POWER CLIMATE SMARTER LIVING

VATTENFALL ANNUAL AND SUSTAINABILITY REPORT 2016

VATTENFALL

VATTENFALL FOR THE FUTURE

Vattenfall has begun a sustainable journey and is rapidly transforming to support its customers in the transition to a fossil-free world. We will capture value from new trends and continue to deliver results in a dynamic, rapidly-changing energy system.

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

Hydro power plays an important role as a large-scale, on-demand renewable energy source.

Nuclear power is a climate neutral, cost effective solution that will play an important role in Sweden for a long time to come.

Lignite- and coal-fired generation will be phased out. Vattenfall has taken a major step in this respect by divesting its lignite assets in Germany.

Energy storage systems such as pumped storage power plants and batteries can help manage the challenges with renewable and weather-dependent energy on the continent, such as wind and solar power.

Market trends

Decentralisation

Renewables

Electric cars and buses will contribute to significant reductions in CO_2 emissions and noise in cities.

Through electrification of the steel, concrete and chemical industries, CO_2 emissions from industrial processes can be reduced significantly.

New digital solutions will enable customers to produce and consume sustainable energy in a convenient and affordable manner.

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

Solar energy will play a greater role in the future energy system in both small- and large-scale installations.

Digitalisation

Electrification

VATTENFALL AT A GLANCE

This is Vattenfall

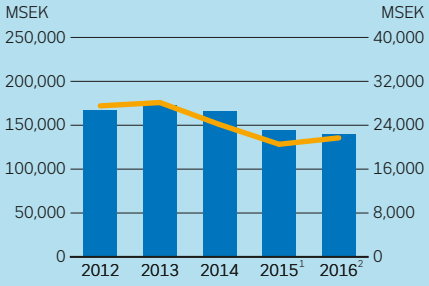
We are one of Europe's major retailers of electricity and heat and one of the largest producers of electricity and heat. Vattenfall's main markets are Denmark, Finland, the Netherlands, Germany, the UK and Sweden. The Group has approximately 20,000 employees. The Parent Company, Vattenfall AB, is 100%-owned by the Swedish state, and its headquarters are located in Solna, Sweden.

Results 2016

- Net sales of SEK 152,667 million (164,510) for Total Vattenfall[1], of which SEK 139,208 million (143,576) for continuing operations
- Underlying operating profit[2] of SEK 21,693 million (20,541) for Total Vattenfall[1], of which SEK 21,697 million (20,529) for continuing operations
- Operating profit of SEK -21,205 million (-22,967) for Total Vattenfall[1], of which SEK 1,337 million (-5,069) for continuing operations
- Profit for the year of SEK -26,004 million (-19,766) for Total Vattenfall[1], of which SEK -2,171 million (-5,188) for continuing operations

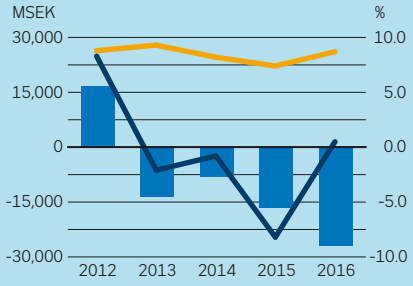
1) Total Vattenfall, including lignite operations.
2) Operating profit excluding items affecting comparability.

Net sales and underlying operating profit



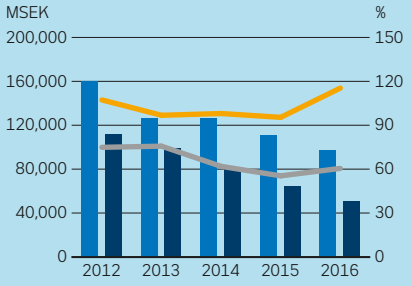
1) The value for 2015 has been recalculated compared with information previously published in Vattenfall's 2015 Annual and Sustainability Report. This is because the lignite operations have been divested and are reported as a discontinued operation in accordance with IFRS 5.
2) The value pertains to continuing operations.
3) Operating profit excluding items affecting comparability.

Earnings and return

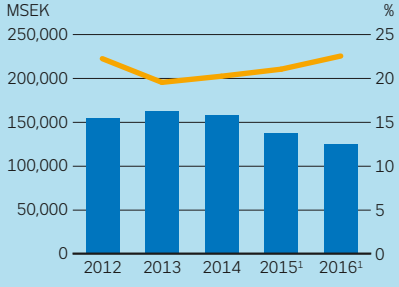


1) Profit for the year attributable to owners of the Parent Company.

Net debt

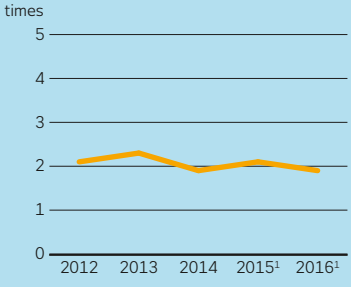


Adjusted net debt



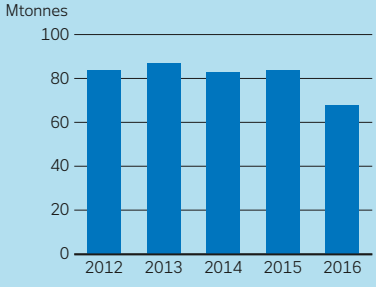
1) Key ratio is based on continuing operations.

Net debt/EBITDA



1) Key ratio is based on continuing operations.

CO_2 emissions[1]



1) Absolute CO_2 emissions, pro rata corresponding to Vattenfall's share, pertain to Total Vattenfall including the lignite operations. Emissions for continuing operations amounted to 23.2 Mtonnes CO_2.

Heat customers

2,040,000

Electricity customers

6,340,000

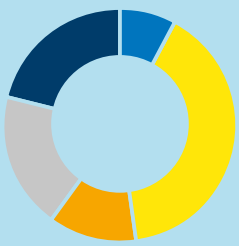
Gas customers

2,190,000

Electricity network customers

3,270,000

Operating segments – percentage share of underlying EBITDA[1, 2]



Customers & Solutions	8%
Power Generation	40%
Wind	12%
Heat	19%
Distribution	21%

1) Pertains to continuing operations, excluding lignite operations.

2) Underlying operating profit before depreciation, amortisation and impairment losses, excluding items affecting comparability.

Contents

👁 = audited
👁 = limited assurance

Reporting in accordance with GRI G4 "Core" option
Vattenfall has been reporting in accordance with the Global Reporting Initiative's (GRI) Guidelines since 2003. For 2016 Vattenfall continues to adhere to the G4 Guidelines, "Core" option. Vattenfall uses the GRI framework as a base for reporting with the ambition that the report shall reflect how sustainability is embedded in the overall strategy as well as in the daily work.

The GRI Index on pages 166–171 provides an overview of the aspects, indicators and industry-specific supplementary information that is included in Vattenfall's sustainability reporting. Information on the reporting boundaries and omissions is also provided. 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 UNGC and GRI is provided in the GRI Index.

Further information about Vattenfall's operations and sustainability work can be found at vattenfall.com/sustainability.

TOWARDS A CLIMATE-SMART FUTURE

A more sustainable energy system is currently being created as the electricity market continues its shift towards fossil-free generation. This system is closer to customers and combines efficient, large-scale production with decentralised solutions. Today we are exceptionally well positioned to develop Vattenfall's business in line with these trends.

Global trend towards a fossil-free future
Energy markets around the world have varying degrees of fossil-free electricity generation. A large share of electricity generation in the Nordic countries is derived from hydro and nuclear power, while fossil fuels are still the dominant energy source globally. This balance is changing. Increasingly I am seeing that renewable energy is the most competitive alternative for investments in electricity generation, owing to decreasing costs for solar and wind power as well as to state subsidies.

The world is currently facing a number of political and economic uncertainties that could affect the energy sector and the global climate agreement in 2017. Over the long term, I am convinced that efficient, fossil-free, low-emitting technologies combined with market forces will lead us on the right path – both from economic and climate perspectives. One such advancement is electric cars and buses, which are nearing a breakthrough and have the potential to reduce CO_2 emissions and create less noise in our cities. This is an area in which we made significant progress in 2016 through the establishment of InCharge, a large e-vehicle charging network, as well as in testing Sweden's first wireless electric bus charging station together with our project partners.

We are many actors who are working to achieve sustainable development. The UN Agenda 2030 lays out a joint direction for the most important challenges ahead. At Vattenfall when we look at the various sustainability goals in Agenda 2030 we see great opportunities to contribute and make a positive impact in many areas. Our core business is about producing affordable, sustainable energy in which the climate impact is always included in the calculation. We are part of the solution when it comes to innovation and infrastructure for sustainable cities and communities.

Our long-term strategic path
Fossil fuels are not a viable long-term option, neither for a world committed to solving the climate problem nor as part of the Vattenfall of tomorrow. The divestment of our lignite operations in Germany was an important milestone for us in this respect and also contributes to reducing the overall risk profile. While lignite does not fit our strategy, Germany will continue to be an important market for Vattenfall, with a large and growing customer base in electricity sales, distribution and heat, and with increasing investments in wind power.

Step-by-step we are adapting our portfolio to new market conditions and to a

"At present there is rapid development of local initiatives that promote the generation of local, fossil-free energy and allow greater customer involvement and choice."

more sustainable energy system. This is also reflected in our capex plan, where a large share of our planned investments of SEK 50 billion in 2017 and 2018 will be made in wind power, solar energy, district heating and electricity distribution. In fact, Vattenfall is one of the largest developers of offshore wind power in the world, which is something that we should be proud of. We have recently secured a number of projects by winning tenders in a highly competitive market. High efficiency and cost optimisation will ensure the long-term profitability of these projects.

One example of efforts to achieve greater decentralisation and customer centricity can be seen in our launch of the Powerpeers website in the Netherlands, which is a platform that allows small-scale, local energy producers and consumers to exchange local renewable energy, neighbour-to-neighbour. I am excited to see the rapid development of local initiatives that promote the generation of local fossil-free energy and allow greater customer involvement and choice. The "Voices of Vattenfall" case studies that are interspersed throughout this report provide some insight to such initiatives.

Our customer commitment and adaptation to the new energy system is also evident in the large investments we are making in our electricity grids, both in Sweden and Germany. We are constantly renewing the grids to ensure that we meet the ever greater quality requirements and can support the growing proportion of renewable energy in the system.

Negative net result but improved underlying operating profit

Despite several positive developments, the business situation for electric utilities remains tough, with low prices and continued overcapacity. The entire energy sector is under price pressure, which resulted in substantial impairment losses for Vattenfall in 2016. Profit for the year totalled SEK -2.2 billion for continuing operations and SEK -26 billion for Vattenfall as a whole, including the lignite operations. In terms of our continuing operations, we are beginning to see some positive financial developments in line with our new strategic direction. In 2016, the underlying operating profit for continuing operations was SEK 21.7 billion, which is an improvement of SEK 1.2 billion compared to 2015. Our focus on reducing costs was a key contributing factor, together with strong earnings performance by our Heat and Customers & Solutions business areas. Our greater sales focus also contributed to an increase in the customer base growth by more than 200,000 contracts in 2016.

Our CO_2 Roadmap

To address climate change – which is one of the greatest challenges of our time – we have developed a CO_2 Roadmap with the goal of being climate-neutral by 2050, and by 2030 in the Nordic countries. Following the divestment of our lignite operations in 2016, we will continue to phase out the use of coal in Vattenfall and will implement new smart energy solutions together with our business partners. For example, we will convert the Klingenberg lignite-fired power plant in Berlin into a gas-fired plant three years ahead of schedule, which will reduce our annual CO_2 emissions by 600,000 tonnes and give us an entirely new replacement power plant in operation by 2021. I am also looking forward to our continued partnerships with the cities of Uppsala, Berlin, Hamburg and Amsterdam to help them achieve their ambitious climate goals. In this report we have also highlighted current issues like these under the heading "Topical issues".

More favourable energy policy climate in Sweden and Germany and reduced risk profile for Vattenfall

Besides the lignite divestment the Swedish energy policy agreement in June 2016 was in my view one of the most positive developments during the year. It provides greater certainty and the basis for necessary investments and long-term planning in the energy sector. I highly welcome the commitment to a renewable energy future and the acknowledgement of the importance of nuclear power to realise this in a financially responsible manner. At the same time, we must continue our cost-cutting work to ensure that our nuclear plants will remain profitable.

Another key ingredient in the Swedish energy policy agreement is the reduced tax on hydro power. Hydro power is the backbone of Sweden's renewable energy system and investments are needed here to increase flexibility.

Another positive development was the German government's decision to establish a fund to finance the dismantling of the country's nuclear reactors and properly manage nuclear waste. The fund settles the debate on who is financially responsible for the country's exit from nuclear power and allows us to determine our financial obligations in this area with much greater certainty. The decision is expected to take effect in 2017. In summary we can conclude that significant progress has been made through the lignite divestment, the Swedish energy policy agreement and the financing solution for German nuclear which all contribute to a lower risk profile for Vattenfall.

Work with human rights

In 2016 we conducted a human rights screening throughout our value chain and extended the scope of human rights due diligence among our suppliers. These activities have helped us identify areas for improvement and will enable us to strive towards a greater positive impact in all areas of our business, in accordance with our commitment to the UN Global Compact.

Creating opportunity in the new energy landscape

The recent steps we have taken will be instrumental in our success at realising our strategy, but we have a number of equally important actions ahead of us in our work on creating a new Vattenfall. We will need to continue our strong growth in renewables, improve our customers' experiences, develop decentralised electricity and heat solutions, enhance our digitalisation expertise, reduce our climate impact and increase the cost-efficiency of our core operations. Through these measures I am convinced that we will create exciting future opportunities – not just for Vattenfall, but also for our customers, our partners and society as a whole.

Magnus Hall
President and CEO

TARGETS AND TARGET ACHIEVEMENTS

At Vattenfall we aspire to contribute to a sustainable energy system in all parts of the value chain. We should be a truly customer-centric company and 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 four 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. Vattenfall's board of directors adopted the six strategic long-term targets in December 2015 to better reflect our strategy, and they took effect on 1 January 2016.

Strategic objective	Strategic targets for 2020	Outcome 2016	Comment
Leading towards Sustainable Consumption	1 Customer engagement, Net Promoter Score relative[1] (NPS relative): **+2**	+7	The Customers & Solutions operating segment continued its positive trend in NPS in 2016 with improvements in the end customer market in all four core markets: Sweden, Finland, Germany and the Netherlands.
Leading towards Sustainable Production	2 Commissioned new renewables capacity 2016–2020: **≥2,300 MW**	297 MW[2]	A total of 297 MW of new renewable capacity was installed in 2016. The new capacity consists of the Sandbank offshore wind farm in Germany (216 MW), the Högabjär (38 MW) and Höge Väg (38 MW) onshore wind farms in Sweden, and the 5 MW of solar energy adjacent to Vattenfall's Parc Cynog onshore wind farm in Wales.
	3 Absolute CO_2 emissions pro rata: **≤21 Mt**	23.2 Mt[3]	CO_2 emissions of 23.2 Mtonnes (23.4) in 2016 for continuing operations were slightly lower than in 2015. Including the lignite operations, CO_2 emissions in 2016 amounted to 67.7 Mtonnes (83.8).
High Performing Operations	4 Return On Capital Employed (ROCE): **≥9%**	-8.5%[4]	The return on capital employed was -8.5% (-8.2%) for Total Vattenfall, i.e., including the lignite operations, and 0.5% (-1.8%) for continuing operations. Excluding impairment losses and other items affecting comparability, return on capital employed was 8.7% (7.4%) for Total Vattenfall and 8.7% (7.3%) for continuing operations.
Empowered and Engaged People	5 Lost Time Injury Frequency[5] (LTIF): **≤1.25**	2.0	Lost Time Injury Frequency (LTIF) was lower than a year ago, at 2.0 (2.3).
	6 Employee Engagement Index[6]: **≥70%**	57%	The employee engagement index was 57% (59%) in 2016. The My Opinion survey for 2016 showed a lower engagement score.

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 completed and commissioned wind farms as per 31 December 2016.

3) Pro rata values, corresponding to Vattenfall's share of ownership. The value has been adjusted compared to the value presented in Vattenfall's 2016 year-end report. Consolidated emissions amounted to 23.7 Mtonnes excluding lignite operations and 68.2 Mtonnes including lignite operations.

4) The key ratio is based on average capital employed. The lignite operations were classified as assets held for sale on the balance sheet as per 30 June 2016, which entails that the calculation of average capital employed excludes the lignite operations as from 30 June 2016.

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.

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 November 2012. These targets are intended to ensure that we create value and generate a market rate of return, that the capital structure is efficient, and that financial risk is kept at a reasonable level.

Financial objective	Targets over business cycle[1]	Outcome 2016	Comment
Profitability	1 Return on capital employed: **≥9%**	-8.5%[2]	The return on capital employed was -8.5% (-8.2%) for Total Vattenfall, i.e., including the lignite operations and 0.5% (-1.8%) for continuing operations. Excluding impairment losses and other items affecting comparability, return on capital employed was 8.7% (7.4%) for Total Vattenfall and 8.7% (7.3%) for continuing operations.
Capital structure	2 FFO/adjusted net debt: **22%–30%**	22.6%[3]	FFO/adjusted net debt increased compared with 2015 and was 22.6% (21.1%) for Total Vattenfall and 21.6% (18.6%)[4] for continuing operations. Adjusted net debt decreased, mainly owing to the lower level of net debt, while FFO decreased slightly.
Capital structure	3 Debt/equity ratio: **50%–90%**	60.5%	The debt/equity ratio is still within the target interval but increased slightly to 60.5% (55.4%) compared with 2015, mainly due to the negative result for the year.
Dividend policy	4 Dividend: **40%–60% of the year's profit after tax**	–	Due to the loss for the year, the board of directors has proposed – in accordance with Vattenfall's dividend policy – that no dividend be paid for 2016.

1) 5–7 years.
2) The key ratio is based on average capital employed. The lignite operations were classified as assets held for sale on the balance sheet as per 30 June 2016, which entails that the calculation of average capital employed excludes the lignite operations as from 30 June 2016.
3) The lignite operations were classified as assets held for sale on the balance sheet as per 30 June 2016. As a result, the lignite operations are excluded from balance sheet items included in the calculations of key ratios as from 30 June 2016.
4) The key ratio has been adjusted compared with the value presented in Vattenfalls' 2016 year-end report due to an adjustment of FFO by SEK 1,200 million. The adjustment of FFO was due to an incorrect allocation of FFO between continuing and discontinued operations.

IMPORTANT EVENTS

Q1 2016

Sale of Netzservice/Metering in Hamburg – In January Vattenfall completed the sale of its network services operations in Hamburg, Germany. The sale generated a capital gain of SEK 1.2 billion.

Secure supply of district heating in Hamburg – Vattenfall decided to invest EUR 83.5 million in the refurbishment of a combined heat and power (CHP) plant in the Wedel district of western Hamburg to secure the city's supply of heat for the coming years. In parallel with this, Vattenfall and the City of Hamburg are working together to achieve climate neutrality in Hamburg's heat operations by 2050.

Planning process for two large wind farms in the UK – Vattenfall commenced the planning process for two wind farms in the UK, Norfolk Vanguard and Norfolk Boreas. Once an investment decision has been made, the two projects will provide installed capacity of 3.6 GW, equivalent to the electricity needs of more than 2.6 million British households.

Construction of first solar farm completed – Vattenfall's first large-scale solar farm (5 MW), adjacent to the Parc Cynog wind farm in Wales, was completed and began generating electricity at the end of March. The solar farm has the capacity to generate 5.5 GWh of electricity per year, corresponding to the average annual consumption of 1,440 British households. The total investment amounted to approximately SEK 50 million.

Vattenfall, SSAB and LKAB in joint industrial development project In partnership with the steel company SSAB and the minerals group LKAB, Vattenfall initiated preliminary studies into the potential of replacing coal with hydrogen gas in steelmaking processes – with the aim of making Sweden's iron and steel manufacturing entirely climate-neutral.

Q2 2016

Sale of German lignite operations – Vattenfall signed an agreement to sell its lignite operations to the Czech energy company EPH and its financial partner PPF Investments. Vattenfall's owner, the Swedish state, confirmed its support of the sale. Vattenfall completed the sale in September 2016 after gaining clearance from the European Commission. Read more about Vattenfall's lignite operations in Note 5 to the Consolidated accounts, Discontinued operations.

Impairment losses – Vattenfall recognised impairment losses totalling SEK 30 billion, of which SEK 21 billion was attributable to Vattenfall's lignite operations. Read more about the impairment losses in Note 11 to the Consolidated accounts, Impairment losses and reversed impairment losses.

Multi-billion kronor investment in Uppsala to reduce CO_2 emissions Vattenfall decided to proceed with project planning for a new heating plant in Uppsala that will replace peat and oil with renewable biomass. The aim is to make a definitive investment decision in 2018.

Construction of the Horns Rev 3 – During the quarter construction was started of the Horns Rev offshore wind farm (407 MW), off Denmark's west coast. Horns Rev 3 will be commissioned in 2019/20 and will supply enough electricity to power 425,000 Danish homes. The total investment will be just over DKK 7.5 billion (corresponding to approximately SEK 9.6 billion).

Offshore wind farm extension inaugurated in the UK – On 6 June the extension of the Kentish Flats (combined 150 MW) offshore wind farm in the UK was inaugurated. The extension, comprising an additional 15 wind power turbines (50 MW), became operational at the end of 2015.

Vattenfall decides on investment in Forsmark – Following the government's decision to phase out the nuclear capacity tax pursuant to the country's energy policy agreement, Vattenfall's board of directors decided to invest in independent core cooling in Forsmark's three nuclear reactors.

Q3 2016

Launch of Powerpeers – Powerpeers, Europe's first peer-to-peer digital energy sharing platform, was launched in the Dutch market. This web-based platform makes it possible to buy and sell small-scale, locally generated renewable electricity between private parties, such as between neighbours in a residential area.

Decision to invest in an offshore wind farm off the coast of Aberdeen – Vattenfall decided to invest approximately GBP 335 million (corresponding to approximately SEK 3.7 billion) in an offshore wind farm (92 MW) off the coast of Aberdeen, Scotland. The wind farm is expected to be operational in 2018.

Acquisition of offshore wind project in Germany – Vattenfall acquired a German offshore wind project in the North Sea (known as the Global Tech II Offshore Wind Project), with the ultimate goal of building up to 79 wind turbines. Vattenfall's goal is to further develop and prepare the project, and make it competitive in the tendering process for subsidies and permits for offshore projects, which is expected to be initiated in spring 2017.

Sandbank begins generating wind power – Vattenfall's Sandbank offshore wind farm in Germany (288 MW) commenced wind power generation in September with less than half of the turbines installed. The wind farm was fully commissioned in early 2017.

Winning bid for Danish wind power – Vattenfall won a tender to build two near shore wind farms at two sites off the west coast of Jutland. Vattenfall's plan is to build two wind farms with combined capacity of 350 MW, equivalent to the electricity consumption of 375,000 Danish households.

Decision to phase-out lignite at the Klingenberg combined heat and power plant in Berlin – Vattenfall decided to replace lignite with natural gas at the Klingenberg combined heat and power plant in Berlin three years ahead of plan, which will reduce CO_2 emissions by 600,000 tonnes per year. The switch will involve a total investment of approximately EUR 100 million (equivalent to approximately SEK 1 billion).

Application for the re-extension of Vattenfall's grid concession in Berlin – At the end of August Vattenfall submitted an application for a re-extension of its electricity grid concession in Berlin. In October 2015 Berlin's Senate Administration for Finance decided to resume the process after the process was suspended in 2014.

Q4 2016

Ruling handed down by German Federal Constitutional Court – The ruling handed down by the German Federal Constitutional Court affirms that Germany's decision on the immediate shutdown of the nuclear power plants operated by Vattenfall, without compensation, was not in compliance with German law. No decision has been made yet on the amount, type and time of compensation for Vattenfall. The closure of nuclear power as such has not been considered to be contrary to German law. Vattenfall will pursue the process at the International Centre for Settlement of Investment Disputes (ICSID) in Washington, D.C., where Vattenfall's right to compensation will be established. A decision is expected by summer 2017.

Launch of InCharge – a partner-based charging network – In early November the InCharge charging network was launched, which Vattenfall is building together with a number of partners in Sweden and Northwest Europe. The network will include thousands of charging stations and will make it easy for businesses, local authorities and local power companies to offer electric car charging.

Winning bid to build Denmark's largest offshore wind farm – Vattenfall won the tender to build the Kriegers Flak offshore wind farm (600 MW) in Denmark. Once operational, Kriegers Flak will supply 600,000 Danish households with electricity. The total investment sum is approximately DKK 7.4–9.4 billion, pending a final investment decision.

Sale of two waste-to-energy power plants – In November Vattenfall sold the two German waste-to-energy power plants Lauta and Rüdersdorf to STEAG. The deal is expected to close during the first half of 2017. The parties have agreed to not disclose the financial details of the transaction.

Restart of Ringhals 2 reactor – The Swedish Radiation Safety Authority (SSM) decided to grant Ringhals AB dispensation from the Authority's regulations, and the Ringhals 2 (R2) reactor has been restarted, contingent upon the fulfillment of certain requirements, and began operating after a two-year outage.

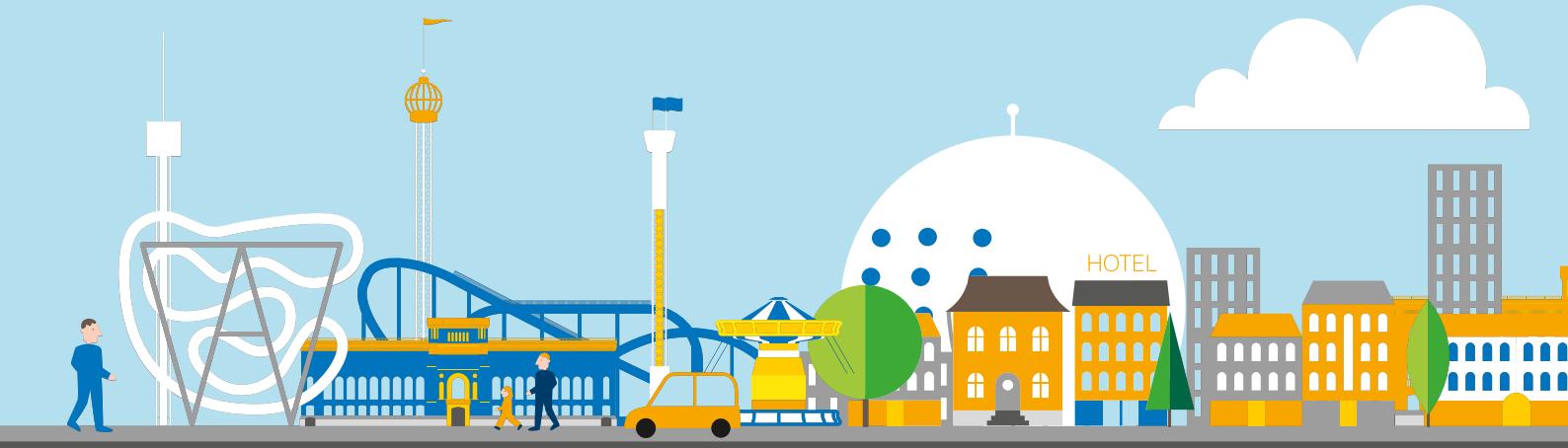
Vattenfall enters Danish consumer market – In December Vattenfall acquired the Danish company Vindstød.dk, which offers 100% wind power-based electricity to Danish consumers, and has thereby made an entry into the Danish consumer sales market. Vindstød.dk offers an existing customer base, a powerful IT platform and an efficient organisation, and the ambition is to further grow the business. The parties have agreed to not disclose the financial details of the transaction.

Inauguration of wireless charging station on new electric bus route Vattenfall inaugurated the first hybrid electric bus route in the Nordic region with wireless bus stop charging in Södertälje, south of Stockholm. Wireless bus stop charging means that the bus parks over a charging segment hidden in the road, where charging takes place automatically. Seven minutes of wireless charging is enough for the bus to run its entire 10 km route. Vattenfall owns and operates the charging station and supplies the renewable electricity. The project aims to develop silent and sustainable public transport and is a cooperation between Scania, SL, Vattenfall, Södertälje municipality and the Royal Institute of Technology (KTH).

Vattenfall secures nuclear fuel supply – Vattenfall secured its future supply of nuclear fuel by signing new contracts with three different suppliers: Areva (France), Westinghouse (USA) and TVEL (Russia). The contracts are worth approximately SEK 1.2 billion and cover the period 2018–2025. Nuclear fuel procurement complies with the rules and guiding principles established by the Euroatom Supply Agency (ESA) and the International Atomic Energy Agency (IAEA). In addition, Areva, TVEL and Westinghouse comply with the Vattenfall Code of Conduct for Suppliers.

VATTENFALL'S VALUE CHAIN

We are striving to provide reliable and innovative energy solutions to meet our customers' needs.
It is Vattenfall's ambition to make a positive impact across our value chain.



Core business activities

Production
Vattenfall produces electricity from hydro power, nuclear power, coal, natural gas, wind power, solar power, biomass, and waste. Vattenfall is phasing out fossil-based production and investing in more renewable generation.

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 different price and service models and by giving customers opportunities to reduce their environmental impact.

Energy services and decentralised generation
Vattenfall offers energy services, such as charging solutions for electric vehicles, solar panels, heat pumps and smart control of energy consumption. We also provide wholesale energy market services and access to marketplaces for customers that enable them to buy and sell electricity.

Value creation process

Inputs and assets

Natural resources
- Hydro power
- Wind power
- Coal and gas
- Uranium
- Biomass, waste
- Solar energy

Manufactured capital
- Hydro power plants
- Wind power plants
- Thermal heat and power plants
- Small-scale PV plants
- Electricity networks
- Nuclear power plants

Human capital
- Engineering and service skills
- Trading and raw material market knowledge
- Market analysis
- Digital competence
- Meteorology (weather dependent sources)
- Business development
- Technical innovation

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

Relationship capital
- Customers with increasing sustainability expectations
- Individualisation of customer relations via digital platforms
- Responsible relationships with suppliers
- Active local dialogue and community engagement

Intellectual capital
- Integration of sustainability in operations
- Sustainability framework
- Values and brand recognition
- Structures and processes

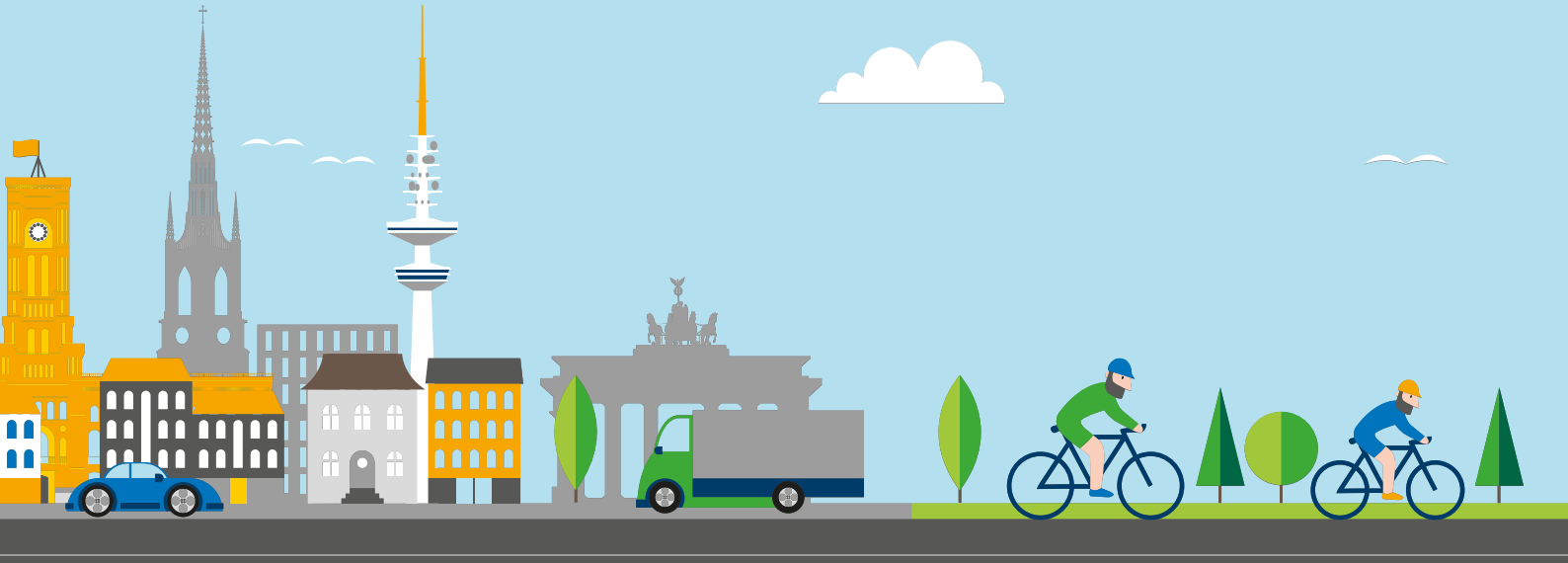
Core business activities

We creates value by offering energy services, producing and distributing electricity and heat to customers, and by providing jobs for employees and suppliers. Vattenfall is a significant taxpayer and also indirectly supports economic growth, for example through long-term contracts with business customers.

In all parts of its operations, Vattenfall strives to ensure that any negative impact on its surroundings will be minimal.

Vattenfall engages with stakeholders to enhance positive social values in the community and local context.

We aspire to act responsibly and strive to influence our business partners to do the same, in compliance with Vattenfall's Code of Conduct for Suppliers.



District heating
We are 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 transformation towards fossil-free heating solutions.

Electricity distribution
Vattenfall has well-functioning electricity distribution networks and ongoing development of smart grid solutions which ensure security of supply. We enable customers to feed self-generated power into the network, becoming so-called "prosumers". We operate electricity distribution networks in Sweden and Germany. Electricity distribution is a regulated monopoly business monitored by national authorities.

Outputs and value

Vattenfall gives customers access to reliable and cost-effective energy solutions. Our operations are also important for society – both economically and by driving development towards a climate-neutral society. Following are some examples of value we create for our customers, society, our owner and our employees:

For customers and partners
- Supplying safe, stable, affordable and low-CO_2 energy to a large number of customers in seven countries
- 20%–25% fewer electricity outages during the past five years
- Enabling our customers to participate in the energy transformation via installations of decentralised solutions
- Providing expertise to drive the energy transformation and sustainability issues
- Powering electricity intensive industries with fossil-free electricity
- Promoting the electrification of industry and transport, with more than 1,000 e-vehicle charging stations installed

For society
- Roughly 87.5 TWh of fossil-free energy
- SEK 12.4 billion in tax payments
- Organising local "open houses" and supplier education events to support local communities
- Working together with cities and regions to implement plans for climate neutrality
- Participating in local environmental and biodiversity conservation projects

For Vattenfall's owner and employees
- Providing a workplace for some 20,000 employees with emphasis on inclusion, diversity and safety
- Approximately 1.3 days of training per employee, and numerous employee development and leadership programmes
- Payment of SEK 6.8 billion in dividends to our owner over the last five years

MARKET TRENDS

The transformation of the energy sector continues.
Low prices are putting utilities under pressure and are challenging the traditional business models.
In this section we identify the most salient market trends that are driving the transformation.

1 From fossil fuels to renewables

A transformation from fossil fuels to renewables has been ongoing for many years, driven by climate change and growing environmental and sustainability demands from customers and society.

The market share for oil, coal and gas power has dropped significantly during the last ten years, and these sources now represent less than half of total electricity generation in Europe. During roughly the same period, wind power grew from 2% in 2004 to more than 8% in 2014. Solar power increased from virtually zero in 2004 to more than 3% in 2014. In 2016, renewables had a record year and represented more than half of global growth in capacity. Energy efficiency and smart consumption are also contributing to this trend, where new innovations are helping to reduce total energy demand as well as peak loads.

Customer centricity and sustainability are key for attracting customers, talent and investors. Employers with a clearly stated purpose for their business have an easier time attracting talented people, and financial opportunities are better for companies that are supporting the energy transformation.

2 From large-scale to more decentralised generation

Technological development and the market's adaptation to small-scale generation have rapidly reduced the costs for people to generate their own electricity. Households, businesses and industries are increasingly installing roof-mounted solar panels, small wind power turbines and micro-CHPs. Depending on local conditions, these can be very cost-effective solutions for certain customers.

Energy storage

A strong trend in the transformation of the energy sector is the development of energy storage. With the rapid development of renewable and weather-dependent energy, the energy system is becoming challenged from an availability perspective. Solar and wind power may produce more electricity than is needed at certain times of the day, while not producing enough on windless or cloudy days. To cover such a deficit and produce energy on demand, today's system typically relies on fossil fuels, nuclear power, or hydro power.

New technologies that allow the possibility to store energy, however, are creating new opportunities. Integration of heat and electricity systems is creating the possibility to charge heating systems using electricity when the availability of wind and solar power creates a surplus of energy.

One challenge for the energy system as a whole entails finding a solution that can handle storage not only short-term (from one day to another) but also seasonally (from summer to winter). The number of customers with their own electricity generation and batteries is expected to rise significantly. To be able to meet customer demand for electricity at all times, a mixed system with a large share of centralised generation will remain for a long time.

The distribution grid

Historically, the distribution grid – and therefore the electricity market – has developed from a local, to a regional, national, and now to a European model in a common market. The integration of electricity markets has been positive from both a cost and an environmental perspective, and further integration will increase the security of supply for the system as a whole.

In parallel with this there is a trend towards micro-grids or in some cases even off-grid systems. Developments in energy storage, combined with systems to handle the demand side, could potentially mean that some houses or locations could manage their own energy systems, with solar and wind power as the only electricity sources and no connection to any other grids.

Paradoxically, we therefore see a future that includes more interconnections along with an increasing number of micro-grids with little or no interconnections to other systems.

3 Lean operations and digitalisation

As a combined effect of lower coal and gas prices, weak demand development, structural oversupply, strong growth in renewables and rapid technological development, wholesale electricity prices in our markets have more than halved over the past five years, and no recovery is expected in the near future. A strong cost and efficiency focus is thus key to staying competitive in electricity generation. A large part of the value creation in the next years will come from efficiency improvements in existing operations.

Digitalisation and developments in small-scale generation are removing traditional barriers to electricity generation. This is resulting in an increasingly competitive environment, where competition is coming not just from other utilities, but also from other industries, such as IT, internet companies, and small start-ups. The growing interest among investors and companies to own renewable electricity assets with lower risk, such as with solar energy, is putting pressure on margins. Only lean and agile companies will be able to profit from these new business opportunities.

Digitalisation is an important enabler of increased operational efficiency and flexibility. Efficient operation requires better data on the state of different devices, sophisticated forecasting techniques, and more powerful and complex algorithms for converting data into information and control. Today, for example, operations can be managed remotely from a control room. Digitalisation is also creating new opportunities for customer interaction, and new solutions can be made visible and more understandable for customers.

4 Electrification of everything

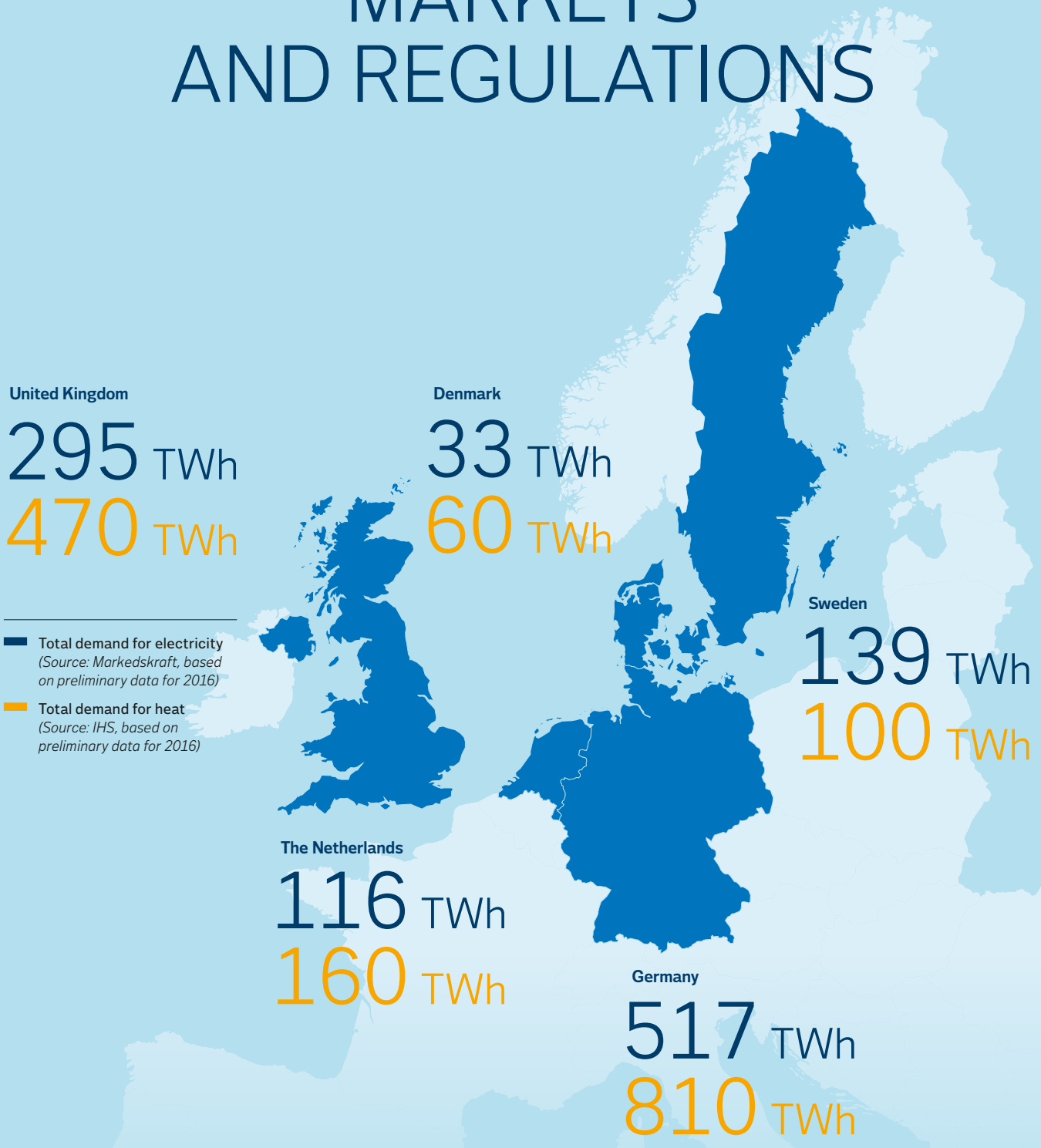
The role of electricity in our society cannot be overestimated. It has changed the world fundamentally and continues to drive change for many industries, making life easier and improving efficiencies in many industrial processes. Roughly 70% of CO_2 emissions in Sweden derive from heating buildings, transportation and industry. Electrification is enabling fossil fuels to be replaced by renewable, climate-neutral energy, which is reducing or eliminating emissions entirely.

In the heating sector, energy efficiency can be achieved by switching from gas, oil or electric boilers to heat pumps or district heating. And with more renewable electricity in the system, heating can become entirely climate-neutral.

The transport sector is set for a major transformation in the coming decades, as virtually all vehicle manufacturers are looking to develop electric models. Electric vehicles can not only reduce CO_2 emissions, but also have the potential to transform our urban environments by solving pollution and noise issues. The number of electric vehicles in Sweden alone has grown rapidly from 1,200 in 2012 to more than 25,000 at the end of 2016, and the rapid growth is expected to continue. *(Source: Elbilsstatistik.se)*

Studies are currently being conducted on how CO_2 emissions can be reduced through electrification of the steel, concrete and chemical industries. One example is our preliminary studies into replacing coal in blast furnaces with hydrogen when producing steel, which we are conducting together with LKAB and SSAB (read more on page 49).

MARKETS AND REGULATIONS



Climate change and sustainability issues are high on the global political agenda. At the Climate Change Conference in Marrakech, governments reaffirmed their commitment to the Paris Agreement, which came into force in 2016. The commitment is to limit the earth's temperature increase to 2°C, with the ultimate goal to keep within 1.5°C.

The "winter package" presented by the European Commission, contains several directives and proposals, most notably on renewable energy, energy efficiency, the energy performance of buildings, and market design. The proposals are aimed at unlocking investments in the energy transformation, empowering customers to be the main drivers of this transformation, and improving cross-border cooperation to strengthen the internal market.

Heating and cooling account for approximately 50% of energy consumption in Europe and are increasingly perceived as an important area for achieving European and national decarbonisation targets. Sustainable energy supply and reducing energy demand continue to be key political issues. City climate agendas and customer participation are playing an important role in the energy transformation throughout Europe.

European Union

2030 climate and energy targets:
- A binding EU target of a minimum 40% reduction in greenhouse gas emissions by 2030 climate and energy targets compared to 1990
- A binding EU target that at least 27% of energy consumed in the EU shall come from renewable energy sources by 2030
- A non-binding EU target for improving energy efficiency by a minimum of 27% by 2030

European framework for reduction of greenhouse gas emissions – The adoption of the reviewed Emissions Trading Directive is scheduled for the first half of 2017. The aim is to improve the EU ETS system for the 4th trading period, which starts in 2021.

Reference document on best available techniques (BREF) – This is a cornerstone of the Industrial Emissions Directive (IED) and will set the framework for future emission thresholds for NOx, mercury and particulates for large combustion plants, and will require many power plants to undergo major adaptation. Final adoption is expected in 2017.

Germany

National support for combined heat and power (CHP) plants in accordance with EU law – The amended CHP Act, including a tendering procedure to define the support level for installations between 1 and 50 MW, will provide a more predictable regulatory framework for CHP operations in Germany.

Approved legislative proposal on the financing of nuclear phase-out – Nuclear operators must pay a combined total of EUR 23.6 billion, including a risk premium of 35.47%, into a fund to transfer the responsibility for intermediate and final nuclear waste repositories to the German government. Vattenfall's share, including the risk premium, is about EUR 1.8 billion (SEK 17 billion). The law was passed by Germany's parliament in December 2016. Approval from the EU remains and is expected to be received in early 2017. Read more on page 33.

New electricity market design (Strommarktgesetz)/EEG 2017 – The aim of the Electricity Market Act is to optimally integrate the various elements of electricity supply. To achieve the national climate goals for 2020, 2.7 GW of lignite-fired power plants will gradually be removed from the market and provisionally closed from 2016.

The 2017 Renewable Energy Sources Act (EEG) will support wind power operations in Germany. The new system will determine the future rates of renewable energy funding through tendering procedures.

Ongoing discussion about phasing out coal ("coal exit") – According to the German Climate Action Plan 2050, in 2018 a commission will begin working on a concept for a coal exit (after the general election in September 2017).

United Kingdom

Reducing CO_2 emissions sets strategic direction – The UK government's 2017 Emissions Reduction Plan sets out the long-term public policy needed to meet legally-binding cuts in CO_2 emissions – a 57% reduction on 1990 levels by 2032, and 80% by 2050. The strategic, long-term focus on decarbonising transport and heat suggests higher degrees of electrification.

Growth of renewable energy generation – The UK Government has committed to support the growth in offshore wind capacity by increasing deployment to at least 20 GW by 2030, if cost reductions continue.

Brexit – In June 2016 a majority of voters in the UK voted in favour of leaving the EU. A period of debate has now begun on how the British government will define its post-Brexit vision for trading arrangements. The formal exit process is expected to begin by the end of March 2017.

Sweden

Parliamentary energy agreement – A goal has been set for Sweden's energy system to be based on 100% renewable sources by 2040. The agreement also stipulates a stepwise phasing out of the nuclear capacity tax during a two-year period starting in 2017 and a stepwise reduction of the property tax on hydro power from 2.8% to 0.5% during a four-year period.

Implementation of the EU Water Framework Directive (WFD) – The regional water authorities are working on mitigation programmes for large-scale hydro power, which are to be finalised in 2018. The government is preparing a strategy that could limit the loss of hydro generation capability to 1.5 TWh per year (of which about 0.5 TWh is produced by Vattenfall). In addition, the hydro power industry is developing a joint solidarity fund for financing mitigation measures primarily in small-scale hydro power plants.

Revenue framework for distribution – A new distribution revenue framework model for the period 2016–2019 suggests a change of calculation of the Weighted Average Cost of Capital (WACC). The legal process of the Distribution System Operator (DSO) vs. the regulator regarding what capital cost to use was finalised in the Administrative Court in late 2016.

Denmark

A new political framework for Danish energy policy – The Energy Commission was established to look at the Danish energy system as a whole and make recommendations to politicians regarding a new energy agreement from 2020 to 2030. The recommendations must still be based on a changeover from fossil-based to renewable energy. The report is expected to be completed in early 2017.

Higher share of renewable energy generation – The Danish government has announced that by 2030, 50% of Denmark's energy consumption shall be met by renewable energy sources, compared with a 30% share in 2015. The government will initiate a thorough screening of the North Sea and the Baltic Sea to identify locations for future offshore wind farms.

Onshore wind support – The Danish government is expected to present a proposal on the design of the support schemes for onshore wind power after 2018.

The Netherlands

Heat transition in the built environment – A national agenda for the phase-out of gas as a heat source by 2050 is expected, which means that 8 million households and buildings will need new heating systems.

Climate Act & Energy Agreement 2.0 – The Climate Act should provide the legal basis for an emissions reduction. A new energy agreement will enable work to get started.

Phase-out of coal – In early 2016 the government started a process to investigate the phase-out of all remaining coal-fired power plants in the Netherlands.

Energy efficiency agreement – The government, NGOs and the Dutch energy sector signed a voluntary agreement to improve energy efficiency by 2020. If insufficient progress is made, obligatory measures will be implemented, potentially targeting suppliers.

The transformation to a sustainable energy system is being driven in part by investments in hydro power, such as in the 166 MW of installed capacity at the Bergeforsen hydro power plant on the Indalsälven river in Sweden.

