that gives rise to a rich flora, older trees, and its location near the Dalälven river. The path crossing the area has interpretive signs about the special flora that is found in the area.

Environmental Product Declarations

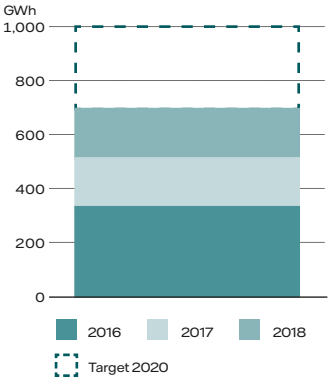
For more than 20 years we have worked actively with life cycle assessments, and in 1997 we were the first company in the world to prepare an environmental product declaration for our hydro power. The disclosure of a full environmental footprint for our various energy sources is valuable information for our customers as demands on transparency and environmental data increase. The EPDs and accompanying environmental data can then be used in the customers' own environmental work and communication. The EPD itself has been developed and certified in accordance with the International EPD® system. The system measures the environmental impact of products and services in an objective and standardised way, allowing us to account for the entire environmental impact from extraction of raw materials to end use, including impacts on biodiversity. Vattenfall's EPDs are linked to our wind, hydro and nuclear power assets in Sweden. The EPD enables the possibility to keep track of the environmental consequences of Vattenfall's operations and choices made in the product lifecycle, allowing us to continuously work to reduce our environmental impact throughout the value chain.

Environmental Foundation in Germany

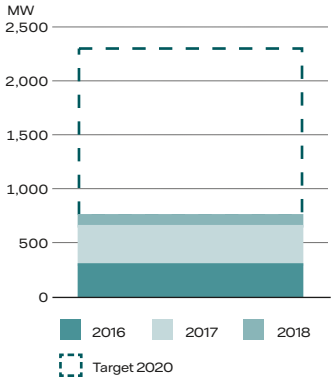
In Germany, Vattenfall manages an environmental foundation that was established by Hamburgische Electricitäts-Werke (HEW) in 1994. Since its inception the foundation has provided support to more than 180 projects in a number of areas, including environmental education and nature conser-

[3] corporate.vattenfall.co.uk/projects/operational-wind-farms/european-offshore-wind-deployment-centre/scientific-research/?apcprt=noreplace

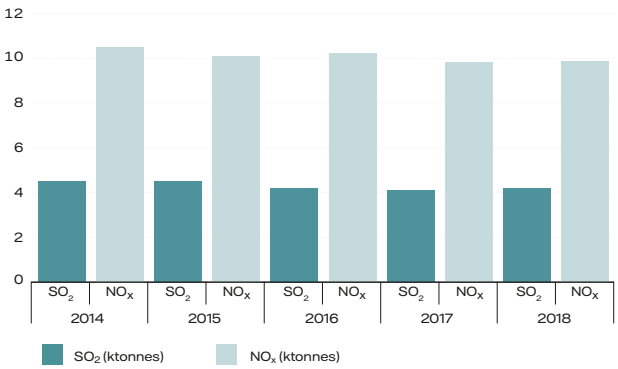
Energy efficiency improvements



New renewable capacity



Nitrogen oxide (NO_x) and sulphur dioxide (SO_2)[1]



[1] Data for 2014 to 2016 does not include the lignite operations.

vation (projects in urban areas and small watercourses). The foundation is operated as an independent non-profit association under civil law. Thanks to Vattenfall's support of administrating the foundation, all earnings from the foundation's capital are used to fund environmental projects.

Environmental risk management
To protect the environment and reduce our environmental impact we put special emphasis on assessing the environmental risks associated with our operations. Another important issue involves monitoring relevant legislative changes in order for us to be able to draw up action plans at an early stage, if necessary.

We have long worked with climate-related risks, but to further improve our preparedness for the consequences of climate change we implemented climate change risks in the risk management procedure in 2018. This means our businesses will now report and assess how climate change will impact their operations and business. For more details, see Risk Management, page 65.

Sustainable use of resources
Vattenfall will take an active role in the development towards a circular economy. We will do this by providing renewable energy, developing new business models that enable our customers and partners 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 resources e.g., energy, fuel, water, construction materials, and chemicals, and our activities also generate effluents, emissions, waste and by-products. Our resource footprint lies both within our own operations and in our supply chain. We therefore consider resource efficiency already in the design phase, choose Best Available Technologies, and continuously work to reduce environmental impacts based on a lifecycle perspective, including decommissioning of assets such as wind turbines, for example.

Other emissions
Apart from CO_2, we focus specifically on reducing emissions of sulphur dioxide (SO_2), nitrogen oxides (NO_x) and particulates resulting from the combustion of fossil fuels and biomass in our power plants. During construction, operation and dismantling of our power plants and networks, we take necessary measures to reduce noise and particulate emissions. We use innovative technologies to comply with all legal emission thresholds and to improve our environmental performance. This includes:

- Primary measures such as targeted mixing of coal quality (SO_2) or combustion controlling (NO_x, CO) to reduce combustion emissions
- Secondary measures such as electrostatic precipitators or filter bags (particulates), flue gas desulphurisation (SO_2) and DENOX (NO_x) to clean flue gas
- Noise abatement walls and facades or encapsulation of units to dampen noise from our operations
- 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, which reduces both CO_2 and SO_2 emissions
- The use of power-to-heat is replacing fossil-based heating and eliminating associated emissions

As we reduce and eventually eliminate the use of fossil fuels, the associated emissions will be likewise reduced.

Energy efficiency improvement
We have set a target to achieve a cumulative total of more than 1,000 GWh in annual energy efficiency improvements for the period 2016–2020. In 2018 we achieved 694 GWh in efficiency improvements, mainly through upgrades of hydro power plants and distribution networks and by replacing local boilers with district heating. Vattenfall is working continuously to improve energy efficiency by changing to more efficient components, expanding district heating networks and helping customers to become energy-efficient.

The laws that have been enacted as a result of the EU Energy Efficiency Directive require all large companies to conduct energy audits to identify cost-effective energy saving measures. Such audits have been conducted or are in progress in Vattenfall, in line with national implementation requirements. To a large extent Vattenfall goes beyond the requirements of these laws through certified Energy Management Systems ISO 50001 or by adapting certified Environmental Management Systems, meaning that energy efficiency becomes a part of our systematic environmental work. Vattenfall also offers energy audits to customers.

Sustainable office buildings
Our vision to enable fossil free living within one generation also guides us in how we act in a modern working environment. Accordingly, we are focusing on optimising energy and office space use as well as waste avoidance and innovative service solutions that go along with our environmental policy. By setting sustainability guidelines in Vattenfall's Real Estate Standard for our offices, we ensure to apply these requirements for new and existing buildings and make them relevant for our suppliers, too. Furthermore, employees are encouraged to behave in a way that is better for the environment, and our offices should be easy to reach via access to public transportation.

Water management
Cooling water
Vattenfall's nuclear power plants and fossil-based power plants require large amounts of cooling water. So-called through cooling is used at plants where large volumes of water, like river or sea water, are available. Otherwise, cooling towers are used, which have closed cooling cycles and use considerably less water. Vattenfall complies with all applicable regulations on water quality, and the outlet water temperature is strictly controlled to protect aquatic fauna and flora from any potential harm caused by temperature variations.