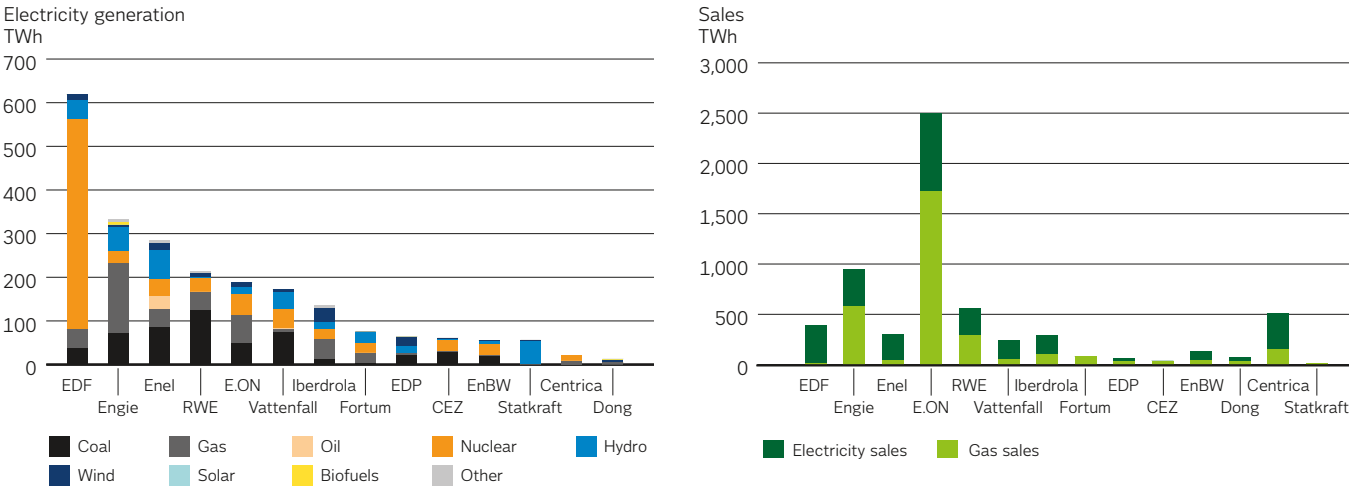
Competitive situation in Europe

The largest energy companies in Europe in terms of revenue are EDF, Engie and Enel, which operate in most parts of the value chain in Europe and also have extensive operations outside of Europe. In 2016 two of the largest companies in Europe, EON and RWE, split their operations into two separate companies. Innogy was split off from RWE, and Uniper from EON. Vattenfall can be classified as a medium-sized regional player. Most of Europe's energy companies are suppliers of electricity, and many are municipally owned. In addition, there are a number of transmission system operators and electricity distribution companies.

The competitive landscape is changing through the emergence of niche players, companies from other sectors – such as telecom and IT companies – and also by consumers that are increasingly seeking to become electricity producers (so-called prosumers). Economic support systems and regulations for self-produced electricity from wind power and solar panels are important drivers in this process.

With 6.3 million electricity customers, 3.4 million electricity network customers 2.1 million gas customers and a portfolio of generation assets that now no longer includes lignite, Vattenfall is well-positioned to take a leading role in the transformation to a sustainable energy system across the value chain in Northwest Europe.

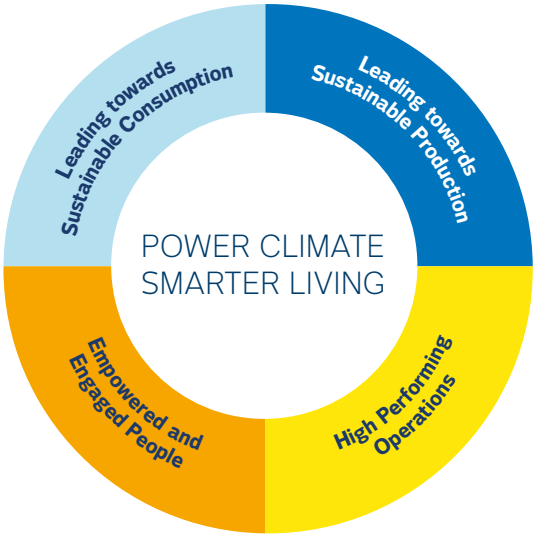
Europe's largest producers of electricity (energy mix), and sales of electricity and gas



Source: Company annual reports for 2015.

STRATEGY

The world is in urgent need to find alternative, cleaner ways of powering and heating homes, industries and cities. Vattenfall's purpose is to "Power Climate Smarter Living". This means we are committed to accelerating and enabling people to live climate smart lives. Against this background, in 2016 we accelerated the implementation of our strategy and took concrete actions to ensure that we will achieve our strategic objectives.



Our strategic objectives

Our climate and sustainability ambitions, alongside our owner's requirement that we generate a market rate of return, are the basis of our strategy and our strategic targets. Our goal to be climate-neutral by 2050 – and by 2030 in the Nordic countries – entails a stepwise phase-out fossil fuels. Through a strong commitment to efficient operations and engaged employees, we will focus on developing customer-centric energy solutions and delivering a financial return in line with our owner's expectations. To fulfil our purpose – to "Power Climate Smarter Living" – our overarching strategy for the years ahead is based on four strategic objectives:

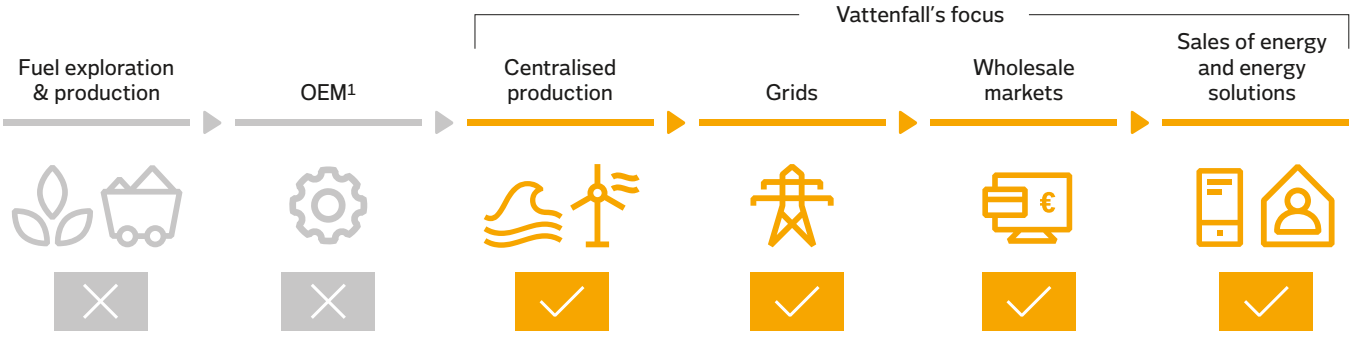
- Leading towards Sustainable Consumption
- Leading towards Sustainable Production
- High Performing Operations
- Empowered and Engaged People

Diversified and sustainable energy market

The energy market is currently undergoing a shift towards a more climate-neutral system with a high share of renewable energy, increasing customer involvement and decentralisation of energy generation. Continued technological development will create a mixed central/decentral energy system that is cost-competitive and fossil-free, and an increasingly electrified society in which electricity – often renewable – replaces fossil fuels for heating, transport, and industry.

We are determined to be a leader in developing sustainable energy solutions. With the customer in mind we are focusing on areas where we have or can build a competitive advantage and continue to develop a diversified and sustainable portfolio. This entails that we leverage our capabilities by focusing on heat and power generation (such as hydro, nuclear, wind and solar power) grids, wholesale energy trading, and sales of energy and energy solutions. We will continue to operate along the entire value chain in the energy system – developing and constructing, operating, optimising, marketing and managing assets (without necessarily fully owning them) – and interacting directly with our customers. Our geographical focus is Northwest Europe.

Focus in the value chain based on competitive advantage



1) Original Equipment Manufacturer

Transforming our portfolio
Achieving our goal of climate neutrality and a sustainable energy system by 2050 will require a dramatic transformation of the energy system. We will be quick to embrace opportunities and develop new business models, and have defined a target portfolio to help us on our journey.

The target portfolio highlights the general development of our portfolio in terms of "Grow", "Keep" or "Non-core". Businesses in the Grow category are climate-smart energy solutions where we see attractive growth opportunities. We will keep and optimise businesses that support the transformation of the energy market. Our lignite and hard coal-based businesses are regarded as Non-core. They will be either phased out or converted to biomass.

Full speed ahead
Our success in carrying out our strategy will depend on how well and how fast we can capitalise on market opportunities and on how quickly we can improve operational efficiency. Maintaining a competitive edge and financial strength are key prerequisites in this work. Achieving our strategic objectives will require that we accelerate our work in several important areas. We will need to meet customers' needs faster, increase our efficiency ambitions and raise the bar with respect to sustainability.

The following six actions will ensure that we ahieve our strategic objectives:

Leading towards Sustainable Consumption

1. Increase customer centricity
2. Establish a strong position as a solutions provider in decentralised energy

Leading towards Sustainable Production

3. Grow in renewables
4. Implement the CO_2 Roadmap and explore the potential to accelerate climate neutrality

High Performing Operations

5. Further reduce costs and improve operational efficiency

Empowered and Engaged People

6. Develop our culture, competence and brand

Target portfolio

1) E.g., micro CHPs, heat pumps and solar panels

Sustainable Consumption

1 Increase customer centricity

Vattenfall is strongly focused on improving and simplifying the customer experience, ranging from how customers obtain information and sign a contract with us, to understanding their energy costs, paying bills, and receiving customer support or exiting a contract. To improve in this area we have expanded our digital platforms and created online tools and mobile apps to ensure that we are accessible to the customers as conveniently as possible.

We will provide end-to-end solutions to our customers by selling electricity and heat together with new sustainable services. We offer products and services with transparent labelling that shows the climate impacts. Together with regions and cities we will develop climate roadmaps, and we will continue to drive electrification while replacing fossil fuels in transport, heating and industries.

Increasing customer centricity in distribution is primarily about improving the quality of our distribution networks. Power outages have a major negative impact on our customers and on society. Further investments in networks are enabling the development of smart grid solutions, which for example automatically can locate network disruptions and thereby improve availability and network quality.

2 Establish a strong position as a solutions provider in decentralised energy

Our ambition is to make it possible for our customers to produce and consume their own electricity – often renewable – in a convenient and efficient way. We have intensified our work with decentralised energy solutions with a focus on electricity and heat services for households, business customers and large facilities, and on decentralised networks (micro-grids) as well as introduced a service based on peer-to-peer technology[1]. As roof-mounted solar panels and batteries become more affordable and attractive as solutions for our customers, we aim to be the preferred supplier and to capitalise on the opportunities that arise in the market.

Sustainable Production

3 Grow in renewables

We will continue to grow in renewables by developing, acquiring and participating in tenders for onshore and offshore wind farms, and by further leveraging our knowledge and experience in both the construction and operation of wind power. Identifying synergies between our existing operations will allow us to find attractive opportunities to accelerate and grow in solar energy and in storage solutions. Expansion in renewable energy entails a higher share of regulated revenue from distribution, heat and tendered wind power. At the same time this requires that we continue our work on lowering costs and improving efficiency.

4 Implement the CO_2 Roadmap and explore the potential to accelerate climate neutrality

We have developed a CO_2 Roadmap with the goal of reducing our CO_2 emissions to zero, requiring our suppliers to reduce their emissions, and make it possible for our customers to achieve their climate goals (read more about our CO_2 Roadmap on page 20). Our goal is to be climate-neutral by 2050, and we are looking into ways of achieving climate neutrality even sooner. In the Nordic countries we will be climate-neutral by 2030.

High Performing Operations

5 Further reduce costs and improve operational efficiency

We are benchmarking our operations with other companies and have the ambition to be rated in the top quartile in terms of efficiency. For example, we are working to improve operational efficiency in our Swedish nuclear power operations, which entails reducing generation costs while maintaining high availability and a high level of safety.

We will also continue to reduce our administrative costs through outsourcing. A restructuring office has been established with the task of simplifying processes and driving cost reduction initiatives.

Across the company we are using digitalisation as a tool for reducing costs and improving efficiency. Through process automation and automation control, we are striving to simplify business support as well as operational processes. The goal of automation is not only to lower costs, but also to reduce process times and improve service quality for customers. Our ambition to be a digital energy company requires more flexible IT operating models in order to meet the needs of our diverse business areas.

Another priority area involves securing responsible sourcing and purchasing through direct dialogue with key suppliers and organisations. Concrete actions include on-site supplier dialogues and audits, and more transparent dialogues with NGOs and local stakeholders that may be affected by our decisions and activities. Engaging more closely with our suppliers and stakeholders also helps to mitigate risk, improve supply chain performance and reduce costs.

Empowered and Engaged People

6 Develop company culture, competence and brand

Companies with strong brands have more engaged employees, more loyal customers, and better rapport with their stakeholders. A strategic project is currently under way at Vattenfall to lay out our long-term brand position. We are reviewing our brand strategy and company values in order to strengthen our identity and pride in the customer-centric Vattenfall brand. We will make clear who we are, what we stand for and what our purpose is.

We are committed to creating an attractive and engaging work environment where employees have both the ambition and opportunities to develop themselves and thereby also the company. Vattenfall's employees are to work with high integrity and should know what is expected of them, how they can contribute to the success of the business, what opportunities they have for development, and how their performance will be rewarded. Our focus is on both developing and attracting new competence, particularly within digitalisation, and on retaining key competence in our current operations. Diversity and equal opportunities are key building blocks of a successful company, and we strive to incorporate these into our day-to-day activities.

With roughly 20,000 employees and a large number of contractors and hired-in personnel, we are responsible for ensuring a safe and healthy workplace. Health and safety are crucial and are guiding principles in our daily operations, with the ambition to have zero injuries and no work-related illnesses. To achieve this we are working on developing leadership in Health & Safety, setting health and safety standards, and strengthening preventive health activities (read more about our people on pages 53–55).

1) Digital platforms that make it possible for small-scale energy producers and consumers to share local, renewable energy, with each other.

CO_2 Roadmap

Topical issue

Climate change is one of the greatest challenges of our time. Limiting global warming to 2°C would require zero net greenhouse gas emissions during the second half of the 21st century. A major effort is currently under way to limit Earth's temperature rise to 1.5°C, which would require the world to reach zero net GHG emissions between 2030 and 2050. At Vattenfall we are working together with customers, partners, authorities and cities to achieve climate neutrality by 2050, both in our own operations and in society. We call this our CO_2 Roadmap.

On track to reduce our emissions

Fossil fuels are not a long-term alternative for a society that wants to achieve climate neutrality, nor for the Vattenfall of the future. Lignite and hard coal do not fit in to our strategy. By divesting our lignite operations we have reduced our annual CO_2 emissions from 84 million tonnes to 24 million tonnes. More than half of our remaining CO_2 emissions come from our coal-fired condensing/CHP plants in Germany and the Netherlands (16 million tonnes), and most of the remainder from gas-fired units in the two countries (6 million tonnes).

The most important actions we can take to phase out our remaining emissions are:

- Phase-out of peat/coal by conversion to biomass, decommissioning or divestment
- Supply district heating based on efficient gas-fired CHPs with the potential for long-term transition to synthetic gas or biogas
- Develop new smart energy and heat solutions that combine different energy sources, such as industrial residual/waste heat, solar panels, heat pumps, power-to-heat storage, and low-energy buildings

Successful examples include Klingenberg, where we are converting from lignite to gas (reducing our CO_2 emissions by 600,000 tonnes per year) and our Uppsala city partnership where we are replacing peat with biomass for district heating (reducing our CO_2 emissions by about 160,000 tonnes per year).

Helping customers reach their climate targets

We are committed to reducing our climate impact across the entire value chain, with special focus on helping our customers and partners lower their emissions and reach their climate targets. We have expanded our product offering to household and business customers to enable them to lower their footprint and/or produce energy themselves. Examples include low-CO_2 heat and electricity, e-vehicle charging solutions, solar roofs, heat pumps, smart thermostats and homes, and more. We strive to provide transparency on the climate footprint of our products through life cycle assessments and Environmental Product Declarations[1]. We are also working together with our suppliers to increase transparency on CO_2 emissions and set climate targets.

We are also cooperating with energy intensive businesses to reduce CO_2 emissions through the electrification of industrial processes. We believe that Sweden can be a pioneer in this area given that its electricity is comparatively cheap and virtually fossil-free. Electrification has the potential to provide up to 9 million tonnes per year of potential CO_2 savings in Sweden's steel, cement and refinery industries. There is also potential to produce renewable fuels in refineries to save 6 million tonnes per year in the transport sector.

We also support the electrification of the transport sector by taking a leading role in developing charging infrastructure. This is key to phasing out fossil fuels and reaching the national targets for CO_2 reductions in all our markets.

The combination of CHP, renewable heat and heat storage creates opportunities for flexible heat and power generation with low CO_2 emissions. In our partnerships with the cities of Uppsala, Berlin, Hamburg and Amsterdam, we are working on plans to develop a path to climate neutrality and still deliver on our customers' expectations for the supply of affordable electricity and heat.

1) For further information, see corporate.vattenfall.com/life-cycle-management/

Divestment of Vattenfall's lignite operations

Topical issue

The divestment of the lignite operations in Germany represents a vital step in our overall strategy to secure a sustainable energy production portfolio.

On 30 September 2016 we completed the sale of our lignite operations in Germany to the Czech energy group EPH and its financial partner PPF Investments. The deal included all of Vattenfall's lignite assets in Germany (except for CHP Klingenberg in Berlin, where lignite will be phased out in May 2017): the Jänschwalde, Boxberg and Schwarze Pumpe power plants, Vattenfall's share in the Lippendorf power plant, and the Jänschwalde, Nochten, Welzow–Süd, Reichwalde, and the recently closed Cottbus–Nord open cast mines.

Approximately 6,800 FTEs (full-time equivalents) were transferred to EPH in connection with the sale.

Portfolio transformation

The sale of the lignite operations in Germany represents an important step in our strategy to be a customer-centric company offering sustainable solutions based on a climate-neutral energy production portfolio. The divestment considerably reduces our CO_2 emissions as well as our emissions of NOx and SO_2.

The divestment reduces risk and improves our balance sheet, which will give us greater flexibility to invest in sustainable energy solutions that our customers are demanding.

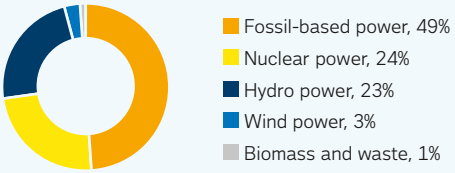
Overall, our investments in the German lignite operations have been profitable, even when considering historical impairment losses. The total estimated annual return on the investment has been in line with our required rate of return. Given our expectations for future price developments, the negative impact on our earnings would have been higher if we were to have remained the owner. Read more about the financial consequences for Vattenfall of the divestment of the lignite operations on page 80.

Germany remains a core market

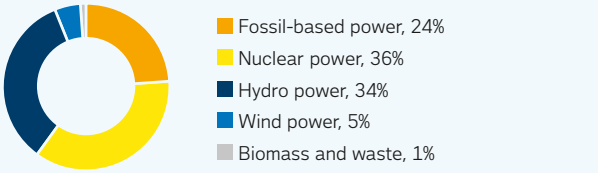
Germany will continue to be an important market for Vattenfall. As a supplier of electricity, gas and heat, and through our ongoing distribution and trading businesses, we continue to have a significant amount of business in Germany. We have approximately 7,000 employees in the country along with a large and growing customer base of more than 3 million electricity and heat customers, and more than 2.3 million network customers.

We also continue to invest in wind power in Germany. Our Sandbank offshore wind farm in Germany was delivering at full capacity in early 2017, and in 2016 we acquired the Global Tech II Offshore Wind Project in Germany.

Vattenfall's production mix before the lignite divestment[1]



Vattenfall's production mix after the lignite divestment[1]



1) Based on total electricity generation in 2015.

INVESTMENT PLAN

Our investment plan reflects a clear shift in strategy, where the majority of growth investments will be made in wind power, solar energy and distribution networks. Investments in fossil-based assets will be reduced.

During the upcoming two-year period investments will amount to SEK 50 billion (SEK 47 billion), of which SEK 28 billion pertains to growth investments. Resources that were previously tied up in the lignite operations can now be used to further expand the portfolio with sustainable energy production and a higher share of regulated income from distribution, heat, and tendered wind power. A higher rate of growth in renewable energy will require that we further lower our costs and improve efficiency.

We continue to expand in onshore and offshore wind power, and will invest SEK 17 billion in 2017 and 2018. Major decided investment projects include Horns Rev 3 (407 MW) and Aberdeen Bay (92 MW).

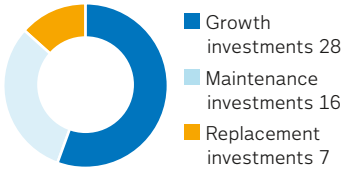
In addition, our growth portfolio will be more diversified with investments in solar energy (SEK 2 billion) and in new areas such as batteries and e-charging infrastructure, which will allow us to continue delivering innovative and sustainable solutions that customers are demanding.

Maintenance and replacement investments will amount to SEK 22 billion in 2017 and 2018. Investments in fossil-based electricity and heat production have been almost halved, from SEK 11 billion to SEK 6 billion. We continue to invest in electricity networks to improve availability and network quality. At the same time we continue to invest in upgrades of our hydro power plants in order to maintain availability and dam safety. We are also investing in securing the long-term operation of our nuclear reactors, and in 2016 we decided to invest in independent core cooling in the three reactors at Forsmark.

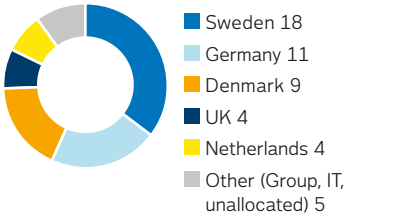
Growth investments in our electricity network operations are enabling the development of smart grid solutions and thereby improving availability and network quality.

Vattenfall's investment plan 2017–2018

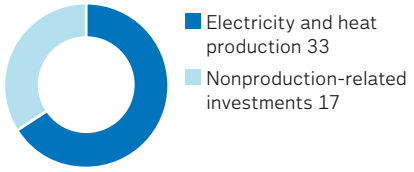
Total investments, SEK 50 billion



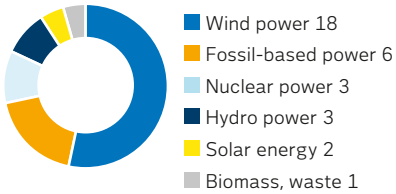
Total investments per country, SEK 50 billion



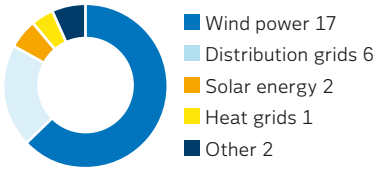
Total investments, SEK 50 billion



Total investments in electricity and heat production, SEK 33 billion



Total growth investments, SEK 28 billion



Our Sandbank (288 MW) offshore wind farm in Germany began generating power in September 2016 and was delivering at full capacity in early 2017, three months ahead of schedule.

Major investment projects – decided on and in progress

Project	Country	Type	Capacity	Vattenfall's interest, %	Completion	Total investment	Investment SEK million[1]
Pen y Cymoedd	UK	Onshore wind	228 MW	100%	2017	~GBP 370 million	~4,200
Horns Rev 3	Denmark	Offshore wind	407 MW	100%	2019/2020	~DKK 7,500 million	~9,600
Aberdeen Bay	UK	Offshore wind	92 MW	100%	2018	GBP 335 million	~3,700
Ray	UK	Onshore wind	54 MW	100%	2017	GBP 88 million	~1,000
Lichterfelde CHP	Germany	Gas CHP	300 MW electricity 222 MW heat	100%	2017	EUR 370 million	~3,500
HOB Haferweg	Germany	Gas, heat	150 MW heat	100%	2017	EUR 50 million	~500

1) Year-end exchange rate as per 31 December 2016.

OPERATING SEGMENT OVERVIEW

Operating segments

We report our operations broken down into the Group's operating segments: Customers & Solutions, Power Generation, Wind, Heat, and Distribution. The operating segments follow the Business Area structure except for the Power Generation segment, which is divided into the Generation and Markets Business Areas. In view of the divestment of the lignite operations in Germany, which were previously part of the former Mining & Generation unit, these are reported as a discontinued operation. Read more in Note 5 to the Consolidated accounts, Discontinued operations.

Read more in Note 8 to the Consolidated accounts, Operating segments.

Customers & Solutions

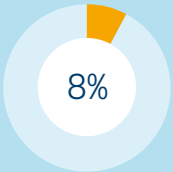
Responsible for sales of electricity, gas and energy services in all Vattenfall's markets

- Leading position in Sweden with more than 900,000 retail electricity customers
- In Germany, we have a market-leading position in Berlin and Hamburg as a gas and electricity supplier to household customers
- Leading supplier of both gas and electricity in the Netherlands
- Vattenfall's customer base grew by about 250,000 contracts since the start of the year
- Vattenfall entered Danish consumer market through the acquisition of Vindstød.dk

External net sales,[1,2] SEK million

67,862

Share of underlying operating profit[1,3]



Number of employees, full-time equivalents[1]

2,930

Power Generation

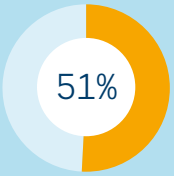
Includes Vattenfall's hydro and nuclear power operations, maintenance services business as well as optimisation and trading operations

- One of Europe's major generators of electricity with 81.6 TWh electricity from hydro and nuclear power
- During the year Vattenfall completed the sale of its lignite operations in Germany
- Restart of Ringhals 2 reactor after a two-year outage
- Decision to invest in independent core cooling in Forsmark's three nuclear reactors

External net sales,[1,2] SEK million

49,276

Share of underlying operating profit[1,3]



Number of employees, full-time equivalents[1]

7,493

Other

Pertains mainly to all Staff Functions and Shared Service Centres.

Number of employees, full-time equivalents[1]

3,006

1) Pertains to continuing operations, i.e., excluding the lignite operations.
2) Net sales for the Vattenfall Group also include Staff Functions and Shares Service Centers, totalling SEK 326 million, and Eliminations totalling SEK -12,567 million.
3) Underlying operating profit is defined as operating profit excluding items affecting comparability.

Wind

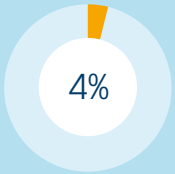
Responsible for Vattenfall's wind and solar power operations

- Second largest producer of offshore wind power worldwide
- Leading operator of onshore wind power in Sweden and the Netherlands
- 297 MW of new renewable capacity installed in 2016
- In 2016 Vattenfall won tenders for two major wind power projects
- Our first solar energy farm (5 MW) adjacent to the Parc Cynog wind farm in the UK was commissioned

External net sales,[1,2] SEK million

4,384

Share of underlying operating profit[1,3]



Number of employees, full-time equivalents[1]

706

Heat

Responsible for Vattenfall's heat operations and gas- and coal-fired condensing plants for electricity generation

- One of Europe's largest suppliers of heat with more than 2 million end users
- The earlier than planned phase-out of lignite at the Klingenberg combined heat and power plant in Berlin will result in a reduction of CO_2 emissions by 600,000 tonnes per year and represents the first step towards climate-neutral heat operations

External net sales,[1,2] SEK million

15,110

Share of underlying operating profit[1,3]

Number of employees, full-time equivalents[1]

3,790

Distribution

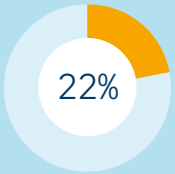
Responsible for Vattenfall's electricity distribution operations in Sweden and in Berlin, Germany

- Leading owner and operator of electricity distribution networks in Sweden and Germany with approximately 3.2 million business and household customers
- Application submitted for an extension of the grid concession in Berlin

External net sales,[1,2] SEK million

15,233

Share of underlying operating profit[1,3]



Number of employees, full-time equivalents[1]

2,010

CUSTOMERS & SOLUTIONS

Customers & Solutions is responsible for our relationships with customers, providing electricity, gas and energy solutions and services in our markets.

Operations

In the Nordic countries we supply electricity to household and business customers in Sweden, Finland and Denmark. We have a market-leading position in Sweden with more than 900,000 retail electricity customers, and we are one of the leading companies in Finland. In Denmark we are a fast-growing challenger. In the Netherlands we are the leading supplier of both gas and electricity to household and business customers (3.7 million contracts).
In Germany we supply gas and electricity to household customers (3.5 million contracts) and in selected business segments, and have a market-leading position in Berlin and Hamburg. In France we focus on sales of gas and electricity in selected business segments. We have competitive operations and have repeatedly demonstrated our ability to grow in customer numbers and profitability, owing to our unique strengths.

Key data	2016	2015
Net sales (SEK million)	69,230	87,523
External net sales (SEK million)	67,862	84,905
Underlying operating profit[1] (SEK million)	1,830	1,390
Sales of electricity (TWh)	88.9	123.2
– of which, private customers	27.0	26.8
– of which, resellers	5.5	33.5
– of which, business customers	56.4	62.9
Sales of gas (TWh)	53.1	50.7
Net Promoter Score (NPS) relative[2]	+7	n.a.

1) Underlying operating profit is defined as operating profit excluding items affecting comparability.

2) NPS is reported for the first time in 2016. For definition, see page 6. Previously we reported a Customer Satisfaction Index (CSI) score.

Strategy

Our long-term aspiration is to be a leading customer-centric company, supplying a wide range of energy solutions and services to household and business customers. We are becoming increasingly customer-focused and are working to create enduring relationships with our customers in an effort to help them reduce their climate footprint and actively participate in the emerging energy landscape. We have four guiding principles – Easy, Fair, Sustainable and Engaged – which guide us in our work on achieving and improving the profitability of our current business and contribute to the development of new, sustainable energy solutions.

We have set the following strategic focus areas for Customers & Solutions:

- Focus on both the customers' emotional and functional experiences
- Accelerate digital development by creating fully digital offerings and taking the next step in agile ways of working
- Develop and expand the offering of sustainable energy solutions and services. In the area of smart data-based solutions, we are using data to develop personalised services. In cooperation with our partners we are developing decentralised solutions that are tailored to local market conditions. In the area of e-mobility we are focusing on charging solutions for the home, businesses and cities with a differentiated range of services
- Grow our customer base in Germany, Finland and France
- Reduce customer service costs by digitalising parts of our daily operations, optimising IT processes and executing cost optimisation programmes, such as the outsourcing of customer service operations in Germany
- Continue to develop the digital platforms for secondary market sales that we introduced in 2016 in our three core markets: Powerpeers in the Netherlands, Alltid.se in Sweden, and Enpure in Germany. These platforms cater to different customer segments and are allowing us to actively test new business and service models

Developments in 2016

Net sales decreased compared with 2015, primarily due to a reallocation of contracts with resellers from the Customers & Solutions Business Area to the Markets Business Area, which is part of the Power Generation segment; lower sold volumes in Germany; and negative price effects in the Netherlands. The underlying operating profit increased compared with 2015, mainly owing to lower administrative and sales costs.

During the year we continued our work on developing smart, sustainable and modern energy solutions:

- We launched the InCharge network of charging stations with partners in Sweden and Northwest Europe, which will make it easier for companies, municipalities and local energy companies to offer e-vehicle charging. It will help us to achieve a leading position in e-mobility in the Nordic markets
- Powerpeers, the first European online platform for sharing locally produced renewable energy, was launched and is getting a lot of traction in the new energy landscape
- Enpure, Europe's first energy product that is managed exclusively from mobile devices, based on 100% hydro power
- We developed and launched the Smart Fritidshus ("Smart vacation home") concept, our second custom-tailored energy solution for a specific customer segment
- Nuon energy roof, an integrated solution for an energy efficient roof including solar panels and insulation, was launched and is being commercialised on a larger scale. The first roofs have been installed
- We relaunched Alltid.se, our innovative and easy concept for a younger target group who care about the environment and who want simplicity, sustainability and trust

To date, we have sold 6,000 charging points, 73,000 smart home solutions, 22,000 decentralised energy systems and 600,000 decentralised heating systems.

The positive trend in customer loyalty and NPS continued in 2016, with improvements in the private segment in all of our core markets. We saw steady growth in our customer base, with an increase of about 250,000 contracts during the year, and see further potential. In Germany we continue to grow, and the customer base is stable in both Sweden and Finland. In the Netherlands we succeeded in turning the trend towards growth. During the year we acquired a majority interest in a customer-centric and innovative energy company in Denmark, and we are exploring opportunities for further growth in other countries. Development of sustainable solutions remains crucial, as demand is steadily growing for green electricity products and sustainable energy solutions.

Planned activities

To further improve the customer experience (and NPS), we continue to simplify things for our customers through digitalisation and by increasing the flexibility of our IT processes.

We are expanding our portfolio with relevant energy solutions as part of our efforts to offer good service to our customers. Our focus is on further development of e-mobility solutions, smart home applications, and decentralised production and storage solutions. We aim to continue growing our customer base in all markets and potentially also outside of our core markets. Our growth, combined with continuous cost reductions, will result in increased profitability. We will finalise the outsourcing process for our customer services unit in Germany, and we will continue to lower costs and increase the efficiency of IT and process handling through simplification and digitalisation. We will expand and further develop our new customer-centric Powerpeers, Alltid.se and Enpure business models.

POWER FROM YOUR NEIGHBOURS

Powerpeers in the Netherlands is the world's first digital peer-to-peer marketplace that allows small-scale producers and consumers to exchange energy directly with one another.

A social media energy platform

Powerpeers was launched in the Netherlands in 2016 as a start-up by Vattenfall and gives everyone access to local renewable energy generation.

"We offer the most customer-facing digital platform you can imagine – a kind of social media energy platform – where households can exchange energy in a fun way directly with their friends, neighbours and even their local school," says Lars Falch, Head of Powerpeers.

Subscribers, who may be generators as well as consumers of electricity, pay a monthly fee to both supply the energy they generate to others and choose whose energy they want to receive.

"Consumers can create their own personal energy community by managing their lists of producers, and can monitor online how much energy they source from whom and when," explains Falch.

Powerpeers is just one manifestation of the trend towards digitalisation, the connected society, the "sharing economy", interest in local renewable energy, and the increasingly decentralised energy market.

"The energy market is in a state of transformation, and I think Powerpeers gives us a good indication of where we are heading in the future," says Falch.

Powerpeers consumers

Arnoud Rijpstra and Thessa Wong are a young couple who live in central Utrecht. They don't have the possibility to install their own solar panels or wind power turbines, but are Powerpeers consumers.

Arnoud: "I really like that Powerpeers allows me to personally choose local green suppliers. Nowadays, sustainability should be the standard."

Thessa: "It is great that I can visit my energy suppliers for a cup of coffee, and know that my energy is truly green."

Powerpeers "prosumers"

Hans Grijseels lives in the Utrecht countryside with his wife Edith and their dog Keetje. They have solar panels and are Powerpeers "prosumers" – as they both produce and consume electricity.

Hans: "I installed solar panels and became a Powerpeers customer because sustainability is a very important issue for me – for the sake of my children and grandchildren. I have also always been interested in new gadgets and innovations."

Arnoud Rijpstra

Thessa Wong

Hans Grijseels

What is Powerpeers and how does it work?

- Powerpeers is a social media energy platform, launched in 2016 as a start-up by Vattenfall
- Subscribers pay a monthly fee to supply the energy they generate to others
- Subscribers can choose their own local suppliers of renewable, green electricity

POWER GENERATION

Power Generation includes Vattenfall's hydro and nuclear power operations, and optimisation and trading operations. Moreover, our service operations develops and delivers maintenance services to both internal and external customers. The operating segment comprises the Generation and Markets Business Areas.

Operations

Through our Power Generation operating segment we are one of Europe's largest generators of electricity, producing a total of 81.7 TWh of electricity in 2016. We strive to be a leader in providing safe, reliable and efficient nuclear and hydro power. By continuously increasing the flexibility of our hydro power plants we can provide balance to the growing share of intermittent, weather-dependent power generation, such as from wind and solar. The Markets Business Area is responsible for the optimisation and marketing of our generation portfolio, including hedging, sourcing and trading. We also offer wholesale services to businesses and households, enabling our customers to optimise their generation, demand or storage assets at the lowest possible cost. These services include wholesale market access to term, day ahead and intraday markets.

Key data[1]	2016	2015
Net sales (SEK million)	98,997	91,643
External net sales (SEK million)	49,276	35,783
Underlying operating profit[2] (SEK million)	11,410	12,376
Electricity generation, (TWh)	81.6	82.4
Sales of electricity[3], (TWh)	37.6	—
– of which, private customers	3.0	—
– of which, resellers	31.6	—
– of which, business customers	3.0	—

1) Reporting of figures for 2016 pertain to continuing operations, i.e., excluding the lignite operations.

2) Underlying operating profit is defined as operating profit excluding items affecting comparability.

3) Values have been adjusted compared with information previously presented in Vattenfall's 2016 year-end report. Comparable figures for 2015 are not available due to changes in sales allocation and reporting of contracts.

Strategy

The energy sector, especially large-scale conventional power generation, has experienced fundamental changes in recent years which have significantly reduced electricity prices. In a renewable future, hydro power plants in Sweden will play an increasingly important role as a large-scale, flexible source of renewable energy. Nuclear power is climate-neutral and cost-effective, and will play a crucial role in Sweden during the transition to a renewable power system.

We have identified the following strategic focus areas for Power Generation:

- Maintain safe, reliable, and efficient hydro and nuclear power generation with high environmental performance
- Develop flexible electricity generation that can balance the energy system
- Ensure the efficient decommissioning and dismantling of nuclear power plants that have been scheduled for closure
- Develop maintenance services business for the power grid market

Developments in 2016

During the year we completed the sale of our lignite operations in Germany. The Swedish Energy Agreement that was reached in 2016 includes provisions to phase-out the nuclear capacity tax and reduce the property tax on hydro power assets from 2.8% to 0.5% during the period 2017–2020. These measures will have a positive impact on our business performance.

Net sales decreased compared to 2015, which is mainly due to a reallocation of contracts with resellers from the Customers & Solutions Business Area to the Markets Business Area. The underlying profit decreased, mainly owing to lower production margins resulting from average lower electricity and fuel prices achieved.

Hydro power

Our total installed hydro power capacity of 8,824 MW in the Nordic region generated 32.2 TWh (36.5) of electricity in 2016. A dry spring and autumn reduced Nordic reservoir levels to 52% (74%) of capacity at the end of 2016, which is 5% below normal. We invested in refurbishments and upgrades to increase the efficiency and power generation of our hydro power plants, and made further investments in maintaining availability and in dam safety. During the year we completed a major refurbishment and expansion of the Akkats hydro power plant near Jokkmokk, Sweden. The EU Water Framework Directive needs to be implemented in a more balanced manner to ensure the future availability and capacity of our bigger hydro power plants. In Germany, our hydro power portfolio, consisting mainly of pumped storage hydro plants, had a total capacity of 2,880 MW and generated 2.5 TWh of electricity.

Nuclear power

Our nuclear power generation in 2016 amounted to 46.9 TWh (42.2). The increase compared with the preceding year can be credited to higher availability. Combined availability of our nuclear power plants was 75.4% (69.7%) in 2016. During the fourth quarter the Ringhals 2 (R2) reactor was restarted following a two-year outage. To increase security of supply, we strengthened our sourcing activities by engaging in a more active dialogue with our suppliers and incorporating more human rights issues into our due diligence procedures. The decommissioning activities for our Brunsbüttel and Krümmel nuclear power plants in Germany progressed as planned during the year. The nuclear fuel is currently being removed from the reactors, and this work is planned to be completed during 2017 for Brunsbüttel and 2018 for Krümmel.

Markets Business Area

Vattenfall's portfolio and risk exposure have changed dramatically following the sale of our lignite operations to EPH. As a result, Vattenfall decided to change its price hedging strategy (read more on page 60). To increase efficiency and reduce costs, we decided to consolidate all continental activities for trading and asset optimisation into a single hub in Hamburg.

Colombian coal

Topical issue

BA Markets sources Vattenfall's hard coal from several countries, including Colombia, as part of efforts to optimise its portfolio from both commercial and technical perspectives. Colombia is a high risk country and as such has received a lot of attention from the general public.

Our sourcing philosophy, which is aligned with international guidelines, is that we can be a positive force for change by engaging in a dialogue with relevant stakeholders and by working actively with our suppliers. In addition to our risk-based due diligence process and our participation in the Bettercoal Assessment Program, we have engaged in dialogue with both international and Colombian NGOs, the UN Global Compact, governmental representatives in the Netherlands and Sweden, and directly with three major mining companies. This dialogue has significantly improved our knowledge of the Colombian mining situation, allowing us to identify important areas for improvements, refine our requirements, and more transparently voice our views and ways of working.

In 2016 we introduced three new criteria for our Colombian suppliers that underline our ultimate goal for reconciliation for victims of past human rights violations. Our criteria are that our suppliers should (1) publicly condemn any human rights violations in the past that took place in the region where they currently operate, (2) publicly support the Colombian Peace Process, and (3) publicly support a reconciliation procedure for the victims of past human rights violations. We have reported externally on the outcome of our analyses of the relevant companies on these criteria. In 2017 we are planning an on-site visit to Colombia to gather more information through interviews with local stakeholders such as NGOs, labour unions, local communities, and representatives from the government and mining companies.

For more information, visit corporate.vattenfall.com/hard-coal

Planned activities

We will continue to implement operational efficiency measures in our nuclear power operations to reduce costs and will invest in independent core cooling at the Forsmark nuclear power plant. In Swedish hydro power we will continue our investments to further improve dam safety and renew our hydro power plants. We are currently reviewing our German hydro power operations to optimise operation of the various assets.

The Markets Business Area is identifying where we can create the most value by leveraging digitalisation and market opportunities to meet the increasing customer demand for wholesale market services related to decentralised generation, storage, and demand response.

Topical issue

Strategic investments in nuclear power

Our nuclear operations in Sweden will continue to be a part of the long-term solution and support the transition to an energy system that includes both central and decentralised energy solutions. The Swedish energy policy agreement acknowledges the importance of nuclear power in the transition to a 100% renewable energy system. This provides the precondition for us to be able to make the investments needed to secure the long-term operation of our nuclear reactors.

Based on market developments, we will begin decommissioning two reactors in Sweden in 2019/2020 and all reactors in Germany in 2022, while investing in the operation of the remaining five reactors in Sweden until the 2040s.

Nuclear operations in Sweden

As part of the 2016 parliamentary agreement on Sweden's future energy policy, it was decided that continued long-term operation of the nuclear generation fleet would provide the necessary energy stability during the transition to a renewable energy system.

The Forsmark and Ringhals reactors have undergone comprehensive modernisation programmes which will allow them to continue operating until the mid-2040s. Following the decision to phase-out the nuclear capacity tax, we decided to invest in independent core cooling in Forsmark's three nuclear reactors. This safety upgrade is a requirement from the Swedish Radiation Safety Authority following the Fukushima accident in 2011, to enable continued operations after 2020. A corresponding investment decision for the Ringhals 3 and 4 reactors is planned for the second half of 2017. In 2015 we announced an early phase-out of the Ringhals 1 and 2 reactors in 2020 and 2019, due to poor profitability resulting from low electricity prices and high costs.

Nuclear capacity tax

In 2000 the Swedish government introduced a tax on installed nuclear capacity. Since then this tax has gradually increased and today corresponds to approximately 7 öre (SEK 0.07)/kWh. The Swedish energy policy agreement includes a phase-out of the nuclear capacity tax over a two-year period, starting in 2017. This corresponds to annual tax savings for Vattenfall of SEK 3 billion. However, even with the abolishment of the capacity tax, profitability in nuclear will remain a challenge due to low electricity prices, and we will therefore continue to focus on reducing production costs for the operating nuclear power reactors.

Nuclear power operations in Germany

All of Germany's nuclear power reactors are to be shut down by 2022, following a federal decision to immediately close or shorten the operating lifetime for the German nuclear reactors, which was influenced by the Fukushima accident in 2011. Vattenfall is seeking compensation for the lost value of its German assets due to the decision. In 2016, the hearing of Vattenfall's lawsuit against the German government with the International Centre for Settlement of Investment Disputes (ICSID) in Washington, D.C. took place. Vattenfall does not disagree with the decision but is seeking compensation from the German government for lost revenues, totalling EUR 4.4 billion including interest. Vattenfall's request for arbitration was registered with the ICSID on 31 May 2012, and a ruling is expected in 2017. Additionally, Vattenfall filed a constitutional suit against the German government, as have two other German nuclear power companies. The Federal Constitutional Court of Germany decided on 6 December 2016 that Vattenfall is entitled to compensation for electricity generation rights they lost through the German government's decision to exit from nuclear energy. The Constitutional Court has limited itself to stating the unconstitutional nature of the accelerated shutdown. There has been no decision on amount, type and time of compensation for Vattenfall.

Nuclear power decommissioning and radioactive waste

In both Sweden and Germany, nuclear power operators make provisions for future expenses, which are recorded as liabilities on the companies' balance sheets. Read more about our provisions in Note 42 to the Consolidated accounts, Other interest-bearing provisions.

Swedish Nuclear Waste Fund

In Sweden, nuclear reactor owners must pay a fee per generated kWh into a dedicated fund, the Swedish Nuclear Waste Fund. For Vattenfall, the fee to the Swedish Nuclear Waste Fund, which is decided by the government every three years, amounted to an average of 4 öre (SEK 0.04)/kWh in 2016. As per 31 December 2016 the value of our share of the fund was SEK 30.4 billion[1]. In a statement to the government, the Swedish Radiation Safety Authority (SSM) has proposed that the nuclear waste fee for nuclear reactors shall be calculated on the basis of an operating lifetime of 50 years instead of 40 years, as it is currently. The government will decide on the fees for 2018–2020 during the autumn of 2017. Read more in Note 29 to the Consolidated accounts, Share in the Swedish Nuclear Waste Fund.

In Sweden, reactor owners are also required by law to pledge security to the Swedish state that sufficient funds will exist to cover the future costs for decommissioning and waste handling. The security is currently provided in the form of guarantees from the respective parent companies of the owners of the nuclear power companies. Read more in Note 51 to the Consolidated accounts, Contingent liabilities.

Draft law for nuclear waste fund in Germany

In 2016 the German federal cabinet approved a draft law under which the country's nuclear power operators will shift their liability for the transport, intermediate and final storage of nuclear waste to the state through payment of a total of EUR 23.6 billion into a public fund. For Vattenfall, this change in law effectively eliminates the financial uncertainty over future cost increases for intermediate and final storage or radioactive waste.

Together with the risk premium of 35.47% and six months' interest payments at an annualised rate of 4.58% to be paid by law, Vattenfall will transfer a total of SEK 17 billion (EUR 1.8 billion). The German law on nuclear waste was passed by Germany's parliament in December 2016. Approval must still be obtained from the EU and is expected to be received in early 2017. Read more on the financial consequences for Vattenfall on page 80.

Final storage of spent nuclear fuel

In a statement to Sweden's land and environmental court published in 2016, SKB (the Swedish Nuclear Fuel and Waste Company, in which Vattenfall is the majority owner) meets or has the potential to meet the radiation protection requirements for the final repository method according to SSM (the Swedish Radiation Safety Authority). SKB filed an application in 2011 for permission to build an encapsulation facility in Oskarshamn and the final repository for spent nuclear fuel in Forsmark, in Östhammar municipality. In 2017, SSM is expected to give its final assessment to the Swedish government, which will decide if the repository may be built or not. If construction starts in 2019 as planned, the repository can be put into operation in 2027.

In Germany, no formal proposal for a final repository for spent nuclear fuel has been set forth yet. Following a decision by the Bundesrat in June 2013, a suitable location for final storage shall be agreed by 2031 at the latest. Until then, spent nuclear fuel is stored in interim facilities adjacent to the nuclear power plants. The Konrad mine, an abandoned iron ore mine located near the city of Salzgitter, is currently being used as the nationwide repository for the final storage of low- and intermediate-level radioactive waste.

[1] 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.)

Vattenfall's nuclear reactors

Reactor	Start (year)	Net capacity (MW)	Vattenfall's share (%)
Ringhals 1	1976	887	70.4
Ringhals 2	1975	907	70.4
Ringhals 3	1981	1,075	70.4
Ringhals 4	1983	1,114	70.4
Forsmark 1	1980	984	66.0
Forsmark 2	1981	1,120	66.0
Forsmark 3	1985	1,167	66.0
Brunsbüttel[2]	1977	771	66.7
Brokdorf	1986	1,410	20.0
Krümmel[2]	1984	1,346	50.0
Stade[3]	1972	640	33.3

[2)] Brunsbüttel and Krümmel have had no authorisation for electricity generation since 2011.

[3)] Stade is being dismantled.

INNOVATION AND COST-EFFICIENCY IN OFFSHORE WIND

Increasing competition in the offshore wind tender processes are driving down the cost of renewable energy. This is good for customers – and requires Vattenfall to continuously innovate and improve cost-efficiency to stay ahead.

Innovation and cost-efficiency

"Competition for offshore wind tenders has become extremely tough," says Gunnar Groebler, Head of BA Wind. "Our diligent work on reducing costs allows us to offer record low prices and to win tenders. Staying competitive means that we constantly need to innovate and improve profitability."

Technical innovation is key to greater project lifecycle cost-efficiency – and overall profitability.

"We are benefiting from the development towards larger, more cost-effective turbines, and our efforts in process harmonisation as well as our investments in digitalisation allow us to optimise operation and maintenance by providing more efficient ways of working, better data analytics and improved predictive maintenance," says Gunnar Groebler.

People also play a decisive role – both in terms of Vattenfall's supply chain partners and its employees.

"We are working closely with our key suppliers to enable them to better understand what we want to do, which helps them to innovate and ultimately improves our cost-efficiency," says Gunnar Groebler. "As the second largest offshore wind developer in the world, we are able to secure and attract the best people – for us great people make all the difference."

Targeting renewable energy, independent of subsidies

Vattenfall's ambition is to continue to strive for on- and offshore cost-efficiency to remove the need for subsidies altogether. The company's offshore R&D test projects, such as off the coast of Aberdeen in the UK, where various new technologies are currently being tested, are vital in achieving this level of cost-efficiency.

The Aberdeen project is the first in the world to combine a new turbine release with 66 kV cabling rather than the standard 33 kV cabling, to reduce materials and costs, and a suction bucket foundation, which allows turbines to be located in deeper water and with more complex ground conditions than conventional monopile foundations.

"The information we are gathering on this project will help us further improve our cost and profitability position throughout our portfolio, but especially on our projects under development," says Gunnar Groebler.

Gunnar Groebler
Senior Vice President,
Head of Business Area Wind

Wind champion

Vattenfall is the second largest offshore wind developer worldwide, with more than 2,200 MW of installed capacity from 1,100 wind turbines in Sweden, Denmark, the Netherlands, Germany, and the UK.

WIND

Wind is responsible for development and operation of our onshore and offshore wind power as well as for other renewable generation, such as solar energy and batteries.

Operations

We now have a strong number two position in offshore wind power worldwide and are one of the top three companies in onshore wind power in Denmark and the Netherlands. We currently operate a portfolio of more than 1,100 wind power turbines with total installed capacity of 2,200 MW across five countries.

We continue to explore new opportunities in solar energy (PV) technology and battery storage. For example, by integrating PV with wind farms we can keep costs down and minimise the environmental impact by taking advantage of existing infrastructure. We plan to build additional solar farms in our efforts to further diversify our portfolio. Read more about Vattenfall's first solar farm on page 39.

Key data	2016	2015
Net sales (SEK million)	6,702	6,769
External net sales (SEK million)	4,384	4,267
Underlying operating profit[1] (SEK million)	878	1,469
Electricity generation (TWh)	5.8	5.8
Investments (SEK million)	8,782	8,629

[1] Underlying operating profit is defined as operating profit excluding items affecting comparability.

Strategy

Development of renewable power generation is the key to reducing CO_2 emissions and achieving a sustainable energy system. We want to be a leader in the development, construction and operation of wind power, and we have set a target to operate 4 GW of wind power by 2020. To achieve this target and succeed in a competitive market, we will continue to create a strong foundation and build on our strategic objectives.

We have identified the following focus areas for Wind:

- Further strengthen our project pipeline by acquiring project development rights or entering into joint venture agreements
- Become a leader in Levelised Energy Cost (LEC), for example by leveraging procurement scale, standardising processes and improving site selection and design capabilities
- Innovate in operations and maintenance, and use digitalisation to reduce costs and improve availability
- Create partnering options for a number of major projects

Developments in 2016

Lower prices received and less favourable wind conditions contributed to a decrease in both net sales and the underlying operating profit compared with 2015. During the year a total of 297 MW of new capacity became operational.

In most other respects, 2016 was a very successful year for Vattenfall's wind power business. We won tenders for two major projects – one for the 350 MW Danish Near Shore wind power project and one for the 600 MW Kriegers Flak offshore wind farm in Denmark. The Kriegers Flak bid price was the lowest offshore bid ever awarded, indicating we are a leader in LEC projects. During the year we also decided to invest an additional GBP 400 million in the Aberdeen offshore wind farm, which will also serve as a testing ground for new offshore power generation technologies. In June a final investment decision was taken for one of our largest offshore projects so far, Horns Rev 3, with construction scheduled to commence in early 2017. Horns Rev 3 will consist of 49 wind turbines with total capacity of 407 MW, which corresponds to the annual electricity needs of 425,000 Danish households.

In addition to tenders we made several positive development steps in our projects currently under construction. Sandbank, a 288 MW offshore wind farm in Germany, began delivering power in September and was fully commissioned in early 2017, a few months ahead of schedule. In the UK, construction of the Pen y Cymoedd wind farm remains on schedule. The wind farm began delivering power in early October and will be operating at full capacity in early 2017. In November the final turbine was installed at the Ray wind farm. This marked a major milestone in the development of this 54.4 MW wind farm, which is expected to generate enough power to meet the annual electricity needs of over 30,000 UK households.

Our first solar farm (5 MW), adjacent to the Parc Cynog wind farm in the UK, became operational at the end of March 2016. Solar energy will increase in the coming years and will be one of our growth areas. In addition, we won a tender in the UK for a 22 MW battery to provide enhanced frequency control service to the national grid. This will help us diversify our portfolio in the area of storage technologies and enable us to participate in the balancing market.

Planned activities

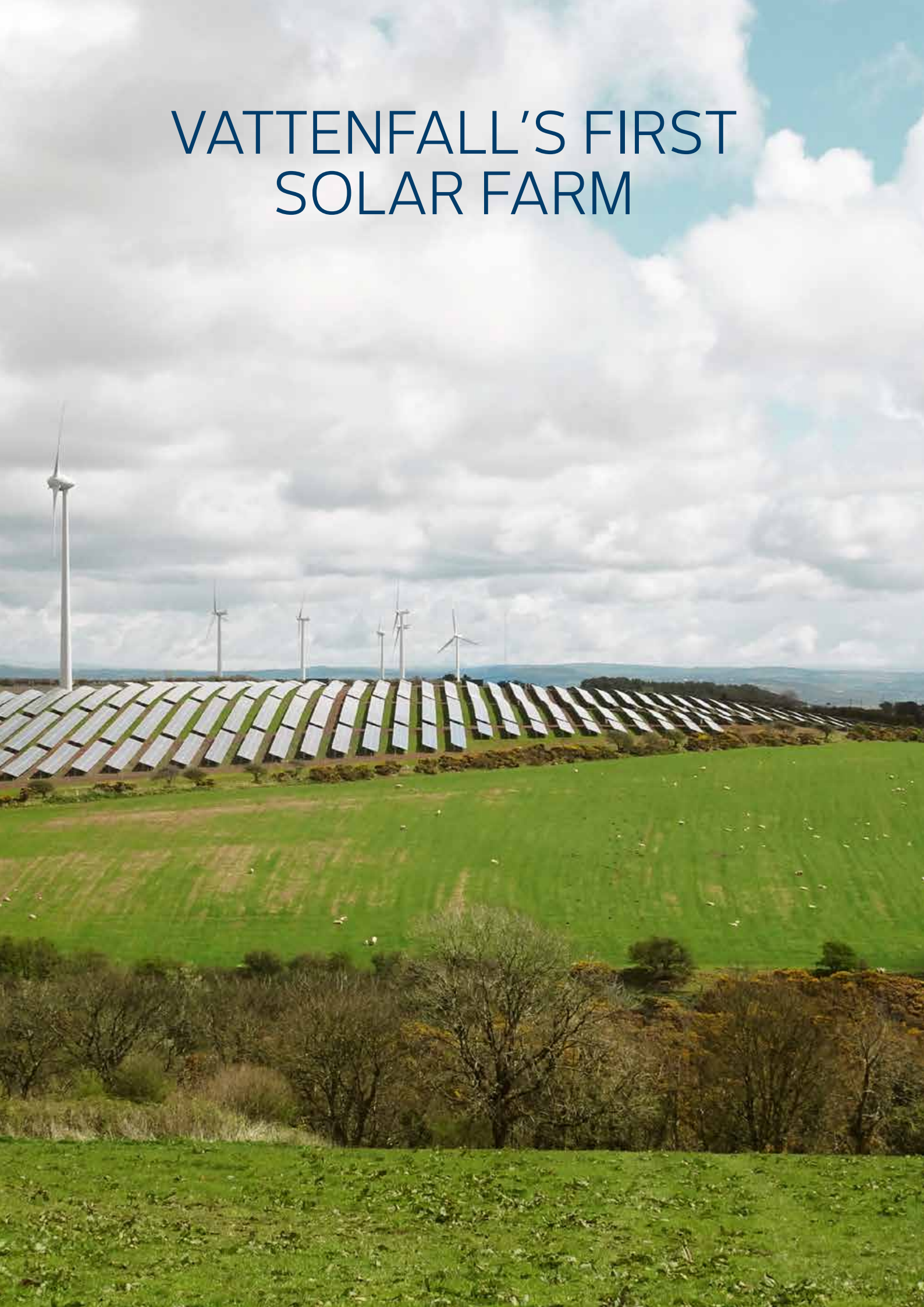
We will proceed with our plans to invest more than EUR 5 billion in the coming years and will continue to prepare bids for tenders in 2017 with a focus on offshore projects, such as the upcoming auctions in Germany and the Netherlands. Both of our recently acquired projects, Global Tech II and Sandbank Plus, meet the legal criteria and will allow us to participate in the first auction rounds for offshore wind projects in Germany starting in spring 2017. In the Netherlands we are planning for investment decisions on the Wieringermeer onshore wind farm, and we will continue to develop our onshore pipelines in the UK, Sweden, Denmark, the Netherlands and Germany.

With respect to our existing wind farms, we will incorporate the operation of more assets into active asset management and lower costs by raising the level of digitalisation and data analysis. We will also further develop our offering to operate third party wind farms.

Given our expertise in constructing and operating on- and offshore wind farms, we believe partnerships will provide attractive opportunities to fulfil our commitment to further growth in wind power.

A vital precondition for success is to cooperate with local stakeholders and implement the most appropriate environmental solutions. Toward this end we have formed a proactive biodiversity management team to provide support to wind power and other projects. We continue to work actively with local stakeholders and are further developing our expertise on minimising biodiversity impacts. For example, our specialists are continuously participating in a number of environmental R&D projects and are studying the environmental impacts of onshore and offshore wind farms in addition to testing measures to mitigate these impacts. The outcomes will be shared across the industry and will be used to develop industry-wide best practices.

VATTENFALL'S FIRST SOLAR FARM



Parc Cynog in Wales was the first Vattenfall project to combine wind and solar power on a single grid connection – with the aim of creating synergies and efficiencies. The project also reached out to local stakeholders to promote community awareness and understanding of the project.

Complementary energy sources

Wind and solar were combined at Parc Cynog as a pilot project to test technical synergies and how two renewable technologies would work together in practice. Early data show that wind and solar power complement each other very well, as we are seeing that solar and wind power generation tend to peak at different times.

"Being able to share infrastructure and grid connection also means that we can reduce costs and environmental impacts by maximising space and resource usage," explains Rahel Jones, Project Communications Team Leader at Vattenfall UK. "The site only requires one access road, and the solar panels are in a field with one of the wind power turbines, which both optimises the land use footprint of the site and the associated environmental impacts."

Building on good local relations

"As Parc Cynog has operated since 2001 and was expanded in 2011, we already had strong relationships with local stakeholders, and attitudes to adding solar were positive from the beginning," says Jones.

The team sent newsletters about the plans to add solar to Parc Cynog to homes in the area and organised site visits both before and after the solar installation project that were open to anyone. The site visits gave local people the chance to ask the team questions face-to-face, and people genuinely appreciated the opportunity to find out about the project in a real way, which was much better than looking at maps and project plans.

"We have also offered to install solar panels on local buildings as part of our community outreach work at Parc Cynog," adds Jones.

Combining wind, solar and batteries?

Vattenfall is eager to build on the experience at Parc Cynog in order to find more synergies with future projects.

"We are currently exploring opportunities to integrate wind, solar and batteries to combine complementary renewables with energy storage on our projects in the pipeline," says Rahel Jones.

Rahel Jones

Parc Cynog – a renewable energy park

In March 2016 Vattenfall completed a 5 MW solar array at its Parc Cynog wind farm, thereby creating Vattenfall's first renewable energy park that generates energy from wind and sun. The site generates enough wind energy to annually power around 4,800 average homes, and the solar array is expected to meet the annual electricity needs of up to 1,440 homes during its 30-year lifespan.

HEAT

Heat develops, operates and optimises the entire heating and cooling value chain, producing efficient and reliable electricity and heat for customers and society.

Operations

We are one of Europe's largest producers and distributors of heat, supplying electricity and heat to growing metropolitan areas in Northwest Europe, including Berlin, Hamburg, Amsterdam and Uppsala. We operate approximately 30 CHP plants and some 20 condensing plants.

We are a leading supplier of heat in Germany, Sweden, and the Netherlands, with a customer base of more than 2 million end users and very low churn (less than 1%). We also offer an array of decentralised heating and energy solutions, including mini-CHPs, heat pumps, and solar panel installations. Our decentralised operations comprise over 320 installations with sold thermal power of 165 MW that serves some 33,000 customers.

Key data[1]	2016	2015
Net sales (SEK million)	28,414	27,345
External net sales (SEK million)	15,110	14,356
Underlying operating profit[2] (SEK million)	3,230	1,759
Sales of heat (TWh)	20.3	20.6
Electricity generation (TWh)	31.6	29.8
– of which, fossil-based power (TWh)	30.8	29.0
– of which, biomass and waste (TWh)	0.8	0.8
CO_2 emissions (Mtonnes)	23.7	23.9
Nitrogen oxide, NO_x (ktonnes)	10.2	10.1
Sulphur dioxide, SO_2 (ktonnes)	4.2	4.5
Particulates (ktonnes)	0.3	0.3

1) Data for 2016 pertains to continuing operations, i.e., excluding the lignite operations.
2) Underlying operating profit is defined as operating profit excluding items affecting comparability.

Strategy

We aspire to be a preferred partner to the communities and customers that we provide efficient, sustainable solutions to. We will achieve this through efficient electricity generation and by developing, operating and optimising the entire heating and cooling value chain, which will allow us to serve customers and communities with reliable and efficient heat and energy solutions.

We have identified the following focus areas for Heat:

- Deliver on our customer promise and increase our customer base in both district heating and decentralised heating solutions
- Broaden our product offering and develop solutions that fit the customer's specific situation and preferences. Heating solutions can include district heating, decentralised solutions or combinations of the two, with an increasing focus on digital services
- Set ambitious targets for climate neutrality and drive the transition towards fossil-free heating solutions together with cities and regions (read more on page 43)
- Commitment to operational excellence and competitive pricing for heat customers

Developments in 2016

Both net sales and the underlying operating profit improved compared with 2015, mainly owing to a higher number of customer contracts and higher gross margin mainly resulting from lower fuel costs. In our core regions we continued to work in close partnership with our customers and stakeholders on new district heating and decentralised heating solutions. For example, by replacing decentralised oil and gas boilers with more efficient heating solutions, we have helped them to become more energy efficient.

With the Noorderwarmte pipeline in Amsterdam, we connected new areas to our district heating network, reducing CO_2 emissions by 70% for residents. By signing the Berlin Climate Protection Agreement in 2009, we committed to the city's CO_2 reduction targets of 85% by 2050 compared with 1990. As such, we have agreed to close down and replace our Reuter C coal-fired power plant with a new gas-fired CHP and install the largest power-to-heat e-boiler in Germany, with capacity of 120 MW by 2020.

In Hamburg, we reached a significant milestone with the conversion of the Moorburg coal-fired condensing power plant into a CHP plant. In 2016 we began supplying steam to our first industrial customer. Testing began in November, and the investment in a connecting pipeline will cut 15,000 tonnes of CO_2 annually by replacing gas with residual heat from the Moorburg power plant. In 2017 we will continue to identify additional customers for the residual heat available from electricity generation. Also in 2016, the Haparanda plant in Northwest Sweden and the CHP plant in Munksund were sold. Emissions from these waste- and biomass-fired plants amounted to approximately 11,300 tonnes of CO_2 in 2015, corresponding to 3.9% of Vattenfall Heat Sweden's total emissions.

Planned activities

We see a need to replace outdated, less efficient heating solutions with modern and more energy- and CO_2-efficient solutions. The regulatory framework favours this development, as heat is considered an important area to address in the energy transformation. For example, we have drafted the following transitional plan for our operations Uppsala:

- 2017: Installation of a new bio-oil tank and conversion of the oil boilers to bio-oil
- 2018: Conversion of the existing hot water boiler from peat to wood pellets
- 2019: Closure of the peat-fired CHP
- 2020 onwards: Heat in Uppsala will be generated by waste-fired boilers, bio-fuel boilers, electric boilers and heat pumps
- 2021: Commissioning of a new wood chip–fired plant

These actions will reduce annual CO_2 emissions of the Uppsala heating system from approximately 300,000 tonnes in 2016 to about 140,000 tonnes in 2020, exceeding our commitment to halving emissions by that date.

In 2017, the lignite CHP in Klingenberg will be shut down, three years ahead of what was agreed in the Climate Protection Agreement with the city of Berlin. Its generation will be replaced by a refurbished gas-fired unit, resulting in an annual reduction of CO_2 emissions by approximately 600,000 tonnes.

In Germany we will focus on accelerating the growth of our decentralised solutions business in Berlin, Hamburg and the rest of the country.

In the Netherlands our district heating networks are achieving significant reductions in CO_2 emissions by using a combination of residual heat from waste incineration plants, highly efficient gas CHPs, and renewable sources including biomass and solar. The Netherlands has set a goal to phase out natural gas in the built environment (more than 90% of residential heating in the Netherlands is provided by household gas boilers). We are supporting this transformation by offering cost-efficient, low CO_2-emitting district heating. Together with cities and other stakeholders we are preparing a large expansion of our district heating networks, which will help our stakeholders achieve their climate goals.

HEAT STORAGE CONTRIBUTING TO CLIMATE GOALS

Vattenfall's Heat operating segment has established some of the largest pressurised heat buffers in the world that optimise local district heating systems by reducing CO_2 emissions and energy costs.

Optimising system efficiency

Heat buffers, which are enormous hot water storage tanks, have been installed in Berlin, Germany, and Diemen, the Netherlands. The buffers allow Vattenfall to source electricity from the grid when there is excess energy from wind farms at low prices, and store it for later use in local district heating systems. Vattenfall's buffer in the Netherlands also optimises the use of its gas-fired power plants.

This solution of using heat buffers for energy storage is known as power-to-heat storage and can reduce CO_2 emissions by optimising energy use. It also makes power plants more cost-effective as they can source cheaper energy.

Contributing to Amsterdam's carbon reduction targets

Since October 2015 Vattenfall has operated a 22,000 cubic metre heat storage buffer with 1,800 MWh thermal capacity on its production site in Diemen, the Netherlands.

"By being able to store heat from our gas plants, the buffer allows us to switch off the plants when sufficient wind energy is available," explains Willeke Kloosterman, Programme Manager at Vattenfall Heat Projects.

Vattenfall's storage buffer in Diemen is contributing to Amsterdam's goal to be climate-neutral and gas-free by 2050 – through greater efficiency and by storing heat generated by its gas plants.

"Our buffer alone reduces CO_2 emissions by some 14,000 tonnes annually," says Kloosterman. "What is crucial from a climate perspective is that the buffer makes us less reliant on our five heat-only gas boilers, which are less efficient as they don't co-generate power."

Willeke Kloosterman

Vattenfall and district heating

Vattenfall is the largest supplier of district heating in Europe, with systems in major cities in Sweden, Germany, and the Netherlands. Vattenfall uses almost exclusively renewable fuels in its district heating systems in Sweden and is phasing out the use of hard coal and lignite in Germany.

DISTRIBUTION

Distribution is responsible for the operation of electricity distribution networks in Sweden and Germany, and develops and delivers network-related products and services to selected customer segments.

Operations

We own and operate electricity distribution networks in Sweden and Germany (Berlin) and have approximately 3.2 million business and household customers. We strive to minimise environmental impacts when constructing and operating our electricity distribution networks. Electricity distribution is a regulated business and is monitored by the network regulators in the respective countries. In June 2015 the Swedish Energy Markets Inspectorate issued instructions for a revenue framework for the regulatory period 2016–2019. We have appealed this decision. In Germany, the third regulatory period, valid from 2019, is in preparation.

Key data	2016	2015
Net sales (SEK million)	19,661	19,914
External net sales (SEK million)	15,233	15,355
Underlying operating profit[1] (SEK million)	4,863	5,465
Investments (SEK million)	5,248	4,671

1) Underlying operating profit is defined as operating profit excluding items affecting comparability.

Strategy

Electricity distribution and the related infrastructure are essential for a sustainable society. Customers' and society's expectations have increased on security of supply, high-quality of supply and the ability to connect to the network. Regulatory models are also setting increasingly high goals for the quality of supply. The ageing network must be modernised to manage the growing volume of renewable and distributed power generation that needs to be connected. The Distribution System Operators (DSOs) are expected to enable the adoption of smart meters, digital solutions and customer information.

We have identified the following focus areas for Distribution:

- Increase investments to improve availability and the quality of supply, increase customer satisfaction, and accommodate renewable energy sources
- Become a Digital DSO with customer-centric smart solutions and increased automation in the electricity network

Developments in 2016

Net sales increased as a result of higher prices and slightly higher transmission volumes. At the same time, the underlying operating profit decreased, mainly as a result of higher costs in Germany and the earlier scheduling of maintenance investments. We have invested heavily in the electricity network to reduce outages and improve the quality of supply. In 2016 alone we invested more than SEK 5.3 billion (4.7) in electricity networks, including SEK 3.7 billion in Sweden. A large share of investments in Sweden pertain to weather-proofing the electricity network, particularly in rural areas, and to improving the network in growing cities. Measures such as insulating overhead power lines or replacing them with underground cables will increase the quality of supply and reduce outage frequency and duration[1]. Ageing and malfunctioning assets will be replaced to improve environmental and safety performance. To continue to finance investments in improving the quality of supply, we announced an 11% increase in the electricity network price in Sweden, which is effective from 1 January 2017.

To further increase supply security in Berlin, investments are being made to renew assets, for example substations and asset automation. The forthcoming rollout of smart meters in Germany will be governed by a new law, where integrity and security issues will be key aspects. In Berlin, the tender process for the electricity grid concession continued in 2016. Stromnetz Berlin GmbH has submitted an ambitious and competitive bid, which will guarantee an efficient and future-oriented distribution system.

It is important for us to minimise potential adverse impacts on the environment and people living near our plants. The involvement of local stakeholders is key when initiating new projects to ensure local acceptance and mitigate potential negative impacts. Stakeholder dialogue is conducted by local employees with knowledge of the local community. Environmental aspects are always considered, with a special focus on biodiversity and protected species. Old poles are reused where possible in other parts of the network, which reduces the need to source and transport new materials. Outdated creosote poles are used as fuel in heat production. These measures are positive both for the environment and promote resource efficiency in the project at hand.

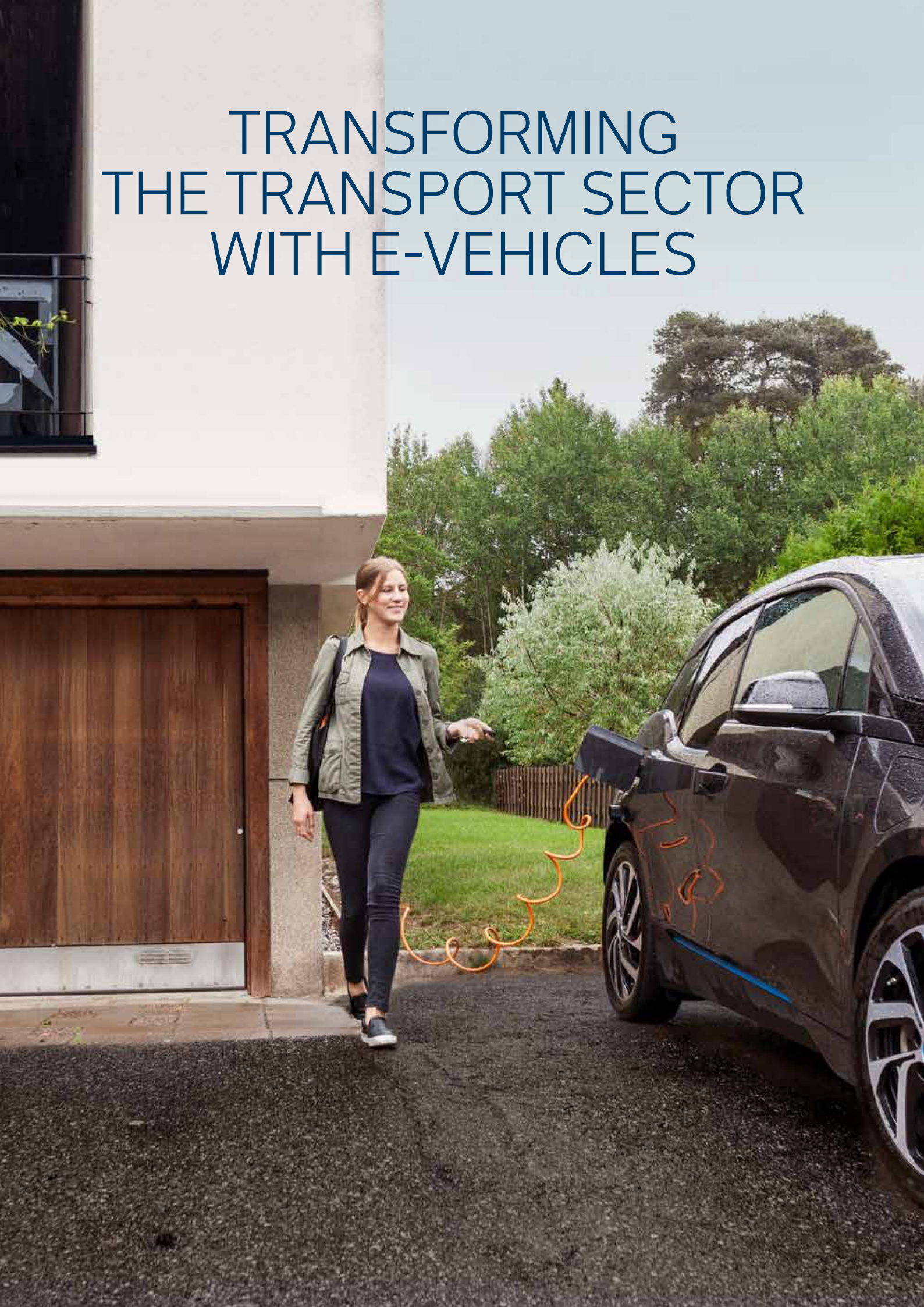
1) For further information on outage duration and frequency, see SAIDI and SAIFI on page 172.

Planned activities

We will continue our investments to significantly improve the quality of supply, as this will allow us to capture future business opportunities and enable major environmental benefits. Our substantial level of investments have involved procuring equipment in the international market and have thereby increased our supplier base. We conduct formal audits based on Vattenfall's Code of Conduct for Suppliers on a regular basis. We believe that by being a responsible purchaser with clear goals for our business relationships, we are a driver of improvements in working conditions for contractors and workers. We will also continue to develop relationships with local stakeholders to foster an understanding of our societal responsibility as a network owner.

Environmental focus areas in the coming years include replacing creosote poles with alternative pole materials and impregnation methods, proper management of biodiversity in maintenance and construction activities, responsible handling of equipment to avoid oil spills, and the ambition to adopt new cooling technologies for high voltage breakers when they become commercially viable.

TRANSFORMING THE TRANSPORT SECTOR WITH E-VEHICLES



As a leading player in the development of innovative and reliable electric vehicle charging services, Vattenfall has created the largest e-vehicle charging network in Northwest Europe and is pioneering innovative charging solutions.

"The use of electric vehicles is exciting in that it not only reduces our energy use, emissions and dependence on fossil fuels, but it also has the potential to transform and bring greater harmony to our cities by significantly reducing air pollution and noise," says Susanna Hurtig, Head of e-mobility at Vattenfall Nordic.

Vattenfall acts as a link between e-vehicles and the electricity grid, in a manner that boosts electricity demand while also promoting environmental benefit.

"In addition to charging station technology, we now offer payment solutions, station monitoring, and load balancing as charging stations become more advanced and increasingly integrated into the electricity grid," says Hurtig. "This infrastructure is crucial in enabling electric vehicles to become mainstream."

Northwest Europe's largest electric vehicle charging network

In 2016 Vattenfall launched InCharge – a partner-based network of more than 2,700 e-vehicle charging stations in Northwest Europe. The network will make it easier for companies, municipalities and local energy companies to establish and provide charging stations in Sweden, Germany and the Netherlands.

"With InCharge we have taken our offering to a new level and can provide B2B customers with whole-platform support, from monitoring charging stations, to customer support and managing payment transactions," explains Hurtig. "InCharge is the result of us listening to our customers and finding out how we can fully meet their needs."

Sweden's first wireless bus charging station

Another innovative e-mobility solution launched in December 2016 is a wireless bus charging pilot project in Södertälje, Sweden.

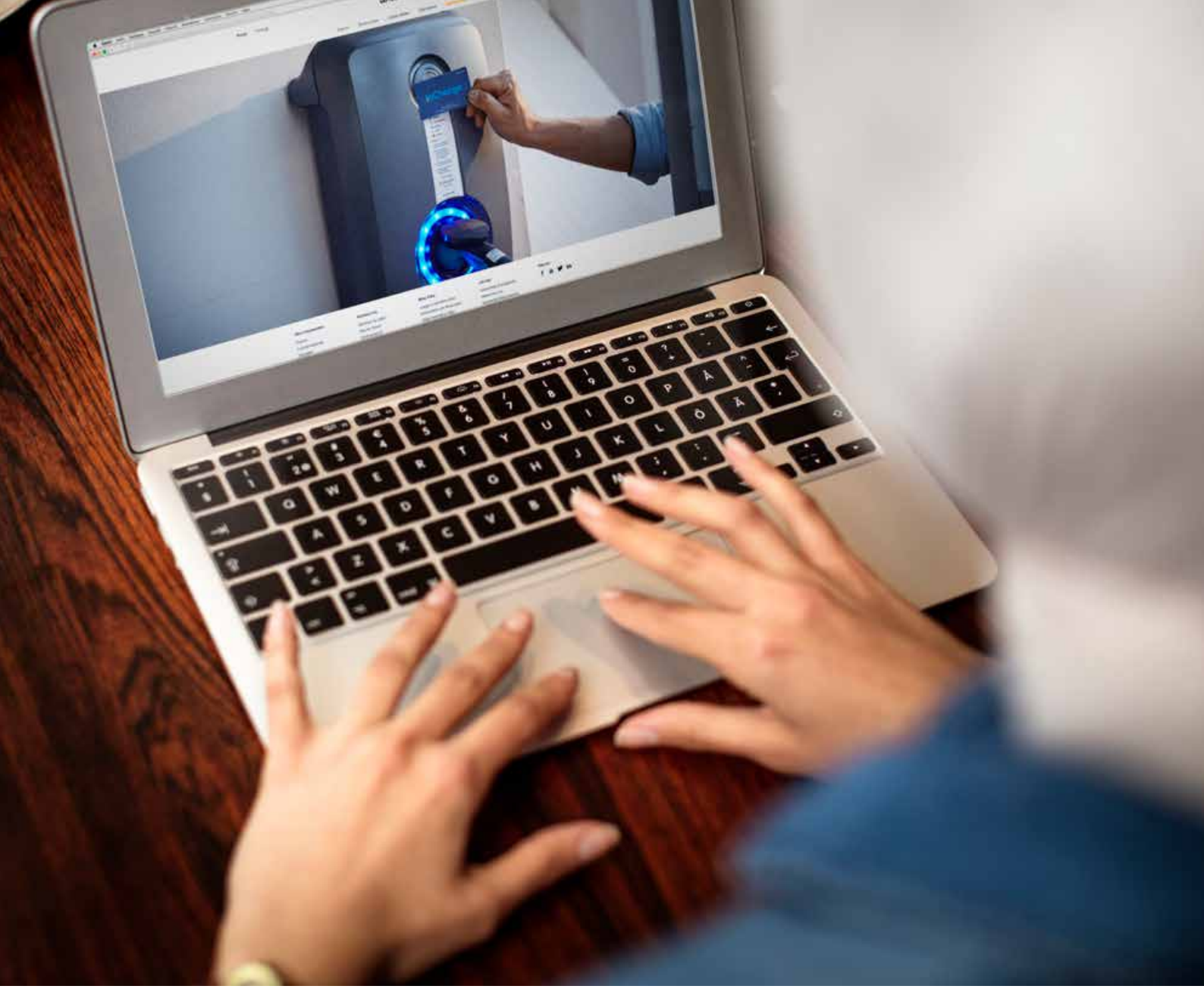
Vattenfall installed, owns and operates the charging infrastructure, which uses wireless inductive charging technology to charge the hybrid bus in 7 minutes while it is stationary at its terminus. The bus can cover most of its 10 km route on this short charge and is equipped with a biodiesel engine for when the battery runs out.

The project is a joint venture between Vattenfall, Scania, the Royal Institute of Technology (KTH), the local authorities, and the public transport company SL.

Susanna Hurtig

E-mobility at Vattenfall

Vattenfall is committed to accelerating the electrification of transport by demonstrating new technologies, providing customers EV freedom with the InCharge public charging network, and offering smart and efficient charging solutions. We operate over 1,000 charging stations in Sweden, the Netherlands and Germany, and have already delivered around 200 MWh electricity from fast chargers in Sweden alone.



RESEARCH & DEVELOPMENT

Research and development helps Vattenfall execute its strategy by developing innovative solutions that help us, our partners, and our customers accelerate the transition to a climate-neutral, electrified, and cost- and resource-efficient society.

We conduct research and development (R&D) to contribute to the realisation of our strategy in both the short and long term. In recent years our R&D has shifted focus from traditional electricity generation to more customer-centric areas, with increased emphasis on digitalisation, smart grids, e-mobility and decentralised solutions for customers.

Our R&D organisation has approximately 130 full-time employees, but a great deal of development also takes place within each Business Area (read more about our costs for R&D on page 84). We focus on how we can best use technology and new solutions to execute our strategy and provide customer value. In many projects we work in close collaboration with technology partners to jointly develop new solutions.

Leading towards Sustainable Consumption

Reducing CO_2 emissions in the steel industry with green hydrogen
We have started a project together with the minerals group LKAB and the steel company SSAB to significantly reduce the climate impact of Swedish steel production. SSAB's blast furnaces for iron production in Luleå and Oxelösund are the two single-largest sources of CO_2 emissions in Sweden. When iron ore is heated together with coal in the blast furnaces to produce iron, CO_2 gas is produced as a by-product. The idea is to use hydrogen – produced using green electricity, instead of coal – which would emit water vapour instead of CO_2. This technology has the potential to eliminate approximately 10% of Sweden's total greenhouse gas emissions. The project is currently in a feasibility study phase, with industrial scale production expected to commence in the second half of the next decade, following a pilot phase and demonstration project.

E-vehicles – making charging easy
Our R&D in e-mobility is focused on making it convenient and cost-efficient to charge electric vehicles, be it a private car on a driveway, a city bus, or heavy goods vehicles. With inductive charging, a parked vehicle can recharge automatically without even having to plug in a cable. Through smart charging technologies in the home, vehicle charging will pause if power is needed for cooking, washing or heating – and will automatically restart when domestic loads reduce. This avoids unnecessary costs or unwanted power outages due to blown circuit breakers.

An exciting project aimed at business customers is electric roads that allow heavy goods vehicles to charge as they drive, which is currently being tested in Rosersberg, Sweden (eRoad-Arlanda).

These projects will ultimately facilitate the adoption of electric vehicles and accelerate the transition to a sustainable electrified transport system.

Leading towards Sustainable Production

Balancing power from the sun and wind with hydro power
Hydro power is the backbone of the Nordic energy system. It provides reliable, affordable and renewable energy for consumers, and has the flexibility to balance out both fluctuations in demand and the increasing supply from intermittent, weather-dependent sources, such as wind and solar. This means that hydro power optimises the energy system by providing on-demand electricity and allows a higher proportion of wind and solar energy generation in the system.

In recent years we have made our hydro power plants more robust and better prepared for the future – through maintenance initiatives to ensure they remain productive for another 40 to 50 years, but also by making them more flexible. We have upgraded many of our hydro power plants to be able to start and stop, and even run at variable loads, to optimally meet on-demand energy requirements.

As with all forms of power generation, hydro power has environmental impacts, such as on aquatic ecosystems. To ensure that environmental protection measures, such as fish ladders, are effective and capital efficient, we are currently building a unique laboratory to study how ecosystems interact with various measures.

High Performing Operations

Using drones to inspect turbine blades
The conventional way to perform a safety inspection of wind power turbine blades is for climbers to hang suspended from the blades, perhaps a hundred metres above ground, for extended periods of time. This is a challenging and risky assignment, especially for offshore wind farms that are highly dependent on favourable weather conditions.

We are currently testing drones to inspect turbine blades in a safer, more accurate and more cost-effective way. Drones can fly close to the blades and deliver detailed high-resolution images and movies that show the smallest scratch in a matter of minutes. This will allow us to significantly reduce the number of man-hours required for an inspection, and thereby reduce both costs and safety risks.

INNOVATION AT VATTENFALL

Stephan Clarisse

Amira El-Bidawi

Janina Fuchs

Innovation is essential for us to stay ahead in a rapidly evolving energy market. Apart from ongoing innovation by our R&D and business development operations, Vattenfall encourages employee entrepreneurship through employee innovation initiatives aimed at creating new business opportunities.

Nuon Next in the Netherlands, Vattenfall Vision in Germany, and Vattenfall Innovation in Sweden are all employee innovation competitions designed to find new business ideas for Vattenfall to bring to the energy market. The competitions are open to all employees, and successful teams then receive support to pursue their ideas.

Intrapreneurship[1] success in the Netherlands
Nuon Next was the first employee initiative that led to an "intrapreneurship" competition in 2014.

"The competition was immediately a great success, with fifty different ideas submitted in 2015 – seven of which received support and resources," says Stephan Clarisse, Strategy Advisor at Nuon. One idea from Nuon Next includes a power control technique for wind turbines that contributes to system stability. The project is already making a profit (around EUR 0.3 million at the end of 2016) and is an internal cooperation between the Wind and Markets Business Areas.

Creating an innovation network in Sweden
By year-end 2016 Vattenfall Innovation had established an innovation network in Sweden of more than 30 ambassadors and over 170 employee members, with the aim of holding an employee innovation competition in 2017.

"There's so much expertise and entrepreneurial spirit in the company, and Vattenfall Innovation will allow us to better collaborate internally and draw on the Swedish start-up scene," says Amira El-Bidawi, Strategy Analyst at Vattenfall AB and Project Leader for Vattenfall Innovation.

Fostering innovation in Germany
Green Power Community was one of the five employee ideas that won company support in the finals of the Vattenfall Vision competition in Germany in October 2016. Janina Fuchs, Product Manager Sales & Renewables at Vattenfall Energy Trading Germany, tells us about her experience in the competition.

What was your experience of Vattenfall Vision?
The competition was a great forum that first brought us together and then gave us space to develop our ideas. We were offered workshops and off-site events, and help from a start-up support company.

Do you think that Vattenfall Vision has promoted an entrepreneurial culture at the company?
Definitely. It was empowering to develop an idea in a bottom-up manner together with like-minded colleagues who would not normally work together. I also think it is great that our top management supports the initiative and entrepreneurship in the company – for example, the competition jury included Vattenfall board members.

What's next for Green Power Community?
Well, we have won support to conduct a feasibility study, so that is the next step for us, and it is great to now have more colleagues from our sales units on board. Of course, we are confident that Green Power Community will go ahead – it targets a growing customer segment that is asking for new services and green solutions – a strategic fit with Vattenfall's growth plans in the new energy landscape.

[1] An innovative process within an organisation, typically larger companies.


VATTENFALL

OUR PEOPLE

Our success at executing our strategy in the new energy landscape is dependent on having empowered and engaged employees. As an employer of some 20,000 people, Vattenfall strives to offer a work environment that attracts, motivates and encourages people to develop to the best of their potential and act with high integrity.

Strategy

We operate in a market that is undergoing major changes, and we are transforming our business in order to be competitive in the new energy landscape. This transformation requires a dynamic organisation, with competence shifts in some areas and competence enhancement and development in others. We continue to refine the organisation and strengthen our business focus in a socially responsible manner in order to execute our strategy and meet our customers' needs. As this transformation puts greater pressure on the organisation, it is crucial that we increase employee engagement and strengthen our employer brand. To be able to attract, engage and develop people with key competencies and encourage them to perform to the best of their potential, we have identified the following focus areas:

- Ensure key competencies and a culture of diversity
- Develop excellence in leadership and a high performance culture
- Promote a safe, healthy and engaging working environment

Developments during 2016

In 2016 the number of employees decreased from 28,567 to 19,935 full-time equivalents (FTEs), of which approximately 6,800 FTEs pertained to the divestment of the lignite operations in Germany on 1 October 2016. The employee count also decreased as part of a cost-saving programme announced in 2015 and will likely decrease further by the planned outsourcing of certain administration and IT operations. Social responsibility and a commitment to our obligations play an important role in all divestment, restructuring, downsizing and outsourcing initiatives. We strive to offer a range of career opportunities, including internal mobility, as well as employability efforts on an individual level, should no internal solution be feasible.

These activities allow us to shift and expand resources to growth areas, such as wind power, or areas of specific competence demand, such as digitalisation. We are working to manage the challenges we face through a proactive approach to health and safety, good leadership, and ensuring the right competence.

Ensuring key competencies and a culture of diversity

Strategic competence planning is growing increasingly important in view of technology shifts and digitalisation. Ongoing activities such as competence sharing, job rotation, leadership development and trainee programmes are aimed at ensuring access to future leaders and key competencies.

To support our strategy, particular emphasis is placed on developing competencies and resources in digitalisation, project management and electrical engineering, with a focus on retention in our nuclear operations and people with experience in working in partnership projects.

We are working continuously to promote diversity and an inclusive culture, and we drive and participate in a range of activities in support of this work, including external cooperation with the Diversity Charter, Mitt Liv, the Diversity Challenge and Pride Festivals. We are also working to increase the number of women managers in order to achieve a more gender-balanced management culture within the organisation.

Developing excellence in leadership and a high performance culture

Being a high performance organisation requires that we have a strong employer brand and that we share a compelling purpose and excitement about the value we create for our customers and society. We should know what is expected of us, how we contribute to the success of the business, our potential for development and how our performance will be rewarded.

During this period of intense change it is important that we re-unite around our core values, our vision and our strategy. An abbreviated employee survey conducted in autumn 2016 indicated a decrease in employee engagement. Based on the survey's findings an action plan was drawn up to review our company culture – including who we are, what we stand for and what our purpose is – to better guide our people in their daily work and help them to be more engaged and committed to shaping Vattenfall's future.

We also develop and support our leaders to be accountable, lead change and drive performance, as well as engage employees in our strategy and future. Specific initiatives include our trainee programme and the Nuclear Acumen Leadership programme.

Individual goal and performance reviews, combined with development plans, provide all employees with opportunities to develop, both personally and in their careers, which promote a high performance culture. Our pilot projects to drive individual performance and development have been a success, and continued rollouts are planned for 2017. We also want our people to know how they contribute to the success of the business and how their performance

will be rewarded. Our variable compensation programmes strengthen the connection between performance and reward, incentivise employees to achieve better results and help us to attract, retain and motivate employees on all levels[1]. For further information, see page 165.

Promoting a safe, healthy and engaging work environment
Ensuring a safe and sound workplace for all employees, contractors and hired-in personnel requires systematic work in all our operations. As a result of our work in this area, the Group's companies and units are occupational health and safety–certified to the OHSAS 18001 standard. Lost Time Injury Frequency[2] (LTIF) is one of our strategic targets and is actively followed up by senior management.

Our LTIF improved from 2.3 in 2015 to 2.0 in 2016, and sick leave was stable (3.97%) in 2016, largely owing to further development and improvements in our proactive health and safety work. See page 165 for more information.

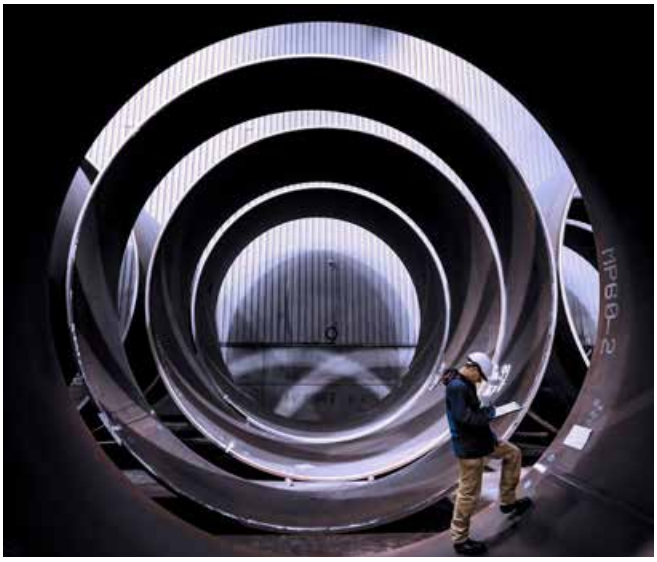
We are currently developing an indicator that describes the progress of our health and safety work and will form the basis for a more preventive approach. New digital tools allow employees to track their own health and be more proactive in preventing illness. Our health and safety management systems and tools are being harmonised to increase efficiency and set standards.

Immigrant integration

Topical issue

"The 100 Club"

Vattenfall will offer at least 100 internships over a three-year period, each lasting up to six months, to newly arrived immigrants with permanent residence permits. The project is part of the Swedish government's 100-klubben initiative, which aims to encourage larger companies to offer newcomers internships to improve their chances of finding a job. Vattenfall believes that an integrated society is a productive society and is proud to be a part of this initiative.



1) The number of employees who have had a performance review is monitored every other year in an employee survey. In 2015, 75% of employees answered that they had a performance review with their manager.

2) 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.

Integrity

Operating our business with integrity is essential to ensure that we live up to the expectations of our customers and stakeholders, who should be able to depend on us to conduct our business in a responsible and fair manner. We have a zero tolerance policy for bribery and corruption. 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. Tailor-made trainings and e-learning tools have been developed to support these ambitions.

We also 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, which is based on the United Nations Global Compact. Read more about the Integrity organisation in the Corporate Governance Report on page 71.

Integrity training and education

New employees are familiarised with our Code of Conduct, both in text form and through e-learning. Online courses are also offered in Competition Law and Anti-Bribery & Anti-Corruption. More than 1,200 employees completed the Code of Conduct e-learning training in 2016.

All managers and employees who have extensive contact with our competitors are required to participate in the Vattenfall Integrity Programme (VIP). The VIP includes both e-learning and instructor-led training with the purpose of raising the level of awareness, ensuring our employees understand the integrity standards we expect of them, and ensuring a common compliance culture throughout the Group. The training includes information on antitrust/competition issues, anti-bribery and anti-corruption, conflicts of interest and inside information. More than 1,100 employees attended the VIP in 2016, corresponding to nearly 4,000 hours of education.

Awareness and monitoring

It is the responsibility of every manager to lead by example and to ensure that their team members understand our core values. 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 the monitoring compliance with our governing rules or providing tailor-made information material. Occasionally more in-depth surveys are conducted in specific areas. Two such surveys were conducted in 2016, one in the Sales business unit in Germany and one in the IT Staff Function.

Incidents

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

All investigations are led by Vattenfall's Internal Audit unit. A total of 40 integrity-related incidents were reported in 2016, of which ten led to disciplinary action. None of the incidents in 2016 were related to antitrust/competition issues. Currently there are no pending integrity-related cases in court. Most of the incidents were reported internally.

All reported incidents and violations are evaluated and subject to a lessons-learned process to ensure continuous improvement within the company. An example of such a process following an incident report 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 i) non-compliance with competition laws and ii) corruption. 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. The training provided as part of the VIP focuses on anti-trust/competition, anti-bribery and anti-corruption training.

A process example

In early 2016 the Integrity organisation was contacted by an employee in the line organisation about a situation that indicated a possible conflict of interest.

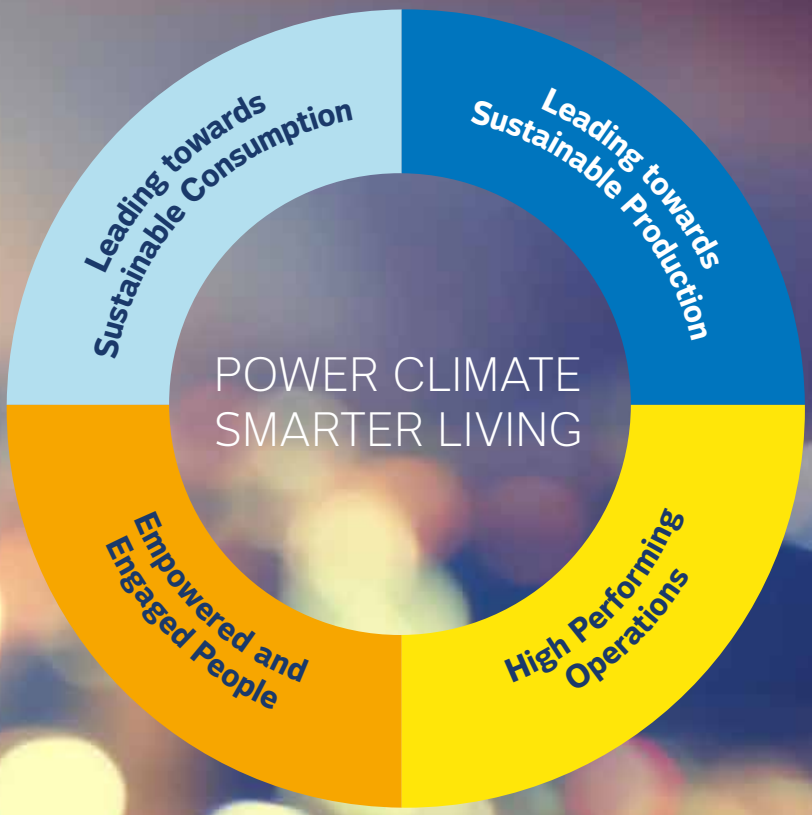
Following this conversation, the Integrity organisation contacted Internal Audit, which initiated an investigation. The investigation was led by an auditor from Internal Audit with support from one of the national whistleblower ombudsmen. Information was gathered and interviews were held with relevant people in the organisation. The investigation and all interviews were conducted under strict confidentiality.

Following the investigation it became clear that a manager within the organisation had engaged an external consultant with whom the manager had a close family connection. This was a clear conflict of interest, where the manager's loyalty to Vattenfall could be questioned.

The manager was presented with the facts at hand and was also given an opportunity to provide an explanation. The manager admitted that his/her actions were wrong and agreed that he/she should have declined responsibility for the procurement of this particular firm.

The investigation team wrote an investigation report, which was presented orally and sent to the relevant people in the organisation. Additional training and information about conflicts of interest were offered to the relevant parts of the organisation.

Following advice from the Human Resources department, the manager was issued a written warning and the investigation was closed.


Leading towards Sustainable Consumption
Leading towards Sustainable Production
POWER CLIMATE
SMARTER LIVING
Empowered and Engaged People
High Performing Operations

RISKS AND RISK MANAGEMENT

We apply conscious and balanced risk-taking in which business transactions are reviewed from both profitability and risk perspectives. In accordance with the Swedish Corporate Governance Code and the board of directors' Rules of Procedure, Vattenfall's risk management framework ensures thorough identification of our risks and acceptable risk exposure.

Enterprise Risk Management

The aim of Enterprise Risk Management (ERM) is to thoroughly manage risks to which the Group is exposed in order to support value creation, ensure risk awareness, create transparency, and balance risks against rewards. ERM at Vattenfall involves analysing and monitoring of 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 model. It combines a top-down and bottom-up approach to support us in adhering to our strategy and achieving our long-term goals.

ERM process

Vattenfall's strategy, which includes our purpose, our values and our risk appetite, serves as the basis for setting objectives for the respective business units in the business planning process. When setting these objectives, events that could hinder their achievement are identified. 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 units' most important risks and measures are followed up as part of the financial monitoring. Information and communication are provided on a regular basis to the Executive Group Management. Our risk management process quantifies and compares risks with respect to both financial and non-financial consequences (e.g., concerning the environment, health and safety). After aggregating the risks, a composite overview of our risk situation is created. The potential financial impact is linked to financial key data that is used for the governance of the company.