Wastewater
Wastewater from Vattenfall's installations is carefully cleaned and constantly monitored – a process that also includes comprehensive laboratory controls. No untreated wastewater is discharged into watercourses.

Waste management
Waste is generated during the operation and maintenance of power plants, electricity and heating grids, and during construction and dismantling of power generation systems. In addition, residual products such as ash, slag and gypsum are produced in combustion plants. Offices generate small amounts of waste as well. Depending on the waste content and national legislation, waste is classified either as hazardous or non-hazardous. Radioactive waste is a special form of waste produced from operations at nuclear power plants. See Radioactive waste.

Vattenfall works in accordance with the waste hierarchy. Waste is identified, classified and managed within the framework of the 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.

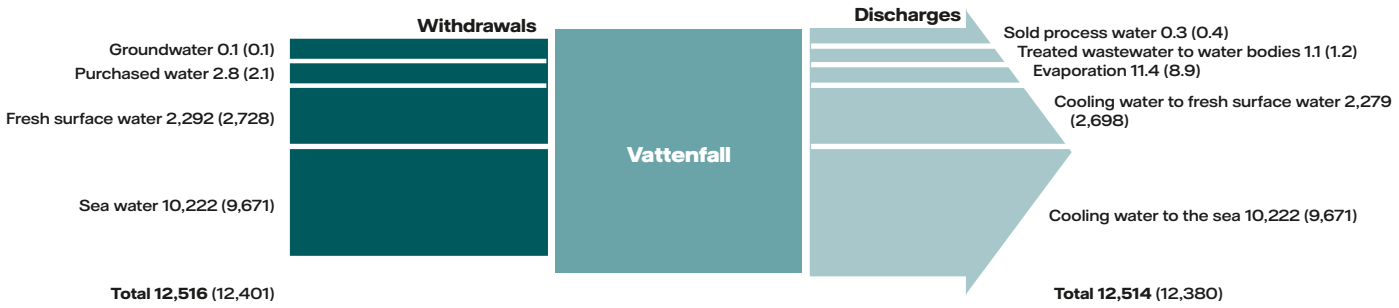
Combustion residues
Residual products such as ash, slag and gypsum are produced from the combustion of solid fuels such as hard coal, biomass and waste. The volumes produced are directly related to how much fuel is used. More than 90% of residual products are re-used and sold to the construction industry as secondary raw material for cement, concrete or asphalt production. The remainder is sent to landfills.

Radioactive waste
Vattenfall operates nuclear power plants in Sweden and Germany. 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.

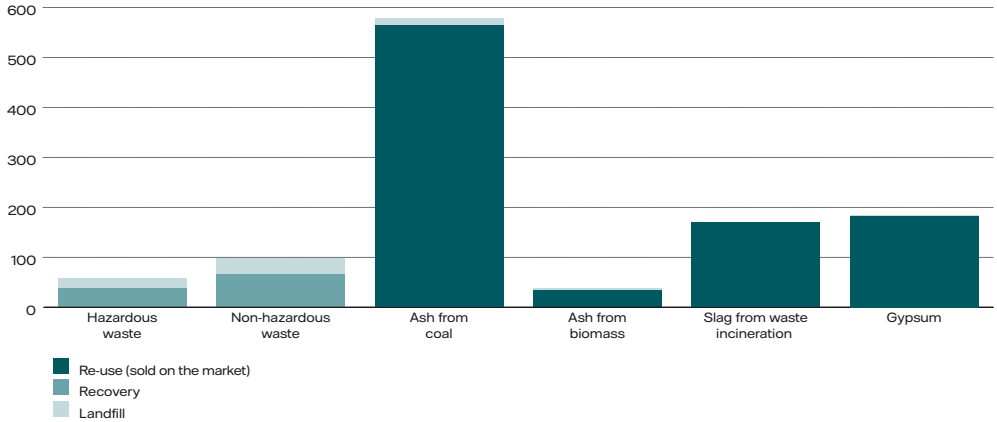
High-level, long-life radioactive waste, consisting primarily of spent nuclear fuel and core components, must be carefully shielded during handling and transportation. When the waste is stored, it is encapsulated to prevent spreading of contamination. The type and location of storage depends on the radioactive 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. The radioactive waste system and how to minimise radioactive waste are themes included in the training. Waste operators and personnel at production plants who work with waste handling also participate in special training programmes.

Chemicals
Chemicals are used in all our operations on a daily basis. To reduce the risk for harmful effects on health and the environment, Vattenfall is working continuously to eliminate or replace hazardous chemicals. We also urge our suppliers to do the same. During 2018 a decision was taken to strengthen our substitution work, both internally and towards suppliers. We therefore developed a new, stricter, restriction list for hazardous substances and will work to implement this into all operations starting in 2019.

Total withdrawals and discharges of water (million m³)



Waste and residues (ktonnes)



ktonnes	Hazardous waste[1]	Non-hazardous waste	Ash from coal	Ash from biomass	Slag from waste incineration	Gypsum
2018	59	98	578	38	170	185
2017	61	145	671	37	168	169

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.

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. For 2018 Vattenfall adheres to the GRI Standards and reports according to the 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 165–167. 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 2018 financial year, unless indicated otherwise, and the figures provided pertain to the 2018 financial year. Vattenfall reports sustainability data annually in the ASR, and the preceding year's report was published on 28 March 2018.

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 8–9 and 77. Changes in Vattenfall's supply chain are described on pages 156–157. 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 157. 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 2018.

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 2018 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 conditions and personnel, human rights and anti-corruption:

- Strategic targets, pages 10–11
- Business model and value creation, pages 14–17
- Integrity and risk management, pages 60–66
- Internal governance, pages 75–77
- Materiality analysis and stakeholders, pages 152–154
- Human rights, page 155
- Responsible sourcing and purchasing, pages 156–157
- Human resources, pages 158–159
- Environment, pages 160–163

External assurance
The sustainability information in the Annual and Sustainability Report for 2018 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. The implementation and the monitoring of compliance to 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:

- CSR Europe
- Business for Social Responsibility (BSR)
- The World Economic Forum
- 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					
	Organizational profile				
	102-1	Name of the organization	Cover, Note 1		
	102-2	Activities, brands, products, and services	2-3		8-9: Environment
	102-3	Location of headquarters	2, 71		
	102-4	Location of operations	2-3		
	102-5	Ownership and legal form	2		
	102-6	Markets served	3		
	102-7	Scale of the organization	2, 4		
	102-8	Information on employees and other workers	158-159		6: Labour
	102-9	Supply chain	156-167		
	102-10	Significant changes to the organization and its supply chain	8-9, 156-157		
	102-11	Precautionary Principle or approach	64-65, 160		All principles
	102-12	External initiatives	164		
	102-13	Membership of associations	164		
	EU1	Installed capactiy	176-178		
	EU2	Energy production, net	176-178		
	EU3	Numbers of customers	2, 176-178		
	EU4	Length of transmission and distribution lines, based on voltage	176-177		
	EU5	Allocation of CO_2 emission allowances	176-177		
	Strategy				
	102-14	Statement from senior decision-maker	6-7		
	Ethics and integrity				
	102-16	Values, principles, standards, and norms of behavior	58-61, 76-77, 155-156, 158-159		All principles
	Governance				
	102-18	Governance structure	70-83		
	Stakeholder engagement				
	102-40	List of stakeholder groups	154		
	102-41	Collective bargaining agreements	154		3: Labour
	102-42	Identifying and selecting stakeholders	154		
	102-43	Approach to stakeholder engagement	154		
	102-44	Key topics and concerns raised	154		
	Reporting practice				
	102-45	Entities included in the consolidated financial statements	164		
	102-46	Defining report content and topic Boundaries	164		
	102-47	List of material topics	153		
	102-48	Restatements of information	164		
	102-49	Changes in reporting	164		