Within Vattenfall we have defined a "target portfolio" to take advantage of the opportunities that arise in the transformation of the energy landscape. With customers in mind, we are to focus only on businesses where we have or can build a competitive advantage and the risk-reward balance is attractive. This will also entail a shift in our risk profile going forward. The risk structure on the following pages reflects the company's strategic objectives: Leading towards Sustainable Consumption, Leading towards Sustainable Production, High Performing Operations, and Empowered and Engaged People. The main risks that we are exposed to are presented, as well as how we manage these risks. 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.

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 80–156.

Risks related to Sustainable Consumption

We are strongly focused on increasing customer centricity and strengthening our position as a provider of sustainable full-service solutions to our customers. This requires that we further improve and simplify the customer experience and accelerate digitalisation, which will allow our customers to take control over their energy consumption and generation. Read more on page 19.

Risks

- Failure to meet customer expectations, or our inability to develop and offer the energy efficient and sustainable solutions and services demanded, could lead to lower customer satisfaction (measured by a lower NPS[1]), which would lead to lost market share and loss of customers
- That we fail to ensure satisfactory supply reliability due to aging and unreliable distribution networks

Risk management activities during the year

To be Leading towards Sustainable Consumption, we continue to develop energy solutions for our customers – such as charging solutions, additional digital offerings, and decentralised generation – to optimise and increase value to customers. Our focus on hiring and developing digital competencies will ensure we can continue to deliver on our targets. During the year several new products were developed, including Alltid.se (SE), Enpure (DE), and Powerpeers (NL). Read more on page 27.

Basic industries in Sweden are soliciting our help in increasing the electrification of their industrial processes. For example, in partnership with the steel company SSAB and the minerals group LKAB, Vattenfall has initiated an R&D project focusing on the possibility of replacing coal with hydrogen gas, with the aim of substantially lowering CO_2 emissions from Sweden's iron ore and steel industries.

To meet customer and regulatory demands on quality of supply, we are increasing our investments in distribution networks, primarily in Sweden. In the Nordic region we are working continuously to make the electricity networks less vulnerable by successively replacing overhead power lines with underground cables. In parallel to this, the development of smart grid solutions is enabling us to reduce outage frequency and duration, and allowing customers to monitor and steer their own energy use.

Risks related to Empowered and Engaged People

We must ensure a safe work environment that attracts, engages and develops people with the right competencies. We will continue to develop our company culture, our company values and our employer brand in our work on strengthening our identity and being clear about who we are, what we stand for, and what our purpose is. Read more on page 19.

Risks

- Work environment risks related to accidents and incidents
- The risk of an inability to attract and retain people with key competencies, and the risk of lower employee engagement for Vattenfall in connection with outsourcing and/or restructuring
- Violations of our Code of Conduct; 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

Risk management activities during the year

Health and safety are crucial and a guiding principle in our day-to-day operations, with the goal to have zero injuries and no work-related illnesses. We are currently introducing a health and safety maturity indicator throughout the organisation that will enable proactive rather than reactive management. Early results show the programme has been successful in reducing Lost Time Injury Frequency (LTIF[2]). To support our strategy we have put greater emphasis on hiring and developing talent in digitalisation and project management, among other areas. Our pilot project for driving individual result performance and development has been successful and will continue to be rolled out in 2017.

We have zero tolerance for bribery and corruption. To ensure compliance, we have a Code of Conduct and have implemented integrity instructions. Training and e-learning programmes are conducted to increase awareness, and the "four eyes principle" is applied to protect assets and information from improprieties and fraud. The two greatest integrity risks identified for Vattenfall are (1) non-compliance with competition laws and (2) corruption. Read more on page 55.

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

[2] 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.

Risks related to Sustainable Production

We will provide more renewable energy production. We continue to develop, acquire and participate in projects and tenders for on- and offshore wind farms. We have developed a CO_2 roadmap with the purpose of fulfilling our commitment to be climate-neutral by 2050, and by 2030 in the Nordic countries. Read more on page 19.

Risks

- Failure to reach our CO_2 exposure reduction target by 2020 and to become climate-neutral as we have pledged could result in a loss of customers and have a negative impact on profitability
- Unsuccessful R&D investments that commit us to less profitable technologies or make us too slow to adapt to the new production landscape could result in a loss of market share
- Offshore wind is becoming increasingly competitive, entailing both profitability and growth risks
- In pace with development in the wind power segment, the risk profile is shifting towards more regulatory and systemic risk exposure
- Regulatory risk related to developments in environmental legislation that could lead to restrictions on operations and permits.
- Investment risks, including procurement risk and long-term market risk

Risk management activities during the year

Achieving our strategic target of reducing our CO_2 exposure will require a stepwise phase-out of fossil fuels. A decisive step in this direction was taken in 2016 with the divestment of our lignite operations, which will reduce our emissions by roughly 75% compared to 2015. In addition, we decided to phase out lignite at the Klingenberg CHP in Berlin three years ahead of schedule. Finding heat solutions in close cooperation with our largest city partners – Berlin, Hamburg, Amsterdam, and Uppsala – will play an important role. The switch from coal- to gas-fired combined heat and power plants, gas boilers, and power-to-heat solutions will provide greater flexibility and further reduce CO_2 emissions.

Our wind power operations are exposed to regulatory risks in connection with tender processes and uncertain subsidy frameworks. Local or regional developments concerning environmental permits are being closely monitored, which is important as our portfolio continues to diversify by region and technology. To reduce our reliance on wind, we plan to invest SEK 2 billion in other technologies, including solar energy, battery storage, and e-vehicle charging infrastructure. During the year we completed our first large-scale solar farm (5 MW) adjacent to the Parc Cynog wind farm in Wales.

Risks related to High Performing Operations

To be competitive and achieve our strategic objectives, we must accelerate our activities in several areas. This includes raising our ambitions for efficiency and further reducing costs. Digitalisation will be crucial for achieving financially sustainable results. Read more on page 19.

Risks

- Operational asset risks related to the operation of electricity and heat generation plants, including nuclear power availability, dam failure, and damage to distribution networks, which could have significant negative financial and non-financial consequences
- Human rights violations in the supply chain could require changing a supplier and result in higher costs, negative impacts on the brand and trust, and in the worst cases potentially lead to the loss of our licence to operate
- The risk of environmentally hazardous emissions related to, for example, accidents or incidents resulting from an explosion, fire, oil spill or leak of hazardous substances, which could have financial, non-financial and regulatory repercussions

Risk management activities during the year

An important part of the management of operational asset risks involves a systematic inspection programme, continuous control of plant conditions, and effective maintenance. Our structured maintenance strategy allows us to perform the necessary upkeep for safe and reliable operations while simultaneously reducing maintenance costs. Nuclear power and dam safety are special focus areas for Vattenfall's board of directors. Vattenfall's Corporate Independent Nuclear Safety Oversight (CINSO) unit is responsible for overseeing nuclear power safety at the Group level.

We have a Code of Conduct for Suppliers and perform risk assessments and reviews of our suppliers. The Code of Conduct for Suppliers was updated in 2016, and an independent third-party screened our value chain to identify our greatest human rights impacts and risks. Read more on pages 159–160.

Identification and management of environmental risks are handled by the respective business units. The main principles of our environmental work are defined in the Vattenfall Environmental Management System, which is part of our overarching management system.

Market risk – electricity and commodities

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. Following the divestment of the lignite operations, Vattenfall's portfolio and risk exposure have changed substantially. After conducting a review of the hedge strategy, Vattenfall has decided to hedge prices closer to the delivery date.

Risk management

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 utilise the wholesale trading market and hedge our electricity position and fuel requirements through physical and financial forward contracts and long-term customer contracts. Long-term customer 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. The total hedged volume for the period 2019–2026 is 51TWh, where most is hedged in the beginning of the period, 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 proportion of the total cost of nuclear power generation.

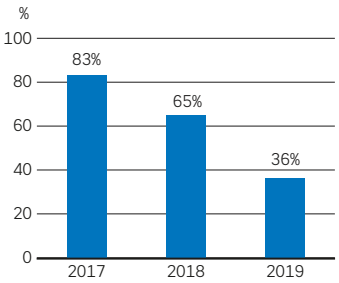
Following the sale of the lignite operations in Germany, the dominant risk exposure is now coupled to Nordic nuclear and hydro power base load generation. In addition, Vattenfall's continuing operations generate a higher share of regulated revenue from distribution, heat and tendered wind power, which reduces the total risk exposur the Continent (Germany and the Netherlands) and in the UK Vattenfall continues to have some price exposure between electricity and used fuel. Such an exposure has a lower risk profile than in the Nordic countries. The following table and chart provide an indication of the current percentage of our expected electricity generation that is hedged as well as an average indicative price level. The hedge level is based on an internal risk management model that uses simulations to reflect both future possible price scenarios and the volume risk associated with hydro power generation.

Nordic market

Average indicative Nordic hedge prices as per 31 December 2016

EUR/MWh	2017	2018	2019
	29	27	30

Vattenfall's estimated Nordic hedge ratio (%) as per 31 December 2016



Continental market

The table below shows the impact of changes in commodity prices on the expected future operating profit before tax. The calculation 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.

Market-quoted risks

	+/–10% impact on operating profit before tax, SEK million[1]			Observed yearly volatility,[2] %
	2016	2017	2018	
Electricity	+/-399	+/- 401	+/- 820	22% – 23%
Coal	+/-11	-/+ 241	-/+ 244	31% – 32%
Gas	+/-240	-/+ 412	-/+ 412	25% – 27%
CO_2	+/-15	-/+ 79	-/+ 94	54% – 55%

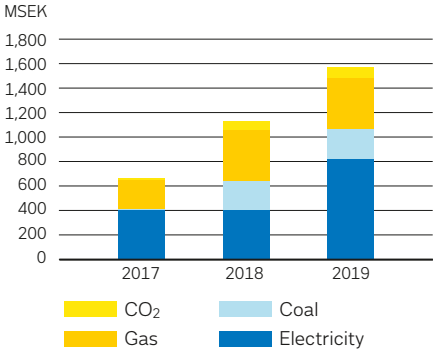
1) The denotation +/- entails that a higher price affects operating profit favourably, and -/+ vice versa.

2) Observed yearly volatility in 2016 for daily price movements for each commodity, based on forward contracts for the period 2017-2019. Volatility normally declines the further ahead in time the contract pertains to.

Sensitivity analysis

In addition to commodity market risk resulting from our assets and sales activities, Vattenfall's board of directors has given the President 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 47 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.

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



The sensitivity analysis shows the impact that variations in market prices can have on Vattenfall's operating profit for the Continental portfolio. The exposure of Vattenfall's hedges for electricity and fuel prices is monitored daily. The effect of price movements 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 analysis is based on the assumption that risks are independent of each other and are based on 252 trading days in a year. Prices and positions are stated as per 31 December 2016. For example, a movement of +10% in the price of electricity in 2017 would have an impact on operating profit of SEK +399 million.

Volume risk

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

Risk management
In hydro power generation, volume risk is managed by analysing and forecasting historical weather data, including such factors as precipitation and snowmelt. Volumes are managed by improving and developing forecasts for electricity consumption. There is a correlation between electricity prices and generated electricity volume. The impact of the price of electricity on our electricity generation volume is therefore included in calculations of price sensitivity in the sensitivity analysis of market-quoted risks above. Volume risk also arises in the sales activities as deviations in the anticipated volumes versus actual volumes delivered to customers.

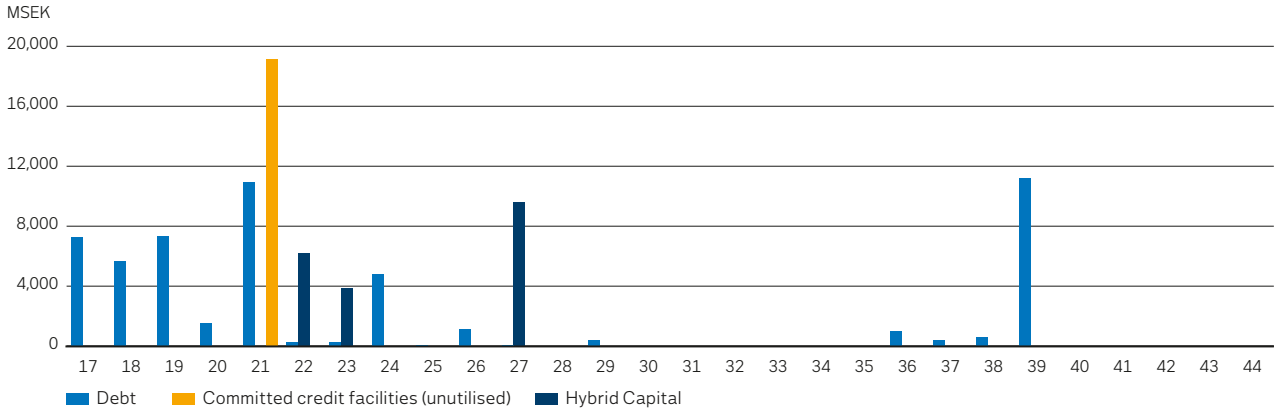
Liquidity risk

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
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 Group's sales, or the equivalent of 90 days' stressed liquidity needs of the business (whichever is higher) shall be available. As per 31 December 2016, available liquid assets and/or committed credit facilities amounted to 36% (34%) of net sales.

Vattenfall is committed to maintaining financial stability, which is reflected in the company's long-term targets for capital structure. On 13 May 2016, Moody's affirmed Vattenfall's long-term A3 rating and Baa2 rating for hybrid bonds. On 19 May 2016 Standard & Poor's affirmed Vattenfall's long-term BBB+ rating. At the same time, Standard & Poor's affirmed Vattenfall's short-term A-2 rating. The outlook for Vattenfall's rating is negative from both Moody's and Standard & Poor's. Vattenfall does not have an imminent refinancing need. Given that credit spreads narrowed in the second quarter of 2016, affected by the decision of the European Central Bank (ECB) to purchase corporate bonds, we believe that we have good access to the capital markets.

Maturity profile for Vattenfall's loans as per 31 December 2016[1]



1) Excluding loans from minority owners and associated companies.

Borrowing programmes and committed credit facilities

		Maximum aggregated amount		Maturity		Used portion, %		Reported external liability, SEK million	
	Currency	2016	2015	2016	2015	2016	2015	2016	2015
Borrowing programmes									
Commercial paper	SEK	15,000	15,000	—	—	0	0	0	0
Euro Commercial Paper	EUR	2,000	2,000	—	—	19	19	3,602	3,455
Euro Medium Term Note	EUR	10,000	15,000	—	—	46	40	49,530	62,335
Committed credit facilities									
Revolving Credit Facility[1]	EUR	2,000	2,000	2021	2020	—	—	—	—

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, with an option for one-year extension. The maturity structure pertains to the debt portfolio excluding loans from minority owners and associated companies, which amounted to SEK 12,929 million in 2016 (15,792). Further information about the maturity structure of loans is provided in Note 33 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
We quantify interest rate risk in our debt portfolio in terms of duration, which describes the average term of fixed interest.

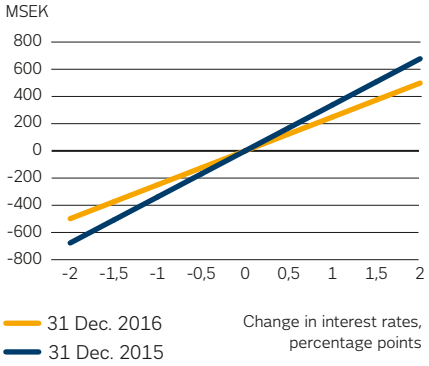
The norm duration is based on the company's current financing need and desired interest rate sensitivity in net interest income/expense. Duration is to have a norm of five years with a permissible variation of +2/–1 year. The duration of the Group's debt portfolio at year-end was 5.55 years including Hybrid Capital (3.87).

Remaining fixed rate term in debt portfolio 2016 (2015)

	Debt		Derivatives		Total	
SEK million	2016	2015	2016	2015	2016	2015
< 3 months	10,311	16,839	21,959	15,616	32,270	32,455
3 months–1 year	489	2,074	-495	8,971	-6	11,045
1–5 years	28,208	18,616	-10,569	-1,434	17,640	17,182
> 5 years	36,071	48,148	-14,174	-23,196	21,898	24,951
Total	**75,080**	**85,676**	**-3,278**	**-43**	**71,802**	**85,633**

The portfolio includes loans and interest rate derivatives in order to steer the duration of borrowing. Negative amounts are explained by the use of derivatives, such as interest rate swaps and interest rate forwards. The sum of derivatives is not equal to zero due to currency effects. Figures are exclusive of loans from minority owners and associated companies, totalling SEK 12,929 million for 2016 (15,792). The average financing rate as per 31 December 2016 was 4.42% (3.94%). All figures in nominal amounts.

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



The interest rate sensitivity analysis shows how changes in interest rates affect the Vattenfall Group's interest income and expenses (before tax and including capital gains/losses on interest rate derivatives) within a 12-month period given the Group's current structure of borrowing at fixed interest rates. With the same method and an assumption that interest rates would rise by 100 basis points, the impact on the Vattenfall Group's equity after tax would be SEK -194 million (-264), 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
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 23 to the Consolidated accounts, Derivative assets and derivative liabilities.

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). Our largest conversion exposure is in EUR, totalling SEK 70,309 million (2015: 100,352). Of this amount, 43% (36%) was hedged at year-end. For further information, see Note 42 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 2.4 billion (3.5), where a strengthening of the currencies shown in the table in Note 42 to the Consolidated accounts would result in a positive change in equity.

Debt portfolio, breakdown per currency

	Debt		Derivatives		Total	
Original currency	2016	2015	2016	2015	2016	2015
DKK	3,010	0	0	0	3,010	0
EUR	43,596	53,380	5,431	5,973	49,027	59,353
GBP	14,200	16,908	-2,974	—	11,225	16,908
JPY	2,044	2,461	-2,044	-2,461	0	—
NOK	575	1,220	-575	-1,220	0	—
PLN	0	0	0	—	0	0
SEK	8,031	8,331	509	1,042	8,540	9,373
USD	3,625	3,376	-3,625	-3,376	0	0
Total	75,080	85,676	-3,278	-43	71,802	85,633

The table shows the 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 2016 compared with 2015. Figures above are exclusive of loans from minority owners and associated companies, totalling SEK 12,929 million (15,792). All figures in nominal amounts.

Consolidated operating income and expenses per currency, %

	Income		Expenses	
Currency	2016	2015	2016	2015
EUR	71	74	75	73
SEK	24	24	19	19
GBP	3	1	2	1
DKK	1	1	1	2
Other	1	0	3	5
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.

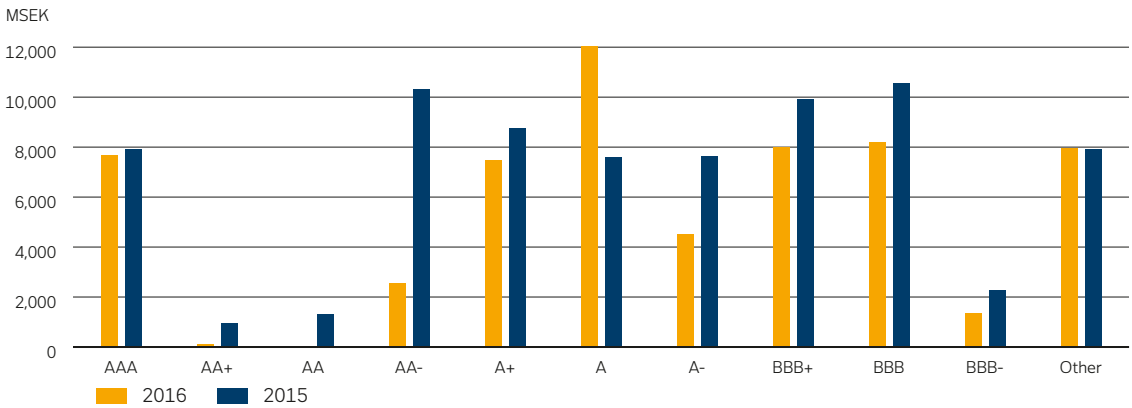
Credit risk

Credit risk can arise if a counterparty fails to meet its obligations, and exists in Vattenfall's commodity trading, sales, treasury operations and investments.

Risk management

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 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.

Credit risk exposure per rating class

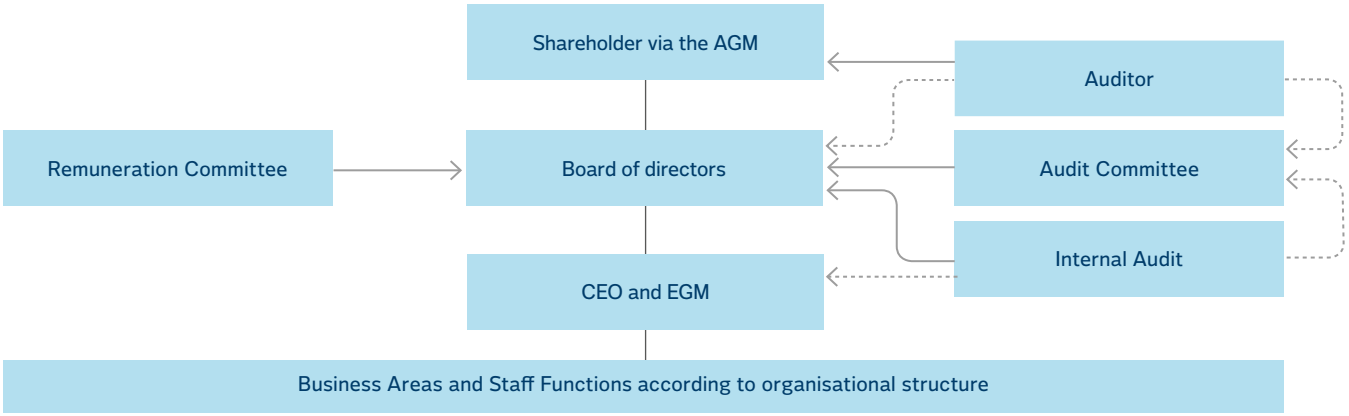


The chart shows exposures to Vattenfall's counterparties where the exposure is greater than SEK 50 million per counterparty, broken down per rating classification according to Standard & Poor's rating scale. Counterparties are reviewed and approved in line with Vattenfall's credit mandates and policies. Smaller exposures are considered to have such a large diversification effect that the net risk for Vattenfall is judged to be low. Procurement and heat sales exposures are not included. Other financial assets (that are neither past-due nor impaired) are considered to have good creditworthiness. The values for "Other" in the chart include mostly counterparties covered by policy and limit exceptions, mainly pertaining to long-term sales contracts and those in connection with the divestments that occurred in the 2016 financial year.

CORPORATE GOVERNANCE REPORT

The following pages include information on corporate governance during the 2016 financial year, as prescribed by law and the Swedish Corporate Governance Code. The corporate governance report has been reviewed by the company's external auditor.

Vattenfall's corporate governance model



Governance and reporting structure

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, 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, 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) G4 Guidelines

Internal rules

- Vattenfall's Articles of Association
- The Board's and committees' Rules of Procedure, including the CEO's instructions and instructions for reporting to the Board
- The Vattenfall Management System (VMS), including the Code of Conduct, 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's Articles of Association and continuously updated information about corporate governance at Vattenfall are available on Vattenfall's website: vattenfall.com (original Swedish documents available on vattenfall.se). The website is also a source for previous corporate governance reports, documentation and video presentations from the most recent Annual General Meetings, and links to the Swedish state's ownership policy, the Swedish Corporate Governance Code and Vattenfall's Code of Conduct).

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 (AGM) 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. In accordance with the Swedish state's ownership policy, the company's financial targets are also decided on by a general meeting. The Annual General Meeting of Vattenfall AB is to be held yearly within six months after the end of the financial year by law 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.

Vattenfall held its 2016 AGM on 27 April 2016. 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. Staffan Bohman and Hilde Tonne were elected as new directors on the Board. Gunilla Berg and Håkan Buskhe had declined re-election. 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 2017 AGM will be held on 27 April 2017 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, delegation of duties between the Board, the President and the Board's committees, the Chairman's duties, the form and content of board meetings, and the evaluation of the work of the Board and the President.

The Board's Rules of Procedure stipulate that the Board shall set the overarching targets for Vattenfall's operations, decide on Vattenfall's strategy for achieving those targets, and ensure that suitable systems are in place for monitoring and controlling Vattenfall's operations, risks and financial position in respect of the set targets. The Board is responsible for approving major investments, acquisitions and divestments, and for adopting central policies and instructions. The Board shall also approve certain important contracts, including contracts between Vattenfall and the President, Executive Vice Presidents and other persons in the Group who have been defined by the AGM as being 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

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 implementation.

The Board's yearly planning

The Board holds at least one board seminar every year. At these seminars the Board receives more detailed information and discusses Vattenfall's long-term development, strategy, competitive situation and risk management.

The Board met eleven times in 2016, including the statutory meeting. Major matters addressed included the company's strategy, handling of investments in nuclear power and nuclear power safety, and the divestment of Vattenfall's lignite operations in Germany along with related issues. Several matters for the Board in 2016 pertained to investments in wind farms and tenders in connection with auctions of wind power projects.

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. 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. Vattenfall provides orientation training for new directors who are elected by the AGM.

The Swedish state's ownership policy 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 experience. Discrimination based on gender, transgender identity or expression, ethic origin, religion or other faith, functional disability, sexual orientation or age may not take place.

At the 2016 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 – with the proposed changes and 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 background, as well as fulfilling the government's goal that the share of women and men shall be at least 40%.

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.

The Board's main items of business in 2016:

- Vattenfall's strategic direction and goals, including sustainability targets and reporting
- Cost-cutting and cost-cutting targets
- Valuations on Vattenfall's balance sheet
- Divestment of the lignite operations in Germany
- Submissions of tenders and investments in new wind farms
- Business model and wind power partnerships
- Investments in improved safety (independent core cooling) at the Forsmark nuclear power plant
- Nuclear power issues in Germany
- Electricity distribution operations in Berlin
- Re-investments in German heat operations and strategy for heat operations
- Cyber security
- Improved control in the supply chain and revised Code of Conduct for Suppliers
- Measures for meeting the requirements of the EU Market Abuse Regulation that apply for Vattenfall
- UK Modern Slavery Act statement

In 2016 the Board was composed of nine 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. After the AGM, five of the Board's twelve members were women, and among the directors elected by a general meeting, four of nine were women. The average age of board members was 58. One director, Hilde Tonne, is a foreign (Norwegian) citizen. Biographical information about the board members is provided on pages 74–75.

Sustainability issues addressed by the Board

The Swedish state's ownership policy stipulates that companies with state ownership shall serve as a model for sustainable business. The ownership policy defines sustainable business as "a development that meets the needs of today without jeopardising future generations' ability to meet their needs" and covers human rights, work conditions, the environment, anti-corruption, business ethics, and equality and diversity.

The Board has adopted an overarching sustainability policy as a complement to individual policies for such areas as the environment, the Code of Conduct, and health and safety. It stipulates that for Vattenfall, sustainability entails taking responsibility for future generations by contributing to sustainable development in society – economically, environmentally and socially. The sustainability policy also stipulates that environmental issues are the top-priority focus area, based on a decision by Swedish Parliament in 2010 that Vattenfall shall operate a commercial energy business that enables the company to be among the leaders in developing environmentally sustainable energy production. This parliamentary decision is also reflected in Vattenfall AB's Articles of Association.

At the Board's annual review of the company's sustainability targets and strategy it was emphasised that Vattenfall's four strategic objectives (see page 18) by and of themselves constitute sustainability objectives, and that one of their purposes is that sustainability issues shall constitute an integral part of Vattenfall's operations.

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 fees paid to the Chairman of the Board and directors were unchanged between 2008 and 2016. The 2016 AGM resolved in favour of a 7.8% increase in the fee paid to the Chairman of the Board and a 7.1% increase in the fees paid to the other board members. For work as chair and a member of board committees, the AGM resolved in favour of unchanged fees. Information on directors' fees in 2016 is provided in the Annual and Sustainability Report, Note 46 to the Consolidated accounts, Number of employees and personnel costs.

Evaluation of the Board's and 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 26 October 2016. 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 16 December 2016. 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 five 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 2016. Information on the committees' composition is provided on pages 74–75.

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

Audit Committee

In 2016 the Audit Committee conducted preparatory work in connection with Vattenfall's annual impairment testing of asset values, which resulted in the recognition of impairment losses. The impairment testing in 2016 was specifically focused on the sale of the lignite operations and the energy policy agreement in Sweden. During the year the committee revised its work forms to meet new requirements posed by legislation in Sweden and the EU, including among other things stricter requirements on auditors' reports to the committee and a specification of how the committee chair is to report to the Board.

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 Accounts' 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

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 risks. Internal Audit's budget, the Internal Audit Charter and the internal audit plan are prepared by the committee.

The Audit Committee 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 2016 the committee had at least one member with accounting or auditing competence.

Remuneration Committee

The committee's duties include the following:

- Serving as a drafting body to ensure implementation and compliance with guidelines
- Where applicable, conducting drafting work for any special reasons that may exist in an individual case to deviate from the guidelines
- Conducting drafting 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 the election of auditors and that the auditors are to be appointed by the Annual General Meeting. 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 auditing firm as auditor.

At the 2016 AGM, the auditing firm Ernst & Young AB was re-elected as auditor. The auditing 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, Capio AB, Academedia AB, and Nederman Holding 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 2014 to 2016 mainly pertained to tax and accounting issues and studies of organisational issues.

At the 2016 AGM the auditor reported on the audit work in 2015 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 2016 to the entire Board at the board meeting on 6 February 2017 (without the presence of any person from the Executive Group Management), and also reported on its observations at the board meeting on 16 December 2016. 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 2016.

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 17 to the Consolidated accounts, Auditor's fees, and in Note 16 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 2016 was Magnus Hall. An account of the President's remuneration is provided in the Annual and Sustainability Report, Note 46 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. 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.

Biographical information on the members of the Executive Group Management is provided on page 76–77.

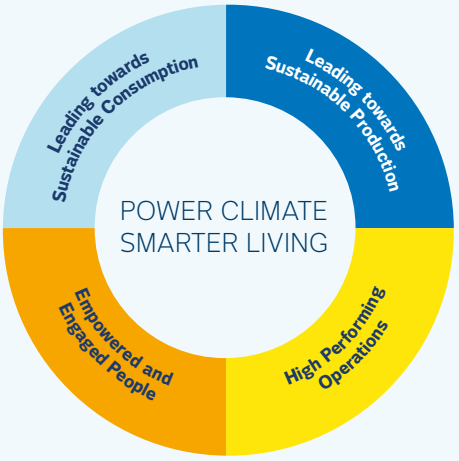
Internal governance

Core values, purpose and strategy
Operations in 2016 rested upon three core values: Safety, Performance and Cooperation.

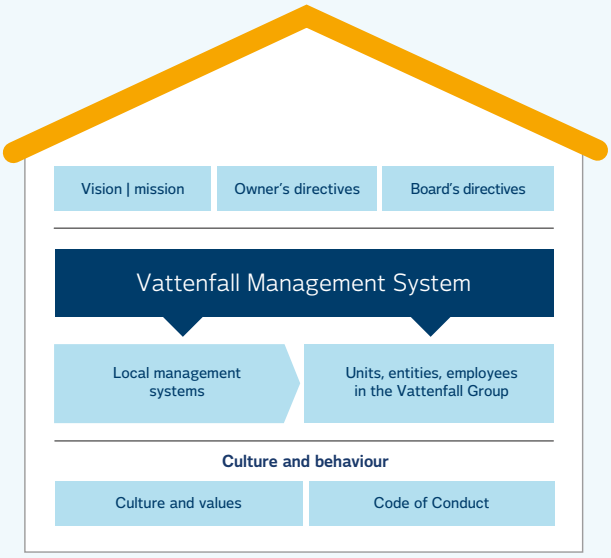
Vattenfall wants to contribute to a sustainable energy system in all parts of the value chain, to be a company that is truly customer-centric, and to transform to a long-term sustainable production portfolio. We are striving to accelerate and enable climate-smart living entirely without the use of fossil fuels, which is expressed in our purpose: the "Power Climate Smarter Living". Vattenfall has set a target to be climate-neutral by 2050, and by 2030 in the Nordic countries.

Vattenfall aspires to contribute to a sustainable energy system in all parts of the value chain and to be a company that is distinctively customer-centric. Parallel with this Vattenfall is working to transform to a long-term sustainable production portfolio. Vattenfall has four strategic objectives: The company shall be 1) Leading towards Sustainable Consumption and 2) Leading towards Sustainable Production. Achieving these requires 3) High Performing Operations and 4) Empowered and Engaged People.

Four strategic objectives



VMS – Vattenfall Management System



VMS structure and other governance documents

Governing business ethics
Vattenfall's internal Code of Conduct builds upon eight principles in the areas of Health and Safety, People, Customers and Suppliers, Business Ethics, Communication, Information Security, Company Resources, and the Environment, and includes references to the Vattenfall Management System (VMS), which elaborates on the principles in more detail. Information about the Code of Conduct is provided on the company's intranet in all of the company's languages, through articles in Vattenfall's employee news magazine, and in connection with new hiring and training. The company also has an e-learning programme on application of the Code of Conduct. Together these measures have contributed to employees' awareness of the Code of Conduct.

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 as well as in internal policies and 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 55.

The Code of Conduct gives employees the opportunity to report incidents anonymously through a whistleblower 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 on page 55.

Ongoing legal processes are described in Note 44 to the Consolidated accounts, Contingent liabilities.

Vattenfall Management System
The Vattenfall Management System (VMS) is the framework that ensures that Vattenfall's governance 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 at an overarching level within Vattenfall. The VMS is documented in binding governance documents consisting of policies, instructions and process documents on three different levels: corporate level, function level and business level. 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, along 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. In 2016 a number of simplifications and continuing updates of the VMS were conducted. In addition, the evaluation has been improved with respect to knowledge about and compliance with the VMS.

The company's direction is laid out by certain policies. Vattenfall's governance with respect to sustainability issues is based on the company's sustainability policy along with a number of other policies, including:

- The environmental policy
- The health and safety policy
- The Code of Conduct
- The Code of Conduct for Suppliers, which addresses issues such as human rights, work conditions, the environment and anti-corruption, based on the UN Global Compact.

Policies have also been drawn up in the areas of risk, dam safety and nuclear safety.

The sustainability policy, the environmental policy and the Code of Conduct are decided on by the board of directors, while other policies are decided on by the President. In the EGM, the Head of Strategic Development is responsible for sustainability issues. The company's policies are accessible to employees on the company's intranet and are also communicated externally. However, 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. Instructions in the VMS can also include concretisations of the content of the Board's Rules of Procedure – for example, with respect to the issuance of information and delegation of responsibilities.

Vattenfall's Environmental Management System is integrated in the VMS. At year-end 2016 nearly 100% of Vattenfall's production portfolio had certified environmental management systems in accordance with ISO 14001 (2015: 87%). In addition, the Group's business units are certified in accordance with OHSAS 18001 for occupational health and safety, and seven units have certified energy management systems in accordance with ISO 50001.

Organisation

Vattenfall's organisational structure comprises six Business Areas: Heat, Wind, Customers & Solutions, Generation, Markets and Distribution. The Business Areas are organised in five operating segments, where Generation and Markets make up a single operating segment. The central Staff Functions are organised in a Corporate Centre which supports and directs the business activities. The organisational structure has been formed to reflect Vattenfall's overall strategy for the coming years (see preceding page). For further information see pages 17–19.

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.

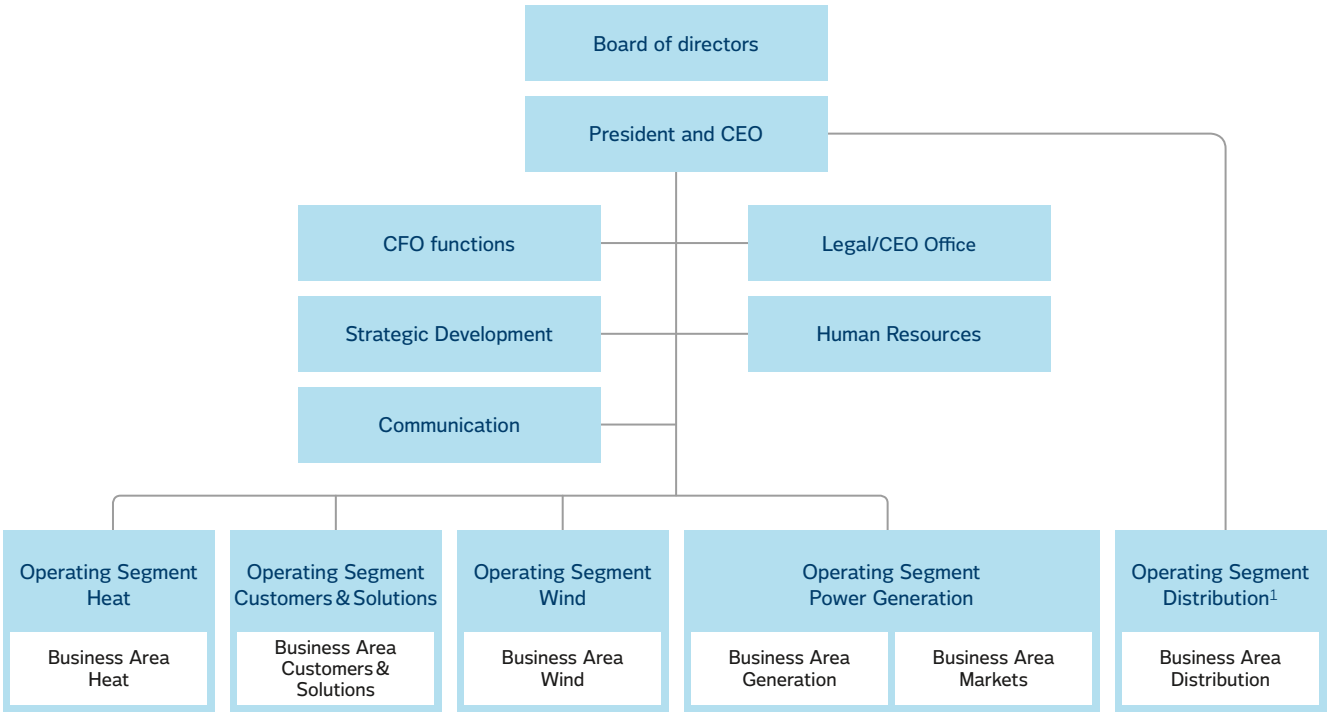
Integrity work at Vattenfall is organised according to the three lines of defence principle, with varying roles for risk ownership, control and advice, and quality assurance:

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, insider information, awareness of Vattenfall's Code of Conduct, and coordination of Vattenfall's whistleblower 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 in 2016 is described in more detail on page 55.



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 terms of employment for senior executives in state-owned companies". These guidelines are available on the Government Offices' website: regeringen.se.

The 2016 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 2015 Annual and Sustainability Report, on page 69.

Based on the AGM's definition, in 2016 a total of 14 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 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 46 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 2017 AGM are shown on page 78.

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 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. For further information see also the section Risks and risk management on pages 57–63.

Control environment

According to the Swedish Companies Act and the Code, the board of directors has overarching responsibility for internal control over financial reporting. 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, makes recommendations and proposals to ensure the reliability of reporting, and 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 control environment is based on the division of responsibility 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, which lays out the overarching rules governing employee conduct.

The VMS is an integrated management system for the Vattenfall Group and is revised on a continuous basis (see also the section on internal governance on page 70). The VMS contains governance documents for all identified material areas, including roles and responsibilities, authority, 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 whose overall purpose is to ensure that controls are in place in the financial reporting.

Risk assessment

The Board addresses the Group's risk assessment and risk management process 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.

The Board's risk management and reporting is centrally coordinated via the Vattenfall Risk Committee (VRC). A continuous Enterprise Risk Management (ERM) process makes it possible to quantify and compare both financial and non-financial risks. Ahead of decisions made by the President in the Executive Group Management or VRC on major investments and transactions, the risk unit performs an independent risk analysis, which makes up part of the decision-making documentation.

For the financial reporting, the IFC process serves as a framework for internal control that identifies and defines risks for material errors in the financial 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

Vattenfall applies the "three lines of defence" model for management and control of risks.

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

The risk organisation, which is headed by the Chief Risk Officer (CRO), makes up the second line of defence and is responsible for monitoring and controlling risks. The CRO heads the risk management organisation within the Group and provides information to the Board's audit committee on a regular basis. The CRO is also responsible for processes related to, among other things, new products and certain contracts with long durations.

The second line of defence also includes the Group Internal Financial Control Officer (IFCO), who is responsible for monitoring and control of risks in the financial reporting. 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.

Internal and external audit make up the third line of defence. Internal Audit is an independent and objective function that over-

sees and evaluates the first and second lines of defence. Internal Audit 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. 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.

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 monthly basis via Business Performance Meetings, where outcomes, forecasts, important events and challenges (including status reports on Vattenfall's sustainability focus areas and sustainability targets) are discussed with the top management of each business unit to ensure that the organisation is performing in line with expectations.

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 through internal Representation Letters to management. Self assessments are conducted for certain stipulations within the VMS and for matters concerning integrity and competition law, among other things.

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.

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 Board's monitoring of the effectiveness of internal control is conducted via the Audit Committee, which 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.

Information and communication

The Group's governance 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. In 2016, updated VMS stipulations about insider issues were drawn up in response to changed legislation. Accounting policies 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.

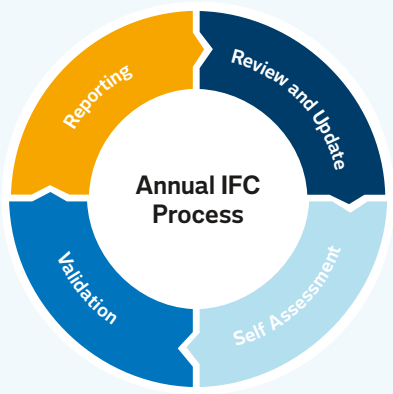
Reporting and follow-up reporting to the Board and EGM are part of monitoring activities. Internal Audit and the CRO also report on their observations to the Board's audit committee. Financial reporting includes interim reports, the year-end report and the annual report. In addition to these reports, 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. In addition, Vattenfall arranges a capital markets day once a year.

Three lines of defence

The IFC (Internal Financial Control) 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. Board member of Nordea Bank, 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: 11/11
Committee meeting attendance:
RemCom: 7/7

FREDRIK ARP (1953)
Board member
Education: B.Sc. Econ. Honorary Doctor of Economics

Other assignments: Chairman of Nolato AB. Board member of Parques Reunidos and 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: Member of the Remuneration Committee
Board meeting attendance: 11/11
Committee meeting attendance:
RemCom: 6/7

VIKTORIA BERGMAN (1965)
Board member
Education: Communication Executive Program at IFL/Stockholm School of Economics. Berghs School of Communication

Other assignments: Chairman of Galber AB. Board member of The Swedish Association of Communication Professionals and GS-Hydro Oy

Previous positions: Member of Group Management and Senior Vice President Stakeholder Management & Corporate Sustainability E.ON Nordic, Board member 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: 11/11
Committee meeting attendance:
RemCom: 7/7

STAFFAN BOHMAN (1949)
Board member
Education: M.Sc. Economics and Business Administration; Stanford Executive Program

Other assignments: Chairman of Höganäs Aktiebolag and Cibes Lift Group AB. Vice Chairman of Rezidor Hotel Group AB. Board member of Atlas Copco Aktiebolag and Upplands Motor AB. Member of the Royal Swedish Academy of Engineering Sciences (IVA). Chairman of Swedish Tax Delegation for Industry and Commerce

Previous positions: President & CEO of Gränges/Sapa AB (1999–2004). President & CEO of DeLaval (1992–1999). Corporate Controller Alfa Laval AB (1988–1991)

Elected: 2016
Committee assignment: Audit Committee chair
Board meeting attendance: 7/8
Committee meeting attendance:
AC: 5/5

HÅKAN ERIXON (1961)
Board member
Education: B.Sc. International Business Administration and Economics

Other assignments: Chairman of Hemnet Sverige AB, Orio AB and Capacent AB (publ). Member of the Nasdaq OMX Stockholm AB Listing Committee. Board member of Alfvén & Didrikson Invest AB

Previous positions: Board member of IT-Gården i Landskrona AB (2014–2016) and Saab Automobile Parts AB (2012–2013). Senior Advisor, Corporate Finance, Swedish Government Offices, which included work for the Swedish National Debt Office (2007–2010). Board member of Carnegie Investment Bank AB (2008–2009). Board member of Vasakronan AB (2007–2008). Various positions with UBS Investment Bank Ltd, London (1997–2007), including as 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: 11/11
Committee meeting attendance:
AC: 7/7

TOMAS KÅBERGER (1961)
Board member
Education: M.Sc. Engineering Physics. Ph.D. Physical Resource Theory, Associate Professor, Environmental Science

Current positions: Professor, Chalmers University of Technology, Industrial Energy Policy

Other assignments: Chairman of Renewable Energy Institute, Tokyo. Vice Chairman of the National Swedish Forest Agency. Board member of Innoventum AB

Previous positions: Professor, Lund University, International Sustainable Energy Systems (2006–2008). Director General, Swedish Energy Agency (2008–2011)

Elected: 2015
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee meeting attendance:
AC: 6/7

JENNY LAHRIN (1971)
Board member
Education: Master of Laws. Executive MBA

Current positions: Investment Director, Division for State-Owned Enterprises, Ministry of Enterprise and Innovation

Other assignments: Board member of AB Göta kanalbolag and SOS Alarm Sverige AB

Previous positions: Board member of Swedavia AB (2012-2015). Board member of RISE Research Institutes of Sweden AB (2012–2013), Legal Counsel at the Division for State-Owned Enterprises, Ministry of Enterprise/Ministry of Finance (2008–2012). Legal Director at Veolia Transport Northern Europe AB (2003–2008) and attorney (2001–2002)

Elected: 2013
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee meeting attendance:
AC: 7/7

ÅSA SÖDERSTRÖM JERRING (1957)
Board member
Education: B.Sc. Econ.

Other assignments: Chairman of Delete OY and Scanmast AB. Board member of JM AB, OEM International AB, Nordic Home Improvement AB, Balco Group AB and ELU Konsult 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: 11/11
Committee meeting attendance:
RemCom: 7/7

HILDE TONNE (1965)
Board member
Education: M.Sc. Petroleum Technology

Other assignments: Board member of Danske Bank Group

Previous positions: Executive Vice President in Telenor Group (2007–2015). Head of Technology & Research Norsk Hydro Oil & Energy (2005–2007). Various leadership positions in Saga Petroleum and Norsk Hydro (1991–2005). Board member of Nordea Norge AS (2015–2016), DNVGL (2008–2016) and Statkraft AS (2009–2010). Various international directorships in listed companies as part of executive positions (2007–2015)

Elected: 2016
Committee assignment: Member of the Remuneration Committee
Board meeting attendance: 5/8
Committee meeting attendance: RemCom: 3/5

CARL-GUSTAF ANGELIN (1951)
Employee representative
Education: M.Sc. Eng.

Current positions: Employee representative for Akademikerrådet at Vattenfall. Vattenfall employee since 1988, currently in Business Area Customer & Solutions

Elected: 2003
Board meeting attendance: 9/11

JOHNNY BERNHARDSSON (1952)
Employee representative
Education: Engineering studies with supplementary coursework in economics

Current positions: 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: 11/11

RONNY EKWALL (1953)
Employee representative
Education: Electrical engineer

Current positions: Employee representative for SEKO Facket för Service och Kommunikation

Elected: 1999
Committee assignment: Member of the Audit Committee
Board meeting attendance: 11/11
Committee meeting attendance: AC: 7/7

LENNART BENGTSSON (1958)
Employee representative (deputy)
Education: Two-year secondary school degree in mechanics and network technology training in IT

Current positions: Employee representative for SEKO Facket för Service och Kommunikation. Vattenfall employee since 1979, currently as IT technician.

Elected: 2011
Board meeting attendance: 11/11

CHRISTER GUSTAFSSON (1959)
Employee representative (deputy)
Education: Four-year education in technology.

Current positions: Employee representative for Ledarna (the Association of Management and Professional Staff). Employed at Vattenfall since 1986, currently in the staff function for the engineering department, Forsmarks Kraftgrupp AB

Other assigments: Representative for Energy & Technology, Confédération Européenne des Cadres (for energy issues).

Elected: 2013
Board meeting attendance: 10/11

JEANETTE REGIN (1965)
Employee representative (deputy)
Education: Secondary school diploma and two-year education in healthcare

Current positions: Employee representative for Unionen. Currently head of customer service/office services for Gotland Energientreprenad

Elected: 2011
Board meeting attendance: 8/11

Board members who left the Board in 2016: Gunilla Berg and Håkan Buskhe declined re-election at the Annual General Meeting on 27 April 2016.

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 Holmen forestry group

Other assignments: Chairman of NTM AB

In 2016 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: Long-standing experience from Vattenfall through various management positions within Finance in BU Heat Nordic, BG Pan Europe, BD Production and Region Nordic as well as acting head of Human Resources

STEFAN DOHLER (1966)
Senior Vice President, Business Area Markets

Vattenfall employee since: 1998

Education: M.Sc. Aerospace Engineering, MBA

Stefan Dohler was appointed as CFO effective 1 December 2016

Previous positions: Head of network operations Vattenfall Europe AG. CEO of the Management Board of Distribution and Transmission System Operators (2008–2010). Vice President Finance, Business Division Production (2011–2012). Head of BA Markets (2012–2016)

Other assignments: Board member of GASAG

GUNNAR GROEBLER (1972)
Senior Vice President, Business Area Wind

Vattenfall employee since: 1999

Education: Mechanical Engineering

Previous positions: Vice President, BU Renewables, Region Continental/UK, Vattenfall (2014–2015). Head of BU Hydro Germany, Vattenfall (2011–2013). Head of Corporate Development & M&A, BG Central Europe, Vattenfall Europe AG (2009–2010). Head of Mergers & Acquisitions, BG 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.

Vattenfall employee since: 2012

Education: LL.B.

Previous positions: General Counsel, Secretary to the Board and member of executive management of SAAB AB (2004–2012). General Counsel and member of executive management of the Swedish National Debt Office (2002–2004). Corporate Legal Counsel, SAS (1987–2002)

Other assignments: Board member Swedish Space Corporation

MARTIJN HAGENS (1971)
Senior Vice President, Business Area Customer & 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: Chief Operating Officer, Nuon Netherlands

TUOMO HATAKKA (1956)
Senior Executive Vice President, Business Area Heat, German region, Executive Vice President, Vattenfall AB

Vattenfall employee since: 2002

Education: B.Sc. Econ. MBA

Previous positions: Head of Business Group Poland (2005–2007). Head of Business Group Central Europe (2008–2010). Head of Business Division Production (2010–2013)

KARIN LEPASOON (1968)
Senior Vice President, Group Communications.

Vattenfall employee since: 1 April 2016

Education: LL.M. in EU Law

Previous positions: Director of Communications, Environment, Social and Governance Standards and HR, Nordic Capital (2015–2016). Executive Vice President and member of the group senior executive team (full member since 2008), Skanska (2006–2015). VP Group Communications, Gambro (1999-2006)

ANDREAS REGNELL (1966)
Senior Vice President, Strategic Development
Vattenfall employee since: 2010
Education: B.Sc. Econ.

Previous positions: Head of Nordic Business Strategy, Vattenfall (2014–2015). Head of Strategy and Sustainability, Vattenfall (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)

TORBJÖRN WAHLBORG (1962)
Senior Executive Vice President, Business Area Generation, Executive Vice President, Vattenfall AB
Vattenfall employee since: 1990
Education: M.Sc. Eng.

Previous positions: Vattenfall's Polish operations 1997–2010, including as country manager (2008–2009). Head of Business Group Nordic (2010). Head of Business Division Distribution and Sales (2010–2012). Head of Business Division Nuclear (2012–2013). Head of Business Region Nordic (2014–2015)

Other assignments: Board member of the Confederation of Swedish Enterprise and of Swede Energy. Chairman of EFA AB

In 2016 Magnus Hall did not have any significant shareholdings in companies with which Vattenfall has business relations.
Persons who left the Executive Group Management in 2016: Ingrid Bonde left her position as CFO on 30 November 2016.

AGM proposal

Proposed principles for compensation and other terms of employment for senior executives

The Annual General Meeting resolved on 27 April 2016 to adopt the Board's proposed guidelines for compensation of senior executives. The Board proposes that the 2017 Annual General Meeting resolve to adopt the Board's proposal which correspond 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 27 April 2016, 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.

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 2016 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 result for the year, totalling SEK 43,618,361,708. 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 shareholders: SEK 0
To be carried forward: SEK 43,618,361,708

The board of directors' and President's assurance upon signing the Annual and Sustainability Report for 2016

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 Adminstration 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, as defined in the GRI Index on pages 166–171, has been prepared in accordance with the GRI G4 Guidelines, and has been adopted by the Board of Directors.

Solna, 21 March 2017

Lars G. Nordström,
Chairman of the Board

Carl-Gustav Angelin Fredrik Arp Viktoria Bergman Johnny Bernhardsson Staffan Bohman Ronny Ekwall

Håkan Erixon Tomas Kåberger Åsa Söderström Jerring Jenny Lahrin Hilde Tonne

Magnus Hall,
President and CEO

FINANCIAL INFORMATION

Vattenfall's financial performance

In 2016 the underlying operating profit for continuing operations was SEK 21.7 million, an increase of SEK 1.2 billion compared with 2015. Our focus on lowering costs has been a contributing factor, together with stronger earnings in the Heat and Customers & Solutions business areas. Greater customer focus also led to an increase in our customer base by approximately 200,000 contracts during the year. At the same time we can note that the tougher market situation, with low electricity prices and continued overcapacity, remained in 2016. This resulted in Vattenfall recognising sizeable impairment losses for asset values in 2016.

Amounts in SEK million unless indicated otherwise	2016	2015
Continuing operations		
Net sales	139,208	143,576
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[1]	27,209	30,604
Underlying operating profit before depreciation, amortisation and impairment losses[1]	36,144	35,229
Operating profit (EBIT)[1]	1,337	-5,069
Underlying operating profit[1]	21,697	20,529
Profit for the period	-2,171	-5,188
Funds from operations (FFO)[1,2]	28,186	29,009
Net debt[1]	50,724	64,201
Adjusted net debt[1]	124,741	137,585
Electricity generation, TWh	119.0	117.4[10]
– of which, hydro power	34.8	39.5
– of which, nuclear power	46.9	42.2
– of which, fossil-based power	30.8	29.2[10]
– of which, wind power	5.8	5.8
– of which, biomass, waste	0.7	0.7[10]
Sales of electricity, TWh[4]	193.2	197.2
Sales of heat, TWh	20.3	20.6[3]
Sales of gas, TWh	53.1	50.7
CO_2 emissions, Mtonnes	23.2[6]	23.4[6]
Work-related accidents, number (LTIF)[5]	2.0	2.3
Total Vattenfall		
Number of employees, full-time equivalents	19,935	28,567[7]
Key ratios		
Return on capital employed, continuing operations, %	0.5[8]	-1.8
Return on capital employed, Total Vattenfall, %	-8.5[8]	-8.2
Net debt/equity, %	60.5	55.4
FFO/adjusted net debt, continuing operations, %	21.6	18.6[11]
FFO/adjusted net debt, Total Vattenfall, %	22.6[9]	21.1
Adjusted net debt/EBITDA, continuing operations, times	4.6	4.5
Adjusted net debt/EBITDA, Total Vattenfall, times	4.4[9]	4.2

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

2) Pertains to Total Vattenfall, including the lignite operations.

3) The value has been adjusted compared with the information previously in Vattenfall's 2015 Annual and Sustainability Report.

4) Sales of electricity also include bilateral trading on the Nordic electricity exchange.

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 measure pertains only to Vattenfall employees.

6) Pro rata values, corresponding to Vattenfall's share of ownership.

7) 6,802 full-time equivalents (FTEs) pertain to the lignite operations.

8) The key ratio is based on average capital employed. The lignite operations were classified as assets held for sale on the balance sheet as per 30 June 2016, which entails that the calculation of average capital employed excludes the lignite operations as from 30 June 2016.

9) The lignite operations were classified as assets held for sale on the balance sheet as per 30 June 2016. As a result, the lignite operations are excluded from balance sheet items included in the calculations of key ratios as from 30 June 2016.

10) The value has been adjusted compared with information previously presented in Vattenfall's 2015 interim reports, year-end report and Annual and Sustainability Report.

11) The key ratio has been adjusted compared with the value presented in Vattenfalls' 2016 year-end report due to an adjustment of FFO by SEK 1,200 million. The adjustment of FFO was due to an incorrect allocation of FFO between continuing and discontinued operations.

Sale of Vattenfall's lignite operations in Germany

On 30 September Vattenfall completed the sale of its lignite operations in Germany to the Czech energy company EPH and its financial partner PPF Investment.

The total effect of the divestment for Vattenfall is SEK -22.1 billion. Vattenfall's adjusted net debt decreased by SEK 7.1 billion. Provisions for mining operations, other environment-related provisions and provisions for pensions that affect adjusted net debt amounted to SEK 16.5 billion. Cash amounted to SEK 9.4 billion.

Financial consequences for Vattenfall related to draft law for nuclear waste fund in Germany

In 2016 the German federal cabinet approved a draft law under which the country's nuclear power operators will shift their liability for the transport, intermediate and final storage of nuclear waste to the state through payment of a total of EUR 23.6 billion into a public fund. The base amount for Vattenfall to pay to the fund amounts to SEK 12.3 billion (EUR 1.3 billion). The German law on nuclear waste was passed by Germany's parliament in December 2016. Approval must still be obtained from the EU and is expected to be received in early 2017. Together with the risk premium of 35.47% and six months' interest payments at an annualised rate of 4.58% to be paid by law, Vattenfall will transfer a total of SEK 17.0 billion (EUR 1.8 billion). This also entails that the duration of remaining nuclear power provisions in Germany is calculated to be approximately 15 years, which changes the discount rate. A new discount rate of 1.75% is used for the remaining nuclear power provisions.

The earnings effect for Vattenfall related to the risk premium of 35.47% including interest payments amount to SEK -5.4 billion (including 100% of Brunsbüttel). In addition higher provisions for decommissioning, dismantling and packaging the nuclear waste as a result of lower discount rate applied due to the shorter duration of the obligations were almost fully offset by lower anticipated cost for decommissioning and dismantling, SEK -0.2 billion, net. In total the earnings effect for Vattenfall amounts to approximately SEK -5.6 billion.

On a pro rata basis (corresponding to Vattenfall's share of ownership), Vattenfall's adjusted net debt has increased by SEK 5.0 billion as a result of the higher provisions, of which SEK 4.7 billion pertains to the risk premium including interest. A lower discount rate and lower anticipated costs as described above resulted in a change of SEK 0.3 billion. Read more about Vattenfall's nuclear operations on the pages 32–33.

Comparability of information presented in tables and graphs

The financial performance that is reported and commented on in the following pages pertains to Vattenfall's continuing operations, unless indicated otherwise. In view of the divestment of Vattenfall's lignite operations, these are classified and reported as a discontinued operation. Read more in Note 5 to the Consolidated accounts, Discontinued operations.

Wholesale price trend

Average Nordic spot prices were 28% higher than in 2015, mainly owing to drier weather and a lower hydrological balance. Average spot prices in Germany and the Netherlands were 8% and 19% lower, respectively, than in 2015 as a result of lower commodity prices.

Volatile commodity prices led to major fluctuations in futures prices for electricity in all markets. Electricity futures prices were 12%–20% lower than in 2015.

Oil prices (Brent crude) were an average of 16% lower than in 2015, mainly owing to larger supply and a stronger US dollar. Coal prices were an average of 1% lower, gas prices were 22% lower and prices of CO_2 emission allowances were an average of 30% lower than in 2015.

Electricity generation

Total electricity generation in 2016 was 119.0 TWh, compared with 118.0 TWh in 2015.

Hydro power generation decreased as a result of lower reservoir levels. Nordic reservoir levels were 52% (74%) of capacity at the end of the fourth quarter, which is 5 percentage points below the normal level.

Nuclear power generation increased compared with the preceding year, owing to higher availability. The Ringhals 2 reactor (R2) was restarted during the fourth quarter. Combined availability for Vattenfall's nuclear power plants for 2016 was 75.4% (69.7%). Forsmark had availability of 84.0% (76.1%) and generation of 24.0 TWh (21.1). Ringhals had availability of 68.2% (64.4%) and generation of 22.9 TWh (21.1).

The increase in electricity generation from wind power resulting from the commissioning of new wind farms was countered by less favourable wind conditions for existing wind farms. This resulted in an unchanged level of electricity generation from wind power compared with 2015. Capacity added in 2016 consisted of the Sandbank offshore wind farm in Germany (216 MW of a total of 288 MW), the Högabjär (38 MW) and Höge Väg (38 MW) onshore wind farms in Sweden, and the 5 MW of solar energy adjacent to Vattenfall's Parc Cynog onshore wind farm in Wales.

Fossil-based power generation increased compared with 2015, mainly attributable to the Moorburg power plant in Germany.

Sales of electricity, heat and gas

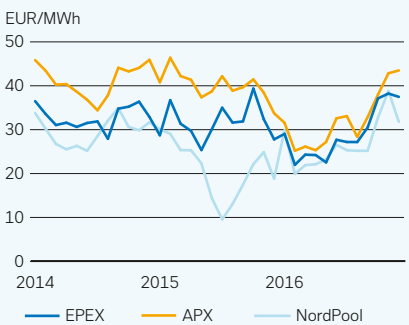
Sales of electricity to private customers increased in 2016. Vattenfall's customer base in Customers & Solutions grew by some 144,000 contracts since the start of the year, which includes the acquisition of the Danish consumer company Vindstød.dk (27,000). Sales of heat were level with 2015. Sales of gas were slightly higher than in 2015, mainly due to a larger number of customer contracts in Germany and colder weather in the Netherlands.

Vattenfall's price hedging

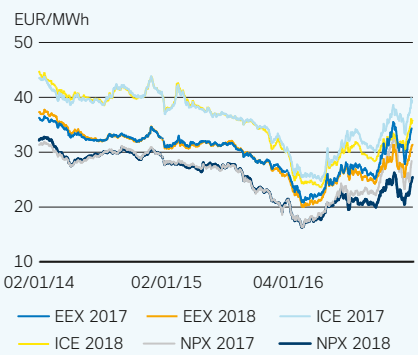
Vattenfall continuously hedges its future electricity generation through sales in the forward and futures markets. Spot prices therefore have only a limited impact on Vattenfall's earnings in the near term.

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 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 risk and risk management on the pages 57–63.

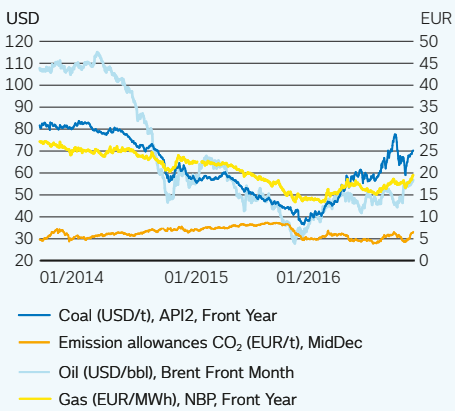
Electricity spot prices in the Nordic countries, Germany and the Netherlands, monthly averages



Electricity futures prices the Nordic countries, Germany and the Netherlands



Price trend for oil, coal, gas and CO_2 emmision allowances



Comments on the consolidated income statement

Sales

	External net sales		Internal net sales		Total net sales	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Customers & Solutions	**67,862**	**84,905**	**1,368**	**2,618**	**69,230**	**87,523**
Power Generation	**49,276**	**35,783[3]**	**49,721[4]**	**55,860[3,4]**	**98,997**	**91,643[3]**
Wind	**4,384**	**4,267**	**2,318**	**2,502**	**6,702**	**6,769**
Heat	**15,110**	**14,356**	**13,304**	**12,989[3]**	**28,414**	**27,345[3]**
Distribution	**15,233**	**15,355**	**4,428**	**4,559**	**19,661**	**19,914**
– of which, Distribution Germany	4,978	6,018	3,954	4,012	8,932	10,030
– of which, Distribution Sweden	10,255	9,337	474	547	10,729	9,884
Other[1]	326	178	5,037	5,183	5,363	5,361
Eliminations	-12,983[2]	-11,268[2]	-76,176	-83,711[3]	-89,159	-94,979[3]
Total continuing operations	**139,208**	**143,576**	**—**	**—**	**139,208**	**143,576**
Discontinued operations	13,459	20,934[3]	—	—[3]	13,459	20,934[3]
Total	**152,667**	**164,510**	**—**	**—**	**152,667**	**164,510**

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

[2] Pertains to Trading's sales to Nordic electricity exchange. Vattenfall's sales organisation buys a corresponding amount of electricity from the Nordic electricity exchange.

[3] The value for 2015 has been recalculated compared with information previously 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.

[4] Pertains to Trading's sales of electricity, heat and CO_2 emission allowances to other segments in Vattenfall.

Consolidated net sales decreased by SEK 4.4 billion compared with 2015. This is mainly attributable to average lower prices achieved.

Underlying operating profit

Continuing operations, amounts in SEK million	**2016**	**2015[1]**
Operating profit (EBIT)	1,337	-5,069
Depreciation, amortisation and impairment losses	25,872	35,673
Operating profit before depreciation, amortisation and impairment losses (EBITDA)	**27,209**	**30,604**
Items affecting comparability excl. impairment losses and reversed impairment losses	8,935	4,625
Underlying operating profit before depreciation, amortisation and impairment losses	**36,144**	**35,229**
Operating profit (EBIT)	1,337	-5,069
Items affecting comparability[2]	20,360	25,598
Underlying operating profit	**21,697**	**20,529**

[1] The value for 2015 has been recalculated compared with information previously 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] See Definitions and calculations of key ratios for definition of this Alternative Performance Measure.

The underlying operating profit improved by SEK 1.2 billion, which is explained by the following:

- Lower production margins in the Power Generation operating segment, mainly owing to lower average electricity and fuel prices achieved (SEK -1.3 billion)
- A higher earnings contribution from the heat operations as a result of lower fuel costs (SEK 1.4 billion)
- A higher earnings contribution from trading and gas sourcing activities (SEK 0.4 billion)
- Other items, net (SEK 0.7 billion)

Operating segments

	Operating profit (EBIT)		Underlying operating profit	
	2016	**2015**	**2016**	**2015**
Customers & Solutions	**1,749**	**775**	**1,830**	**1,390**
Power Generation	**-3,648**	**-7,699**[1]	**11,410**	**12,376**[1]
Wind	**898**	**931**	**878**	**1,469**
Heat	**-3,366**	**-2,555**[1]	**3,230**	**1,759**[1]
Distribution	**4,838**	**5,419**	**4,863**	**5,465**
– of which, Distribution Germany	527	1,848	544	1,881
– of which, Distribution Sweden	4,311	3,571	4,319	3,584
Other[1]	868	-1,907	-512	-1,897
Eliminations	-2	-33	-2	-33
Total continuing operations	**1,337**	**-5,069**	**21,697**	**20,529**
Discontinued operations	-22,542	-17,898[1]	-4	12[1]
Total	**-21,205**	**-22,967**	**21,693**	**20,541**

Continuing operations	**2016**	**2015**
Underlying operating profit	21,697	20,529
Items affecting comparability	-20,360	-25,598
Financial income and expenses	-6,382	-4,776
Profit before income taxes	**-5,045**	**-9,845**

1) The value for 2015 has been recalculated compared with information previously 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.

Lower selling and administrative expenses had a positive effect on the underlying operating profit for the Customers & Solutions operating segment by SEK 0.4 billion compared with 2015. The underlying operating profit for the Power Generation operating segment decreased by SEK 1.0 billion compared with 2015, which is mainly explained by lower production margins resulting from average lower electricity and fuel prices achieved. The underlying operating profit for the Wind operating segment decreased by SEK 0.6 billion, mainly owing to lower generation revenue, higher depreciation associated with the commissioning of new wind farms, and higher project planning and repair costs. The underlying operating profit for the Heat operating segment improved by SEK 1.5 billion, mainly owing to a higher gross margin resulting primarily from lower fuel costs. The underlying operating profit for the Distribution operating segment decreased by SEK 0.6 billion, mainly owing to higher costs in Germany and the earlier scheduling of maintenance investments. Read more about the Group's operating segments in Note 8 to the Consolidated accounts, Operating segments.

Items affecting comparability that affected operating profit

Continuing operations, amounts in SEK million	**2016**	**2015**[1]
Capital gains	2,152	249
Capital losses	-376	-369
Impairment losses	-12,354	-21,507
Reversed impairment losses	929	534
Provisions	-8,249	-3,463
Unrealised changes in the fair value of energy derivatives	-2,417	1,558
Unrealised changes in the fair value of inventories	997	-657
Restructuring costs	-761	-1,105
Other non-recurring items affecting comparability	-281	-838
Total	**-20,360**	**-25,598**

1) The value for 2015 has been recalculated compared with information previously 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.

Items affecting comparability in 2016 amounted to SEK -20.4 billion. Capital gains pertain mainly to the sale of the network services operation in Hamburg (SEK 1.2 billion) and the sale of real estate in Hamburg and Berlin (SEK 0.7 billion). Impairment of asset values amounted to SEK -12.4 billion and pertained primarily to the Moorburg power plant in Hamburg, hydro power assets in Germany, fossil-based assets in the Netherlands, and impairment of the shareholdings in the German nuclear power plants Brokdorf and Stade. Provisions amounted to SEK -8.2 billion and pertain mainly to higher provisions for nuclear power in Germany (SEK -5.3 billion) and Sweden (SEK -2.1 billion). Other items affecting comparability pertain to capital losses (SEK -0.4 billion), unrealised changes in the fair value of energy derivatives and inventories (SEK -1.4 billion), restructuring costs (SEK -0.8 billion), and other nonrecurring items affecting comparability (SEK -0.3 billion).

Items affecting comparability in 2015 amounted to SEK -25.6 billion. Impairment losses amounted to SEK -21.5 billion and pertain mainly to impairment of Ringhals nuclear power reactors 1 and 2 in Sweden and impairment of the Moorburg power plant in Hamburg, Germany. The increase in provisions pertains mainly to higher provisions for nuclear power in Germany.

Read more about impairment losses in Note 11 to the Consolidated accounts, Impairment losses and reversed impairment losses.

Cost savings
Vattenfall has taken numerous measures to cut costs, and compared with the cost base in 2010, Vattenfall has lowered costs under its control by approximately SEK 16.2 billion, or 31%. The cost savings programme of SEK 2.5 billion for 2015-2016 has been completed. Vattenfall will continuously improve efficiency to further reduce costs.

Costs for CO_2 emission allowances
Costs for CO_2 emission allowances for own use amounted to SEK 4.4 billion in 2016, compared with SEK 6.0 billion in 2015. The decrease is mainly attributable to lower prices of CO_2 emission allowances and lower volumes resulting from the sale of the lignite operations in Germany.

R&D activities
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 2016 Vattenfall invested SEK 499 million (422) in R&D (excluding resources allocated to the safe storage of spent nuclear fuel), corresponding to 0.3% (0.3%) of consolidated net sales. A larger share of R&D work is being focused on new products and services in e-mobility and energy management, including smart homes. For further information on Vattenfall's R&D activities, see pages 48–51.

Financial items
Financial items amounted to SEK 6.4 billion, which is SEK 1.6 billion higher than in 2015. This is mainly attributable to a higher level of net interest expenses, higher interest on provisions, and a lower return from the Swedish Nuclear Waste Fund.

Taxes
For 2016 the Group reported a tax revenue of SEK 2.9 billion. The tax revenue is explained mainly by a deferred tax revenue of SEK 3.0 billion associated with the year's impairment losses on asset values.

In 2015 the Group reported a tax revenue of SEK 4.7 billion. This is mainly attributable to a positive one-time effect of impairment losses recognised during the second quarter of 2015. For further information, see Note 15 to the Consolidated accounts, Income taxes.

Comments on the consolidated balance sheet

Assets and capital employed

Amounts in SEK million[1]	31 December 2016	31 December 2015
Intangible assets: current and non-current	17,107	18,655
Property, plant and equipment	217,136	244,563
Participations in associated companies and joint arrangements	4,839	7,002
Deferred and current tax assets	12,852	12,550
Non-current noninterest-bearing receivables	2,659	8,309
Inventories	14,566	16,592
Trade receivables and other receivables	26,008	26,193
Prepaid expenses and accrued income	6,463	5,936
Unavailable liquidity	6,995	6,813
Other	484	719
Total assets excl. financial assets	**309,109**	**347,332**
Deferred and current tax liabilities	-16,664	-23,276
Other noninterest-bearing liabilities	-6,440	-6,273
Trade payables and other liabilities	-25,330	-23,958
Accrued expenses and deferred income	-15,481	-19,969
Other	—	-77
Total noninterest-bearing liabilities	**-63,915**	**-73,553**
Other interest-bearing provisions not related to adjusted net debt[2]	-12,505	-9,188
Capital employed[3]	**232,689**	**264,591**
Capital employed, average	**248,640**	**279,435**

[1] The amounts as per 31 December 2016 pertain to continuing operations, and the amounts as per 31 December 2015 pertain to Total Vattenfall.

[2] Includes personnel-related provisions for non-pension purposes, provisions for tax and legal disputes and certain other provisions.

[3] See Definitions and calculations of key ratios for definitions of this Alternative Performance Measure.

Total assets decreased by SEK 53.1 billion compared with the level at 31 December 2015, to SEK 409.3 billion (462.3). This is mainly explained by a decrease in property, plant and equipment resulting from substantial impairment losses recognised in 2016 and the divestment of the lignite operations. Participations in associated companies and joint arrangements decreased by SEK 2.2 billion to SEK 4.8 billion (7.0), mainly due to impairment losses. Read more about impairment losses in Note 11 to the Consolidated accounts, Impairment losses and reversed impairment losses. In addition, the value of Vattenfall's share in the Swedish Nuclear Waste Fund increased by SEK 2 billion, to SEK 36.2 billion (34.2).

Other interest-bearing provisions decreased by SEK 1.6 billion to SEK 97.7 billion (99.3). The change includes an increase in provisions for nuclear power in Sweden and Germany by SEK 9.9 billion and a decrease by SEK 15.8 billion in provisions for future expenses for mining operations associated with the sale of the lignite operations in Germany. Read more about provisions in Note 35 to the Consolidated accounts, Other interest-bearing provisions.

Financial position

Amounts in SEK million[1]	2016	2015
Cash and cash equivalents, and short-term investments	43,292	44,256
Committed credit facilities (unutilised)	19,105	18,379

[1] The amounts as per 31 December 2016 pertain to continuing operations, and the amounts as per 31 December 2015 pertain to Total Vattenfall.

Cash and cash equivalents, and short-term investments decreased by SEK 1.0 billion compared with the level at 31 December 2015.

Committed credit facilities consist of a EUR 2.0 billion Revolving Credit Facility that expires on 10 December 2021. As per 31 December 2016, available liquid assets and/or committed credit facilities amounted to 36% 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[1]	2016	2015
Hybrid Capital[2]	-19,164	-18,546
Bond issues, commercial paper and liabilities to credit institutions	-55,807	-68,898
Present value of liabilities pertaining to acquisitions of Group companies	-51	—
Liabilities to associated companies	-2,798	-2,751
Liabilities to owners of non-controlling interests	-10,109	-13,041
Other liabilities	-8,738	-7,349
Total interest-bearing liabilities[2]	**-96,667**	**-110,585**
Cash and cash equivalents	19,995	12,351
Short-term investments	23,297	31,905
Loans to owners of non-controlling interests in foreign Group companies	2,651	2,128
Net debt[2]	**-50,724**	**-64,201**

[1] The amounts as per 31 December 2016 pertain to continuing operations, and the amounts as per 31 December 2015 pertain to Total Vattenfall.

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

Total interest-bearing liabilities decreased by SEK 14 billion compared with the level at 31 December 2015. This is mainly attributable to repurchases and maturity of bonds.

Net debt decreased by SEK 13.5 billion compared with the level at 31 December 2015. This is mainly attributable to a positive cash flow after investments which was partly offset by effects of the sale of the lignite operations, which reduced cash holdings.

Adjusted gross and net debt as per 31 December

Amounts in SEK million[1]	2016	2015
Total interest-bearing liabilities	-96,667	-110,585
50% of Hybrid Capital[2]	9,582	9,273
Present value of pension obligations	-40,644	-38,919
Provisions for mining, gas and wind operations and other environment related provisions	-4,367	-19,099
Provisions for nuclear power (net)[3]	-41,896	-32,944
Margin calls received	3,961	5,307
Liabilities to owners of non-controlling interests due to consortium agreements	8,993	11,939
Adjusted gross debt	**-161,038**	**-175,028**
Reported cash and cash equivalents and short–term investments	43,292	44,256
Unavailable liquidity	-6,995	-6,813
Adjusted cash and cash equivalents and short–term investments	**36,297**	**37,443**
Adjusted net debt[4]	**-124,741**	**-137,585**

[1] The amounts as per 31 December 2016 pertain to continuing operations, and the amounts as per 31 December 2015 pertain to Total Vattenfall.

[2] 50% of Hybrid Capital is treated as equity by the rating agencies, which thereby reduces adjusted net debt.

[3] 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).

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 12.8 billion compared with the level at 31 December 2015. The decrease is mainly attributable to a lower level of net debt and to effects of the sale of the lignite operations, which reduced provisions for future obligations for mining operations. Higher nuclear power provisions in both Germany and Sweden increased adjusted net debt by a total of SEK 9.0 billion. Read more about the provisions in Note 35 to the Consolidated accounts, Other interest-bearing provisions.

Equity

The Group's equity decreased by SEK 32.2 billion. The decrease is mainly attributable to the loss for the year and cash flow hedges.

Comments on the consolidated statement of cash flows

Cash flow from operating activities

Amounts in SEK million	2016	2015
Funds from operations (FFO)	28,186	29,009
Cash flow from changes in operating assets and operating liabilities (working capital)	2,597	11,925
Cash flow from operating activities	30,783	40,934

Funds from operations (FFO) decreased by SEK 0.8 billion and amounted to SEK 28,2 billion (29,0) in 2016.

Cash flow from changes in working capital amounted to SEK 2.6 billion (11.9) in 2016. This is mainly attributable to a positive net change in operating receivables and operating liabilities (SEK 1.3 billion), and a lower inventory of CO_2 emission allowances (SEK 1.2 billion).

Cash flow from investing activities

Amounts in SEK million	2016	2015
Maintenance/replacement investments	10,557	12,329
Growth investments	11,561	12,709
Total investments from continuing operations	**22,118**	**25,038**
Accrued investments (-)/release of accrued investments (+)	-197	738
Total investments with cash flow effect from continuing operations	**21,921**	**25,776**
Investments with cash flow effect from discontinued operations	1,149	2,950
Total investments with cash flow effect	**23,070**	**28,726**
Total divestments	**4,406**	**2,814**
- of which, shares	1,298	206

Investments are specified in the table below. Divestments in 2016 pertain mainly to Vattenfall's network services operation in Hamburg, Germany, the sale of real estate in Hamburg and Berlin, and the Nordjylland combined heat and power station in Denmark. Divestments in 2015 pertained primarily to combined heat and power assets in Utrecht, the Netherlands.

Specification of investments

Amounts in SEK million	2016	2015
Hydro power	1,511	1,706
Nuclear power	2,162	4,219
Coal power	454	1,292
Gas	164	174
Wind power	8,782	8,629
Biomass, waste	22	25
Total electricity generation	**13,095**	**16,045**
Fossil-based power	1,840	1,949
Biomass, waste	156	145
Other	1,064	1,242
Total CHP/heat	**3,060**	**3,336**
Electricity networks	5,248	4,671
Total electricity networks	**5,248**	**4,671**
Purchases of shares, shareholder contributions	-361	-267
Other	1,076	1,253
Total investments from continuing operation	**22,118**	**25,038**
Accrued investments (-)/release of accrued investments (+)	-197	738
Total investments with cash flow effect from continuing operation	**21,921**	**25,776**
Investments with cash flow effect from discontinued operations	1,149	2,950
Total investments with cash flow effect	**23,070**	**28,726**

Cash flow from financing activities

Cash flow from financing activities amounted to SEK 5.0 billion (-12.0). In March Vattenfall repaid a large bond of EUR 1.1 billion (corresponding to approximately SEK 10 billion). Short-term investments were lower than in 2015, which led to an increase in cash flow from financing activities by SEK 12 billion. The sale of 49% of the shares in the Ormonde offshore wind farm to the Swedish pensions company AMF led to a further, positive cash flow from financing activities corresponding to GBP 237 million (corresponding to approximately SEK 3 billion).

Consolidated income statement

Amounts in SEK million, 1 January-31 December	Note	2016	2015[9]
Continuing operations			
Net sales	7, 8, 9	139,208	143,576
Cost of products sold[1]		-119,217	-129,222
Gross profit		**19,991**	**14,354**
Other operating income		3,155	2,240
Selling expenses		-7,573	-6,422
Administrative expenses		-11,322	-12,555
Research and development costs		-364	-349
Other operating expenses		-699	-1,840
Participations in the results of associated companies[2]	8, 21	-1,851	-497
Operating profit (EBIT)[3, 4, 10]	8, 9, 10, 11, 12, 16, 17	**1,337**	**-5,069**
Financial income[5, 8]	13	1,767	2,755
Financial expenses[6, 7, 8]	14	-8,149	-7,531
Profit before income taxes		**-5,045**	**-9,845**
Income taxes	15	2,874	4,657
Profit for the year from continuing operations		**-2,171**	**-5,188**
Discontinued operations			
Profit for the year from discontinued operations, net after tax	5	-23,833	-14,578
Profit for the year		**-26,004**	**-19,766**
Attributable to owner of the Parent Company		-26,324	-16,672
Attributable to non-controlling interests		320	-3,094
Supplementary information for continuing operations			
Operating profit before depreciation, amortisation and impairment losses (EBITDA)[10]	8, 9	27,209	30,604
Underlying operating profit before depreciation, amortisation and impairment losses[10]	8, 9	36,144	35,229
Underlying operating profit[10]	8, 9	21,697	20,529
Financial items, net excl. discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund		-4,005	-3,036
1) Of which, depreciation, amortisation and impairment losses.		-23,423	-34,236
2) Of which, impairment losses.		-1,118	-41
3) Of which, depreciation, amortisation and impairment losses.		-25,872	-35,673
4) Including items affecting comparability.[10]		-20,360	-25,598
5) Including return from the Swedish Nuclear Waste Fund.		866	1,168
6) Including interest components related to pension costs.		-954	-922
7) Including discounting effects attributable to provisions.		-3,243	-2,908
8) Items affecting comparability recognised as financial income and expenses, net.		-176	-18

9) The value for 2015 has been recalculated compared with information previously 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.

10) See Definitions and calculations of key ratios for definitions of Alternative Performance Measures.

Consolidated statement of comprehensive income

Total Vattenfall, amounts in SEK million, 1 January-31 December	2016	2015
Profit for the year	**-26,004**	**-19,766**
Other comprehensive income		
Items that will be reclassified to profit or loss when specific conditions are met		
Cash flow hedges – changes in fair value	-17,620	11,354
Cash flow hedges – dissolved against income statement	2,737	-5,323
Cash flow hedges – transferred to cost of hedged item	-71	-3
Hedging of net investments in foreign operations	-923	1,709
Translation differences and exchange rate effects net, divested companies	1,164	—
Translation differences	1,927	-1,938
Income taxes related to items that will be reclassified	4,022	-1,722
Total Items that will be reclassified to profit or loss when specific conditions are met	**-8,764**	**4,077**
Items that will not be reclassified to profit or loss		
Remeasurement pertaining to defined benefit obligations	-1,805	2,867
Income taxes related to items that will not be reclassified	500	-762
Total Items that will not be reclassified to profit or loss	**-1,305**	**2,105**
Total other comprehensive income, net after income taxes	**-10,069**	**6,182**
Total comprehensive income for the year	**-36,073**	**-13,584**
Attributable to owner of the Parent Company	-36,485	-10,398
Attributable to non-controlling interests	412	-3,186

Consolidated balance sheet

Total Vattenfall, amounts in SEK million	Note	31 December 2016	31 December 2015
Assets			
Non-current assets			
Intangible assets: non-current	9, 18	16,792	17,564
Property, plant and equipment	9, 19	217,136	244,563
Investment property	9	128	388
Biological assets		34	35
Participations in associated companies and joint arrangements	21	4,839	7,002
Other shares and participations		118	273
Share in the Swedish Nuclear Waste Fund	22	36,199	34,172
Derivative assets	23, 40	14,036	20,220
Current tax assets, non-current	15	—	222
Prepaid expenses		20	103
Deferred tax assets	15	11,538	9,265
Other non-current receivables	24	3,788	9,484
Total non-current assets		**304,628**	**343,291**
Current assets			
Inventories	25	14,566	16,592
Biological assets		13	19
Intangible assets: current	26	315	1,091
Trade receivables and other receivables	27	26,008	26,193
Advance payments paid	28	1,311	3,607
Derivative assets	23, 40	10,656	14,067
Prepaid expenses and accrued income	29	6,463	5,936
Current tax assets	15	1,314	3,285
Short-term investments	30	23,297	31,905
Cash and cash equivalents	31	19,995	12,351
Assets held for sale	32	694	3,980
Total current assets		**104,632**	**119,026**
Total assets	8	**409,260**	**462,317**
Equity and liabilities			
Equity attributable to owners of the Parent Company			
Share capital		6,585	6,585
Reserve for cash flow hedges		-1,711	9,460
Other reserves		-733	-2,989
Retained earnings incl. profit for the year		64,131	90,928
Total equity attributable to owners of the Parent Company	42	**68,272**	**103,984**
Equity attributable to non-controlling interests		**15,528**	**11,972**
Total equity		**83,800**	**115,956**
Non-current liabilities			
Hybrid Capital	33	19,164	18,546
Other interest-bearing liabilities	33	63,494	68,179
Pension provisions	34	40,644	38,919
Other interest-bearing provisions	35	79,341	93,042
Derivative liabilities	23, 40	12,464	10,579
Deferred tax liabilities	15	14,776	22,970
Other noninterest-bearing liabilities	33, 36	6,440	6,273
Total non-current liabilities		**236,323**	**258,508**
Current liabilities			
Trade payables and other liabilities	33, 37	25,330	23,958
Advance payments received	38	2,164	2,293
Derivative liabilities	23, 40	11,552	8,023
Accrued expenses and deferred income	39	15,481	19,969
Current tax liabilities	15	1,888	306
Other interest-bearing liabilities	33	14,009	23,860
Interest-bearing provisions	35	18,359	6,302
Liabilities associated with assets held for sale	32	354	3,142
Total current liabilities		**89,137**	**87,853**
Total equity and liabilities		**409,260**	**462,317**

See also information on Collateral (Note 43), Contingent liabilities (Note 44) and Commitments under consortium agreements (Note 45), to the Consolidated accounts.

Consolidated statement of cash flows

Total Vattenfall, amounts in SEK million, 1 January–31 December	Note	2016	2015
Operating activities			
Profit before income taxes		-27,975	-28,192
Reversal of depreciation, amortisation and impairment losses		49,539	55,724
Tax paid		1,290	-1,340
Capital gains/losses, net		-1,581	143
Other, incl. non-cash items	41	6,913	2,674
Funds from operations (FFO)[1]		**28,186**	**29,009**
Changes in inventories		1,199	-553
Changes in operating receivables		-2,287	4,074
Changes in operating liabilities		3,623	5,775
Other changes		62	2,629
Cash flow from changes in operating assets and operating liabilities		**2,597**	**11,925**
Cash flow from operating activities		**30,783**	**40,934**
Investing activities			
Acquisitions in Group companies	4	-129	-5
Investments in associated companies and other shares and participations	4	541	272
Other investments in non-current assets	41	-23,482	-28,993
Total investments		**-23,070**	**-28,726**
Divestments	41	4,406	2,814
Cash and cash equivalents in acquired companies		98	—
Cash and cash equivalents in divested companies		-199	-563
Cash flow from investing activities		**-18,765**	**-26,475**
Cash flow before financing activities		**12,018**	**14,459**
Financing activities			
Changes in short-term investments		12,004	235
Changes in loans to owners of non-controlling interests in foreign Group companies		-434	-783
Loans raised[2]		8,764	5,088
Amortisation of debt pertaining to acquisitions of Group companies		—	-19,152
Amortisation of other debt interests		-21,549	-10,223
Divestment of shares in Group companies to owners of non-controlling interests		2,745	—
Effect of early termination of swaps related to financing activities		2,244	1,690
Redemption of Hybrid Capital		—	-9,172
Issue of Hybrid Capital		—	18,636
Dividends paid to owners		-882	-333
Contribution from owners of non-controlling interests		2,107	1,973
Cash flow from financing activities		**4,999**	**-12,041**
Cash flow for the year		**17,017**	**2,418**
Cash and cash equivalents			
Cash and cash equivalents at start of year		12,351	12,283
Cash and cash equivalents included in assets held for sale/sold		-9,443	-2,263
Cash flow for the year		17,017	2,418
Translation differences		70	-87
Cash and cash equivalents at end of year		**19,995**	**12,351**

cont. Consolidated statement of cash flows

Supplementary information

Total Vattenfall, amounts in SEK million, 1 January–31 December	2016	2015
Cash flow before financing activities	**12,018**	**14,459**
Financing activities		
Divestment of shares in Group companies to owners of non-controlling interests	2,745	—
Effects from terminating swaps related to financing activities	2,244	1,690
Dividends paid to owners	-882	-333
Contribution from owners of non-controlling interests	2,107	1,973
Cash flow after dividend	**18,232**	**17,789**
Analysis of change in net debt		
Net debt at start of year	-64,201	-79,473
Cash flow after dividends	18,232	17,789
Changes as a result of valuation at fair value	-914	274
Change in interest-bearing liabilities for leasing	13	3
Interest-bearing liabilities/short-term investments acquired/divested	4	35
Changes in liabilities pertaining to acquisitions of Group companies, discounting effects	—	-160
Cash and cash equivalents included in assets held for sale	-9,443	-2,263
Transfer to liabilities due to changed shareholders' rights	99	—
Release collateralised cash by issuing bank guarantees	2,515	—
Translation differences on net debt	-127	-406
Reclassification	3,098	—
Net debt at end of year	**-50,724**	**-64,201**
Cash flow from operating activities	30,783	40,934
Maintenance investments	-11,566	-15,921
Free cash flow[1]	**19,217**	**25,013**

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

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

Consolidated statement of changes in equity

Amounts in SEK million	Attributable to owner of the Parent Company					Attributable to non-controlling interests	Total equity
	Share capital	**Reserve for hedges**	**Translation reserve**	**Retained earnings**	**Total**		
Balance brought forward 2016	6,585	9,460	-2,989	90,928	103,984	11,972	115,956
Profit for the year	—	—	—	-26,324	-26,324	320	-26,004
Cash flow hedges – changes in fair value	—	-17,691	—	—	-17,691	71	-17,620
Cash flow hedges – dissolved against income statement	—	2,746	—	—	2,746	-9	2,737
Cash flow hedges – transferred to cost of hedged item	—	-52	—	—	-52	-19	-71
Hedging of net investments in foreign operations	—	—	-923	—	-923	—	-923
Translation differences and exchange rate effects net, divested companies	—	—	1,164	—	1,164	—	1,164
Translation differences	—	—	1,812	—	1,812	115	1,927
Remeasurement pertaining to defined benefit obligations	—	—	—	-1,726	-1,726	-79	-1,805
Income taxes relating to other comprehensive income	—	3,826	203	480	4,509	13	4,522
Total other comprehensive income for the year	—	-11,171	2,256	-1,246	-10,161	92	-10,069
Total comprehensive income for the year	—	-11,171	2,256	-27,570	-36,485	412	-36,073
Dividends paid to owners	—	—	—	—	—	-882	-882
Group contributions from (+)/to (-) owners of non-controlling interests	—	—	—	—	—	-352	-352
Changes in ownership in Group companies on divestments of shares to owners of non-controlling interests	—	—	—	895	895	2,082	2,977
Contribution from minority interest	—	—	—	—	—	2,107	2,107
Changes as a result of changed ownership	—	—	—	—	—	-28	-28
Other changes in ownership	—	—	—	-122	-122	217	95
Total transactions with equity holders	—	—	—	773	773	3,144	3,917
Balance carried forward 2016	6,585	-1,711	-733	64,131	68,272	15,528[1]	83,800

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 2015	6,585	4,828	-2,707	106,554	115,260	13,202	128,462
Profit for the year	—	—	—	-16,672	-16,672	-3,094	-19,766
Cash flow hedges – changes in fair value	—	11,335	—	—	11,335	19	11,354
Cash flow hedges – dissolved against income statement	—	-5,324	—	—	-5,324	1	-5,323
Cash flow hedges – transferred to cost of hedged item	—	-4	—	—	-4	1	-3
Hedging of net investments in foreign operations	—	—	1,709	—	1,709	—	1,709
Translation differences	—	—	-1,746	—	-1,746	-192	-1,938
Remeasurement pertaining to defined benefit obligations	—	—	—	2,742	2,742	125	2,867
Income taxes relating to other comprehensive income	—	-1,375	-245	-818	-2,438	-46	-2,484
Total other comprehensive income for the year	—	4,632	-282	1,924	6,274	-92	6,182
Total comprehensive income for the year	—	4,632	-282	-14,748	-10,398	-3,186	-13,584
Dividends paid to owners	—	—	—	—	—	-333	-333
Group contributions from(+)/to(-) owners of non-controlling interests	—	—	—	—	—	355	355
Additional purchase price pertaining to previous share purchase	—	—	—	-878	-878	—	-878
Contribution from minority interest	—	—	—	—	—	1,973	1,973
Other changes in ownership	—	—	—	—	—	-39	-39
Total transactions with equity holders	—	—	—	-878	-878	1,956	1,078
Balance carried forward 2015	6,585	9,460	-2,989	90,928	103,984	11,972[1]	115,956

[1] Of which, Reserve for cash flow hedges SEK 11 million (1).

See also Note 42 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 2016 was approved for publication on 6 February 2017 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 21 March 2017. 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 27 April 2017. The main activities of the Group are described in Note 8 to the Consolidated accounts, Operating segments.

NOTE 2 Important changes in the financial statements compared with the preceding year

Recalculation of financial statements for 2015
In accordance with IFRS 5 – "Non-Current Assets Held for Sale and Discontinued Operations", the lignite operations, which have been divested, are reported as a Discontinued operation as from the second quarter of 2016. The profit from the lignite operations is thus reported on a separate line in the income statement, and comparison figures for 2015 have been recalculated in a corresponding manner. In the segment reporting, the parts of the Power Generation and Heat segments that pertain to the lignite operations have been reclassified as Discontinued operations, and the Power Generation and Heat operating segments have been recalculated for earlier periods so that they only include the continuing operations. In accordance with IFRS 5, the balance sheet has not been restated to reflect earlier periods. The Statement of cash flows has not been recalculated. Cash flow from the discontinued lignite operations is presented in Note 5 to the Consolidated accounts, Discontinued operations.

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 2016
Amendments in IAS 1: "Disclosure initiative" encourage companies to exercise professional judgement when determining which information are to be presented in the financial statements. The amendments clarify that the materiality aspect shall be applied for the report as a whole and that the inclusion of non-essential information may obscure the usefulness of the financial information. Vattenfall has conducted a review of the financial information in Vattenfall's 2015 Annual and Sustainability Report. This work has resulted in the exclusion of a number of notes or parts of notes with non-essential information from Vattenfall's 2016 Annual and Sustainability Report. To improve the usefulness of the financial information, the accounting policies pertaining to specific notes have been moved from Note 3 to the Consolidated accounts, Accounting Policies, to the respective notes that the accounting policy pertains to. The general information in Note 4 to the Consolidated accounts, Important estimations and assessments in the preparation of the financial statements, in Vattenfall's 2015 Annual and Sustainability Report, has been included at the end of this note. The information in Note 4 to the Consolidated accounts, Important estimations and assessments in the preparation of the financial statements, that pertains to specific notes has been moved to the respective notes that the information pertains to.

Other new or revised accounting standards are not considered to have a material impact on the Vattenfall's Group's financial statements.

New IFRSs and interpretations effective as from 2017 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 9 – "Financial Instruments" pertains to recognition of financial assets and liabilities and replaces IAS 39 – "Financial Instruments: Recognition and Measurement". IFRS 9 is effective as from 2018.

Vattenfall has been performing an analysis of the new standard since the start of 2016.

- The work with "Classification and Measurement" has been concluded, and the standard will affect Vattenfall's financial statements only marginally, as only a minor part of Short-term investments will have a changed valuation.
- The effect of "impairment" for receivables will not have any material impact on Vattenfall's financial statements. This is because of the counterparties' good credit ratings.
- The work with "Hedge Accounting" is in progress, and its implementation is not expected to have any material impact on Vattenfall's financial statements. Vattenfall already applies hedge accounting under IAS 39 and plans to continue doing so to the same extent under IFRS 9.

IFRS 15 – "Revenue from Contracts with Customers" 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, IFRIC 13, IFRIC 15 and IFRIC 18. IFRS 15 is effective as from 2018. Vattenfall has been performing an analysis of the new standard since 2016. Areas being investigated are, for example, connection fees, discounts and variable fees, costs to obtain contracts, construction contracts and whether Vattenfall is considered to be the agent or principal for certain revenues. Even though Vattenfall is affected in some of these areas, our preliminary analysis indicates that the effect of implementing IFRS 15 is limited in relation to the Group's total amount of revenues.

IFRS 16 – "Leases" is a new standard for reporting leases that requires lessees to recognise assets and liabilities for all leases unless the lease term is 12 months or less or has a low value. IFRS 16 replaces IAS 17 – "Leases" along with the accompanying interpretations IFRIC 4, SIC-15 and SIC-27. IFRS 16 is expected to apply starting in 2019, assuming endorsement by the EU. Vattenfall is evaluating the effects of the new standard.

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. Financial assets and liabilities measured at fair value consist of holdings in the categories financial assets and liabilities recognised at fair value through profit or loss, holdings in the category available-for-sale financial assets, and all derivatives.

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). In Level 2 Vattenfall reports mainly commodity derivatives, currency-forward contracts and interest rate swaps
- Level 3: Inputs for the asset or liability that is 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).

cont. Note 3 – Accounting policies

Significant accounting policies
The accounting policies of the Group described below or in each respective note to the Consolidated accounts (see below), with the exception of what is stated above under the heading New IFRSs and interpretations effective as of 2016, have been applied consistently for all periods presented in the consolidated financial statements.

The accounting policies are described further in the following notes to the Consolidated accounts:

- Note 7 Net sales
- Note 8 Operating segments
- Note 13 Financial income
- Note 14 Financial expenses
- Note 15 Income taxes
- Note 16 Leasing
- Note 18 Intangible assets: non-current
- Note 19 Property, plant and equipment
- Note 25 Inventories
- Note 26 Intangible assets: current
- Note 32 Assets held for sale
- Note 34 Pension provisions
- Note 35 Other interest-bearing provisions
- Note 40 Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Classification of current and non-current assets and liabilities
An asset is classified as a current asset when it is held primarily for the purpose of trading or is expected to be realised within twelve months after the balance sheet date or consists of cash and cash equivalents, provided it is not subject to restrictions on its exchange or use for regulating a liability at least twelve months after the balance sheet date. All other assets are classified as non-current assets.

A liability is classified as a current liability when it is held primarily for the purpose of trading or is expected to be settled within twelve months after the balance sheet date or one for which the Group does not have an unconditional right to defer settlement for a minimum of twelve months after the balance sheet date. All other liabilities are classified as non-current liabilities.

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. The subsidiary's 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; revenue from the sale of their respective shares of the output of the joint operation and their share of the revenue from the sale of the output of the joint operation; and their expenses, including the share of any expenses 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 6 to the Consolidated accounts, Exchange rates.

Financial assets and financial liabilities
Financial instruments are reported initially at cost, corresponding to the instrument's fair value plus transaction costs for all financial instruments, except for those that belong to the category "financial assets at fair value through profit or loss" and all derivatives, which are reported at fair value excluding transaction costs.

A financial asset or financial liability is recognised on the balance sheet when Vattenfall becomes a party to such in accordance with terms of the instrument's contract. A trade receivable is recognised on the balance sheet when an invoice has been sent. A liability is recognised when the counterparty has performed a service and a contractual obligation to pay exists, even if the invoice has not yet been received. A trade payable is recognised when the invoice has been received.

A financial asset is derecognised from the balance sheet when the rights under the contract are sold, expire, or when Vattenfall no longer retains the risks and rewards of ownership of the asset. The same applies for parts of a financial asset. A financial liability is derecognised from the balance sheet when the contractual obligation has been fulfilled or in some other way extinguished. The same applies for parts of a financial liability.

For financial instruments traded in active financial markets, the fair value is set at the rate applicable when the market closes on the balance sheet date. The same rule applies for fixing the fair value of bilaterally traded financial instruments (OTC trading). For unlisted financial instruments, fair value is set by discounting estimated future cash flows. Discounting is done using discounting factors based on return curves in the cash flows of the respective currencies. The return curves are based on the market interest rates, such as swap rates, that apply on the balance sheet date.