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Omission	UNGC Principle(s)
	102-50	Reporting period	164		
	102-51	Date of most recent report	164		
	102-52	Reporting cycle	164		
	102-53	Contact point for questions regarding the report	181		
	102-54	Claims of reporting in accordance with the GRI Standards	164		
	102-55	GRI content index	164-167		
	102-56	External assurance	164		
	Economic				
GRI 205: Anti-corruption 2016					
	103-1/2/3	Management approach, 205	60-61, 77		10: Anti-corruption
	205-2	Communication and training about anti-corruption policies and procedures	61		
GRI 206: Anti-competitive behavior 2016					
	103-1/2/3	Management approach, 206	60-61, 77		10: Anti-corruption
	206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	61		
	Environmental				
GRI 302: Energy 2016					
	103-1/2/3	Management approach, 302	77, 160	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 organization	170		
GRI 303: Water 2016					
	103-1/2/3	Management approach, 303	77, 162	Vattenfall has no power plants in areas with poor access to water. Rain and waste water from other organisations are not reported as this is not significant compared with other water flows.	8-9: Environment
	303-1	Water withdrawal by source	163		
GRI 305: Emissions 2016					
	103-1/2/3	Management approach, 305	77, 160	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	160, 178		
	305-4	GHG emissions intensity	160	CO_2 emissions (Scope 1) are reported	8: Environment
	305-7	Nitrogen oxides (NO_X), sulfur oxides (SO_X), and other significant air emissions	170	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.	

GRI Standard	Disclosure number	Disclosure title	Page number(s) and/or URL(s)	Omission	UNGC Principle(s)
Electric Utility Sector-Specific-Environmental Social Indicators					
	EN21	Nitrogen oxides (NO_X), sulfur oxides (SO_X), and other significant air emissions	170		
GRI 306: Effluents and Waste 2016					
	103-1/2/3	Management approach, 306	28-29, 162		8-9: Environment
	306-1	Water discharge by quality and destination	163		
	306-2	Waste by type and disposal method	163		
Electric Utility Sector-Specific-Environmental Performance Indicators					
	EN23	Waste by type and disposal method	170		
GRI 308: Supplier Environmental Assessment 2016					
	103-1/2/3	Management approach, 308	156		7: Environment
	308-1	New suppliers that were screened using environmental criteria	157		
	Social				
GRI 403: Occupational Health and Safety 2016					
	103-1/2/3	Management approach, 403	58-60, 76-77	Data on gender for injury rate (LTIF) is unavailable. For contractors only LTI is reported as the number of hours worked is uncertain. Occupational disease rate is not reported as the definitions differ between the countries.	1-2: Human rights 4-6: Labour
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	159		
GRI 405: Diversity and Equal Opportunities 2016					
	103-1/2/3	Management approach, 405	58-60, 159	No reporting per minority group, as this is prohibited by rules in certain markets.	6: Labour
	405-1	Diversity of governance bodies and employees	159		
GRI 413: Local Communities 2016					
	103-1/2/3	Management approach, 413	153, 155		1-2: Human rights 8-9: Environment
	413-2	Operations with significant actual and potential negative impacts on local communities	37, 43, 50, 160-161		
GRI 414: Supplier Social Assessment 2016					
	103-1/2/3	Management approach, 414	156		
	414-1	New suppliers that were screened using social criteria	156-157		
Electric Utility Sector-Specific-Social Indicators					
	EU28	Power outage frequency	170		
	EU29	Average power outage duration	170		

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 2018. Vattenfall AB has defined the scope of the Sustainability Report to the pages referred to in the GRI index on the pages 165-167. The Statutory Sustainability Report is defined on page 86.

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 164 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 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 11:
- Customer loyalty, NPS (Net Promoter Score)
- Commissioned renewables capacity
- Absolute CO2 emissions pro rata
- Work injuries, LTIF (Lost Time Injury Frequency)
- Employee Engagement Index

Our procedures are based on the criteria de¬fined 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.

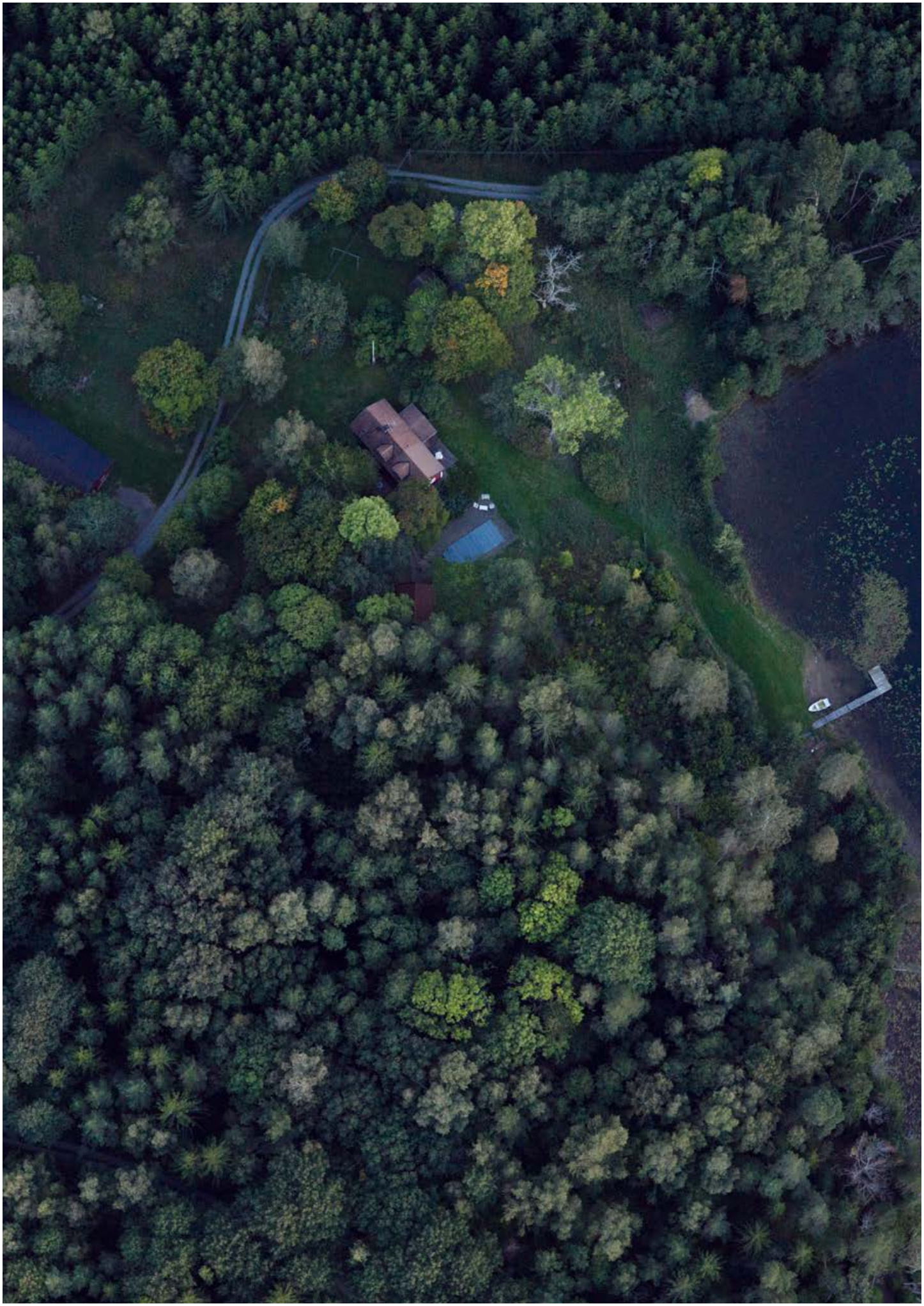
In our opinion the information in the Sustainability Report which has been subject to our reasonable assurance procedures have, in all material respects, been prepared in accordance with the criteria defined by the Board of Directors and Executive Management.