Impairment of financial assets
On each reporting occasion, an assessment is made to determine if there is objective evidence that a financial asset has become impaired. Objective evidence consists in part of observable conditions that have a negative impact on the ability to recover the cost of the asset, and in part of a significant or prolonged decrease in the fair value of an investment in a financial asset that is classified as an available-for-sale financial asset.

cont. Note 3 – Accounting policies

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 15 Income taxes
- Note 18 Intangible assets: non-current
- Note 19 Property, plant and equipment
- Note 32 Assets held for sale
- Note 34 Pension provisions
- Note 35 Other interest-bearing provisions

NOTE 4 Acquired and divested operations

Acquired operations	Fair value	
	2016	**2015**
Intangible assets: non-current	18	—
Property, plant and equipment	93	—
Participations in associated companies and joint arrangements	1	—
Other non-current assets	1	—
Trade receivables and other receivables	91	—
Cash and cash equivalents	98	—
Deferred tax liabilities	-4	—
Trade payables and other liabilities	-207	—
Total net assets	**91**	**—**
Acquisition of non-controlling interests	—	5
Goodwill	89	—
Liabilities to owners of non-controlling interest	-51	—
Total purchase consideration = Cash flow for the year	**129**	**5**

The fair values presented above pertain mainly to the acquisition of Vindstød A/S and are based on a preliminary purchase price allocation analysis. Acquisitions/investments in associated companies and other shares and participations amounted to SEK -541 million (-272).

Divested operations	Carrying amount	
	2016	**2015**
Intangible assets: non-current	70	—
Property, plant and equipment	8,350	163
Participations in associated companies and joint arrangements	5	28
Deferred tax assets	894	9
Other non-current assets	407	—
Inventories	2,336	4
Trade receivables and other receivables	5,660	189
Cash and cash equivalents	9,643	562
Assets held for sale	2,996	12
Borrowings	-41	-35
Provisions	-18,245	-114
Deferred tax liabilities	-1,976	-2
Trade payables and other liabilities	-6,546	-487
Liabilities associated with assets held for sale	-3,015	—
Total net assets	**538**	**329**
Non-controlling interests' share of net assets	28	25
Sales proceeds received in 2017	152	—
Proceeds from sales/Cash flow for the year	1,298	206
Capital gain (+)/loss (-) recognised in the income statement	**940**	**-98**

Divestments in 2016

Divestments in 2016 consists in all essential respects of the sale of the lignite operations, which are reported as a discontinued operation, Netzervice Hamburg GmbH, and Metering Hamburg GmbH.

Divestments in 2015

Divestments in 2015 consisted mainly of the sales of Barsebäck Kraft AB and VERA Klärschlammverbrennung GmbH.

NOTE 5 Discontinued operations

In accordance with IFRS 5 – "Non-Current Assets Held for Sale and Discontinued Operations", the lignite operations, which have been divested, are reported as a Discontinued operation as from the second quarter of 2016. The profit from the lignite operations is thus reported on a separate line in the income statement, and comparison figures for 2015 have been recalculated in a corresponding manner. In the segment reporting, the parts of the Power Generation and Heat segments that pertain to the lignite operations have been reclassified as Discontinued operations, and the Power Generation and Heat operating segments have been recalculated for earlier periods so that they only include the continuing operations. In accordance with IFRS 5, the balance sheet has not been restated to reflect earlier periods. The Statement of cash flows has not been recalculated. Cash flow from the discontinued lignite operations is presented below in this note.

Earnings from discontinued operations

	2016	2015
Net sales	13,459	20,934
Expenses	-13,957	-38,831[1]
Net financial items	-387	-449
Realised gains related to fair value hedges	37	—
Translation differences related to hedging of net investments in foreign operations	-477	—
Capital gain	278	—
Impairment loss recognised on the remeasurement to fair value less costs to sell	-21,883	—
Profit before income taxes from discontinued operations	**-22,930**	**-18,346**
Income taxes	-903	3,768
Profit for the period from discontinued operations attributable to owners of the Parent Company	**-23,833**	**-14,578**

[1]Of which, impairment amounts to SEK 15,285 million.

	2016	2015
Operating profit (EBIT)	-22,542	-17,898
Items affecting comparability	22,538	17,910
Underlying operating profit	**-4**	**12**

Cash flow from discontinued operations

	2016	2015
Funds from operations (FFO)	1,291	3,397[1]
Cash flow from operating activities	2,200	-958[1]
Cash flow from investing activities	-950	-2,871
Cash flow from financing activities	466	8,393

[1] The value has been adjusted by SEK 1,200 million due to an incorrect allocation between continuing and discontinued operations compared with the value that was presented in Vattenfall's 2016 year-end report. The error does not affect Total Vattenfall.

For more information see Note 4 to the Consolidated accounts, Acquired and divested operations.

NOTE 6 Exchange rates

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

		Average rate		Balance sheet date rate	
	Currency	2016	2015	31 December 2016	31 December 2015
Euro Countries	EUR	9.4496	9.3414	9.5525	9.1895
Denmark	DKK	1.2690	1.2523	1.2849	1.2314
Norway	NOK	1.0181	1.0403	1.0513	0.9569
Poland	PLN	2.1647	2.2297	2.1660	2.1552
UK	GBP	11.6081	12.8325	11.1571	12.5206
USA	USD	8.5807	8.4004	9.0622	8.4408

NOTE 7 Net sales

Accounting policy
Net sales include sales proceeds 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.

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.

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.

The change in fair value of derivatives, including commodity derivatives, that does not qualify for hedge accounting is reported in gross profit unless it does not relate to derivative instruments used in financial activities.

Other revenues
In the case of service and consulting assignments, the percentage of completion method is applied, that is, revenues and expenses are reported in proportion to the degree of completion. The degree of completion is established according to the relation between accrued expenses on the balance sheet date and estimated total expenses. In cases where losses are expected, a provision is established immediately. Connection fees for electricity distribution and heat distribution are reported as revenues to the extent that they are not required to cover future obligations.

Financial information

Continuing operations	2016	2015[1]
Sales and distribution of electricity, heat and gas	147,481	145,788
Rendering of service and consulting assignments	8,438	10,459
Excise taxes (included in the above)	-16,711	-12,671
Net sales	**139,208**	**143,576**

[1] The value for 2015 has been recalculated compared with information previously 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.

Vattenfall did not have transactions in 2016 or 2015 with a single external customer where revenues amounted to more than 10% of the Group's total net sales.

NOTE 8 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, external 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.

cont. Note 8 – Operating segments

	External net sales		Internal net sales		Total net sales	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Customers & Solutions	67,862	84,905	1,368	2,618	69,230	87,523
Power Generation	49,276	35,783[3]	49,721[4]	55,860[3,4]	98,997	91,643[3]
Wind	4,384	4,267	2,318	2,502	6,702	6,769
Heat	15,110	14,356	13,304	12,989[3]	28,414	27,345[3]
Distribution	15,233	15,355	4,428	4,559	19,661	19,914
– of which, Distribution Germany	4,978	6,018	3,954	4,012	8,932	10,030
– of which, Distribution Sweden	10,255	9,337	474	547	10,729	9,884
Other[1]	326	178	5,037	5,183	5,363	5,361
Eliminations	-12,983[2]	-11,268[2]	-76,176	-83,711[3]	-89,159	-94,979[3]
Total continuing operations	139,208	143,576	—	—	139,208	143,576
Discontinued operations	13,459	20,934[3]	—	—[3]	13,459	20,934[3]
Total	152,667	164,510	—	—	152,667	164,510

	Operating profit before depreciation, amortisation and impairment losses (EBITDA)		Underlying operating profit before depreciation, amortisation and impairment losses	
	2016	**2015**	**2016**	**2015**
Customers & Solutions	2,775	1,657	2,825	2,271
Power Generation	3,962	12,754[3]	14,354	15,822[3]
Wind	4,442	4,282	4,297	4,621
Heat	7,062	5,632[3]	7,059	5,689[3]
Distribution	7,644	8,143	7,669	8,189
– of which, Distribution Germany	1,337	2,649	1,355	2,683
– of which, Distribution Sweden	6,307	5,494	6,314	5,506
Other[1]	1,326	-1,831	-58	-1,330
Eliminations	-2	-33	-2	-33
Total continuing operations	27,209	30,604	36,144	35,229
Discontinued operations	943	2,150[3]	2,068	4,775[3]
Total	28,152	32,754	38,212	40,004

	Operating profit (EBIT)		Underlying operating profit	
	2016	**2015**	**2016**	**2015**
Customers & Solutions	1,749	775	1,830	1,390
Power Generation	-3,648	-7,699[3]	11,410	12,376[3]
Wind	898	931	878	1,469
Heat	-3,366	-2,555[3]	3,230	1,759[3]
Distribution	4,838	5,419	4,863	5,465
– of which, Distribution Germany	527	1,848	544	1,881
– of which, Distribution Sweden	4,311	3,571	4,319	3,584
Other[1]	868	-1,907	-512	-1,897
Eliminations	-2	-33	-2	-33
Total continuing operations	1,337	-5,069	21,697	20,529
Discontinued operations	-22,542	-17,898[3]	-4	12[3]
Total	-21,205	-22,967	21,693	20,541

Continuing operations	**2016**	**2015**
Underlying operating profit	21,697	20,529
Items affecting comparability (for specification, see page 83)	-20,360	-25,598
Financial income and expenses	-6,382	-4,776
Profit before income taxes	-5,045	-9,845

cont. Note 8 – Operating segments

	Participations in the results of associated companies		Depreciation and amortisation		Impairment losses affecting operating profit	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Customers & Solutions	—	—	995	881	31	—
Power Generation	-2,324	-448	2,944	3,446[3]	4,665	17,005[3]
Wind	-2	-190	3,419	3,152	125	199
Heat	224	141	3,829	3,930	7,530	4,258
Distribution	—	—	2,806	2,723	—	—
– of which, Distribution Germany	—	—	811	802	—	—
– of which, Distribution Sweden	—	—	1,995	1,921	—	—
Other[1]	251	—	455	567	3	45
Total continuing operations	-1,851	-497	14,448	14,699	12,354	21,507
Discontinued operations	—	—	2,073	4,763[3]	21,413	15,285[3]
Total	-1,851	-497	16,521	19,462	33,767	36,792

	Investments		Assets	
	2016	**2015**	**2016**	**2015**
Customers & Solutions	474	331	46,103	48,353
Power Generation	3,955	6,221[3]	252,024	268,956[3]
Wind	8,329	8,855	60,322	58,877
Heat	3,929	5,400	101,691	107,268[3]
Distribution	5,457	4,757	53,450	58,503
– of which, Distribution Germany	1,628	1,208	15,614	17,398
– of which, Distribution Sweden	3,829	3,549	37,836	41,105
Other[1]	-5	258	185,720	230,098
Eliminations	-218	-46[3]	-290,050[5]	-343,046[5]
Total continuing operations	21,921	25,776	409,260	429,009
Discontinued operations	1,149	2,950[3]	—	48,069[3]
Eliminations	—	—[3]	—	-14,761[3]
Total	23,070	28,726	409,260	462,317

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

[2] Pertains to Tradings' sales to the Nordic electricity exchange. Vattenfall's sales organisation buys the corresponding electricity from the Nordic electricity exchange.

[3] The value for 2015 has been recalculated compared with information previously 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.

[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 9 Information about geographical areas

	External net sales		Internal net sales		Total net sales	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Sweden	43,431	42,525	3,302	4,393	46,733	46,918
Germany	67,143	69,199[1]	21,662	41,364[1]	88,805	110,563[1]
Netherlands	24,302	26,566	49,124	59,372	73,426	85,938
Other countries	7,087	7,913	1,631	2,029	8,718	9,942
Eliminations	-2,755[2]	-2,627[2]	-75,719	-107,158[1]	-78,474	-109,785[1]
Total continuing operations	**139,208**	**143,576**	**—**	**—**	**139,208**	**143,576**
Discontinued operations	13,459	20,934[1]	—	—	13,459	20,934[1]
Total	**152,667**	**164,510**	**—**	**—**	**152,667**	**164,510**

	Operating profit (EBIT)		Underlying operating profit		Intangible assets: non-current, property, plant and equipment and investment property	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Sweden	8,282	-6,772	12,364	10,470	107,444	101,750
Germany	-7,386	818[1]	7,701	9,174[1]	70,445	71,319[1]
Netherlands	217	-169	1,366	-42	33,127	36,930
Other countries	224	1,054	266	927	23,040	22,808
Total continuing operations	**1,337**	**-5,069**	**21,697**	**20,529**	**234,056**	**232,807**
Discontinued operations	-22,542	-17,898[1]	-4	12[1]	—	29,708[1]
Total	**-21,205**	**-22,967**	**21,693**	**20,541**	**234,056**	**262,515**

[1] The value for 2015 has been recalculated compared with information previously 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] Pertains to sales from Swedish companies to the Nordic electricity exchange. Vattenfall's sales organisations in other Nordic countries buy the corresponding electricity from the Nordic electricity exchange.

NOTE 10 Depreciation and amortisation

Depreciation of property, plant and equipment and of investment property and amortisation of non-current intangible assets in the income statement are broken down as follows:

	2016	**2015**[1]
Cost of products sold	13,233	13,483
Selling expenses	381	304
Administrative expenses	812	868
Research and development costs	21	39
Other operating expenses (investment property)	1	5
Total continuing operations	**14,448**	**14,699**
Discontinued operations	2,073	4,763
Total	**16,521**	**19,462**

[1] The value for 2015 has been recalculated compared with information previously 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.

Amortisation of non-current intangible assets for the continuing operations is included in Cost of products sold above in the amount of SEK 905 million (907), Selling expenses in the amount of SEK 156 million (67) and Administrative expenses in the amount of SEK 47 million (35).

NOTE 11 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 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 factor that takes into consideration risk-free interest and the risk associated with the specific asset. For an asset that does not generate cash flow independently of other assets, the recoverable amount is calculated for the cash-generating unit to which the asset belongs.

Reversal of impairment losses

Impairment of goodwill is never reversed. Impairment of other assets is reversed if a 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%).

Future cash flows have been discounted to value in use using a discount rate of 5.2% (5.5%–5.6%) after tax (corresponding to 6.9%–7.5% before tax) for regulated business. For non-regulated business, future cash flows have been discounted at a rate of 5.3%–7.3% (5.6%–9.4%) after tax (corresponding to 5.6%–9.0% before tax). 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 6 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 and in Swedish nuclear power assets by between 17% and 27%, depending on the type of asset. This would lead to recognition of further impairment losses of approximately SEK 13 billion. For other assets, such a decrease in electricity prices would not lead to any impairment.

Breakdown of impairment losses in the income statement and reversed impairment losses

Impairment losses for non-current intangible assets, property, plant and equipment, financial non-current assets and investment properties in the income statement are broken down as follows:

	2016	2015[1]
Cost of products sold	11,120	21,245
Administrative expenses	113	174
Research and development costs	—	1
Participations in the result of associated companies	1,118	41
Other operating expenses	3	46
Total continuing operations	**12,354**	**21,507**
Discontinued operations	21,413	15,285
Total	**33,767**	**36,792**

[1] The value for 2015 has been recalculated compared with information previously 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.

During 2016, previously recognised impairment losses of SEK 929 million were reversed in the income statement, pertaining to waste-to-energy power plants in Germany. Previously recognised impairment losses that were reversed during 2015 of SEK 534 million pertained to combined heat and power plants in Denmark, amounting to SEK 492 million, and other assets in Germany, amounting to SEK 42 million.

cont. Note 11 – Impairment losses and reversed impairment losses

Impairment losses 2016

	Goodwill	Property, plant and equipment	Associated companies	**Effect on operating profit**	Effect on taxes	**Total impairment**
Customers & Solutions	**—**	**31**	**—**	**31**	**-8**	**23**
– of which, other assets	—	31	—	31	-8	23
Power Generation	**678**	**2,869**	**1,118**	**4,665**	**-815**	**3,850**
– of which, hydro power plants in Germany	—	2,301	—	2,301	-690	1,611
– of which, Trading Netherlands	678	—	—	678	—	678
– of which, shares in Brokdorf GmbH & Co. oHG and Stade GmbH & Co. oHG	—	—	1,118	1,118	—	1,118
– of which, simulators in Ringhals 1 and 2 and Oskarshamn 1 and 2	—	417	—	417	-92	325
– of which, other assets	—	151	—	151	-33	118
Wind	**—**	**125**	**—**	**125**	**-25**	**100**
– of which, wind assets in Sweden	—	74	—	74	-16	58
– of which, wind assets in UK	—	47	—	47	-8	39
– of which, wind assets in Denmark	—	4	—	4	-1	3
Heat	**—**	**7,530**	**—**	**7,530**	**-2,128**	**5,402**
– of which, the German plant Moorburg	—	4,661	—	4,661	-1,399	3,262
– of which, fossil based assets in the Netherlands and Germany	—	2,807	—	2,807	-714	2,093
– of which, other assets	—	62	—	62	-15	47
Other	**—**	**3**	**—**	**3**	**-1**	**2**
– of which, other assets	—	3	—	3	-1	2
Impairment continuing operations 2016	**678**	**10,558**	**1,118**	**12,354**	**-2,977**	**9,377**
Impairment discontinued operation 2016	—	21,413	—	21,413	-9	21,404
Total Impairment 2016	**678**	**31,971**	**1,118**	**33,767**	**-2,986**	**30,781**
Of which, assets in the Germany	—	28,644	1,118	29,762	-2,178	27,584
Of which, assets in Nordic	—	646	—	646	-142	504
Of which, assets in the UK	—	47	—	47	-8	39
Of which, assets in the Netherlands	678	2,634	—	3,312	-658	2,654
Total Impairment 2016	**678**	**31,971**	**1,118**	**33,767**	**-2,986**	**30,781**

Vattenfall has performed impairment testing by calculating the value in use 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. In the annual impairment testing carried out during the second quarter of 2016, continued worsening market conditions were noted. Owing to the sales price achieved for the sale of the lignite operations, continued low production margins in Germany and the Netherlands that affect the anticipated profitability of the Moorburg coal-fired plant, the pumped storage hydro assets in Germany and the condensing assets in the Netherlands, substantial impairment losses have been recognised for 2016. Impairment losses charged against operating profit in 2016 amounted to SEK 33,767 million (36,792). Of this total, SEK 21,413 million is attributable to discontinued operations, SEK 4,665 million to the Power Generation operating segment, SEK 125 million to the Wind operating segment, SEK 7,530 million to the Heat operating segment, SEK 31 million to the Customers & Solutions operating segment, and SEK 3 million to Other.

Goodwill is not amortised but is instead tested annually for impairment. In this process, the need to recognise impairment of goodwill allocated to the Power Generation operating segment amounting to the entire carrying amount of SEK 678 million has been identified. Off the remaining Goodwill SEK 12,831 million is allocated to the Customers & Solutions operating segment (Sales B2B and B2C cash-generating unit) and SEK 50 million to the Wind operating segment. Impairment testing of goodwill is included in the impairment testing process described above.

The impairment losses charged against operating profit were partly offset by a positive tax effect of SEK 2,986 million (9,606).

NOTE 12 Operating expenses according to type

Continuing operations	**2016**	**2015**[1]
Personnel costs	17,821	18,728
Depreciation and amortisation	14,448	14,699
Impairment losses of non-current assets	12,354	21,507
Reversed impairment losses of non-current assets	-929	-534
Other operating expenses incl. input commodities	95,481	95,988
Total	139,175	150,388

[1] The value for 2015 has been recalculated compared with information previously 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.

NOTE 13 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

Continuing operations	2016	2015[1]
Return from the Swedish Nuclear Waste Fund	866	1,168
Interest income attributable to investments	381	907
Net change in value from remeasurement of derivatives	481	647
Dividends	30	31
Capital gains from divestments of shares and participations	9	2
Total	1,767	2,755

[1] The value for 2015 has been recalculated compared with information previously 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.

NOTE 14 Financial expenses

Accounting policy
For calculation of interest effects attributable to provisions, various discount rates have been used, see Note 34 to the Consolidated accounts, Pension provisions, and Note 35 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

Continuing operations	2016	2015[1]
Interest expenses attributable to loans	3,502	3,449
Interest effects attributable to provisions	3,243	2,908
Interest expenses for the net of pension provisions and plan assets	954	922
Exchange rate differences, net	187	179
Net change in value from remeasurement of other financial assets	18	55
Impairment losses for shares and participations	181	3
Capital losses from divestments of shares and participations	—	15
Other	64	—
Total	8,149	7,531

[1] The value for 2015 has been recalculated compared with information previously 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.

NOTE 15 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 following temporary differences are not taken into account: temporary differences that arises with the initial recognition of goodwill and temporary differences on initial recognition of assets and liabilities that are not business combinations and at the time of the transaction do not affect either reported or taxable profit. Further, such temporary differences attributable to shares or participations in subsidiaries or associated companies that are not expected to be reversed in the foreseeable future are not taken into account either. 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
Breakdown of reported income tax

Continuing operations	2016	2015[1]
Current tax expense (-)/ tax income (+)		
Current taxes pertaining to the period:		
Sweden	-2,189	-1,438
Germany	-493	-551
Netherlands	—	—
Other countries	-28	-55
Adjustment of current tax for prior periods:		
Sweden	115	-28
Germany	-78	3,105
Netherlands	-1	5
Other countries	32	69
Total current tax	**-2,642**	**1,107**
Deferred tax expense (-)/ tax income (+)		
Sweden	1,133	3,688
Germany	4,339	-173
Netherlands	-232	46
Other countries	276	-11
Total deferred tax	**5,516**	**3,550**
Total income tax expense	**2,874**	**4,657**

[1] The value for 2015 has been recalculated compared with information previously 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.

cont. Note 15 – Income taxes

The difference between the nominal Swedish tax rate and the effective tax rate is explained as follows:

	2016		2015[1]	
Continuing operations	%		%	
Profit before tax		-5,045		-9,845
Swedish income tax rate at 31 December	22.0	1,110	22.0	2,166
Difference in tax rate in foreign operations	14.7	740	1.1	105
Tax adjustment for previous periods	3.5	178	33.7	3,316
Revaluation of previously non-valued losses and other temporary differences[2]	19.5	985	-3.8	-376
Tax-loss carryforwards from current year that are not valued[2]	-0.3	-15	-4.9	-483
Other non-taxable income[3]	12.8	646	1.5	153
Other non-deductible expenses[4]	-5.2	-262	-2.5	-242
Participations in the results of associated companies	-11.5	-580	-0.4	-40
Changed tax rates excl. Sweden	1.5	72	0.6	58
Effective tax rate	**57.0**	**2,874**	**47.3**	**4,657**

[1] The value for 2015 has been recalculated compared with information previously 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] In calculating profit for the period for continuing operations in accordance with IFRS 5, profit for 2016 was positively affected without a corresponding tax expense, as it has been possible under the German rules of joint taxation to utilise non-measured losses regarding the companies in the discontinued operations through 31 May 2016. For 2015, profit for the period for continuing operations was negatively affected without a corresponding tax income as the incurred loss was not measured. The effect amounts to SEK 1,062 million for 2016 and SEK -483 million for 2015.

[3] Of which, capital gains amount to SEK 445 million (72).

[4] Of which, non-deductible impairment losses amount to SEK -170 million (-24).

Balance sheet reconciliation of current tax[1]

Total Vattenfall	**2016**	**2015**
Balance brought forward net asset (+)/net liability (-)	3,073	937
Translation differences, acquisitions, disposals and assets held for sale	78	-51
Interest and discounting effects on non-current tax items	17	78
Change via income statement	-2,642	1,107
Tax effect through equity[2]	138	-338
Taxes paid, net	-1,290	1,340
Balance carried forward net asset (+)/ net liability (-)	**-626**	**3,073**

[1] Including tax liabilities reported under provision for tax disputes.

[2] Of which, equity hedge amounts to SEK 39 million (-238).

Balance sheet reconciliation of deferred tax

	2016						
Total Vattenfall	**Balance brought forward**	**Changes via Income statement**	**Changes via Other comprehensive income**	**Acquisitions, disposals and assets held for sale**	**Translation differences**	**Reclassification**	**Balance carried forward**
Non-current assets	-26,974	2,097	—	1,796	24	—	**-23,057**
Current assets	-1,922	-3,038	—	16	-51	-69	**-5,064**
Provisions	14,417	3,107	500	-450	192	—	**17,766**
Other non-current liabilities	546	970	—	-34	26	—	**1,508**
Current liabilities	1,271	3,400	—	-5	53	69	**4,788**
Cash flow hedges	-3,604	—	3,818	-11	-60	—	**143**
Tax losses carried forward	2,561	-1,924	—	—	41	—	**678**
Total	**-13,705**	**4,612**	**4,318**	**1,312**	**225**	**—**	**-3,238**

	2015						
Total Vattenfall	**Balance brought forward**	**Changes via Income statement**	**Changes via Other comprehensive income**	**Acquisitions, disposals and assets held for sale**	**Translation differences**	**Reclassification**	**Balance carried forward**
Non-current assets	-32,837	5,735	—	112	9	7	**-26,974**
Current assets	-2,412	519	—	-89	1	59	**-1,922**
Provisions	16,353	-477	-762	-517	-110	-70	**14,417**
Other non-current liabilities	-384	170	—	-1	-13	774	**546**
Current liabilities	2,631	-539	—	-4	-6	-811	**1,271**
Cash flow hedges	-2,259	—	-1,391	—	46	—	**-3,604**
Tax losses carried forward	623	1,911	—	—	-19	46	**2,561**
Total	**-18,285**	**7,319**	**-2,153**	**-499**	**-92**	**5**	**-13,705**

cont. Note 15 – Income taxes

Accumulated tax-loss carryforwards

	2016	2015
Sweden	32	17
Germany	8,048	11,255
Netherlands	267	1,985
Other countries	1,521	2,195
Total	9,868	15,452

The tax-loss carryforwards fall due as follows:

	2016
2017	30
2018-2021	75
2022 and beyond	280
No time limit	9,483
Total	9,868

The tax-loss carryforwards correspond to a potential deferred tax asset of SEK 1,682 million, of which SEK 677 million is booked on the balance sheet as of 31 December 2016. Tax-loss carryforwards not included in the computation of deferred tax represent a tax value of SEK 1,005 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 16 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.

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:

	2016	2015
Cost	973	1,132
Accumulated depreciation according to plan	-340	-471
Total	633	661

Future payment commitments, as of 31 December 2016, for leasing contracts and rental contracts are broken down as follows:

	Finance leasing, nominal	Finance leasing, present value	Operating leasing
2017	69	66	591
2018	71	65	406
2019	72	63	300
2020	533	448	263
2021	—	—	152
2022 and beyond	—	—	390
Total	745	642	2,102

The current year's leasing expenses for continuing operations amounted to SEK 702 million (934).

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. Facilities are classified in accordance with standard leasing principles, based on the fixed revenue component. On 31 December 2016, cost of assets reported under operating leases amounted to SEK 5,960 million (2,986). Accumulated depreciation amounted to SEK 3,464 million (1,641) and accumulated impairment losses amounted to SEK 301 million (291).

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

	Finance leasing	Operating leasing
2017	—	1,082
2018	—	1,023
2019	—	1,003
2020	—	985
2021	—	964
2022 and beyond	—	3,638
Total	—	8,695

NOTE 17 Auditors' fees

Total Vattenfall	2016	2015
Annual audit assignment		
EY	39	40
Audit-related activities besides the annual audit assignment		
EY	2	3
Tax consulting		
EY	6	6
Other assignments		
EY	10	9

NOTE 18 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, mining rights and similar rights acquired by the Group 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 not is indefinite.

Important estimations and assessments

Intangible assets are tested for impairment in accordance with the accounting policies described in Note 11 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

	2016					
	Development projects in progress	Development costs	Goodwill	Concessions and similar rights with finite useful lives	Renting rights, mining rights and similar rights with finite useful lives	Total
Cost						
Cost brought forward	—	1,888	40,700	15,977	3,966	62,531
Acquired companies	—	—	89	19	—	108
Investments	18	84	—	376	1	479
Advance payments capitalised	—	—	—	7	—	7
Divestments/Disposals	—	—	-251	-398	-4	-653
Reclassifications	—	—	—	10	1	11
Divested companies	—	-9	-94	-553	-3,159	-3,815
Translation differences	—	45	1,464	394	91	1,994
Accumulated cost carried forward	18	2,008	41,908	15,832	896	60,662
Amortisation according to plan						
Amortisation brought forward	—	-1,574	—	-9,549	-2,517	-13,640
Amortisation for the year	—	-27	—	-1,091	-12	-1,130
Divestments/Disposals	—	—	—	282	—	282
Divested companies	—	9	—	477	2,346	2,832
Translation differences	—	-47	—	-341	-67	-455
Accumulated amortisation according to plan carried forward	—	-1,639	—	-10,222	-250	-12,111
Impairment losses						
Impairment losses brought forward	—	-193	-27,735	-2,028	-1,374	-31,330
Impairment losses for the year	—	-19	-678	-63	—	-760
Divestments/disposals	—	—	249	108	—	357
Divested companies	—	—	94	9	812	915
Translation differences	—	—	-957	37	-21	-941
Accumulated impairment losses carried forward	—	-212	-29,027	-1,937	-583	-31,759
Residual value according to plan carried forward	18	157	12,881	3,673	63	16,792
Advance payments to suppliers						—
Total						16,792

cont. Note 18 – Intangible assets: non-current

	2015					
	Development projects in progress	**Development costs**	**Goodwill**	**Concessions and similar rights with finite useful lives**	**Renting rights, mining rights and similar rights with finite useful lives**	**Total**
Cost						
Cost brought forward	4	2,102	41,544	16,505	4,218	**64,373**
Investments	—	26	—	422	18	**466**
Advance payments capitalised	—	—	—	5	—	**5**
Transfer from development projects in progress	-3	3	—	4	—	**4**
Divestments/Disposals	—	-216	—	-132	-199	**-547**
Reclassifications	—	—	—	-569	—	**-569**
Assets held for sale	—	—	—	-16	—	**-16**
Translation differences	-1	-27	-844	-242	-71	**-1,185**
Accumulated cost carried forward	**—**	**1,888**	**40,700**	**15,977**	**3,966**	**62,531**
Amortisation according to plan						
Amortisation brought forward	—	-1,784	—	-9,216	-2,679	**-13,679**
Amortisation for the year	—	-29	—	-1,008	-88	**-1,125**
Divestments/Disposals	—	212	—	129	198	**539**
Reclassifications	—	—	—	346	—	**346**
Assets held for sale	—	—	—	15	—	**15**
Translation differences	—	27	—	185	52	**264**
Accumulated amortisation according to plan carried forward	**—**	**-1,574**	**—**	**-9,549**	**-2,517**	**-13,640**
Impairment losses						
Impairment losses brought forward	—	-193	-28,293	-2,028	-600	**-31,114**
Impairment losses for the year	—	—	—	—	-786	**-786**
Translation differences	—	—	558	—	12	**570**
Accumulated impairment losses carried forward	**—**	**-193**	**-27,735**	**-2,028**	**-1,374**	**-31,330**
Residual value according to plan carried forward	**—**	**121**	**12,965**	**4,400**	**75**	**17,561**
Advance payments to suppliers						**3**
Total						**17,564**

Contractual commitments for acquisitions of non-current intangible assets amounted to SEK 372 million (14) as per 31 December 2016.

Estimated useful life	
Development costs	3–4 years
Concessions and similar rights	3–30 years
Renting rights, mining rights and similar rights	3–50 years

Estimated useful lives are unchanged compared with the preceding year.

NOTE 19 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 in Germany (impaired during 2011) and Sweden, 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. See also Note 35 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 except for depreciation related to the German nuclear power plants (impaired during 2011). 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 11 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.

cont. Note 19 – Property, plant and equipment

Financial information

	2016				
	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]	73,143	520,662	15,072	32,964	**641,841**
Acquired companies	—	—	—	93	**93**
Investments[4]	79	1,691	506	20,499	**22,775**
Reversed investments	—	—	—	-2	**-2**
Advance payments capitalised	—	37	—	1,137	**1,174**
Capitalised/Reversed future expenses for decommissioning, restoration	34	4,002	—	-72	**3,964**
Transfer from construction in progress	2,322	25,691	173	-28,186	**—**
Divestments/Disposals	-1,993	-9,341	-532	-1,233	**-13,099**
Other reclassifications	-178	-3,269	-31	2,960	**-518**
Assets held for sale	-173	-1,133	-7	-1	**-1,314**
Divested companies	-19,797	-119,588	-3,547	-2,181	**-145,113**
Translation differences	1,551	9,273	450	94	**11,368**
Accumulated cost carried forward	**54,988**	**428,025**	**12,084**	**26,072**	521,169
Depreciation according to plan					
Depreciation brought forward	-33,045	-275,424	-10,968	—	**-319,437**
Depreciation for the year	-1,126	-13,836	-423	—	**-15,385**
Divestments/Disposals	770	7,080	474	—	**8,324**
Other reclassifications	33	420	4	—	**457**
Assets held for sale	80	582	6	—	**668**
Divested companies	9,387	85,642	2,642	—	**97,671**
Translation differences	-852	-5,639	-327	—	**-6,818**
Accumulated depreciation according to plan carried forward	**-24,753**	**-201,175**	**-8,592**	**—**	-234,520
Impairment losses					
Impairment losses brought forward	-5,982	-68,097	-741	-4,545	**-79,365**
Impairment losses for the year	-3,506	-28,059	—	-383	**-31,948**
Reversed impairment losses for the year	—	992	—	—	**992**
Transfer from construction in progress	—	-5,017	—	5,017	**—**
Divestments/Disposals	114	2,194	6	982	**3,296**
Other reclassifications	-3	2,981	32	-3,218	**-208**
Divested companies	5,856	33,011	328	90	**39,285**
Translation differences	-183	-2,092	-24	57	**-2,242**
Accumulated impairment losses carried forward	**-3,704**	**-64,087**	**-399**	**-2,000**	-70,190
Residual value according to plan carried forward	**26,531**	**162,763**	**3,093**	**24,072**	216,459
Advance payments to suppliers					**677**
Total					217,136

cont. Note 19 – Property, plant and equipment

	2015				
	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]	71,372	488,695	15,240	48,871	**624,178**
Investments[4]	106	1,881	626	23,190	**25,803**
Reversed investments	—	—	—	73	**73**
Advance payments capitalised	—	46	—	2,125	**2,171**
Capitalised/Reversed future expenses for decommissioning, restoration	42	-573	—	142	**-389**
Transfer from construction in progress	1,879	38,738	198	-40,818	**-3**
Divestments/Disposals	-1,119	-1,655	-564	-303	**-3,641**
Other reclassifications	987	-657	55	—	**385**
Assets held for sale	962	2,028	-142	—	**2,848**
Divested companies	-100	-1,341	-67	-2	**-1,510**
Translation differences	-986	-6,500	-274	-314	**-8,074**
Accumulated cost carried forward	**73,143**	**520,662**	**15,072**	**32,964**	**641,841**
Depreciation according to plan					
Depreciation brought forward	-32,367	-264,458	-10,854	—	**-307,679**
Depreciation for the year	-1,368	-15,724	-914	—	**-18,006**
Divestments/Disposals	821	1,577	499	—	**2,897**
Other reclassifications	-248	260	-52	—	**-40**
Assets held for sale	-486	-1,812	99	—	**-2,199**
Divested companies	70	820	55	—	**945**
Translation differences	533	3,913	199	—	**4,645**
Accumulated depreciation according to plan carried forward	**-33,045**	**-275,424**	**-10,968**	**—**	**-319,437**
Impairment losses					
Impairment losses brought forward	-3,462	-34,701	-728	-8,494	**-47,385**
Impairment losses for the year	-2,192	-29,536	-40	-2,498	**-34,266**
Reversed impairment losses for the year	—	492	—	—	**492**
Transfer from construction in progress	-437	-5,910	—	6,346	**-1**
Divestments/Disposals	3	37	4	85	**129**
Other reclassifications	—	-66	—	—	**-66**
Assets held for sale	—	69	—	—	**69**
Divested companies	—	396	7	—	**403**
Translation differences	106	1,122	16	16	**1,260**
Accumulated impairment losses carried forward	**-5,982**	**-68,097**	**-741**	**-4,545**	**-79,365**
Residual value according to plan carried forward	**34,116**	**177,141**	**3,363**	**28,419**	**243,039**
Advance payments to suppliers					**1,524**
Total					**244,563**

[1] Cost for land and buildings includes cost of land and water rights amounting to SEK 12,476 million (14,501), which are not subject to depreciation.

[2] Borrowing costs during the construction period have been reported as an asset in the amount of SEK 374 million (735) for the year. The average interest rate for 2016 was 0.93% for borrowings in SEK, 4.60% for borrowings in EUR and 3.76% for borrowings in GBP.

[3] Government grants received, balance brought forward, amount to SEK 6,884 million (6,734).

[4] Government grants received during the year amounted to SEK 219 million (179).

At 31 December 2016, contractual commitments for the acquisition of property, plant and equipment amounted to SEK 12,110 million (10,602).

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	5–15 years
Distribution assets	10–35 years
Mining operations (divested during 2016)	4–25 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 20 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 2016	Participation in % 2016	Carrying amount Parent Company 2016	Carrying amount Parent Company 2015
Sweden						
Borås Elhandel AB	556613-7765	Borås	1,000	100	100	100
Chlorout AB	556840-9253	Stockholm	500	100	—	—
Forsaströms Kraft AB	556010-0819	Åtvidaberg	400,000	100	48	48
Forsmarks Kraftgrupp AB	556174-8525	Östhammar	198,000	66	198	198
Försäkrings AB Vattenfall Insurance	516401-8391	Stockholm	200,000	100	200	200
Gotlands Energi AB	556008-2157	Gotland	112,500	75	13	13
Haparanda Värmeverk AB (Divested 2016)	556241-9209	Haparanda	0	0	—	1
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	Stockholm	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[2]	556417-0800	Solna	8,000	100	38,000	38,000
Vattenfall France Holding AB	556815-4214	Stockholm	30,500	100	11	11
Vattenfall Inlandskraft AB (Liquidated 2016)	556528-2562	Jokkmokk	0	0	—	4
Vattenfall Kundservice AB	556529-7065	Stockholm	100,000	100	30	30
Vattenfall Nuclear Fuel AB	556440-2609	Stockholm	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 Procurement International AB	556923-6671	Solna	500	100	—	—
Vattenfall Research & Development AB	556390-5891	Älvkarleby	14,000	100	17	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	10,000	3,000
Västerbergslagens Energi AB	556565-6856	Ludvika	14,674	51	15	15
Denmark						
Vattenfall A/S	213 11 332	Copenhagen	10,040 000	100	515	1,148
Vattenfall Energy Trading A/S	310 811 81	Copenhagen	500	100	49	49
Vindstød A/S	34045143	Århus	1,333 333	70	37	—
Finland						
Vattenfall Sähkömyynti Oy	1842073-2	Helsinki	85	100	5	5
Germany						
Vattenfall GmbH	(HRB) 124048	Berlin	500,000 000	100	51,366	64,066
Vattenfall Management Services GmbH	(HRB) 164088	Berlin	25,000	100	—	—
Poland						
Vattenfall IT Services Poland Sp.z.o.o	0000402391	Gliwice	58,000	100	12	12
Vattenfall Energy Trading Sp.z.o.o	0000233066	Warsaw	80,000	100	9	9
Netherlands						
N.V. Nuon Energy	33292246	Amsterdam	136,794 964	100	44,138	44,138
Other countries						
Aegir Wave Power Ltd, Skottland (Liquidated 2016)	SC367232	Edinburgh	0	0	—	9
Vattenfall Reinsurance S.A., Luxemburg	(B) 49528	Luxembourg	13,000	100	150	111
Total					**145,571**	**151,842**

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

[2] The shares in Vattenfall Eldistribution AB were in 2015 revalued from SEK 11 million to SEK 38 billion in order to better reflect the value of the shares.

cont. Note 20 – Shares and participations owned by the Parent Company Vattenfall AB and other Group companies

Large 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 % 2016
Sweden		
Vattenfall Indalsälven AB	Bispgården	74
Denmark		
Vattenfall Vindkraft A/S	Esbjerg	100
Vattenfall Vindkraft Nørrekær Enge A/S	Esbjerg	100
Germany		
DanTysk Offshore Wind GmbH & Co. KG	Hamburg	51
Fernheizwerk Neukölln AG	Berlin	81
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	Hamburg	67
MVR Müllverwertung Rugenberger Damm GmbH & Co. KG	Hamburg	55
Nuon Epe Gasspeicher GmbH	Heinsberg	100
Sandbank Offshore Wind GmbH	Hamburg	51
Stromnetz Berlin GmbH	Berlin	100
Thermische Abfallbehandlung Lauta GmbH & Co. oHG	Berlin	75
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	Rüdersdorf	100
Vattenfall Europe Nuclear Energy GmbH	Hamburg	100
Vattenfall Europe Sales GmbH	Hamburg	100
Vattenfall Europe Windkraft GmbH	Hamburg	100
Vattenfall Europe Wärme AG	Berlin	100
Vattenfall Heizkraftwerk Moorburg GmbH	Hamburg	100
Vattenfall Wasserkraft GmbH	Berlin	100
Vattenfall Wärme Hamburg GmbH	Hamburg	75

	Registered office	Participation in % 2016
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
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	100
Aberdeen Offshore Wind Farm Ltd	Aberdeen	100

cont. Note 20 – Shares and participations owned by the Parent Company Vattenfall AB and other Group companies

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 2016 amounted to 24.0 TWh (21.1), and the average availability for Forsmark was 84.0% (76.1%).

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 2016 amounted to 22.9 TWh (21.1), and the average availability for Ringhals was 68.2% (64.4%).

Vattenfall Wärme Hamburg

Vattenfall owns 74.9% of the shares in Vattenfall Wärme Hamburg, based in Hamburg, Germany. The other part-owner, the City of Hamburg, has a veto right in decisions that require a 75.0% majority. The veto right does not limit Vattenfall's control over the company's continuing operations according to IFRS 10 – "Consolidated Financial Statements".

Since there is a profit-and-loss transfer agreement in place between the company and Vattenfall GmbH, the City of Hamburg does not have a profit participation in the annual result, but receives an annual guaranteed fixed dividend. If Vattenfall GmbH decides to terminate the profit-and-loss transfer agreement, the City of Hamburg has the right to sell its shares back to Vattenfall. In addition, the City of Hamburg has a right to purchase Vattenfall's 74.9% shareholding with effect in 2019.

Following is condensed financial information for Forsmarks Kraftgrupp, Ringhals, and Vattenfall Wärme Hamburg:

	2016			2015		
	Forsmarks Kraftgrupp	**Ringhals**	**Vattenfall Wärme Hamburg**	**Forsmarks Kraftgrupp**	**Ringhals**	**Vattenfall Wärme Hamburg**
Income statements in summary						
Net sales	7,258	8,249	2,987	6,495	8,192	2,905
Profit for the year	606	213	-266	998	-11,936	104
– of which allocated to non-controlling interests	206	62	—	339	-3,528	—
Balance sheets in summary						
Non-current assets	49,615	36,581	4,699	45,910	42,988	3,823
Current assets	5,073	4,292	2,319	4,574	3,706	3,014
Total assets	**54,688**	**40,873**	**7,018**	**50,484**	**46,694**	**6,837**
Equity	10,098	-748	2,492	9,671	-682	2,766
Liabilities	44,590	41,621	4,526	40,813	47,376	4,071
Total equity and liabilities	**54,688**	**40,873**	**7,018**	**50,484**	**46,694**	**6,837**
Statement of cash flows in summary						
Cash flow from operating activities	1,108	5,523	212	2,035	9,412	668
Cash flow from investing activities	-1,275	-956	-266	-1,725	-2,812	-353
Cash flow from financing activities	138	-4,574	-797	-501	-6,893	—
Cash flow for the year	-29	-7	-851	-191	-293	315

NOTE 21 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 % 2016	Carrying amount Group 2016	Carrying amount Group 2015	Carrying amount Parent Company 2016	Carrying amount Parent Company 2015
Associated companies and joint ventures owned by the Parent Company Vattenfall AB							
Norway							
NorthConnect KS	996625001	Kristiansand	33	11	10	11	19
NorthConnect AS	995878550	Kristiansand	30	4	2	2	3
Associated companies and joint ventures owned by other Group companies than the Parent Company Vattenfall AB							
Sweden							
Taggen Vindpark Elnät AB	556701-3981	Gothenburg	50	24	—	—	—
V2 Plug-In Hybrid Vehicle Partnership HB	969741-9175	Gothenburg	50	487	629	—	—
UK							
East Anglia Offshore Wind Ltd	06990367	Hexham	50	53	—	—	—
Germany							
DOTI Deutsche Offshore-Testfeld- und Infrastruktur-GmbH & Co. KG	HRA 200395	Oldenburg	26	211	219	—	—
GASAG Berliner Gaswerke AG	HRB 44343	Berlin	32	3,514	3,231	—	—
Kernkraftwerk Brokdorf GmbH & Co. oHG	HRA 99143	Hamburg	20	—	1,721	—	—
Kernkraftwerk Stade GmbH & Co. oHG	HRA 99146	Hamburg	33	—	598	—	—
Netherlands							
B.V. Nederlands Elektriciteit Administratiekantoor	09018339	Arnhem	23	73	14	—	—
C.V. De Horn	34227063	Amsterdam	0	—	2	—	—
C.V. Groettocht	37085868	Amsterdam	50	6	7	—	—
C.V. Oudelandertocht	37085867	Amsterdam	50	10	11	—	—
C.V. Waardtocht	37085866	Amsterdam	50	6	4	—	—
C.V. Waterkaaptocht	37085865	Amsterdam	50	9	11	—	—
C.V. Windpoort	34122462	Heemskerk	40	5	9	—	—
NoordzeeWind C.V.	34195602	Ijmuiden	50	249	364	—	—
V.O.F. Windpark Oom Kees	09210903	Amsterdam	13	1	2	—	—
Westpoort Warmte B.V.	34121626	Amsterdam	50	54	29	—	—
Windpark Hoofdplaatpolder B.V.	22053732	Sluis	70	117	134	—	—
V.O.F. Noordpier Wind	51173441	Heemskerk	50	5	5	—	—
Total				4,839	7,002	13	22

cont. Note 21 – Participations in associated companies and joint arrangements

Financial information pertaining to associated companies of material significance for Vattenfall

	GASAG Berliner Gaswerke AG[1]		Kernkraftwerk Brokdorf GmbH & Co. oHG[1]	
	2016	**2015**	**2016**	**2015**
Net sales	11,032	9,846	3,463	3,657
Profit or loss after tax for continuing operations	452	428	4,209	-2,068
Profit or loss after tax for discontinued operations	—	—	—	—
Other comprehensive income	442	-121	—	—
Total comprehensive income	991	374	4,209	-2,068
Non-current assets	17,052	16,762	2,697	5,351
Current assets	2,733	2,876	31,477	29,316
Non-current liabilities	9,584	9,502	28,813	22,050
Current liabilities	2,966	3,667	695	2,741
Paid dividend to Vattenfall GmbH	107	84	—	—
Contingent liabilities	151	234	—	—

[1] The figures in the table pertain to 100% of the values in the respective companies.

GASAG Berliner Gaswerke AG is an energy service provider based in Berlin, Germany. The business activities of the GASAG Group involve the transportation, distribution and sale of natural gas, heat, electricity and water, the operation of storage facilities and other gas-related activities. Vattenfall owns 31.58% of the shares in GASAG.

Kernkraftwerk Brokdorf GmbH & Co. oHG is based in Brokdorf near Hamburg, Germany. The purpose of the company is to operate a nuclear power plant. Vattenfall owns 20.0% of the shares in Brokdorf.

Information pertaining to joint arrangements of material significance for Vattenfall

Vattenfall owns 50% of the shares in the German nuclear power company Kernkraftwerk Krümmel GmbH & Co. oHG, which is classified as a joint operation. With this method of accounting Vattenfall recognises its share of Kernkraftwerk Krümmel GmbH & Co. oHG's assets and liabilities as well revenues and expenses. For more information about accounting treatment of joint operations, see Note 3 to the Consolidated accounts, Accounting policies.

NOTE 22 Share in the Swedish Nuclear Waste Fund

	2016	**2015**
Balance brought forward	34,172	31,984
Payments	2,021	1,936
Disbursements	-860	-916
Returns	866	1,168
Balance carried forward	**36,199**	**34,172**

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 Sweden AB, fund assets for Ringhals AB shall be managed by Vattenfall AB. On 31 December 2016, the fair value of the Vattenfall Group's share in the Swedish Nuclear Waste Fund was SEK 38,866 million (35,272).

As stated in Note 35 to the Consolidated accounts, Other interest-bearing provisions, provisions for future expenses for decommissioning within Swedish nuclear power operations amount to SEK 47,719 million (41,553). Contingent liabilities attributable to the Swedish Nuclear Waste Fund are described in Note 44 to the Consolidated accounts, Contingent liabilities.

NOTE 23 Derivative assets and derivative liabilities

Derivative assets

	Non-current portion, maturity 1-5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Financial contracts	1,960	1,905	4,762	8,083	**6,722**	**9,988**	1,044	1,326	**7,766**	**11,314**
Commodity and commodity-related contracts	7,260	10,178	54	54	**7,314**	**10,232**	9,612	12,741	**16,926**	**22,973**
Total	**9,220**	**12,083**	**4,816**	**8,137**	**14,036**	**20,220**	**10,656**	**14,067**	**24,692**	**34,287**

Derivative liabilities

	Non-current portion, maturity 1-5 years		Non-current portion, maturity >5 years		Total non-current portion		Current portion		Total	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Financial contracts	1,776	1,999	3,359	5,309	**5,135**	**7,308**	1,247	1,229	**6,382**	**8,537**
Commodity and commodity-related contracts	6,577	3,271	752	—	**7,329**	**3,271**	10,305	6,794	**17,634**	**10,065**
Total	**8,353**	**5,270**	**4,111**	**5,309**	**12,464**	**10,579**	**11,552**	**8,023**	**24,016**	**18,602**

NOTE 24 Other non-current receivables

	Receivables from associated companies		Other receivables		Total	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Balance brought forward	27	27	9,457	8,380	**9,484**	**8,407**
New receivables	—	—	-71	519	**-71**	**519**
Payments received	-24	—	-12	-30	**-36**	**-30**
Divested companies	—	—	-53	—	**-53**	**—**
Reclassifications	—	—	-5,592	643	**-5,592**	**643**
Translation differences	—	—	56	-55	**56**	**-55**
Balance carried forward	**3**	**27**	**3,785**	**9,457**	**3,788**	**9,484**
Breakdown of non-current receivables						
Non-current interest-bearing receivables	3	27	1,126	1,148	**1,129**	**1,175**
Non-current noninterest-bearing receivables	—	—	2,659	8,309	**2,659**	**8,309**
Total	**3**	**27**	**3,785**	**9,457**	**3,788**	**9,484**

NOTE 25 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

	2016	2015
Inventories held for own use		
Nuclear fuel	6,939	7,226
Materials and spare parts	2,708	3,816
Fossil fuel	1,233	1,397
Other	348	939
Total	**11,228**	**13,378**
Inventories held for trading		
Fossil fuel	2,599	2,017
CO_2 emission allowances/Certificates	694	1,118
Biomass	45	79
Total	**3,338**	**3,214**
Total inventories	**14,566**	**16,592**

Inventories recognised as an expense in 2016 amount to SEK 50,816 million (62,468). Impairment losses for inventory for own use amounted to SEK 3 million (1,629) during the year. Of impairment losses recognised in 2015, SEK 1,584 million pertain to inventories in Ringhals 1 and 2. See Note 11 to the Consolidated accounts, Impairment loss and reversed impairment losses. Reversed impairment amounted to SEK 11 million (103).