A Statutory Sustainability Report has been prepared.

Stockholm, 19 March 2019
Ernst & Young AB

Staffan Landén
Authorised Public Accountant

Outi Alestalo
Expert member of FAR



Five-year overview of sustainability data

	2014[5]	2015	2016	2017	2018
Production and environment					
Electricity generation	172.9	117.4	119	127.3	130.3
– of which, hydro power	34.3	39.5	34.8	35.6	35.5
– of which, nuclear power	49.9	42.2	46.9	51.9	55.0
– of which, fossil power	82.7	29.2	30.8	31.9	31.6
– of which, wind power	4.1	5.8	5.8	7.6	7.8
– of which, biomass and waste	2	0.7	0.7	0.4	0.4
Energy consumption, TWh					
Gas	31.7	27.7	32.5	36.8	38.6
Hard coal	35.2	46.1	43.9	42.1	41.1
Lignite	153.5	3.2	3.2	1.5	–
Peat	0.4	0.5	0.5	0.4	0.6
Waste (non-biogenic)	2.9	1.8	1.9	1.2	1.2
Biomass, waste (biogenic)	7.1	4.3	4.6	3.7	3.9
Other fuels, including oil	5.7	1.5	1.5	1.5	1.7
Uranium (tonnes)	119	143	119.6	105.9	118.0
Emissions to air (Scope 1)[1]					
Carbon dioxide (CO_2), Mtonnes	82.7	23.9	23.7	23.0	22.5[6]
Specific CO_2 emissions, g/kWh	421	172	170	157	150
Biogenic CO_2[2], Mtonnes	2.4	1.5	1.6	1.3	1.3
Nitrogen oxides (NO_x), ktonnes	52.8	10.1	10.2	9.8	9.9
Specific NO_x emissions, g/kWh	0.271	0.073	0.073	0.066	0.066
Specific NO_x emissions (only combustion plants), g/kWh	0.474	0.196	0.196	0.187	0.194
Sulphur dioxide (SO_2), ktonnes[3]	53.1	4.5	4.2	4.1	4.2
Specific SO_2 emissions, g/kWh[3]	0.272	0.032	0.030	0.028	0.028
Specific SO_2 emissions (only combustion plants), g/kWh[3]	0.476	0.087	0.081	0.078	0.082
Particulate matter (PM), ktonnes	1.7	0.3	0.3	0.3	0.2
Specific PM emissions, g/kWh	0.008	0.002	0.002	0.002	0.001
Specific PM emissions (only combustion plants), g/kWh	0.015	0.005	0.005	0.006	0.004
Carbon dioxide (CO_2), Mtonnes (Scope 2)	–	–	0.1	0.1	0.1
Carbon dioxide (CO_2), Mtonnes (Scope 3)	–	–	19.9	19.6	19.8
Waste and by-products, ktonnes					
Hazardous waste	123	76	106	61	59
Non-hazardous waste	416	128	133	145	98
Ash from coal	5,912	790	775	671	579
Ash from biomass	42.3	38.3	41.3	37.4	38.4
Slag from waste incineration	245	229	237	168	170
Gypsum	3,000	193	208	169	185
Radioactive waste					
Low and medium radiactive operational waste, m^3	2,251	3,353	1,013	912	829
Core components, tonnes	10	7	17	15	31
Spent nuclear fuel, tonnes	193	197	124	175	137
SAIDI (minutes/customer)					
Sweden	177	212	150	125	187
Germany	15	11	10	11	15
SAIFI (number/customer)					
Sweden	2.4	2.2	2.1	1.8	2.9
Germany	0.2	0.2	0.2	0.2	0.3
Our people					
Number employees, FTE	30,181	28,567	19,935	20,041	19,910
– of which females	6,983	6,399	4,773	4,827	4,840
– of which temporary employed (not permanent contract)	882	761	550	609	618
Sick leave					
men, %	3.7%	4.1%	3.5%	3.6%	3.5%
women, %	5.0%	5.8%	5.4%	5.7%	5.4%
Work-related accidents					
Internal LTIF (employees)	2.7	2.6	2.0	1.5	1.9
External LTI[4] (contractors)	–	133	101	80	71

	2014[5]	2015	2016	2017	2018
Gender diversity					
Female managers, %	18%	19%	22%	23%	24%
Share of managers per age category total					
-29	2%	1%	1%	1%	1%
30-49	54%	52%	56%	58%	56%
50-	45%	46%	43%	40%	43%

[1] Emissions are presented in accordance to financial accounting and consolidated.
[2] CO_2 emissions from combustion of biomass.
[3] 2017 SO_2 values have been corrected.
[4] As the Contractor LTIF calculation is not reliable enough, only LTI is reported.
[5] Values for 2014 are including the divested lignite operation.
[6] Total greenhouse emissions amount to 22.6 Mtonnes, 0.15 Mtonnes consist of SF_6 and N_2O emissions. Characterisation factors are obtained from the IPCC Fifth Assessment report.

Quarterly overview

	2017				2018			
Amounts in SEK million	**Q1**[1]	**Q2**[1]	**Q3**[1]	**Q4**[1]	**Q1**	**Q2**	**Q3**	**Q4**
Income statement items								
Net sales	40,112	29,307	27,354	38,342	44,328	31,959	32,489	48,048
EBITDA	9,783	8,718	5,900	9,999	10,938	6,888	7,854	8,662
Operating profit (EBIT)	6,091	4,399	2,115	5,920	6,975	2,775	3,680	4,189
Underlying operating profit	8,408	4,826	2,757	7,213	9,359	3,770	2,127	4,627
Financial income	581	658	340	1,091	206	2,372	-64	373
Financial expenses	-1,586	-1,773	-1,644	-3,422	-1,902	-1,647	-1,435	-1,519
Profit before income taxes	5,087	3,283	811	3,589	5,279	3,500	2,181	3,042
Profit for the period	3,829	2,097	749	2,808	4,158	2,967	1,782	3,100
– of which, attributable to owners of the Parent Company	3,267	1,853	695	2,519	3,691	2,377	1,668	2,421
– of which, attributable to non-controlling interests	562	244	54	289	467	590	114	679
Cash flow items								
Funds from operations (FFO)	8,307	6,809	5,001	6,527	8,758	4,006	3,246	7,265
Cash flow from operating activities	-1,161	6,789	15,550	4,550	1,259	15,215	18,816	5,764
Free cash flow	-3,627	4,111	12,782	-175	-1,165	12,002	15,973	766
Balance sheet items								
Cash and cash equivalents and short-term investments	39,308	42,813	34,166	26,897	32,492	35,449	41,186	40,071
Equity	85,780	88,358	89,454	92,332	97,815	99,194	104,213	103,597
– of which, attributable to owners of the Parent Company	70,460	72,763	73,935	77,085	82,587	83,812	89,085	88,096
– of which, attributable to non-controlling interests	15,320	15,595	15,519	15,247	15,228	15,382	15,128	15,501
Interest-bearing liabilities	96,013	111,994	91,911	87,154	97,497	93,832	84,182	88,275
Net debt	54,681	67,167	56,841	59,260	64,353	57,754	42,384	47,728
Adjusted net debt	127,051	123,263	113,288	124,360	130,900	125,182	109,273	112,324
Provisions	138,092	124,311	124,593	131,680	134,576	138,319	137,175	136,642
Noninterest-bearing liabilities	83,083	75,614	83,979	97,966	97,211	113,945	138,287	134,094
Capital employed, average	252,783	237,491	234,726	241,635	247,383	250,821	244,992	250,283
Balance sheet total	402,968	400,277	389,937	409,132	427,099	445,290	463,857	462,608

[1] Certain amounts have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

	2017				2018			
Amounts in SEK million	**Q1**[2]	**Q2**[2]	**Q3**[2]	**Q4**[2]	**Q1**	**Q2**	**Q3**	**Q4**
Key ratios in % unless otherwise stated. (x) means times.								
Operating margin	15.2	15.0	7.7	15.4	15.7	8.7	11.3	8.7
Operating margin[1]	21.0	16.5	10.1	18.8	21.1	11.8	6.5	9.6
Pre-tax profit margin	12.7	11.2	3.0	9.4	11.9	11.0	6.7	6.3
Pre-tax profit margin[1]	18.5	12.7	5.3	12.7	17.3	7.7	1.9	7.2
Return on equity	-41.1	1.4	2.4	11.1	11.2	11.5	12.4	11.9
Return on capital employed	-1.1	4.2	4.2	7.7	7.8	7.1	7.9	7.0
Return on capital employed[1]	8.7	9.7	9.9	9.6	9.9	9.2	9.2	7.9
EBIT interest cover, (x)	-0.5	2.2	2.2	3.3	3.3	3.0	3.4	4.3
EBIT interest cover, (x)[1]	5.0	4.9	5.2	4.1	4.0	3.9	3.9	4.9
FFO interest cover, (x)	6.9	6.9	7.1	5.4	5.2	4.9	4.7	6.5
FFO interest cover, net, (x)	7.9	7.1	7.5	6.9	6.4	6.0	5.8	7.8
Cash flow interest cover after maintenance investments, (x)	6.8	4.8	6.7	3.5	3.8	5.3	6.0	9.1
FFO/gross debt	27.7	24.5	29.6	30.6	27.8	25.9	26.8	26.4
FFO/net debt	48.7	40.8	47.9	45.0	42.1	42.1	53.2	48.8
FFO/adjusted net debt	21.0	22.3	24.1	21.4	20.7	19.4	20.6	20.7
EBITDA/net financial items, (x)	12.4	8.0	6.0	6.0	8.4	7.3	10.4	21.2
EBITDA/net financial items, (x)[1]	15.4	8.0	6.7	6.7	10.2	8.4	8.3	22.0
Equity/total assets	21.3	22.1	22.9	22.6	22.9	22.3	22.5	22.4
Gross debt/equity	111.9	126.8	102.7	94.4	99.7	94.6	80.8	85.2
Net debt/equity	63.7	76.0	63.5	64.2	65.8	58.2	40.7	46.1
Gross debt/gross debt plus equity	52.8	55.9	50.7	48.6	49.9	48.6	44.7	46.0
Net debt/net debt plus equity	38.9	43.2	38.9	39.1	39.7	36.8	28.9	31.5
Net debt/EBITDA, (x)	2.4	2.4	2.1	1.7	1.8	1.7	1.2	1.4
Adjusted net debt/EBITDA, (x)	5.5	4.4	4.1	3.6	3.7	3.7	3.1	3.3
Other information								
Investments	4,023	4,922	5,173	7,176	3,284	5,558	4,036	9,035
Electricity generation, TWh	36.6	28.3	27.3	35.1	37.2	29.4	27.8	35.9
Sales of electricity, TWh	45.2	34.6	33.9	43.6	49.8	36.2	38.1	50.0
Sales of heat, TWh	7.6	3.2	1.9	6.1	8.2	2.4	1.9	5.8
Sales of gas, TWh	23.1	8.9	5.9	18.5	25.9	8.0	5.3	18.0
Number of employees, full-time equivalents	19,892	19,806	20,140	20,041	20,031	19,959	19,951	19,910

[1] Based on Underlying operating profit, that is, Operating profit excluding Items affecting comparability.

[2] Certain amounts have been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Ten-year overview