NOTE 26 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	
	2016	2015	2016	2015	2016	2015
Balance brought forward	812	4,717	279	168	1,091	4,885
Purchases	11,596	6,310	380	583	11,976	6,893
Received free of charge	—	—	306	100	306	100
Sold	-6,542	-5,875	-619	-218	-7,161	-6,093
Redeemed	-5,880	-4,301	-5	-328	-5,885	-4,629
Disposals	—	—	-37	-26	-37	-26
Translation differences	24	-39	1	—	25	-39
Balance carried forward	**10**	**812**	**305**	**279**	**315**	**1,091**

NOTE 27 Trade receivables and other receivables

Accounting policy
Vattenfall classifies trade receivables as doubtful when – after a missed or significantly late payment and individual assessment of the debtor's financial conditions – a need to recognise impairment can be considered to exist. Impairment is determined on the basis of historical experience of customer losses for similar receivables. Impaired trade receivables are reported at the present value of anticipated future cash flows. When determining any need to recognise impairment, the existence of any credit insurance and other forms of security is also taken into account.

Financial information

	2016	2015
Accounts receivable - trade	17,242	18,841
Receivables from associated companies	7	11
Other receivables	8,759	7,341
Total	26,008	26,193

Age analysis
The collection period is normally between 10 and 30 days.

	2016			2015		
	Receivables, gross	Impaired receivables	Receivables, net	Receivables, gross	Impaired receivables	Receivables, net
Accounts receivable – trade						
Not due	15,218	33	15,185	16,126	17	16,109
Past due 1–30 days	1,059	13	1,046	1,107	11	1,096
Past due 31–90 days	465	15	450	323	18	305
Past due >90 days	1,537	976	561	2,447	1,116	1,331
Total	18,279	1,037	17,242	20,003	1,162	18,841
Receivables from associated companies						
Not due	7	—	7	9	—	9
Past due 1–30 days	—	—	—	1	—	1
Past due >90 days	2	2	—	2	1	1
Total	9	2	7	12	1	11
Other receivables						
Not due	7,729	—	7,729	6,203	9	6,194
Past due 1–30 days	721	—	721	18	—	18
Past due 31–90 days	3	—	3	3	—	3
Past due >90 days	399	93	306	1,223	97	1,126
Total	8,852	93	8,759	7,447	106	7,341

NOTE 28 Advance payments paid

	2016	2015
Margin calls paid, energy trading	893	3,267
Other advance payments	418	340
Total	1,311	3,607

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 30 to the Consolidated accounts, Short-term investments) and are thereby reported in the statement of cash flows as cash flows from financing activities.

NOTE 29 Prepaid expenses and accrued income

	2016	2015
Prepaid expenses and accrued income, electricity	3,562	2,862
Prepaid nuclear power-related tax	834	832
Prepaid insurance premiums	21	60
Prepaid expenses, other	868	636
Accrued income, other	1,178	1,546
Total	6,463	5,936

NOTE 30 Short-term investments

	2016	2015
Interest-bearing investments	20,756	29,226
Margin calls paid, financing activities	2,541	2,679
Total	23,297	31,905

NOTE 31 Cash and cash equivalents

	2016	2015
Cash and bank balances	9,236	10,822
Cash equivalents	10,759	1,529
Total	19,995	12,351

NOTE 32 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 2016 refers to waste-to-energy power plant assets in Germany. Assets held for sale as per 31 December 2015 refers to combined heat and power assets in the Netherlands and Denmark, electricity grid in Germany and industry parks in the Netherlands, which have all been sold in 2016.

	2016	2015
Property, plant and equipment	652	1,050
Other non-current assets	—	593
Trade receivables and other receivables	16	32
Cash and cash equivalents	—	2,263
Other current assets	26	42
Total assets	694	3,980
Other interest-bearing provisions	146	2,812
Other non-current liabilities	42	—
Deferred tax liabilities	5	3
Trade payables and other liabilities	161	327
Total liabilities	354	3,142

NOTE 33 Interest-bearing liabilities and related financial derivatives

Interest-bearing liabilities include Hybrid Capital and other interest-bearing liabilities – mainly bond issues and liabilities pertaining to acquisitions of Group companies.

In 2015 Vattenfall issued hybrid bonds on two occasions. In March 2015, two hybrid bonds, each worth SEK 3 billion, were issued, as well as a EUR 1 billion bond (total amount approximately SEK 15 billion). In November 2015, Vattenfall issued an additional hybrid bond of USD 400 million (approximately SEK 3.5 billion). The 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 SEK and EUR bonds have set terms of 62 years and the USD bond 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 after seven years for the two SEK-denominated bonds, after eight years for the USD-denominated bond, and after twelve years for the EUR-denominated bond.

Hybrid Capital is reported as follows:

	2016	2015
Balance brought forward	18,546	9,385
Redemption of Hybrid Capital	—	-9,172
Issue of Hybrid Capital	—	18,636
Effects from hedge accounting	6	-20
Discount allocation	—	6
Translation differences	612	-289
Balance carried forward	**19,164**	**18,546**

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	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Bond issues	26,031	16,119	23,499	35,035	**49,530**	**51,154**	—	11,181	**49,530**	**62,335**
Commercial paper	—	—	—	—	**—**	**—**	3,602	3,455	**3,602**	**3,455**
Liabilities to credit institutions	2,431	2,832	—	—	**2,431**	**2,832**	244	276	**2,675**	**3,108**
Liabilities pertaining to acquisitions of subsidiaries	51	—	—	—	**51**	**—**	—	—	**51**	**—**
Liabilities to owners of non-controlling interests	150	150	9,721	12,195	**9,871**	**12,345**	238	696	**10,109**	**13,041**
Liabilities to associated companies	—	—	—	—	**—**	**—**	2,798	2,751	**2,798**	**2,751**
Other liabilities	957	1,092	654	756	**1,611**	**1,848**	7,127[1]	5,501[1]	**8,738**	**7,349**
Total interest-bearing liabilities excl. Hybrid Capital	**29,620**	**20,193**	**33,874**	**47,986**	**63,494**	**68,179**	**14,009**	**23,860**	**77,503**	**92,039**
Hybrid Capital	—	—	19,164	18,546	**19,164**	**18,546**	—	—	**19,164**	**18,546**
Total interest-bearing liabilities	**29,620**	**20,193**	**53,038**	**66,532**	**82,658**	**86,725**	**14,009**	**23,860**	**96,667**	**110,585**
Derivatives (swaps) attributable to the above interest-bearing liabilities	-214	292	-1,404	-2,773	**-1,618**	**-2,481**	-25	-209	**-1,643**	**-2,690**

[1] Of which, margin calls within financing activities SEK 3,961 million (5,307).

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	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Interest-bearing liabilities	40,690	32,573	66,827	85,575	**107,517**	**118,148**	17,498	28,086	**125,015**	**146,234**
Derivatives (swaps)	-1,275	-2,315	-3,268	-7,521	**-4,543**	**-9,836**	-375	-794	**-4,918**	**-10,630**
Trade payables and other financial liabilities	1,925	1,966	4,515	4,307	**6,440**	**6,273**	25,330	23,958	**31,770**	**30,231**
Total	**41,340**	**32,224**	**68,074**	**82,361**	**109,414**	**114,585**	**42,453**	**51,250**	**151,867**	**165,835**

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

Type	Issued	Currency	Nominal amount	Coupon, %	Maturity
Euro Medium Term Note	2003	EUR	499	5.000	2018
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	1,000	6.875	2039

During 2016 some bonds have been bought back thus reducing the nominal amounts of outstanding bonds.

NOTE 34 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 corresponds 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. When benefits in a plan are improved, the proportion of the increased benefit attributable to the employees' past service cost is reported as an expense in the income statement, as well as gains and losses arising on settlement of a pension liability.

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. When the calculation leads to an asset for the Group, the reported value of the asset is limited to the present value of future repayments from the plan or reduced future payments to the plan.

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, the expected return on plan assets, future salary increases, inflation and demographic conditions. Every change in these assumptions affects the calculated value of pension obligations.

For pension provisions in Sweden, the discount rate 2016 has been reduced to 2.75% from 3.25% in the preceding year. 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 2016 has been reduced to 1.75% from 2.25% in the preceding year.

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 0.30371%, while Vattenfall's share of the total number of actively insured in Alecta is 1.23207%. Alecta's surplus can be distributed among the policyholders and/or the insured. At the end of 2016, Alecta's surplus in the form of its so-called collective funding amounted to 149% (153%). 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 in line with market terms and conditions. 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. One 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. For employees who began their employment before 1 January 1984, there is a supplementary agree¬ment providing employees working until retirement age with a pension equal to up to 80% of the salary on which the pension is based. 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. Pensionskasse der Bewag's operations are supervised by a regulatory authority. The assets of Pensionskasse are investment funds that are not listed on the stock exchange. The fair value is determined by the repurchase price.

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.

cont. Note 34 – Pension provisions

Defined benefit pension plans

	2016				
		Germany			
	Sweden	**Plan Berlin**	**Plan Hamburg**	**Other countries**	**Total**
Present value of unfunded obligations	11,085	475	21,451	1	**33,012**
Present value of fully or partly funded obligations	—	16,520	133	—	**16,653**
Present value of obligations	**11,085**	**16,995**	**21,584**	**1**	**49,665**
Fair value of plan assets	—	8,898	123	—	**9,021**
Net defined benefit liability	**11,085**	**8,097**	**21,461**	**1**	**40,644**

	2015				
		Germany			
	Sweden	**Plan Berlin**	**Plan Hamburg**	**Other countries**	**Total**
Present value of unfunded obligations	10,355	458	20,764	1	**31,578**
Present value of fully or partly funded obligations	—	15,977	323	—	**16,300**
Present value of obligations	**10,355**	**16,435**	**21,087**	**1**	**47,878**
Fair value of plan assets	—	8,694	265	—	**8,959**
Net defined benefit liability	**10,355**	**7,741**	**20,822**	**1**	**38,919**

Changes in obligations

	2016	**2015**
Balance brought forward	47,878	54,873
Benefits paid by the plan	-2,361	-2,284
Service cost	653	763
Contributions by plan participants	5	5
Actuarial gains (-) or losses (+) due to changes in financial assumptions	3,525	-2,899
Actuarial gains (-) or losses (+) due to changes in demographic assumptions	—	-1
Actuarial gains (-) or losses (+) due to plan experience	-1,632	-148
Current interest expense	1,166	1,124
Divested companies	-1,046	-109
Liabilities associated with assets held for sale	—	-2,587
Translation differences	1,477	-859
Balance carried forward	**49,665**	**47,878**

Changes in plan assets

	2016	**2015**
Balance brought forward	8,959	9,575
Benefits paid by the plan	-459	-459
Contributions by employer	22	28
Contributions by plan participants	5	5
Interest income	199	186
Difference between calculated and actual return	87	-172
Divested companies	-144	-4
Translation differences	352	-200
Balance carried forward	**9,021**	**8,959**

Plan assets consist of the following

	2016	**2015**
Shares and participations	3,459	3,017
Interest-bearing instruments	4,146	4,530
Property	1,130	902
Other	286	510
Total	**9,021**	**8,959**

Payments for employer contributions to defined benefit plans during 2017 are estimated at SEK 20 million.

cont. Note 34 – Pension provisions

Pension costs

Continuing operations	2016	2015[1]
Defined benefit plans:		
Current service cost	626	768
Interest expenses	1,153	1,107
Interest income	-199	-185
Past service cost	18	-19
Total cost for defined benefit plans	**1,598**	**1,671**
Cost for defined contribution plans	793	753
Total pension costs	**2,391**	**2,424**

Pension costs are reported on the following lines in the income statement:

Continuing operations	2016	2015[1]
Cost of products sold	1,303	1,403
Selling expenses	61	40
Administrative expenses	73	58
Financial expenses	954	923
Total pension costs	**2,391**	**2,424**

[1] The value for 2015 has been recalculated compared with information previously 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.

In calculating pension obligations, the following actuarial assumptions have been made (%):	Sweden		Germany	
	2016	2015	2016	2015
Discount rate	2.75	3.25	1.75	2.25
Future annual salary increases	3.00	3.00	2.50	2.50
Future annual pension increases	1.50	1.50	0.0-2.0	0.0–2.0

Sensitivity to key actuarial assumptions	**Sweden**				**Germany**			
	2016		2015		2016		2015	
		%		%		%		%
Impact on the defined benefit obligation at 31 December of a:								
Increase by 50 basis points in the discount rate	-918	-8.3	-863	-8.3	-2,582	-6.7	-2,682	-6.7
Decrease by 50 basis points in the discount rate	996	9.0	936	9.0	2,901	7.5	3,106	7.8
Increase by 50 basis points in the annual pension increases	996	9.0	936	9.0	2,234	5.8	2,303	5.8
Decrease by 50 basis points in the annual pension increases	-918	-8.3	-863	-8.3	-2,044	-5.3	-2,078	-5.2

At 31 December 2016 the weighted duration of pension obligations was 14.6 (15.0) years for Germany and 17.2 (17.2) years for Sweden.

NOTE 35 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 an 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 current 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 3.75% (4.0%) compared with the preceding year. The estimated duration of the remaining nuclear power provisions in Germany has been shortened significantly compared with the preceding year, which has entailed a decrease in the discount rate to 1.75% (4.0%) 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 mining, 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 3.75% (3.75%), Germany 1.25%–3.5% (1.5%–4.0%), Netherlands 1.25% (1.5%), Denmark 3.5% (4.0%) and the UK 3.75% (4.0%). Discount rates for mining operations apply only as per 31 December 2015, as these operations were divested in 2016.

cont. Note 35 – Other interest-bearing provisions

Financial information	Non-current portion		Current portion		Total	
	2016	2015	2016	2015	2016	2015
Provisions for future expenses of nuclear power operations	63,797	68,540	17,091	2,464	**80,888**	**71,004**
Provisions for future expenses of mining, gas and wind operations and other environmental measures/undertakings	4,197	17,516	96	1,594	**4,293**	**19,110**
Personnel-related provisions for non-pension purposes	5,008	1,646	745	1,701	**5,753**	**3,347**
Provisions for tax and legal disputes	2,200	1,794	144	144	**2,344**	**1,938**
Other provisions	4,139	3,546	283	399	**4,422**	**3,945**
Total	**79,341**	**93,042**	**18,359**	**6,302**	**97,700**	**99,344**

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. Further, this 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 22 to the Consolidated accounts, Share in the Swedish Nuclear Waste Fund, Vattenfall's share in the Swedish Nuclear Waste Fund amounts to SEK 36,199 million (34,172).

	Sweden	Germany	Total
Balance brought forward	41,553	29,451	**71,004**
Provisions for the period	2,153	4,080	**6,233**
Interest effects	1,605	1,211	**2,816**
Revaluations versus non-current assets	3,474	—	**3,474**
Reversed provisions	—	-898	**-898**
Provisions used	-1,066	-1,867	**-2,933**
Translation differences	—	1,192	**1,192**
Balance carried forward	**47,719**[1]	**33,169**[2]	**80,888**

[1] Of which, approximately 28% (26%) pertains to the dismantling of nuclear power plants and approximately 72% (74%) to the handling of spent radioactive fuel.

[2] Of which, approximately 43% (50%) pertains to the dismantling of nuclear power plants and approximately 57% (50%) to the handling of spent radioactive fuel.

Provisions for future expenses for mining, gas and wind operations and other environmental measures/undertakings
Provisions are made to restore sites and for other undertakings associated with the Group's permits to conduct lignite mining in Germany (the lignite operations were divested in 2016, and the closing balance as per 31 December 2016 is thus SEK 0 million), and in the Netherlands for the dismantling and removal of assets and restoration of sites where the Group conducts gas 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.

Balance brought forward	19,110
Provisions for the period	774
Interest effects	563
Revaluations versus non-current assets	262
Provisions used	-414
Provisions reversed	-593
Divested companies	-15,849
Translation differences	440
Balance carried forward	**4,293**

Personnel-related provisions for non-pension purposes
Provisions are made for future costs pertaining to redundancy in the form of severance pay and other costs for giving notice to personnel.

Balance brought forward	3,347
Provisions for the period	1,461
Interest effects	82
Provisions used	-1,387
Provisions reversed	-117
Divested companies	-1,090
Release collateralized cash by issuing bank guarantees	3,315
Translation differences	142
Balance carried forward	**5,753**

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. These include provisions related to ongoing legal actions concerning encroachment regarding cable laying on land in eastern Germany.

Balance brought forward	1,938
Provisions for the period	33
Interest effects	184
Revaluations	165
Provisions used	-23
Provisions reversed	-17
Divested companies	-10
Translation differences	74
Balance carried forward	**2,344**

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

Balance brought forward	3,945
Provisions for the period	1,025
Interest effects	49
Revaluations	121
Provisions used	-195
Provisions reversed	-203
Divested companies	-393
Translation differences	73
Balance carried forward	**4,422**

cont. Note 35 – Other interest-bearing provisions

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	4,245	678	2,752	1,702	3,079	12,456
6-10 years	7,686	1,052	978	498	—	10,214
11-20 years	4,018	2,454	1,161	—	323	7,956
Beyond 20 years	129	13	117	—	737	996
Total	16,078	4,197	5,008	2,200	4,139	31,622

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 36 Other noninterest-bearing liabilities (non-current)

Of total liabilities of SEK 6,440 million (6,273), SEK 4,515 million (4,306) falls due after more than five years. Of the total liabilities, SEK 5,108 million (4,789) pertains to deferred income and SEK 1,332 million (1,484) to other liabilities.

NOTE 37 Trade payables and other liabilities

	2016	2015
Accounts payable – trade	15,420	15,587
Liabilities to associated companies	355	-321
Other liabilities	9,555	8,692
Total	25,330	23,958

NOTE 38 Advance payments received

	2016	2015
Margin calls received, energy trading	2,164	2,216
Other advance payments	—	77
Total	2,164	2,293

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 33 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 39 Accrued expenses and deferred income

	2016	2015
Accrued personnel-related costs	2,286	2,695
Accrued expenses, CO_2 emission allowances	1,383	6,373
Accrued expenses, connection fees	83	70
Accrued nuclear power-related fees and taxes	1,131	1,122
Accrued interest expense	2,368	2,698
Other accrued expenses	4,967	4,052
Deferred income and accrued expenses, electricity	2,917	2,525
Other deferred income	346	434
Total	15,481	19,969

NOTE 40 Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Accounting policy

For assets and liabilities with a remaining maturity less than three months (that is cash and bank balances, trade receivables and other receivables and trade payables and other payables), fair value is considered to be equal to the carrying amount. For Other shares and participations carried at cost, in the absence of fair value, cost is considered to be equal to the carrying amount. The fair value hierarchy is described in Note 3 to the Consolidated accounts, Accounting policies.

Financial assets

Financial assets are classified in various categories depending on the purpose of the acquisition of the financial asset. The classification is determined at the original point of acquisition. Settlement day accounting is applied for spot purchases and spot sales of financial assets.

Financial assets at fair value through profit or loss

This category includes assets classified as held for trading, which means that the intention is for them to be divested in the near term. Derivative instruments not held for hedging purposes are always regarded as held for trading. Fair value of currency forward contracts is calculated by discounting the difference between the contracted forward rate and the forward rate that can be contracted on the balance sheet date for the remaining contract period. Discounting is done at a risk-free interest rate based on government bonds. Fair value of interest rate swaps is based on a discounting of calculated future cash flows in accordance with the contract's terms and due dates, based on the market rate of interest. Fair value of options is based on quoted prices, where such are available. The value of unquoted options is calculated using the Black-Scholes model, based on underlying market data.

Fair value of commodity contracts is calculated by discounting the difference between the contracted forward price and the contracted forward price that can be obtained on the balance sheet date for the remaining contract period.

For Vattenfall, the category "Financial assets at fair value through profit or loss" also includes short-term liquid investments with terms of less than three months, since Vattenfall follows up and measures these based on fair values. The category also includes short-term investments with original maturities in excess of three months. For listed securities, fair value is based on the quoted buying price on the balance sheet date. For other short-term investments, fair value is calculated by discounting estimated future cash flows in accordance with the contract's terms and maturity dates, and based on the market rate of interest for similar instruments on the balance sheet date. The assets are re-measured on a continuous basis to fair value, with changes in value presented in profit or loss.

cont. Note 40 – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Loans and receivables
Trade receivables are reported at the amount expected to be paid, that is, less doubtful debts. Impairment losses on trade receivables are reported under operating expenses. Trade receivables have a short anticipated term and are therefore valued at a nominal amount without discounting. Fair value of loans is calculated for disclosure purposes by discounting future cash flows using the current interest rate. For trade receivables, the reported value is considered to reflect fair value.

Available-for-sale financial assets
Financial assets that are available for sale are measured at fair value, with changes in value recognised in Other comprehensive income. On the date that the assets are derecognised from the balance sheet, any previously recognised accumulated gain or loss in Other comprehensive income is transferred to the income statement. Holdings in listed companies are measured based on the share price on the balance sheet date. Shares and participations for which there are no balance sheet date quotations and for which a fair value cannot be established are valued at cost, after taking accumulated impairment losses into account.

Financial liabilities
Financial liabilities have been classified in various categories depending on the purpose of the acquisition of the financial liability. The classification is determined at the date of original acquisition.

Financial liabilities at fair value through profit or loss
Derivative instruments not held for hedging purposes are always classified in this category. These financial liabilities are measured at fair value with changes in value recognised in profit or loss. For a description of how fair value is measured, see above under the heading "Financial assets at fair value through 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.

Fair value of other financial liabilities is calculated for disclosure purposes by discounting future cash flows using the current interest rate for the remaining term, with the exception of trade payables, where the reported value is considered to reflect fair value. Liabilities included in a hedge relationship are reported in accordance with the principles described below.

Derivative instruments
Vattenfall uses various types of derivative instruments (forwards, futures and swaps) to hedge various financial risks, primarily interest rate risks, currency risks and commodity price risks.

Derivative instruments are reported at fair value on the balance sheet date. The reporting of changes in value depends on whether the derivative instrument is classified as a hedge or not. In a situation where hedging is not applied, the change in value is recognised in profit or loss in the period in which it arises. Based on the purpose of the contract, changes in value are reported either under operating profit or as financial income/expense. Effects of hedge accounting are described below.

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.

If the conditions for hedging are no longer met, the accumulated changes in value that were reported in Other comprehensive income are transferred to the income statement/balance sheet in the later period when the hedged item affects the income statement/balance sheet. Changes in value from the day on which the conditions for hedging ceased to be met are recognised directly in profit or loss. If the hedged transaction is no longer expected to occur, the hedges accumulated changes in value are immediately transferred from Other comprehensive income to the Income statement.

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.

cont. Note 40 – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Financial information
Risks arising from financial instruments are described under the heading Risks and risk management on pages 57–63 in this Annual and Sustainability Report.

Financial instruments by category	2016		2015	
	Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets at fair value through profit or loss				
Derivative assets	20,348	20,348	18,435	18,435
Short-term investments	20,756	20,756	29,226	29,226
Cash equivalents	10,759	10,759	1,529	1,529
Total	**51,863**	**51,863**	**49,190**	**49,190**
Derivative assets for hedging purposes for:				
Fair value hedges	1,948	1,948	3,467	3,467
– of which interest rate swaps	1,948	1,948	3,467	3,467
Cash flow hedges	2,396	2,396	12,385	12,385
– of which commodities and commodity-related contracts	1,703	1,703	12,280	12,280
– of which currency-forward contracts and other	693	693	105	105
Total	**4,344**	**4,344**	**15,852**	**15,852**
Loans and receivables				
Share in the Swedish Nuclear Waste Fund	36,199	38,866	34,172	35,272
Other non-current receivables	3,788	3,818	9,484	9,506
Trade receivables and other receivables	23,100	23,100	26,193	26,147
Advance payments paid	893	893	3,267	3,267
Short-term investments	2,541	2,543	2,679	2,679
Cash and bank balances	9,236	9,236	10,822	10,822
Total	**75,757**	**78,456**	**86,617**	**87,693**
Available-for-sale financial assets				
Other shares and participations carried at cost	118	118	273	273
Total	**118**	**118**	**273**	**273**
Financial liabilities at fair value through profit or loss				
Derivative liabilities	20,676	20,676	16,408	16,408
Total	**20,676**	**20,676**	**16,408**	**16,408**
Derivative liabilities for hedging purposes for:				
Fair value hedges	—	—	8	8
– of which interest rate swaps	—	—	8	8
Cash flow hedges	3,340	3,340	2,186	2,186
– of which commodities and commodity-related contracts	3,325	3,325	2,186	2,186
– of which currency-forward contracts and other	15	15	—	—
Total	**3,340**	**3,340**	**2,194**	**2,194**
Other financial liabilities				
Hybrid Capital, non-current interest-bearing liability	19,164	18,317	18,546	16,196
Other non-current interest-bearing liabilities	63,494	72,033	68,179	74,962
Other non-current noninterest-bearing liabilities	6,440	6,440	6,273	6,273
Current interest-bearing liabilities	14,009	14,011	23,860	23,978
Trade payables and other liabilities	17,509	17,509	22,362	22,362
Advance payments received	2,164	2,164	2,216	2,216
Total	**122,780**	**130,474**	**141,436**	**145,987**

cont. Note 40 – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

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 2016

				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	7,767	—	7,767	3,611	3,916	240
Derivatives, commodity contracts	62,596	48,283	14,313	—	2,165	12,148
Total	**70,363**	**48,283**	**22,080**	**3,611**	**6,081**	**12,388**
Derivatives, not subject to offsetting	2,612	—	2,612	—	—	2,612
Total derivative assets			**24,692**			**15,000**

Assets 31 December 2015

				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	11,315	—	11,315	5,751	5,216	348
Derivatives, commodity contracts	77,037	57,446	19,591	—	2,221	17,370
Total	**88,352**	**57,446**	**30,906**	**5,751**	**7,437**	**17,718**
Derivatives, not subject to offsetting	3,381	—	3,381	—	—	3,381
Total derivative assets			**34,287**			**21,099**

Liabilities 31 December 2016

				Related amounts not set off on the balance sheet		
	Gross amounts of recognised financial liabilities	**Gross amounts of recognised financial assets set off on the balance sheet**	**Net amounts of financial liabilities presented on the balance sheet**	**Financial assets, not intended to be settled net[1]**	**Cash collateral pledged**	**Net amount**
Derivatives, financial operations	6,382	—	6,382	3,611	2,531	240
Derivatives, commodity contracts	60,544	48,283	12,261	—	868	11,393
Total	**66,926**	**48,283**	**18,643**	**3,611**	**3,399**	**11,633**
Derivatives, not subject to offsetting	5,373	—	5,373	—	—	5,373
Total derivative liabilities			**24,016**			**17,006**

Liabilities 31 December 2015

				Related amounts not set off on the balance sheet		
	Gross amounts of recognised financial liabilities	**Gross amounts of recognised financial assets set off on the balance sheet**	**Net amounts of financial liabilities presented on the balance sheet**	**Financial assets, not intended to be settled net[1]**	**Cash collateral pledged**	**Net amount**
Derivatives, financial operations	8,537	—	8,537	5,751	2,620	166
Derivatives, commodity contracts	65,434	57,446	7,988	—	3,254	4,734
Total	**73,971**	**57,446**	**16,525**	**5,751**	**5,874**	**4,900**
Derivatives, not subject to offsetting	2,077	—	2,077	—	—	2,077
Total derivative liabilities			**18,602**			**6,977**

[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.

cont. Note 40 – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2016

	Level 1	Level 2	Level 3	Total
Assets				
Derivative assets	—	24,437	255	**24,692**
Short-term investments and cash equivalents	13,935	17,580	—	**31,515**
Total assets	13,935	42,017	255	**56,207**
Liabilities				
Derivative liabilities	—	23,897	119	**24,016**
Total liabilities	**—**	**23,897**	**119**	**24,016**

Financial assets and liabilities that are measured at fair value on the balance sheet at 31 December 2015

	Level 1	Level 2	Level 3	Total
Assets				
Derivative assets	—	33,879	408	**34,287**
Short-term investments and cash equivalents	20,606	10,149	—	**30,755**
Total assets	**20,606**	**44,028**	**408**	**65,042**
Liabilities				
Derivative liabilities	—	17,164	1,438	**18,602**
Total liabilities	**—**	**17,164**	**1,438**	**18,602**

Information about fair value of financial assets and liabilities which are, on the balance sheet at 31 December 2016, measured at amortised cost

	Level 1	Level 2	Total
Assets			
Share in the Swedish Nuclear Waste Fund	38,866	—	**38,866**
Other non-current receivables	—	3,818	**3,818**
Total assets	**38,866**	**3,818**	**42,684**
Liabilities			
Hybrid Capital	—	18,317	**18,317**
Other non-current interest-bearing liabilities	—	72,033	**72,033**
Current interest-bearing liabilities	—	14,011	**14,011**
Total liabilities	**—**	**104,361**	**104,361**

Information about fair value of financial assets and liabilities which are, on the balance sheet at 31 December 2015, measured at amortised cost

	Level 1	Level 2	Total
Assets			
Share in the Swedish Nuclear Waste Fund	35,272	—	**35,272**
Other non-current receivables	—	9,506	**9,506**
Total assets	**35,272**	**9,506**	**44,778**
Liabilities			
Hybrid Capital	—	16,196	**16,196**
Other non-current interest-bearing liabilities	—	74,962	**74,962**
Current interest-bearing liabilities	—	23,978	**23,978**
Total liabilities	**—**	**115,136**	**115,136**

Financial instruments at fair value through profit or loss, changes in Level 3 financial instruments

	Derivative assets		Derivative Liabilities	
	2016	**2015**	**2016**	**2015**
Balance brought forward	408	650	1,438	670
Revaluations recognised in operating profit (EBIT)	-168	-232	-1,361	795
Translation differences	15	-10	42	-27
Balance carried forward	**255**	**408**	**119**	**1,438**
Total revaluations for the period included in Operating profit (EBIT) for assets and liabilities held at 31 December	49	-83	-183	459

cont. Note 40 – Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income

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 2016 of +/-10% would change the fair value of Vattenfall's electricity and fuel derivatives by -/+ SEK 1,195 million (-/+3,125) in other comprehensive income (hedge-accounted derivatives) and +/- SEK 19 million (+/-423) 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, long-term electricity contracts, virtual gas storage contracts, gas swing contracts, and virtual power plants. Presented below are Vattenfall's material Level 3 contracts.

Virtual gas storage contracts:

A virtual gas storage contract is a contract that allows Vattenfall to store gas without owning a gas storage facility. The virtual gas storage contracts include constraints to the maximum storage capacity and the maximum injection and withdrawal per day. The valuation of the contract is based on the storage, injections and withdrawal fees included in the contract, the expected spread between gas prices in the summer and winter which is observable and the optionality value, which is marked to model (Level 3). The valuation methodology is based on a backward estimation of the value of the contracts under different price and operational scenarios and a forward step that selects the optimal exercise. The price scenarios are based on simulating the forward prices until the beginning of their respective delivery periods and the simulation of the daily spot prices during the delivery period. The spot prices are simulated using the forward prices as a starting point. Finally, the spot volatility is calibrated using three years of historical data.

The net value as per 31 December 2016 has been calculated at SEK 189 million (-352) 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 13 million (+/-63).

Gas swing contracts:

A gas swing contract is a contract that provides flexibility on the timing and amount of gas purchases. The contract is based on a price formula with a maximum and minimum annual and daily gas quantity. The valuation of the contract is based on observable price difference between the contract prices and indexes and the optional value, which is marked to model (Level 3). The valuation methodology is based on a backward estimation of the value of the contracts under different price and operational scenarios and a forward step that selects the optimal exercise. The price scenarios are based on simulating the forward prices until the beginning of their respective delivery periods and the simulation of the daily spot prices during the delivery period. The spot prices are simulated using the forward prices as a starting point. Finally, the spot volatility is calibrated using three years of historical data.

The net value as per 31 December 2016 has been calculated at SEK -115 million (-774) 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 8 million (-/+43).

Financial instruments: Effects on income by category

Net gains (+)/losses(-) and interest income and expenses for financial instruments recognised in the income statement:

	2016			2015		
Total Vattenfall	**Net gains/ losses**[1]	**Interest income**	**Interest expenses**	**Net gains/ losses**[1]	**Interest income**	**Interest expenses**
Derivative assets and derivative liabilities	1,758	203	-475	3,940	116	-76
Available-for-sale financial assets	-143	—	—	15	—	—
Loans and receivables	25	1,004	—	-241	1,546	—
Financial liabilities measured at amortised cost	-816	1	-3,017	1,000	—	-3,306
Total	**824**	**1,208**	**-3,492**	**4,714**	**1,662**	**-3,382**

[1] Exchange rate gains and losses are included in net gains/losses.

NOTE 41 Specifications of the cash flow statement

Other, including non-cash items

Total Vattenfall	2016	2015
Undistributed results from participation in associated companies	923	500
Unrealised foreign exchange gains	801	-1,516
Unrealised foreign exchange losses	—	-2
Unrealised changes in values related to derivatives	1,097	-1,110
Changes in fair values for inventories	-990	648
Changes in interest receivables	583	-74
Changes in interest liabilities	-345	-3
Changes in the Swedish Nuclear Waste Fund	-2,027	-2,188
Changes in provisions	6,871	6,378
Other	—	41
Total	**6,913**	**2,674**

Interest paid totalled SEK 3,409 million (3,413) and interest received totalled SEK 979 million (845). Dividends received totalled SEK 220 million (210).

Other investments in non-current assets

Total Vattenfall	2016	2015
Investments in intangible assets: non-current, including advance payments	-487	-469
Investments in property, plant and equipment, including advance payments	-22,995	-28,524
Total	**-23,482**	**-28,993**

Divestments

Total Vattenfall	2016	2015
Divestments of shares and participations	1,298	206
Divestments of property, plant and equipment	3,104	2,608
Total	**4,406**	**2,814**

NOTE 42 Specifications of equity

Share capital

As of 31 December 2016 the registered share capital comprised 131,700,000 shares with a share quota value of SEK 50.

Translation reserve

The translation reserve comprises all exchange rate differences arising from the translation of financial reports from non-Swedish operations that prepare their reports in a currency other than that in which the Group reports. Further, the translation reserve includes exchange rate differences arising from the reassessment of debts raised as hedges for net investments in non-Swedish operations.

Reserve for hedges

The reserve for hedges comprises mostly unrealised changes in values of commodity derivatives used to hedge future sales (cash flow hedges). The reserve for hedges is expected to affect the income statement and cash flow, respectively, in the periods indicated below:

	2016		2015	
	Cash flow	**Income statement**	**Cash flow**	**Income statement**
Within 1 year	-1,004	-403	6,124	13,107
Between 1-5 years	-896	-728	2,331	368
Total	**-1,900**	**-1,131**	**8,455**	**13,475**
Other	-224	—	-329	—
Total	**-2,124**	**-1,131**	**8,126**	**13,475**

Amounts that have reduced the reserve for hedges are included in the following line items in the income statement:

	2016	2015
Net sales	-1,175	6,962
Cost of products sold	-1,630	-1,636
Other operating expenses	39	—
Total	**-2,737**	**5,326**

Amounts that have reduced the reserve for hedges are included in the following line items on the balance sheet:

	2016	2015
Property, plant and equipment	-66	—
Inventories	-5	-3
Total	**-71**	**-3**

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	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
EUR	70,309	100,352	29,903	36,046	40,406	64,306	49,491	61,630
DKK	2,752	807	—	—	2,752	807	1,777	1,065
GBP	14,034	16,916	8,703	13,161	5,332	3,755	5,623	8,498
Other currencies	126	134	—	—	126	134	133	137
Total	**87,221**	**118,209**	**38,606**	**49,207**	**48,616**	**69,002**	**57,024**	**71,330**

NOTE 43 Collateral

	2016	2015
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	1,085	572
Blocked bank funds as security for guarantees issued by bank	1	20
Total	8,381	7,887

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 2016 this security amounted to SEK 893 million (3,267) for energy trading and SEK 2,541 million (2,679) for the financial operations. The amounts are reported as assets on the balance sheet under Advance payments (Note 28 to the Consolidated accounts, Advance payments paid) and under Short-term investments (Note 30 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 2016 amounted to SEK 2,164 million (2,216) for energy trading and SEK 3,961 million (5,307) for the financial operations. The amounts are reported as liabilities on the balance sheet under Advance payments received for the energy trading position (Note 38 to the Consolidated accounts, Advance payments received) and Interest-bearing liabilities (current) for the financial operations (Note 33 to the Consolidated accounts, Interest-bearing liabilities and related financial derivatives).

NOTE 44 Contingent liabilities

As per 31 December 2016 contingent liabilities amounted to SEK 1,067 million (1,653). 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 decreased from SEK 728 million as per 31 December 2015 to SEK 61 million as per 31 December 2016
- Pending legal issues
- Pension commitments PRI
- Various contingent liabilities in relation to Svenska Kraftnät, the Swedish Nuclear Waste Fund, Forsmark, Ringhals and Vattenfall Energy Trading Hamburg

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 2016, such compensation deliveries amounted to 0.7 TWh (0.9), for a value of approximately SEK 212 million (171).

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 (9,110) 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 2016 is as follows:

	Share %	Total liabilities	Of which reported in Vattenfall's consolidated statements
Kernkraftwerk Brunsbüttel GmbH & Co. oHG	66.67	21,088	21,088
Kernkraftwerk Krümmel GmbH & Co. oHG	50.00	27,655	13,828
Kernkraftwerk Stade GmbH & Co. oHG	33.33	8,569	—
Kernkraftwerk Brokdorf GmbH & Co. oHG	20.00	29,508	—

Atomic liability in Sweden is strict and limited to 300 million Special Drawing Rights (SDRs) (rate 12,2295), corresponding to SEK 3,669 million (3,475), 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 2016 Vattenfall reported a provision of SEK 56 million (61) 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. Vattenfall did not receive any complaints from authorities in 2016, nor was it 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 45 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 20 to the Consolidated accounts, Shares and participations owned by the Parent Company Vattenfall AB and other Group companies.

NOTE 46 Number of employees and personnel costs

Number of employees at 31 December, full-time equivalents:

	2016			2015		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**
Sweden	6,519	2,165	**8,684**	6,650	2,209	**8,859**
Denmark	182	50	**232**	264	59	**323**
Germany	5,440	1,558	**6,998**	6,318[1]	1,878[1]	**8,196**[1]
Netherlands	2,715	880	**3,595**	3,052	962	**4,014**
UK	155	61	**216**	121	56	**177**
Other countries	150	60	**210**	138	58	**196**
Total continuing operations	**15,161**	**4,774**	19,935	**16,543**	**5,222**	21,765
Discontinued operations	—	—	—	5,625[1]	1,177[1]	**6,802**[1]
Total	**15,161**	**4,774**	19,935	**22,168**	**6,399**	28,567

Average number of employees during the year, full-time equivalents:

	2016			2015		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**
Sweden	6,571	2,187	**8,758**	6,634	2,229	**8,863**
Denmark	193	49	**242**	310	64	**374**
Germany	5,682	1,702	**7,384**	6,520[1]	2,008[1]	**8,528**[1]
Netherlands	2,921	921	**3,842**	3,159	1,006	**4,165**
UK	144	55	**199**	115	57	**172**
Other countries	143	58	**201**	127	56	**183**
Total continuing operations	**15,654**	**4,972**	20,626	**16,865**	**5,420**	22,285
Discontinued operations	4,226	916	**5,142**	5,683[1]	1,193[1]	**6,876**[1]
Total	**19,880**	**5,888**	25,768	**22,548**	**6,613**	29,161

Personnel costs:

Continuing operations	**2016**	**2015**[1]
Salaries and other remuneration	12,994	13,647
Social security costs[2]	4,827	5,081
Total	**17,821**	**18,728**

[1] The value for 2015 has been recalculated compared with information previously 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] Pension costs are specified in Note 34 to the Consolidated accounts, Pension provisions.

Benefits for board members of Vattenfall AB and senior executives of the Vattenfall Group

	2016			2015		
Amounts in SEK thousands	**Directors' fees and base salary including vacation pay**	**Other remuneration and benefits**	**Pension and severance costs**	**Directors' fees and base salary including vacation pay**	**Other remuneration and benefits**	**Pension and severance costs**
Board of directors						
Lars G. Nordström, Chairman of the Board	655	—	—	645	—	—
Fredrik Arp, board member	338	—	—	325	—	—
Viktoria Bergman, board member	338	—	—	217	—	—
Håkan Erixon, board member	338	—	—	325	—	—
Tomas Kåberger, board member	338	—	—	217	—	—
Jenny Lahrin, board member	—	—	—	—	—	—
Åsa Söderström Jerring, board member	353	—	—	355	—	—
Gunilla Berg, board member until 27 April 2016	113	—	—	355	—	—
Håkan Buskhe, board member until 27 April 2016	93	—	—	295	—	—
Staffan Boman, board member from 27 April 2016	240	—	—	—	—	—
Hilde Tonne, board member from 27 April 2016	230	—	—	—	—	—
Employee representatives	—	—	—	—	—	—
Former board members[1]	—	—	—	128	—	—
Total, board of directors	**3,036**	**—**	**—**	**2,862**	**—**	**—**

cont. Note 46 – Number of employees and personnel costs

Amounts in SEK thousands	2016 Directors' fees and base salary including vacation pay	2016 Other remuneration and benefits	2016 Pension and severance costs	2015 Directors' fees and base salary including vacation pay	2015 Other remuneration and benefits	2015 Pension and severance costs
Executive Group Management[2]						
Magnus Hall, President and CEO	14,672	68	4,288	14,408	169	4,204
Ingrid Bonde, Deputy CEO, Vice President and CFO until 30 November 2016[3]	7,457	—	2,134	7,247	—	2,103
Stefan Dohler, Deputy CEO, Vice President and CFO from 1 December 2016[4]	7,161	78	1,647	6,708	95	1,543
Torbjörn Wahlborg, Vice President, Head of Generation Business Area	7,011	61	2,067	6,830	53	2,037
Tuomo Hatakka, Vice President, Head of Heat Business Area and Head of Mining and Generation	11,778	9	2,599	11,528	32	2,569
Kerstin Ahlfont, Head of Human Resources Staff Function	4,145	18	1,225	3,792	18	1,125
Gunnar Groebler, Head of Wind Business Area	5,275	90	936	3,853	66	576
Anne Gynnerstedt, Head of Legal & CEO Office Staff Function and Secretary of the Board	4,612	55	1,382	4,620	56	1,361
Martijn Hagens, Head of Customers & Solutions Business Area	6,680	200	284	5,605	440	254
Andreas Regnell, Head of Strategic Development Staff Function	4,481	18	1,301	3,319	14	962
Karin Lepasoon, Head of Communication from 1 April 2016[4]	3,199	—	950	—	—	—
Other senior executives[2]						
Eva Halldén, Head of Ringhals, Head of Forsmark until 29 February 2016	481	9	148	2,863	53	888
Björn Linde, Head of Ringhals, Head of Forsmark from 1 Mars 2016[4]	2,040	127	606	—	—	—
Annika Viklund, Head of Distribution Business Area	4,705	24	1,378	3,451	204	1,020
Hartmuth Zeiss, Head of Mining & Generation Business Unit until 30 September 2016	4,197	164	3,159	5,560	208	1,140
Former senior executives[1]	—	—	—	13,872	824	10,881
Total Executive Group Management and senior executives	**87,894**	**921**	**24,104**	**93,656**	**2,232**	**30,663**
Total board of directors, Executive Group Management and other senior executives	**90,930**	**921**	**24,104**	**96,518**	**2,232**	**30,663**

[1] See Vattenfall's 2015 Annual and Sustainability Report, pages 132–133.

[2] For persons who changed positions in 2016, their most recent position is indicated.

[3] Additional remuneration will be paid out in 2017, as her employment ends on 15 February 2017.

[4] Amounts indicated pertain to the full calendar year 2016.

Board of directors

The fees paid to the Chairman of the Board and directors were unchanged between 2008 and 2016. The 2016 Annual General Meeting therefore resolved in favour of increasing these fees by 7.8% and 7.1%, respectively, entailing that directors' fees for the period until the end of the next Annual General Meeting shall amount to SEK 625 thousand for the Chairman and SEK 300 thousand for each of the other directors elected at the Annual General Meeting. In addition, it was resolved that for service on the Remuneration Committee and the Audit 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 64–78.

President and Chief Executive Officer

Magnus Hall received a salary of SEK 14,672 thousand in 2016. The value of other benefits in 2016 amounted to SEK 68 thousand and pertain 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 2016 totalled SEK 4,288 thousand, which corresponds to 30% of his 2016 salary excluding benefits. 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 (9), the sum of salaries and other remuneration for 2016, including the value of company cars and other benefits, was SEK 76,853 thousand. For other persons defined as senior executives by Vattenfall, who are not members of the Executive Group Management – a total of 4 individuals (7) – the sum of salaries and other remuneration for 2016, including the value of company cars and other benefits, was SEK 17,038 thousand.

cont. Note 46 – Number of employees and personnel costs

Retirement benefits
Kerstin Ahlfont, Ingrid Bonde, Stefan Dohler, Gunnar Groebler, Anne Gynnerstedt, Tuomo Hatakka, Andreas Regnell, Torbjörn Wahlborg, Eva Halldén, Björn Linde, Annika Viklund, Karin Lepasoon and Hartmuth Zeiss 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 18 months' salary is payable thereafter. In the event the individual in question accepts new employment or receives income from other business activities, the severance pay shall be reduced by an amount corresponding to the new income or benefit received during the time in question. The severance pay is paid out monthly. All senior executives have severance terms that are in compliance with the government's guidelines.

Incentive programmes
The members of the Executive Group Management and other senior executives do not receive any variable salary component.

Payment from variable remuneration programmes
Vattenfall offers short-term variable performance-based remuneration programmes to certain categories of employees in order to attract, retain and motivate.

Amounts in SEK thousands	**Payment 2016**
Type of programme:	
Profit-sharing	24,048
Short-term incentive programmes	222,633
Long-term incentive programmes	25,157[1]

[1] Based on payments for both 2014 and 2015.

NOTE 47 Gender distribution among senior executives

	Women, %		Men, %	
	2016	**2015**	**2016**	**2015**
Gender distribution among board members	33	33	67	67
Gender distribution among other senior executives	30	38	70	62

NOTE 48 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 46 to the Consolidated accounts, Number of employees and personnel costs.

Disclosures of transactions with major associated companies in 2016 and associated receivables and liabilities as per 31 December 2016 are described below.

Kernkraftwerk Brokdorf GmbH & Co. oHG
This is a nuclear power plant from which Vattenfall purchases electricity. Purchases amounted to SEK 698 million (817). Operating revenue from the company amounted to SEK 0 million (3). Vattenfall's interest expense to the company amounted to SEK 22 million (22). Loan liabilities amounted to SEK 2,305 million (2,193).

GASAG Berliner Gaswerke AG
The company sells, distributes and stores natural gas in the Berlin area. Vattenfall received SEK 121 million (56) in operating revenue from the company, and purchases from the company totalled SEK 12 million (17). Trade liabilities amounted to SEK 56 million (8). Vattenfall's part of contingent liabilities of the company amounted to SEK 151 million (228).

NOTE 49 Events after the balance sheet date

Agreement signed to acquire offshore wind power project Atlantis
Vattenfall has signed an agreement to acquire the project company PNE WIND Atlantis I GmbH, which is the owner of the offshore wind project Atlantis I located northwest of the island of Borkum in the German North Sea.

New combined heat and power plant in Berlin
Vattenfall has decided to invest in a new combined heat and power plant in Berlin, Marzahn–Hellersdorf, with capacity for 260 MW electricity and 230 MW heat. The CHP plant will be able to utilise 90% of the fuel's energy and will thus be one of the most modern and efficient plants of its kind. Start of construction is planned in April, and the plant is expected to be commissioned in summer 2020. The investment sum is EUR 325 million.

NOTE 50 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. Since Vattenfall's securities operations for electricity trading no longer requires a permit from the Swedish Financial Supervisory Authority, the company has allowed that permit to lapse.

Parent Company Vattenfall AB

Condensed review of 2016
A condensed income statement and balance sheet for the Parent Company are presented below.

- Net sales amounted to SEK 29,752 million (30,670).
- Profit before appropriations and income taxes was SEK -6,510 million (6,150).
- Earnings were affected by the following:
  - Received dividends of SEK 1,729 million.
  - A small capital gain from the sale of entire shareholding in Haparanda Värmeverk AB.
  - An impairment loss of SEK 12,700 million for the shareholding in Vattenfall GmbH.
  - An impairment loss of SEK 633 million for the shareholding in Vattenfall A/S – the effect of a received dividend.
- The balance sheet total was SEK 261,902 million (292,057).
- The acquisition of shares in Vindstød A/S took place during the fourth quarter.
- Investments during the period amounted to SEK 7,629 million (589) of which SEK 7,000 million is related to a shareholder contribution to Vattenfall Vindkraft AB.
- Cash and cash equivalents, and Short-term investments amounted to SEK 35,682 million (38,794).