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Income statement items										
Net sales	205,407	213,572	181,040	167,313	172,253	165,945	143,576	139,208	135,114[3]	156,824
EBITDA	51,777	60,706	54,538	54,271	43,554	41,038	30,604	27,209	34,399[3]	34,341
Operating profit (EBIT)	27,938	29,853	23,209	25,958	-6,218	-2,195	-5,069	1,337	18,524[3]	17,619
Underlying operating profit	31,294	36,838	30,793	27,530	28,135	24,133	20,529	21,697	23,203[3]	19,883
Financial income	2,814	2,514	3,843	2,636	1,416	2,590	2,755	1,767	2,670	2,887
Financial expenses	-13,018	-10,944	-12,754	-10,476	-10,453	-8,635	-7,531	-8,149	-8,425	-6,503
Profit before income taxes	17,734	21,423	14,298	18,118	-15,255	-8,240	-9,845	-5,045	12,769[3]	14,003
Profit for the year	13,448	13,185	10,416	17,047	-13,543	-8,284	-19,766	-26,004	9,484[3]	12,007
– of which, attributable to owners of the Parent Company	12,896	12,997	11,083	16,759	-13,668	-8,178	-16,672	-26,324	8,333[3]	10,157
– of which, attributable to non-controlling interests	552	188	-667	288	125	-106	-3,094	320	1,151	1,850
Cash flow items										
Funds from operations (FFO)	36,700	40,108	38,256	34,419	31,888	32,131	29,009	28,186	26,643[3]	23,275
Cash flow from operating activities	46,246	41,231	33,468	28,485	37,843	40,146	40,934	30,783	25,728	41,054
Free cash flow	27,566	23,846	17,637	12,619	23,579	23,234	25,013	19,217	13,091	27,575
Balance sheet items										
Cash and cash equivalents and short-term investments	56,940	43,873	28,685	46,495	27,261	45,068	44,256	43,292	26,897	40,071
Equity	142,404	133,621	138,931	149,372	130,718	128,462	115,956	83,800	92,332[3]	103,597
– of which, attributable to owners of the Parent Company	135,620	126,704	131,988	140,764	120,370	115,260	103,984	68,272	77,085[3]	88,096
– of which, attributable to non-controlling interests	6,784	6,917	6,943	8,608	10,348	13,202	11,972	15,528	15,247[3]	15,501
Interest-bearing liabilities	213,494	188,277	170,350	160,261	126,488	125,928	110,585	96,667	87,154	88,275
Net debt	154,987	144,109	141,089	111,907	98,998	79,473	64,201	50,724	59,260	47,728
Adjusted net debt	205,028	173,409	176,031	154,335	162,590	158,291	137,585	124,741	124,360	112,324
Provisions	91,100	87,822	91,719	103,832	118,166	138,567	138,263	138,344	131,680	136,642
Noninterest-bearing liabilities	155,129	131,712	123,558	114,899	110,112	104,252	97,513	90,449	88,200[3]	134,094
Capital employed, average	–	–	317,799	313,124	302,743	293,992	279,435	248,640	240,778[3]	250,283
Balance sheet total	602,127	541,432	524,558	528,364	485,484	497,209	462,317	409,260	409,132[3]	462,608
Key ratios in % unless otherwise stated. (x) means times.										
Operating margin	13.6	14.0	12.8	15.5	-3.6	-1.3	-3.5	1.0	13.7[3]	11.2
Operating margin[1]	15.2	17.2	17.0	16.5	16.3	14.5	14.3	15.6	17.2	12.7
Return on equity	9.5	10.0	8.6	12.3	-11.4	-6.9	-16.8	-33.4	11.1[3]	11.9
Return on capital employed	–	–	7	8.3	-2.1	-0.8	-1.8	0.5	7.7	7.0
Return on capital employed[1]	–	–	10	8.8	9.3	8.2	7.3	8.7	9.6[3]	7.9
EBIT interest cover, (x)	3.1	4.1	2.6	3.7	-0.7	-0.1	-0.8	0.5	3.3	4.3
EBIT interest cover, (x)1	3.4	5.0	3.3	3.9	4.1	5.0	4.8	4.6	4.1	4.9
FFO interest cover, (x)	4.8	6.2	4.9	5.7	5.4	7.3	6.5	6.5	5.4	6.5
FFO interest cover, net, (x)	5.6	7.5	5.8	6.6	6.2	10.1	9.4	7.7	6.9	7.8
FFO/gross debt	17.2	21.3	22.5	21.5	25.2	25.5	23.2	27.8	30.6	26.4
FFO/net debt	23.7	27.8	27.1	30.8	32.2	40.4	39.9	53.0	45.0[3]	48.8
FFO/adjusted net debt	18	23.1	21.7	22.3	19.6	20.3	18.6	21.6	21.4[3]	20.7
Equity/total assets	23.7	24.7	26.5	28.3	26.9	25.9	25.1	20.5	22.6[3]	22.4
Gross debt/equity	149.9	140.9	122.6	107.3	96.8	98.0	95.4	115.4	94.4[3]	85.2
Net debt/equity	108.8	107.8	101.6	74.9	75.7	61.9	55.4	60.5	64.2[3]	46.1
Gross debt/gross debt plus equity	60.0	58.5	55.1	51.8	49.2	49.5	48.8	53.6	48.6[3]	46.0
Net debt/EBITDA, (x)	3.0	2.4	2.6	2.1	2.3	1.9	2.1	1.9	1.7	1.4
Adjusted net debt/EBITDA, (x)	4	2.9	3.2	2.8	3.7	3.9	4.5	4.6	3.6	3.3
Other information										
Dividend to owners of the Parent Company	5,240	6,500	4,433	6,774	–	–	–	–	2,000	2,000[2]
Investments	102,989	41,794	35,750	29,581	27,761	29,032	25,776	21,921	21,294[3]	21,913
Electricity generation, TWh	158.9	172.4	166.7	178.9	181.7	172.9	117.4	119.0	127.3	130.3
Sales of electricity, TWh	194.6	194.2	209.4	205.5	203.3	199.0	197.2	193.2	157.3	174.1
Sales of heat, TWh	37.9	47.1	41.6	29.8	30.3	24.1	20.6	20.3	18.9	18.3
Sales of gas, TWh	20.0	63.2	53.8	52.4	55.8	45.5	50.7	54.8	56.3	57.2
Number of employees, full-time equivalents	36,593	38,459	37,679	33,059	31,819	30,181	28,567	19,935	20,041	19,910

[1] Based on Underlying operating profit, that is, Operating profit excluding items affecting comparability.

[2] Proposed dividend.

[3] The value has been recalculated compared with previously published information in Vattenfall's 2017 Annual and Sustainability Report as a result of new accounting rules (IFRS 9 and 15) that took effect in 2018. See Note 2 to the consolidated accounts, Important changes in the financial statements compared with the preceding year.

Definitions and calculations of key ratios

The key ratios are presented as percentages (%) or times (x) and are based on full year 2018.

Alternative Performance Measures
In order to ensure a fair presentation of the Group's operations, the Vattenfall Group uses a number of Alternative Performance Measures that are not defined in IFRS or in the Swedish Annual Accounts Act. The Alternative Performance Measures that Vattenfall uses are described below, including their definitions and how they are calculated. The Alternative Performance Measures used are unchanged compared with earlier periods.

EBIT – Operating profit (Earnings Before Interest and Tax)

EBITDA – Operating profit before depreciation, amortisation and impairment losses (Earnings Before Interest, Tax, Depreciation and Amortisation)

Items affecting comparability – Capital gains and capital losses from shares and other non-current assets, impairment losses and reversed impairment losses and other material items that are of an infrequent nature. Also included here are, for trading activities, unrealised changes in the fair value of energy derivatives, which according to IFRS 9 cannot be recognised using hedge accounting and unrealised changes in the fair value of inventories. See Consolidated income statement for a specification of items affecting comparability.

Underlying EBITDA – Underlying operating profit before depreciation, amortisation and impairment losses. This measure is intended to provide a better view on the operating result by excluding items affecting comparability that are of an infrequent nature, while also excluding non-cash depreciation and amortisation.

Underlying operating profit – Operating profit (EBIT) excluding items affecting comparability. This measure is intended to provide a better view on the operating result by excluding items affecting comparability that are of an infrequent nature.

FFO – Funds From Operations, see Consolidated statement of cash flow

Free cash flow – Cash flow from operating activities less maintenance investments

Interest-bearing liabilities – See Consolidated balance sheet – Supplementary Information

Net debt – See Consolidated balance sheet – Supplementary Information

Adjusted net debt – See Consolidated balance sheet – Supplementary Information

Capital employed – Total assets less financial assets, noninterest-bearing liabilities and certain other interest-bearing provisions not included in adjusted net debt. see Consolidated balance sheet – Supplementary Information

Other definition
Hybrid Capital – Perpetual subordinated securities, junior to all Vattenfall's unsubordinated debt instruments.

LTIF – Lost Time Injury Frequency (LTIF) is expressed in terms of the number of lost time work injuries (per 1 million hours worked), i.e., work-related accidents resulting in absence longer than one day, and accidents resulting in fatality.

Calculations of key ratios

Operating margin, %	= 100 x	EBIT / Net sales	17,619 / 156,824	= 11.2
Operating margin excl items affecting comparability, %	= 100 x	Underlying EBIT / Net sales	19,883 / 156,824	= 12.7
Pre-tax profit margin, %	= 100 x	Profit before income taxes / Net sales	14,003 / 156,824	= 8.9
Pre-tax profit margin excl items affecting comparability, %	= 100 x	Profit before income taxes excl items affecting comparability / Net sales	14,227 / 156,824	= 9.1
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	10,157 / 85,500	= 11.9
Return on capital employed, %	= 100 x	EBIT / Capital employed, average	17,619 / 250,283	= 7.0
Return on capital employed excl items affecting comparability, %	= 100 x	Underlying EBIT / Capital employed, average	19,883 / 250,283	= 7.9
EBIT interest cover, (x)	=	EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	18,476 / 4,264	= 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	20,740 / 4,264	= 4.9
FFO interest cover, (x)	=	FFO + financial expenses excl discounting effects attributable to provisions / Financial expenses excl discounting effects attributable to provisions	27,539 / 4,264	= 6.5
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	26,682 / 3,407	= 7.8
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	30,995 / 3,420	= 9.1
FFO/gross debt, %	= 100 x	FFO / Interest-bearing liabilities	23,275 / 88,275	= 26.4
FFO/net debt, %	= 100 x	FFO / Net debt	23,275 / 47,728	= 48.8
FFO/adjusted net debt, %	= 100 x	FFO / Adjusted net debt	23,275 / 112,324	= 20.7
EBITDA/net financial items, (x)	=	EBITDA / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	34,341 / 3,407	= 10.1
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	36,469 / 3,407	= 10.7
Equity/total assets, %	= 100 x	Equity / Balance sheet total	103,597 / 462,608	= 22.4
Gross debt/equity, %	= 100 x	Interest-bearing liabilities / Equity	88,275 / 103,597	= 85.2
Net debt/equity, %	= 100 x	Net debt / Equity	47,728 / 103,597	= 46.1
Gross debt/gross debt plus equity, %	= 100 x	Interest-bearing liabilities / Interest-bearing liabilities + equity	88,275 / 191,872	= 46.0
Net debt/net debt plus equity, %	= 100 x	Net debt / Net debt + equity	47,728 / 151,325	= 31.5
Net debt/EBITDA, (x)	=	Net debt / EBITDA	47,728 / 34,341	= 1.4
Adjusted net debt/ EBITDA, (x)	=	Adjusted net debt / EBITDA	112,324 / 34,341	= 3.3

Facts about Vattenfall's markets 2018[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2018							
Hydro power[2]	8,677	124	–	2,880	6	–	11,687
Nuclear power	7,223	–	–	–	–	–	7,223
Fossil-based power	699	–	–	4,638	4,075	–	9,412
– of which, gas	–	–	–	*1,220*	*3,425*	–	*4,645*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*2,877*	*650*	–	*3,527*
– of which, oil and other	*699*	–	–	*540*	–	–	*1,239*
Wind power	356	–	337	588	201	1,077	2,559
Biomass, peat, waste	189	–	–	45	2	–	236
Solar power	–	–	–	2	10	5	17
Total	**17,144**	**124**	**337**	**8,152**	**4,294**	**1,082**	**31,133**
Installed capacity heat, MW, 31 December 2018	**2,170**	**–**	**–**	**7,915**	**1,225**	**–**	**11,310**
Generated electricity, TWh							
Hydro power[2]	31.6	0.4	–	3.5	–	–	35.5
Nuclear power	55.0	–	–	–	–	–	55.0
Fossil-based power	–	–	–	15.5	15.9	–	31.6
– of which, gas	–	–	–	*3.4*	*12.7*	–	*16.1*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*11.9*	*3.2*	–	*15.1*
– of which, oil and other	–	–	–	*0.3*	–	–	*0.3*
Wind power	0.9	–	0.9	2.6	0.4	3.0	7.8
Biomass, peat, waste	0.3	–	–	0.2	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**87.9**	**0.4**	**0.9**	**21.9**	**16.4**	**3.0**	**130.3**
Production of heat, TWh							
Fossil-based heat	0.3	–	–	12.8	1.6	–	14.7
– of which, gas	–	–	–	*7.5*	*1.6*	–	*9.1*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*4.8*	–	–	*4.8*
– of which, oil and other	*0.3*	–	–	*0.6*	–	–	*0.8*
Biomass, peat, waste	3.1	–	–	1.0	–	–	4.2
Total heat Production	**3.4**	**–**	**–**	**13.9**	**1.7**	**–**	**18.9**
Sales of electricity, TWh	91.8 [3]	0.5	1.1	61.0[4]	19.0	0.7	174.1
Sales of Heat, TWh	3.1	–	–	13.4	1.8	–	18.3
Sales of gas, TWh	–	–	–	13.3[4]	42.8	1.1	57.2
Number of retail customers	878,461	322,215	–	3,220,782	2,015,107	113,826	6,550,391
Electricity volume, TWh retail customers	8.5	2.4	–	8.9	6.9	0.7	27.4
Electricity volume, TWh resellers	3.7	0.6	0.6	24.6	–	–	29.5
Electricity volume, TWh businesses	24.3[3]	6.3	–	22.6[4]	9.1	–	62.3
Number of network customers	965,601	–	–	2,348,086	–	–	3,313,687
Number of gas customers	–	–	–	511,518	1,766,893	68,408	2,346,819
Electricity network							
Transited volume, TWh	72.9	–	–	13.1	–	–	86.1
Distribution network, km	134,727	–	–	35,090	–	–	169,817
Number of employees (full-time equivalents)							
Per country	8,890	83	290	6,563	3,398	464	19,688
Group total							19,910
CO_2 emissions per country, Mtonnes	0.4	–	–	14.1	7.9	–	22.5
CO_2 emission allowances received, Mtonnes CO_2/year	0.3	–	–	1.1	0.1	–	1.5

Facts about Vattenfall's markets 2017[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2017							
Hydro power[2]	8,677	124	–	2,879	6	–	11,687
Nuclear power	7,226	–	–	–	–	–	7,226
Fossil-based power	699	–	–	4,784	4,071	–	9,554
– of which, gas	–	–	–	*1,285*	*3,421*	–	*4,707*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*2,866*	*650*	–	*3,516*
– of which, oil	*699*	–	–	*632*	–	–	*1,331*
Wind power	375	–	338	588	201	981	2,483
Biomass, peat, waste	189	–	–	45	2	–	236
Solar power	–	–	–	–	8	5	13
Total	**17,166**	**124**	**338**	**8,297**	**4,288**	**986**	**31,198**
Installed capacity heat, MW, 31 December 2017	**2,183**	**–**	**–**	**7,689**	**1,248**	**–**	**11,120**
Generated electricity, TWh							
Hydro power[2]	32.3	0.5	–	2.8	–	–	35.6
Nuclear power	51.9	–	–	–	–	–	51.9
Fossil-based power	–	–	–	16.6	15.3	–	31.9
– of which, gas	–	–	–	*3.5*	*12.1*	–	*15.6*
– of which, lignite	–	–	–	*0.3*	–	–	*0.3*
– of which, hard coal	–	–	–	*12.4*	*3.2*	–	*15.6*
– of which, oil	–	–	–	*0.3*	–	–	*0.3*
Wind power	1.1	–	1.1	2.5	0.4	2.6	7.6
Biomass, peat, waste	0.2	–	–	0.2	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**85.5**	**0.5**	**1.1**	**22.0**	**15.7**	**2.6**	**127.3**
Production of heat, TWh							
Fossil-based heat	0.4	–	–	13.6	1.5	–	15.5
– of which, gas	–	–	–	*6.7*	*1.5*	–	*8.2*
– of which, lignite	–	–	–	*1.0*	–	–	*1.0*
– of which, hard coal	–	–	–	*5.5*	–	–	*5.5*
– of which, oil	*0.4*	–	–	*0.5*	–	–	*0.9*
Biomass, peat, waste	3.1	–	–	1.0	–	–	4.2
Total heat production	**3.5**	**–**	**–**	**14.7**	**1.6**	**–**	**19.7**
Sales of electricity, TWh	89.6[3]	3.1	1.3	43.5[4]	18.9	0.6	157.3
Sales of heat, TWh	3.2	–	–	14.0	1.7	–	18.9
Sales of gas, TWh	–	–	–	12.4	43.4	0.5	56.3
Number of electricity customers	926,504	354,863	–	3,062,931	1,979,818	124,913	6,449,029
Electricity volume, TWh retail customers	8.8	2.6	–	8.1	7.1	0.3	26.9
Electricity volume, TWh resellers	3.7	0.6	0.6	20.5	–	0.3	25.6
Electricity volume, TWh businesses	25.1[3]	5.4	–	17.1[4]	8.9	–	56.6
Number of network customers	957,465	–	–	2,332,978	–	–	3,290,443
Number of gas customers	–	–	–	537,257	1,735,226	71,078	2,343,561
Electricity network							
Transited volume, TWh	72.5	–	–	13.0	0	–	85.5
Distribution network, km	133,260	–	–	34,710	0	–	167,970
Number of employees (full-time equivalents)							
Per country	8,808	81	255	6,836	3,474	398	19,852
Group total							20,041
CO_2 emissions per country, Mtonnes	0.3	–	–	15.1	7.6	–	23.0
CO_2 emission allowances received, Mtonnes CO_2/year	0.3	–	–	1.4	0.1	–	1.8

[1] Rounding differences may be present for certain items.
[2] In Germany mainly pumped-storage power plants.
[3] Including sales in Norway.
[4] Including sales in France.

Pro rata[1]

2018	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2018							
Hydro power[2]	8,470	124	–	2,880	6	–	11,479
Nuclear power	4,943	–	–	282[5]	–	–	5,225
Fossil-based power	699	–	–	4,556	4,075	–	9,330
– of which, gas	–	–	–	*1,188*	*3,425*	–	*4,613*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*2,828*	*650*	–	*3,478*
– of which, oil and other	*699*	–	–	*540*	–	–	*1,239*
Wind power	285	–	336	322	273	1,004	2,219
Biomass, peat, waste	189	–	–	34	2	–	225
Solar power	–	–	–	2	10	5	17
Total	**14,585**	**124**	**336**	**8,075**	**4,365**	**1,009**	**28,495**
Installed capacity heat, MW, 31 December 2018	**2,062**	**–**	**–**	**7,475**	**1,225**	**–**	**10,762**
Generated electricity, TWh							
Hydro power[2]	30.8	0.4	–	3.5	–	–	34.8
Nuclear power	37.7	–	–	2.0	–	–	39.7
Fossil-based power	–	–	–	15.3	15.9	–	31.2
– of which, gas	–	–	–	*3.3*	*12.7*	–	*16.0*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*11.7*	*3.2*	–	*14.9*
– of which, oil and other	–	–	–	*0.3*	–	–	*0.3*
Wind power	0.7	–	0.9	1.4	0.6	2.7	6.3
Biomass, peat, waste	0.3	–	–	0.2	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**69.5**	**0.4**	**0.9**	**22.3**	**16.5**	**2.7**	**112.3**
CO_2 emissions per country, Mtonnes	0.4	–	–	13.7	7.9	–	22.0

Footnotes: For explanations, see page 177.

2017	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2017							
Hydro power[2]	8,470	124	–	2,879	6	–	11,479
Nuclear power	4,945	–	–	282[5]	–	–	5,227
Fossil-based power	699	–	–	4,702	4,071	–	9,473
– of which, gas	–	–	–	*1,253*	*3,421*	–	*4,674*
– of which, lignite	–	–	–	–	–	–	–
– of which, hard coal	–	–	–	*2,817*	*650*	–	*3,467*
– of which, oil and other	*699*	–	–	*632*	–	–	*1,331*
Wind power	304	–	336	322	273	907	2,142
Biomass, peat, waste	189	–	–	34	2	–	224
Solar power	–	–	–	–	8	5	13
Total	**14,607**	**124**	**336**	**8,220**	**4,360**	**912**	**28,558**
Installed capacity heat, MW, 31 December 2017	**2,072**	**–**	**–**	**7,248**	**1,248**	**–**	**10,568**
Generated electricity, TWh							
Hydro power[2]	31.3	0.5	–	2.8	–	–	34.6
Nuclear power	35.5	–	–	1.1	–	–	36.6
Fossil-based power	–	–	–	16.3	15.3	–	31.6
– of which, gas	–	–	–	*3.4*	*12.1*	–	*15.6*
– of which, lignite	–	–	–	*0.3*	–	–	*0.3*
– of which, hard coal	–	–	–	*12.2*	*3.2*	–	*15.4*
– of which, oil and other	–	–	–	*0.3*	–	–	*0.3*
Wind power	0.9	–	1.1	1.3	0.6	2.3	6.2
Biomass, peat, waste	0.2	–	–	0.1	–	–	0.4
Solar power	–	–	–	–	–	–	–
Total	**67.9**	**0.5**	**1.1**	**21.7**	**15.9**	**2.3**	**109.3**
CO_2 emissions per country, Mtonnes	0.3	–	–	14.7	7.6	–	22.6

Footnotes 1–4: For explanations, see page 177.

[5] The technical capacity of Krummel nuclear power plant is 673 MW pro rata. However, Krummel has no authorisation for power operation and is therefore reported as zero capacity.

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, Economy and Society.

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 is 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 27 – The 27 member states of the EU after its widening on 1 January 2007.

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 life-time 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 products' 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 the customer's 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.

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 its 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 stations 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 production.

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 over 15,000 times more potent than CO_2 which is commonly used for electrical insulation.

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 which is provided to customers who then brand the product themselves and resell it as their own

For definitions of **financial key ratios**, see pages 174–175.

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
- Mton (megatonnes) = 1,000,000 tonnes

Voltage
- 1 kV (kilovolt) = 1,000 volts (V)

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Financial calendar

11 April 2019	Annual General Meeting
25 April 2019	Interim report January–March
19 July 2019	Interim report January–June
29 October 2019	Interim report January–September
5 February 2020	Year-end report for 2019 (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 2018 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.

VATTENFALL

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