Parent Company income statement

Amounts in SEK million, 1 January–31 December	Note	2016	2015
Net sales	5, 6	29,752	30,670
Cost of products sold	6	-23,999	-24,177
Gross profit		**5,753**	**6,493**
Selling expenses		-840	-817
Administrative expenses		-1,522	-1,534
Research and development costs		-36	-3
Other operating income		561	1,080
Other operating expenses		-286	-71
Operating profit	7, 8, 15, 16	**3,630**	**5,148**
Result from participations in subsidiaries	9	-11,545	3,654
Result from participations in associated companies	10	-2	7
Result from other shares and participations		1	—
Other financial income	11	5,127	991
Other financial expenses	12	-3,721	-3,650
Profit before appropriations and income taxes		**-6,510**	**6,150**
Appropriations	13	1,466	1,194
Profit before income taxes		**-5,044**	**7,344**
Income taxes	14	-1,480	-908
Profit for the year		**-6,524**	**6,436**

Parent Company statement of comprehensive income

Amounts in SEK million, 1 January–31 December	2016	2015
Profit for the year	-6,524	6,436
Total other comprehensive income	—	—
Total comprehensive income for the year	**-6,524**	**6,436**

Parent Company balance sheet

Amounts in SEK million	Note	31 December 2016	31 December 2015
Assets			
Non-current assets			
Intangible assets: non-current	17	174	174
Property, plant and equipment	18	4,151	4,122
Shares and participations	19	145,586	151,865
Deferred tax assets	14	329	212
Other non-current receivables	20	58,897	83,624
Total non-current assets		**209,137**	**239,997**
Current assets			
Inventories	21	255	342
Intangible assets: current		275	215
Current receivables	22	16,553	12,172
Current tax assets	14	—	537
Short-term investments	23	18,733	28,491
Cash and cash equivalents	24	16,949	10,303
Total current assets		**52,765**	**52,060**
Total assets		**261,902**	**292,057**
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		1,316	1,286
Non-restricted equity			
Retained earnings		50,142	43,736
Profit for the year		-6,524	6,436
Total equity		**89,508**	**96,032**
Untaxed reserves	13	13,294	14,882
Provisions	25	5,308	4,835
Non-current liabilities			
Hybrid capital	26	19,101	18,603
Other interest-bearing liabilities	26	49,870	54,961
Other noninterest-bearing liabilities	27	13,099	18,302
Total non-current liabilities		**82,070**	**91,866**
Current liabilities			
Other interest-bearing liabilities	26	64,688	78,348
Current tax liabilities	14	520	—
Other noninterest-bearing liabilities	28	6,514	6,094
Total current liabilities		**71,722**	**84,442**
Total equity, provisions and liabilities		**261,902**	**292,057**

See also information on Collateral (Note 30), Contingent liabilities (Note 31) and Commitments under consortium agreements (Note 32), to the Parent Company.

Parent Company cash flow statement

Amounts in SEK million, 1 January-31 December	Note	2016	2015
Operating activities			
Profit before income taxes		-5,044	7,344
Reversal of depreciation, amortisation and impairment losses		13,851	1,733
Tax paid		-539	-847
Capital gains/losses, net		-60	-58
Other, incl. non-cash items	36	-4,994	-2[1]
Funds from operations (FFO)		**3,214**	**8,170**
Changes in inventories		86	43
Changes in operating receivables		1,482	5,609[1]
Changes in operating liabilities		-3,934	-4,546[1]
Cash flow from changes in operating assets and operating liabilities		**-2,366**	**1,106**
Cash flow from operating activities		**848**	**9,276**
Investing activities			
Investments in subsidiaries		-7,077	—
Investments in associated companies and other shares and participations		-11	-5
Other investments in non-current assets		-541	-584
Total investments		**-7,629**	**-589**
Divestments		88	366
Cash flow from investing activities		**-7,541**	**-223**
Cash flow before financing activities		**-6,693**	**9,053**
Financing activities			
Changes in short-term investments		9,758	-1,767
Loans raised, external		11,350	43,305
Amortisation of other debts		-34,613	-43,806
Effect of early termination of swaps related to financing activities		2,244	1,690[1]
Amortisation received from subsidiaries		24,700	6,733[1]
Amortisation received from associated companies		24	—
Dividend received from subsidiaries		1,729	4,814[1]
Group contributions received/paid		-1,853	-18,054
Cash flow from financing activities		**13,339**	**-7,085**
Cash flow for the year		**6,646**	**1,968**
Cash and cash equivalents			
Cash and cash equivalents at start of year		10,303	8,335
Cash flow for the year		6,646	1,968
Cash and cash equivalents at end of year		**16,949**	**10,303**

[1] The value for 2015 has been recalculated compared with previously published information in Vattenfall's 2015 Annual and Sustainability Report to provide better information about the Parent Company's cash flow.

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 2015	6,585	—	1,286	43,736	**51,607**
Revaluation of share	—	37,989[2]	—	—	**37,989**
Profit for the year	—	—	—	6,436	**6,436**
Balance carried forward 2015	**6,585**	**37,989**	**1,286**	**50,172**	**96,032**
Fund for development costs	—	—	30[3]	-30[3]	**—**
Profit for the year	—	—	—	-6,524	**-6,524**
Balance carried forward 2016	**6,585**	**37,989**	**1,316**	**43,618**	**89,508**

[1] Other reserves consist of Statutory reserve and Fund for development costs.

[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 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 scheduled depreciation is made.

As of 31 December 2016 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 2016 Annual Report was approved in accordance with a decision by the board of directors on 21 March 2017. 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 27 April 2017.

NOTE 2 Proposed distribution of profits

The Annual General Meeting as at its disposal retained profits including the result for the year, totalling SEK 43,618,361,708. 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 shareholders	—
To be carried forward	43,618,361,708
Total	43,618,361,708

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 changes in recommendation RFR 2 and in the Annual Accounts Act that apply as from 2016 are not expected to have any material impact on the Parent Company's financial statements. New and amended accounting standards effective as of 2017 are expected to have no or minimal impact on the Parent Company's financial statements. The accounting policies applied are stated in the applicable parts of Note 3 to the Consolidated accounts, Accounting policies or the respective notes for the Consolidated accounts with the following additions for the Parent Company.

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 applies the exemption rule for IAS 39 "Financial instruments", in accordance with RFR 2, which means that all financial instruments are reported in accordance with a method based on cost, in accordance with the Swedish Annual Accounts Act. Valuation is done at the lower of cost or market. Unrealised derivatives used to hedge exchange rate and price risks in underlying items are handled off the balance sheet until maturity.

A financial asset is derecognised from the balance sheet when the rights under the contract are realised, expire, or when the Parent Company no longer bears the risks and rewards associated with the asset. The same applies for a part of a financial asset. A financial liability is derecognised from the balance sheet when the obligation under the contract is fulfilled or is extinguished in some other manner. The same applies for a part of a financial liability.

The Parent Company applies hedge accounting for assets in a foreign currency effectively hedged by loans in a 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 19 to the Parent Company, Shares and participations.

NOTE 4 Exchange rates

See Note 6 to the Consolidated accounts, Exchange rates.

NOTE 5 Net sales

	2016	2015
Sales of electricity and heat	31,003	32,098
Rendering of services and consulting assignments	1,581	1,333
Excise taxes (included in the above)	-2,832	-2,761
Total	29,752	30,670

Net sales per geographical area	2016	2015
Nordic	27,040	27,521
Germany	2,064	2,543
Netherlands	460	342
Other countries	188	264
Total	29,752	30,670

Net sales for products and services	2016	2015
Optimisation and Trading	12,283	13,688
Energy sales	12,827	13,078
Heat	2,338	2,195
Other	2,304	1,709
Total	29,752	30,670

NOTE 6 Intra Group transactions

Of the Parent Company's total income from sales and total purchase costs, transactions with subsidiaries account for 18% (22%) of sales and 46% (54%) of purchase costs.

NOTE 7 Depreciation and amortisation

Amortisation of intangible non-current assets and depreciation of property, plant and equipment in the income statement are broken down as follows:

	2016	2015
Cost of products sold	497	517
Selling expenses	1	2
Administrative expenses	1	1
Total	499	520

Amortisation of intangible non-current assets is included above in Cost of products sold with the amount of SEK 71 million (74).

NOTE 8 Impairment losses

No impairment was recognised of intangible non-current assets or of property, plant and equipment 2016 or 2015 financial years.

NOTE 9 Result from participations in subsidiaries

	2016	2015
Dividends	1,729	4,805
Impairment losses[1]	-13,335	-1,209
Capital gains/losses on divestments	61	58
Total	-11,545	3,654

[1] See Note 19 to the Parent Company accounts, Shares and participations.

NOTE 10 Result from participations in associated companies

	2016	2015
Dividends	—	9
Impairment of shares	-2	-2
Total	-2	7

NOTE 11 Other financial income

	2016	2015
Interest income from subsidiaries	1,211	736
Other interest income	2,421	255
Foreign exchange gains and losses, net	1,495	—
Total	5,127	991

NOTE 12 Other financial expenses

	2016	2015
Interest expenses to subsidiaries	44	50
Other interest expenses	3,677	2,400
Foreign exchange gains and losses, net	—	1,200
Total	3,721	3,650

NOTE 13 Appropriations and untaxed reserves

Appropriations

	2016	2015
Group contributions paid	-3,240	-3,030
Group contributions received	3,118	2,878
Provision/Dissolution of untaxed reserves, net	1,588	1,346
Total	1,466	1,194

Untaxed reserves

	Balance brought forward	Provision(+)/dissolution (-)	Balance carried forward
Accelerated depreciation	2,351	8	2,359
Tax allocation reserves for 2010–2016 tax years	12,531	-1,596	10,935
Total	14,882	-1,588	13,294

NOTE 14 Income taxes

The reported tax income/tax expense is broken down as follows:

	2016	2015
Current tax	-1,596	-1,286
Deferred tax	116	378
Total	**-1,480**	**-908**

The tax effect of the standard interest on tax allocation reserves amounts to SEK 13 million (20).

The difference between the nominal Swedish tax rate and effective tax rate is explained as follows:

	2016		2015	
	%		%	
Profit before tax		-5,044		7,344
Swedish income tax rate at 31 December	22.0	1,110	22.0	-1,616
Current tax adjustment attributable to previous years	4.3	216	0.3	-23
Non-taxable income	8.4	421	-15.0	1,102
Impairment losses, non-deductible[1]	-58.2	-2,933	3.6	-266
Other non-deductible expenses	-5.8	-294	1.5	-105
Effective tax rate in Sweden	**-29.3**	**-1,480**	**12.4**	**-908**

[1] Chiefly concerns non-deductible impairment losses for shares in Vattenfall GmbH and Vattenfall A/S (2016) and Vattenfall A/S (2015).

Balance sheet reconciliation – Deferred tax:

	Balance brought forward		Changes via income statement		Balance carried forward	
	2016	2015	2016	2015	2016	2015
Non-current assets	2	2	—	—	2	2
Current assets	132	40	60	92	192	132
Provisions	140	135	11	5	151	140
Other non-current liabilities	73	-262	-81	335	-8	73
Current liabilities	-135	-79	127	-56	-8	-135
Total	**212**	**-164**	**117**	**376**	**329**	**212**

NOTE 15 Leasing

Leasing expenses

Future payment commitments, as of 31 December 2016 for leasing contracts and rental contracts are broken down as follows:

	Operating leases
2017	66
2018–2021	248
2022 and beyond	328
Total	**642**

Leasing expenses for the year amounted to SEK 68 million (190).

Leasing revenues

The Parent Company owns and operates energy 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. Facilities are classified in accordance with standard leasing principles, based on the fixed revenue component. On 31 December 2016, the cost of assets reported under operating leases amounted to SEK 501 million (490). Accumulated depreciation amounted to SEK 254 million (230), and accumulated impairment losses amounted to SEK 30 million (30).

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

	Operating leases
2017	1
2018-2021	2
2022 and beyond	—
Total	**3**

NOTE 16 Auditors' fees

Annual audit assignment:

	2016	2015
EY	6	6

NOTE 17 Intangible assets: non-current

	2016				
	Capitalised development costs	Goodwill	Concessions and similar rights	Renting and similar rights	Total
Cost					
Cost brought forward	304	—	1,056	68	1,428
Investments	37	—	40	—	77
Divestments/Disposals	—	—	-248	—	-248
Reclassifications	1	—	-1	—	—
Accumulated cost carried forward	**342**	**—**	**847**	**68**	**1,257**
Amortisation according to plan					
Amortisation brought forward	-187	—	-882	—	-1,069
Amortisation for the year	-1	—	-70	—	-71
Divestments/Disposals	—	—	241	—	241
Reclassifications	-1	—	1	—	—
Accumulated amortisation according to plan carried forward	**-189**	**—**	**-710**	**—**	**-899**
Impairment losses					
Impairment losses brought forward	-116	—	-1	-68	-185
Divestments/Disposals	—	—	1	—	1
Accumulated impairment losses carried forward	**-116**	**—**	**—**	**-68**	**-184**
Residual value according to plan carried forward	**37**	**—**	**137**	**—**	**174**

	2015				
	Capitalised development costs	Goodwill	Concessions and similar rights	Renting and similar rights	Total
Cost					
Cost brought forward	304	13	926	95	1,338
Investments	—	—	130	—	130
Divestments/Disposals	—	-13	—	-27	-40
Accumulated cost carried forward	**304**	**—**	**1,056**	**68**	**1,428**
Amortisation according to plan					
Amortisation brought forward	-186	-13	-809	-27	-1,035
Amortisation for the year	-1	—	-73	—	-74
Divestments/Disposals	—	13	—	27	40
Accumulated amortisation according to plan carried forward	**-187**	**—**	**-882**	**—**	**-1,069**
Impairment losses					
Impairment losses brought forward	-116	—	-1	-68	-185
Accumulated impairment losses carried forward	**-116**	**—**	**-1**	**-68**	**-185**
Residual value according to plan carried forward	**1**	**—**	**173**	**—**	**174**

At 31 December 2016 there were no contractual commitments for the acquisition of intangible non-current assets.

NOTE 18 Property, plant and equipment

	2016				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,230	7,998	491	421	10,140
Investments	—	—	77	387	464
Transfer from construction in progress	3	294	3	-300	—
Divestments/Disposals	-21	-14	-131	—	-166
Accumulated cost carried forward	**1,212**	**8,278**	**440**	**508**	**10,438**
Depreciation according to plan					
Depreciation brought forward	-707	-4,947	-361	—	-6,015
Depreciation for the year	-29	-334	-65	—	-428
Divestments/Disposals	20	10	129	—	159
Accumulated depreciation according to plan carried forward	**-716**	**-5,271**	**-297**	**—**	**-6,284**
Impairment losses					
Impairment losses brought forward	-1	-2	—	—	-3
Accumulated impairment losses carried forward	**-1**	**-2**	**—**	**—**	**-3**
Residual value according to plan carried forward	**495**	**3,005**	**143**	**508**	**4,151**
Accumulated accelerated depreciation	—	-2,360	—	—	-2,360
Carrying amount	**495**	**645**	**143**	**508**	**1,791**

	2015				
	Land and buildings	Plant and machinery and other technical installations	Equipment, tools, fixtures and fittings	Construction in progress	Total
Cost					
Cost brought forward	1,225	7,648	447	396	9,716
Investments	—	—	62	394	456
Transfer from construction in progress	5	364	—	-369	—
Divestments/Disposals	—	-14	-18	—	-32
Accumulated cost carried forward	**1,230**	**7,998**	**491**	**421**	**10,140**
Depreciation according to plan					
Depreciation brought forward	-677	-4,628	-280	—	-5,585
Depreciation for the year	-30	-323	-94	—	-447
Divestments/Disposals	—	4	13	—	17
Accumulated depreciation according to plan carried forward	**-707**	**-4,947**	**-361**	**—**	**-6,015**
Impairment losses					
Impairment losses brought forward	-1	-2	—	—	-3
Accumulated impairment losses carried forward	**-1**	**-2**	**—**	**—**	**-3**
Residual value according to plan carried forward	**522**	**3,049**	**130**	**421**	**4,122**
Accumulated accelerated depreciation	—	-2,351	—	—	-2,351
Carrying amount	**522**	**698**	**130**	**421**	**1,771**

At 31 December 2016 there were no contractual commitments for the acquisition of property, plant and equipment.

NOTE 19 Shares and participations

Important estimations and assessments
Participations in subsidiaries are tested for impairment in accordance with the accounting policies described in Note 11 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

	2016				2015			
	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	151,842	21	2	151,865	118,452	16	5	118,473
Investments	38	—	—	38	—	—	—	—
Shareholder contributions	7,039	11	—	7,050	—	5	—	5
Divestments	-1	—	—	-1	-2	—	—	-2
Profit participations in associated companies	—	-17	—	-17	—	—	—	—
Purchase price adjustment	—	—	—	—	-3,094[1]	—	—	-3,094
Write up	—	—	—	—	37,989[2]	—	—	37,989
Liquidation	-14	—	—	-14	-294	—	—	-294
Impairment losses	-13,333[3]	-2	—	-13,335	-1,209[3]	—	-3	-1,212
Balance carried forward	145,571	13	2	145,586	151,842	21	2	151,865

[1] Pertains to adjustment of purchase price for shares in N.V. Nuon Energy.
[2] Pertains to tax-exempt revaluation of shares in Vattenfall Eldistribution AB.
[3] Pertains to impairment loss (not tax-deductible) for shares in Vattenfall GmbH and Vattenfall A/S (2016) Vattenfall A/S (2015).

For a breakdown of the Parent Company's shares and participations in subsidiaries, associated companies and other shares and participations, see Notes 20–22 to the Consolidated accounts.

NOTE 20 Other non-current receivables

	2016				2015			
	Receivables from subsidiaries	Receivables from associated companies	Other receivables	Total	Receivables from subsidiaries	Receivables from associated companies	Other receivables	Total
Balance brought forward	82,860	24	740	83,624	89,676	24	778	90,478
New receivables	—	—	9	9	—	—	12	12
Payments received	-24,700	-24	—	-24,724	-6,732	—	—	-6,732
Foreign exchange gains/losses	2	—	23	25	-84	—	-14	-98
Reclassification between non-current and current receivables	—	—	-37	-37	—	—	-36	-36
Balance carried forward	58,162	—	735	58,897	82,860	24	740	83,624

NOTE 21 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 22 Current receivables

	2016	2015
Advance payments paid	116	18
Accounts receivable - trade	1,288	1,172
Receivables from subsidiaries	11,685	7,334
Receivables from associated companies	—	3
Other receivables	871	1,212
Prepaid expenses and accrued income	2,593	2,433
Total	**16,553**	**12,172**

Age analysis of Current receivables
The collection period is normally 30 days.

	2016			2015		
	Receivables gross	**Impaired receivables**	**Receivables net**	**Receivables gross**	**Impaired receivables**	**Receivables net**
Accounts receivable - trade						
Not due	1,206	—	1,206	1,039	—	1,039
Past due 1-30 days	66	—	66	93	—	93
Past due 31-90 days	8	—	8	23	—	23
Past due >90 days	37	29	8	34	17	17
Total	**1,317**	**29**	**1,288**	**1,189**	**17**	**1,172**

Receivables from subsidiaries, Receivables from associated companies, and Other receivables include no receivables that are due for payment.

NOTE 23 Short-term investments

	2016	2015
Fixed-income investments	16,192	25,812
Margin calls, financing activities[1]	2,541	2,679
Total	**18,733**	**28,491**

[1] With respect to pledged assets, see Note 30 to the Parent Company accounts, Collateral.

NOTE 24 Cash and cash equivalents

	2016	2015
Cash and bank balances	6,222	9,068
Cash equivalents	10,727	1,235
Total	**16,949**	**10,303**

NOTE 25 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 34 to the Consolidated accounts, Pension provisions.

Financial information

	2016	2015
Pension provisions[1, 2]	4,165	4,188
Personnel-related provisions for non-pension purposes	613	591
Provisions for environmental measures/undertakings	62	56
Other provisions	468	—
Total	**5,308**	**4,835**
[1] Of which, information registered by PRI.	3,705	3,688
[2] Of which, covered by credit insurance with FPG/PRI.	4,160	4,181

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 22, Share in Nuclear Waste Fund and Note 35, Other interest-bearing provisions to the Consolidated accounts.

NOTE 26 Other interest-bearing liabilities and derivatives

	Non-current portion maturity 1–5 years		Non-current portion maturity >5 years		Total non-current portion		Current portion		Total	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Bond issues	29,978	20,512	19,257	33,806	49,235	54,318	—	11,444	49,235	65,762
Commercial paper	—	—	—	—	—	—	6,594	3,455	6,594	3,455
Liabilities to credit institutions	—	—	—	—	—	—	244	210	244	210
Liabilities to subsidiaries	635	643	—	—	635	643	53,889	57,954	54,524	58,597
Other liabilities (margin calls within financing activities)[1]	—	—	—	—	—	—	3,961	5,285	3,961	5,285
Total interest-bearing liabilities excluding Hybrid capital	30,613	21,155	19,257	33,806	49,870	54,961	64,688	78,348	114,558	133,309
Hybrid capital[2]	—	—	19,101	18,603	19,101	18,603	—	—	19,101	18,603
Total interest-bearing liabilities	30,613	21,155	38,358	52,409	68,971	73,564	64,688	78,348	133,659	151,912

[1] With respect to pledged assets, see Note 30 to the Parent Company accounts, Collateral.

[2] See Note 33 to the Consolidated accounts, Interest-bearing liabilities and related financial derivatives.

NOTE 27 Other noninterest-bearing liabilities (non-current)

	2016	2015
Liabilities to subsidiaries	13,048	18,251
Other liabilities	51	51
Total	**13,099**	**18,302**

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 21 million (26) falls due after more than five years.

NOTE 28 Other noninterest-bearing liabilities (current)

	2016	2015
Advance payments from customers	13	252
Accounts payable – trade	749	381
Liabilities to subsidiaries	2,279	2,037
Other liabilities	208	545
Accrued expenses and deferred income	3,265	2,879
Total	**6,514**	**6,094**

Breakdown of accrued expenses and deferred income:

	2016	2015
Accrued personnel-related costs	287	270
Accrued interest expenses	1,871	1,805
Other accrued expenses	483	352
Deferred income and accrued expenses, electricity	620	444
Other deferred income	4	8
Total	**3,265**	**2,879**

NOTE 29 Financial instruments: Carrying amount and fair value

The categories for assets and liabilities below correspond to the categories described in Note 40 to the Consolidated accounts, Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income. However, the Parent Company recognises all financial instruments based on cost in accordance with the Swedish Annual Accounts Act, that is, the categories do not determine how the instruments are measured or recognised. For disclosures on how fair value is calculated, see Note 3 to the Consolidated accounts, Accounting policies. The column fair value is included for information purposes only.

	2016		2015	
	Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets at fair value through profit or loss				
Derivative assets	—[1]	10,777	—	21,360
Short-term investments	18,733	18,733	28,491	28,491
Cash equivalents	10,727	10,727	1,235	1,235
Total	**29,460**	**40,237**	**29,726**	**51,086**
Loans and receivables				
Share in the Swedish Nuclear Waste Fund[2]	—	283	—	187
Other non-current receivables	58,897	58,897	83,624	83,811
Trade receivables and other receivables	16,437	16,437	12,154	12,154
Advance payments paid	116	116	18	18
Cash and bank balances	6,222	6,222	9,068	9,068
Total	**81,672**	**81,955**	**104,864**	**105,238**
Available-for-sale financial assets				
Other shares and participations carried at cost	15	15	23	23
Total	**15**	**15**	**23**	**23**
Financial liabilities at fair value through profit or loss				
Derivative liabilities	—[1]	10,196	—	10,547
Total	**—**	**10,196**	**—**	**10,547**
Other financial liabilities				
Hybrid capital	19,101	18,317	18,603	16,196
Other non-current interest-bearing liabilities	49,870	58,293	54,961	61,614
Other non-current noninterest-bearing liabilities	13,099	13,099	18,302	18,302
Current interest-bearing liabilities	64,688	64,692	78,348	78,459
Trade payables and other liabilities	6,501	6,501	5,843	5,843
Advance payments received	13	13	252	252
Total	**153,272**	**160,915**	**176,309**	**180,666**

[1] The carrying amount of derivatives is included in related items, that is in the hedged items or in the interim entries, with a net value of SEK 670 million (63).

[2] The carrying amount for the provision to the Swedish Nuclear Waste Fund for Ågestaverket is zero, since the provision is expensed directly. See also Note 22, Share in the Swedish Nuclear Waste Fund, Note 40, Financial instruments by category, offsetting of financial assets and liabilities, and financial instruments' effects on income and Note 44 Contingent liabilities to the Consolidated accounts.

For assets and liabilities with a remaining maturity of less than three months (for example cash and bank balances, trade receivables and other receivables and trade payables and other payables) fair value is considered to be equal to the carrying amount.

NOTE 30 Collateral

Collateral and pledged assets (given)

	2016	2015
Assets 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]	2,541	2,679
Blocked bank funds as security for trading on Nord Pool, ICE and EEX	445	151
Blocked bank funds as security for guarantees issued by bank	1	20
Total	10,282	10,145

Collateral and pledged assets (received)

	2016	2015
Pledged security from counterparties (derivative market)[1]	3,961	5,285

[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 31 Contingent liabilities

Guarantees pertaining to:

	2016	2015
Swedish Nuclear Waste Fund	15,448	15,448
Contractor guarantees provided by order of subsidiaries	12,376	7,457
Guarantees provided as collateral for the subsidiaries within Vattenfall Energy Trading's energy trading	10,779	8,068
Other contingent liabilities	11,918	10,475
Total	50,521	41,448

Swedish Nuclear Waste Fund
According to the Swedish Act (2006:647) on the Financing of Future Expenses for Nuclear Waste Management, Sweden's nuclear power companies are required to pledge security to the Swedish state (the Swedish Nuclear Waste Fund) as a guarantee that sufficient funds exist to cover the future costs of nuclear waste management. The security is pledged in the form of guarantee commitments to the owners of the nuclear power companies. In a decision made on 18 December 2014, the Swedish government set new guarantee amounts for the years 2015–2017. As security for the subsidiaries Forsmarks Kraftgrupp AB and Ringhals AB, the Parent Company Vattenfall AB has made guarantee commitments for a combined value of SEK 15,448 million (15,448). Two types of guarantees have been issued. The first guarantee – so-called Financing Security, totalling SEK 10,633 million – is intended to cover the requisite need for fees that have been decided on but not yet been paid in during the so-called earnings period (25 years of operation). The second guarantee, amounting to SEK 4,815 million, pertains to future cost increases stemming from unforeseen events (so-called Complementary Security). 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. The latter amount essentially consists 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 12,376 million (7,457), mainly attributable to obligations in the Wind Business Area, which increased significantly in 2016.

Guarantees provided as collateral for subsidiaries in Vattenfall Energy Trading's energy trading
Vattenfall AB has issued guarantees with a total value of SEK 30,532 million (27,358) for energy trading conducted by the subsidiary Vattenfall Energy Trading. As per 31 December 2016 a total of SEK 10,779 million (8,068) of these guarantees had been utilised, which is included in the reported amount of contingent liabilities.

Other contingent liabilities
Other contingent liabilities SEK 11,918 million (10,475) 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 1,294 million (1,261).

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 2016 Vattenfall reported a provision of SEK 56 million (61) for its share of Period 1 activities.

Atomic liability in Sweden is strict and limited to 300 million Special Drawing Rights (SDRs) (rate 12.2295), corresponding to about SEK 3,669 million (3,475), 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 32 Commitments under consortium agreements

See Note 45 to the Consolidated accounts, Commitments under consortium agreements.

NOTE 33 Average number of employees and personnel costs

Average number of employees

	2016			2015		
	Men	Women	Total	Men	Women	Total
Sweden	1,153	534	1,687	1,167	558	1,725

Personnel costs

	2016	2015
Salaries and other remuneration	1,148	1,184
Social security expenses	715	739
- of which pension costs[1]	256	203
Total	1,863	1,923

[1] SEK 24 million (14) 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:

	2016			2015		
	Senior executives[1]	Other employees	Total	Senior executives[1]	Other employees	Total
Sweden	62	1,086	1,148	53	1,134	1,187

[1] Senior executives comprise board members and deputy board members as well as the presidents and executive vice presidents. 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 46 to the Consolidated accounts, Number of employees and personnel costs.

NOTE 34 Gender distribution among senior executives

See Note 47 to the Consolidated accounts, Gender distribution among senior executives.

NOTE 35 Related party disclosures

See Note 48 to the Consolidated accounts, Related party disclosures.

NOTE 36 Specification of the cash flow statement

Other, including non-cash items:

	2016	2015
Unrealised foreign exchange gains/losses	-190	4,824
Changes in interest receivables	-2,258	-1,182
Changes in interest liabilities	205	512
Group contributions and received dividends	-1,607	-4,662
Changes in provisions	473	557
Changes in appropriations	-1,588	-1,345
Other	-29	1,294
Total	-4,994	-2

Interest paid totalled SEK 3,516 million (3,632), and interest received totalled SEK 1,373 million (1,503).

NOTE 37 Events after the balance sheet date

See Note 49 to the Consolidated accounts, Events after the balance sheet date.

Audit 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 64–78 for the year 2016. The annual accounts and Consolidated accounts of the company are included on pages 2, 6–9, 56–151 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 2016 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 2016 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 64–78. 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

In the Group's statement of financial position as per December 31, 2016 reported value of fixed tangible and intangible assets amounts to SEK 233,928 million, which equals 57.2% of the Group's total assets. As described in Note 11 to the Consolidated accounts, Impairment losses and reversed impairment losses, 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 11 to the Consolidated accounts 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 11 to the Consolidated accounts 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%. Future cash flows have been discounted to value in use using a discount rate as described in Note 11 to the Consolidated accounts.

In 2016 the Company has recorded impairment losses of SEK 33,767 million in total, whereof SEK 21,413 million are related to the German Lignite operations. The impairment loss related to the Lignite operations is included in the earnings for the period from discontinued operations. The allocation of the other impairment losses to different assets is described in Note 11 to the Consolidated accounts.

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.

Divestment of Lignite operations

As per September 30, 2016 the Company divested its Lignite operations in Germany. Due to the significance of the operations it has been reported as Discontinued operations in accordance with IFRS 5. In brief this means that the profit for 2015 and 2016 related to the Lignite operations, including operating profit, impairment losses and capital gains, has been reported as one single amount in the income statement. A complete income statement for the Lignite operations is presented in Note 5 to the Consolidated accounts, Discontinued operations, in the Company's annual report.

In 2016 the loss from the divested operations amounts to SEK 23,833 million whereof SEK 21,833 million relate to impairment of assets belonging to the Lignite operations and SEK 278 million relate to the capital gain that arose at point of time for the divestment.

Due to the substance of the transaction and the significant accounting consequences triggered by the transaction, we have assessed the transaction as a key audit matter in the audit.

In our audit we have reviewed the sales agreement and the calculation of impairment loss and capital gain. We have also evaluated the allocation of assets, liabilities, revenues and costs between continued and discontinued operations. We have performed audit procedures on the restatement of comparative figures in the income statement and related changes in the disclosures. We have also assessed whether the disclosed information of the divestment of Lignite operations is appropriate.

Provisions for future expenses of nuclear power operations

In the Group's statement of financial position as per December 31, 2016 the provisions for future expenses of nuclear power operations amounts to SEK 80,888 million. As described in Note 35 to the Consolidated accounts, Other interest-bearing provisions, 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 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 and when in time these are expected to fall due, discounted to a present value 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. The mid-term and long-term expenses for handling nuclear waste in German nuclear power plants have been audited in the light of current legislation in Germany. We have also assessed whether the information disclosed is appropriate.

Key Audit Matters, the Parent company

Valuation of Shares in subsidiaries

In the Parent company's statement of financial position as per December 31, 2016 shares in subsidiaries amounts to SEK 145,571 million, which equals 55.6% of the Company's total assets. As described in Note 19 to the Parent company, Shares and participations, which refers to the Note 11 to the Consolidated accounts, the Company is making assessments throughout the year for any indication that shares in subsidiaries may have decreased in value. If there is an indication of this kind, the recoverable amount of shares in subsidiaries is calculated and if the recoverable amount is less than the carrying amount an impairment loss is recognized. Recoverable amount is the higher of value in use and fair value. Value in use is calculated as present value of future cash flows from the operations that are managed within the Parent company adjusted for current net debt as per December 31, 2016.

The Company's valuation of shares in subsidiaries is based on the calculations of value in use. In the Note 11 to the Consolidated accounts 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. The future cash flow projections are discounted to present value based on the discount rates described in the Note 11 to the Consolidated accounts.

In 2016 the Company has impairment losses of SEK 13,333 million in total, whereof SEK 12,700 million are related to book value of shares in Vattenfall GmbH.

Changes in assumptions may have a significant impact on the calculation of value of shares in subsidiaries which imply that the determination of assumptions is of significant importance to the calculation. Hence, we have assessed the valuation of shares in subsidiaries as a key audit matter in the audit.

In our audit we have evaluated the Company's process to develop and perform impairment tests of shares in subsidiaries. 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. The reasonableness of used discount rate and long-term growth have been evaluated through comparisons with other companies within the same industry and current market rates. Current net debt has been verified to obtained information from lenders. 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, 4–5, 10–55, 157–182. 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 scepticism 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 2016 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 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 64–78 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. The information mandated by The Ownership Policy is consistent with the other parts of the annual accounts and the Consolidated accounts.

Stockholm, 21 March 2017
Ernst & Young AB

Staffan Landén
Authorized Public Accountant

Auditor's Combined Assurance Report on Vattenfall AB's Sustainability Report

To Vattenfall AB

Introduction
We have been engaged by the Board of Vattenfall AB to undertake an examination of Vattenfall AB's Sustainability Report for the year 2016. The Company has defined the scope of the Sustainability Report to the pages referred to in the GRI index on the pages 168–171.

Responsibilities of the Board and Management for the Sustainability Report
The board of directors and Group Management are responsible for the preparation of the Sustainability Report in accordance with the applicable criteria, as explained on pages 166–167 in the Sustainability Report, and are the parts of the Sustainability Reporting Guidelines (published by The Global Reporting Initiative, GRI) which 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 procedures we have performed. We conducted our engagement in accordance with RevR 6 Assurance of Sustainability Reports issued by FAR. 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. The procedures performed in a limited assurance engagement vary in nature from, and are less in extent than for, a reasonable assurance engagement conducted in accordance with IAASB's Standards on Auditing and other generally accepted auditing standards in Sweden. Hence, the conclusion based on our limited assurance procedures does not comprise 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.

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.

Our audit has consisted of following information:
Outcome of the strategic targets, disclosed on page 6:
- Customer loyalty, NPS (Net Promoter Score)
- Commissioned renewables capacity
- Absolute CO_2 emissions pro rata
- Work injuries, LTIF (Lost Time Injury Frequency)
- Employee Engagement Index

Our procedures are based on the criteria defined by the board of directors and the Group 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 defined by the board of directors and Group 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 Group Management.

Stockholm, February 21, 2017
Ernst & Young AB

Staffan Landén
Authorized Public Accountant

Outi Alestalo
Specialist member in FAR

NON-FINANCIAL INFORMATION

Vattenfall's Annual and Sustainability Report is an integrated report inspired by the Integrated Reporting Framework. The Non-Financial Information section is not a standalone report but rather provides additional explanation, context, and details on topics that have already been discussed in previous sections.

Stakeholders

Active dialogue with our stakeholders
Access to electricity and heat is viewed as a basic human right. As one of Europe's largest producers of electricity and heat, Vattenfall plays a hidden yet fundamental role in the lives of millions of people. Our operations have significant environmental and social impacts not only in our direct operations, but also indirectly, such as via suppliers. This means that we must conduct our business in a socially responsible and sustainable manner. We view our stakeholder dialogues as not just a way to show that we take our responsibility to heart, but also as a way to improve as a company by truly understanding the many different ways we impact our stakeholders' lives.

Our stakeholders represent all facets of society, from the family that turns its lights on with our power, to the employees who operate our power plants. They are our owner, politicians and decision-makers, capital providers, NGOs, the media, and the general public. They are our suppliers and partners.

With such a wide range of stakeholders, it is inevitable that conflicting interests will arise, and it is therefore essential that we engage in an open and frequent dialogue with all of our stakeholders. These dialogues are part of our daily activities in the company, and they educate us and allow us to make informed decisions when prioritising issues.

The Vattenfall Project Management Model, an obligatory tool used across the Group, ensures that local interests are taken into account and addressed in our various projects.

Below you will find a small but illustrative sample of the dialogues we have had with our stakeholders throughout the year.

Materiality analysis

In addition to direct dialogues with our stakeholders on specific issues, this year we updated our materiality analysis. We contracted an independent third party who interviewed or surveyed close to 1,200 people across all our markets and stakeholder groups in order to get a holistic perspective on the impacts Vattenfall has on its stakeholders and the accompanying expectations they have for us.

Results
In general, Vattenfall's strategic direction and sustainability focus areas are in line with stakeholder expectations. However, credibility is low, as stakeholders feel we need to be more transparent and do a better job of communicating about activities that demonstrate we are taking concrete steps towards achieving our strategic objectives.

Focus areas and changes from last time
The three areas that all stakeholder groups in all of Vattenfall's markets consider to be most important are: impacts on local communities and nature, reducing emissions, and increasing renewables capacity. Country differences do exist, however, as Swedish stakeholders also emphasised an engaging and safe workplace, German stakeholders emphasised climate impacts, and Dutch stakeholders emphasised sustainable customer solutions as key focus areas.

Stakeholder group	What you said	What we did
Customers	Digital offerings need to improve: more intuitive websites that simplify and enhance the purchasing process, and the ability to get content via mobile applications	Digitalisation has high priority at Vattenfall. In 2016 we launched a number of digital platforms for our individual markets (e.g., Powerpeers, EnPure, Alltid.se) and will continue to expand and complement these offerings.
Customers	Insensitive handling of past-due accounts can exacerbate problems for low-income customers	We have introduced various features to prevent customers from getting behind in their payments, such as giving them the opportunity to schedule their own payment dates, giving them advanced warnings about potential extra costs, and sending them text message reminders with a direct link for convenient payment of any outstanding amounts. We can set up a payment plan based on the customer's ability to catch up on payments and help them from getting behind in the future.
Local communities	It's important that projects bring local economic benefit	At Pen y Cymoedd in the UK we held a supply chain event early in the process to raise awareness of opportunities for local companies and ensure they had information on our requirements at an early stage. This was followed by "meet the contractor" sessions with our tier one contractors, where we discussed the requirements we have for all our contractors to cooperate with us and local stakeholders in the aim of maximising local work opportunities. As a result, to date, more than GBP 90 million of contracts have been placed with more than 60 Welsh companies or major Welsh employers, who also worked with us to create thirteen apprenticeships during the construction phase of the project. In the Aberdeen Bay test and demonstration project in the UK, cooperation with local companies is a priority area. Aberdeen has traditionally been a major oil and industry hub. Successful supply chain events and close cooperation with local economic development agencies has already resulted in contract awards to more than 30 UK companies worth more than GBP 5 million.
NGOs	We should stop sourcing coal from Colombia to send a message that companies complicit in human rights abuses – current or past – will not win our business	The UNGC recommends that disengagement should be a last resort when no progress is made, and we agree. We have chosen to stay in Colombia and use our purchasing power as leverage to effect positive change. We are working with suppliers to involve them in the ongoing peace and reconciliation process, and combined with new requirements, we believe that we can make a positive difference locally.
Employees	In our biannual survey, our employees indicated that they do not feel as engaged as we had hoped. They are personally motivated to go beyond their job requirements, but feel that Vattenfall does not motivate them or reward them enough for doing so	We are developing new ways of working in which employees will have more direct control of performance management and measurement, a better understanding of expectations and opportunities, and therefore more motivation to excel. We encourage employees to participate in innovation initiatives (read more about innovation at Vattenfall on pages 48–51).
Governmental organisations	We need to be aware of greater human rights risks in our nuclear fuel supply chain	After participating in a number of meetings and trade missions, we decided to increase scrutiny of human rights issues in all screening phases of nuclear fuel suppliers, and performed a human rights audit of a main supplier.
All stakeholders	In connection with our updating of the materiality analysis, close to 1,200 stakeholders confirmed our strategic direction and highlighted areas of importance	We held meetings with all of the Business Areas to highlight the feedback that is most relevant to them. We held workshops to discuss various ways to address the feedback with new products and services.

Materiality analysis – most important aspects

Focus areas for progress

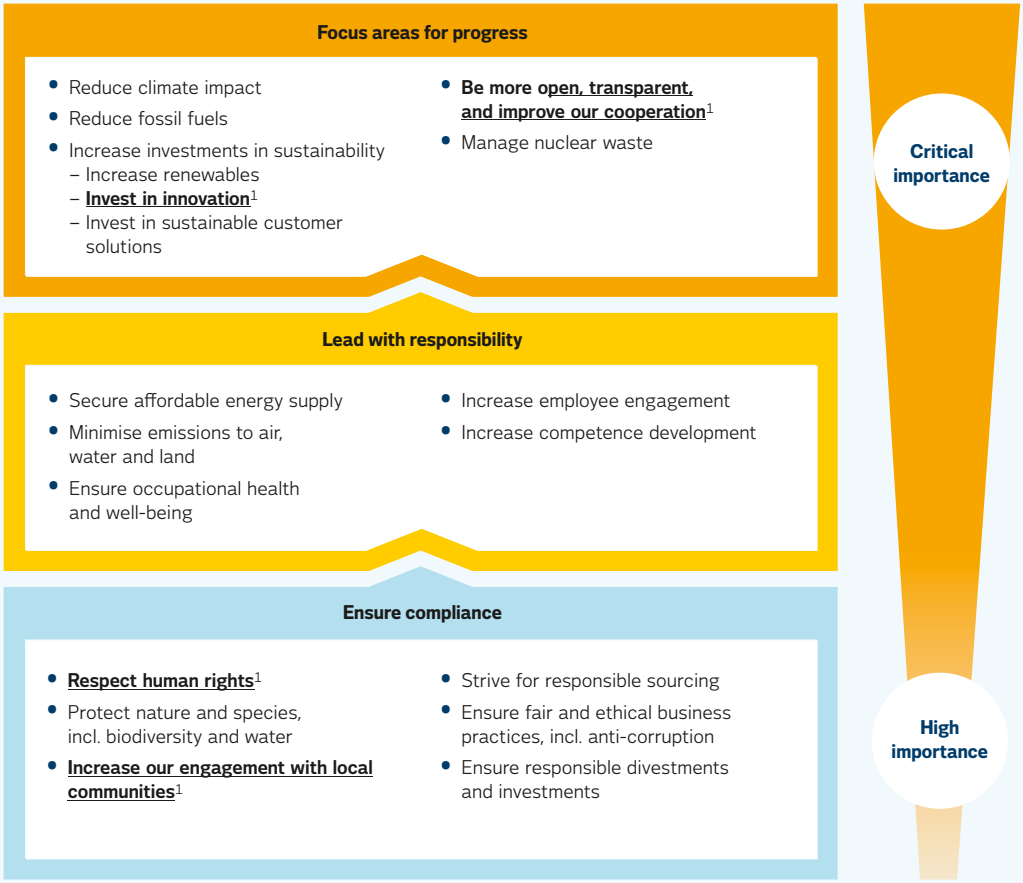
These aspects are crucial for Vattenfall to manage in order to ensure future value creation and profitable growth of the business.

Lead with responsibility

Vattenfall is currently managing these important aspects, but must stay committed to continuously improving performance with respect to internal and external stakeholder expectations.

Ensure compliance

Vattenfall's management of these complex and challenging aspects directly impacts stakeholders' trust in the organisation and Vattenfall's licence to operate, and we need to address all these matters in a systematic and fundamental manner.



1) Emphasised more heavily than in previous years.

While stakeholder feedback generally confirmed our existing strategic objectives, a number of issues have gained in importance.

Issues of increasing importance include protecting human rights, engaging with local communities, investing in innovation, and being more open and transparent.

Responsible sourcing and purchasing

As part of Vattenfall's ambition to act sustainably and responsibly throughout the value chain, we are continuing our work with improving the sustainability performance of our suppliers. Through our supplier engagement strategy and newly implemented sustainability assessments, we aim to deepen our influence in the supply chain and to strengthen relationships with our suppliers. Partnerships and cooperation with suppliers on sustainability-related challenges will enable significant risk mitigation, long-term cost reductions and increased profitability.

Diverse supplier base

Vattenfall's Code of Conduct governs the way we communicate and work with our suppliers. Our Code of Conduct for Suppliers (CoCfS) defines the company's requirements and expectations for suppliers within responsible sourcing and purchasing, namely: human rights, working conditions, the environment and anti-corruption. Vattenfall's CoCfS was revised and strengthened in 2016.

Vattenfall purchases a wide range of goods, services and fuels, with varying risk profiles and legal and sustainability requirements. Purchasing and sourcing are conducted primarily in four streams: goods and services, commodity fuels (coal, biomass, gas and oil), directly sourced heat fuels, and nuclear fuel. As a consequence, implementation of Vattenfall's CoCfS varies. In general, the Group has adopted a three-step process for implementing the CoCfS, shown below.

Developments in 2016

Particular focus has been on continued improvements to Vattenfall's methodology, stimulating internal awareness, and updating tools and documents. Vattenfall is continuously seeking new ways of improving its methodology to gain more knowledge of risks and impacts further along in its supply chain. Major steps were taken in 2015, and this journey continued in 2016, where the scope of sustainability assessments was not only broadened but also deepened. New types of reviews for different categories of suppliers in the supplier base were developed and implemented, leading to a better understanding of and knowledge about our strategic and main suppliers.

Our CoCfS, which is the foundation for our work on engaging with and benchmarking the performance of suppliers, was updated and aligned with current national and international legislation and frameworks, and will be ready for inclusion in contracts beginning in 2017.

In parallel with the CoCfS update, an external party performed a comprehensive human rights impact assessment, the results of which will be used to develop a human rights roadmap and to increase awareness in the Business Areas about what their most significant risks are and what measures should be taken.

In 2016 a shift took place in our supplier management strategy, as we moved beyond auditing to more direct engagement with our suppliers to ensure compliance and performance. In coal sourcing, for example, we developed engagement strategies on a supplier-by-supplier basis in which we engage directly with the companies in our due diligence procedure, inform them of the outcomes, and cooperate with them in our work on driving continuous improvement.

We are convinced that stakeholder dialogues need to be deepened, and towards this end we intensified our dialogue with NGOs, which has become a critical tool for identifying and mitigating social and environmental risks.

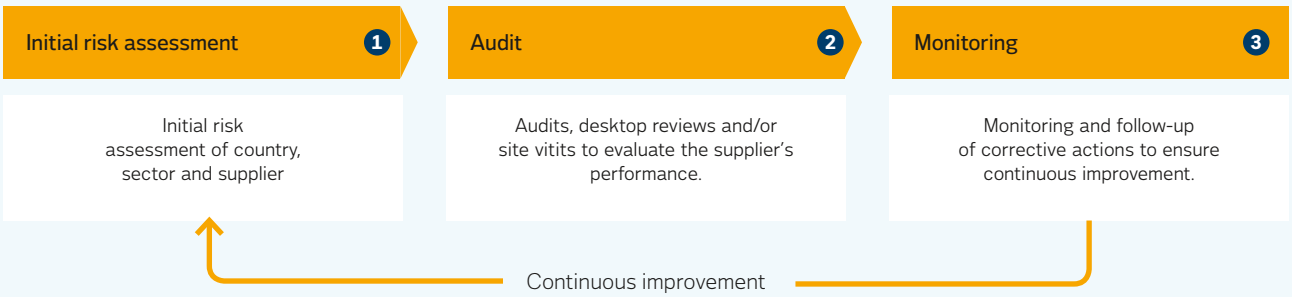
Planned activities

Part of Vattenfall's procurement strategy going forward will be to seek and establish business relationships in new supplier markets. This represents an opportunity to significantly reduce costs and share knowledge, but requires greater attention to supplier sustainability performance. Vattenfall is addressing these challenges with an updated CoCfS that is more explicit with respect to human rights and labour risks. Internal sustainability specialists coach, train and increase awareness and knowledge about this in the procurement and sourcing organisation, which is essential as Vattenfall's risk exposure increases from a sustainability perspective.

Activities planned for 2017:

- Reduce and optimise the supplier base in order to manage our suppliers in the best way possible
- Increase the share of suppliers that have undergone sustainability assessments
- Increase audits and engagement around targeted, specific risk issues
- Conduct pilot projects to extend existing EHS audits to include more sustainability criteria such as human rights, labour and anti-corruption aspects
- Continue to develop internal systems and reporting tools to ensure higher quality of data and facilitate monitoring of suppliers
- Continue training for the sourcing and procurement organisation, and increase transparency of our sourcing and procurement activities
- Increase the scope of our human rights assessments
- Fact-finding and stakeholder engagement visit to Colombia

Implementation process for Vattenfall's Code of Conduct for Suppliers



Responsible sourcing and purchasing, cont.

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. Vattenfall took several steps to improve and strengthen its sourcing and purchasing processes in 2016. An overview of the current state of our activities is detailed below. For the definition of "supplier", see page 166.

Goods and services

- The main sourcing countries are Sweden, Germany and the Netherlands
- Vattenfall's Code of Conduct for Suppliers as well as adherence to the ten principles of the UN Global Compact are included in all new supplier contracts, and form the basis for supplier assessments and are part of the requirements in our entire supplier cycle
- Key risks are work environment–related issues with subcontractors and/or outsourced personnel where there has been finding of overtime exceeding legal limits and unpaid overtime during audits
- Risks are addressed with special attention to non-conformities and close follow-up of corrective action plans and engagements
- All new suppliers from high-risk countries were assessed by site audits
- All suppliers in the supplier base with total volume of more than SEK 3,000 were subjected to sanction list screening (except legal entities, which is prohibited by Swedish law). No confirmed violations were identified
- Our most strategic suppliers have undergone sustainability assessments. This group accounts for approximately 50% of contracted purchasing volume
- Launch and execution of annual Share & Learn sessions on sustainability with Vattenfall's most important suppliers

Number of suppliers: **~26,500**
Share of total sourcing & purchasing spend: **~75%**
Number of suppliers representing 80% of spend: **~875**

Heat fuels

- Primary fuels include biomass and waste. Limited amounts of peat are sourced
- Approximately 90% of heat fuels are sourced locally from the country of operation; no new suppliers from high-risk countries to Sweden or Germany in 2016
- The Code of Conduct for Suppliers is included in all new contracts except for waste tenders with Nordic municipalities
- Performed screening audits for all new suppliers, including desktop assessments and/or site visits
- Conducted regular site visits in Sweden and rotating, monthly site audits for biomass suppliers in Germany. Most findings pertained to truck overloading and PSE/health and safety awareness. Action plans were drawn up and agreed upon with supplier. Will be in focus for 2017

Number of suppliers: **~125**
Share of total sourcing & purchasing spend: **~5%**
Number of suppliers representing 80% of spend: **~30**

Commodity fuels

- Primary fuels include coal and biomass. Limited amounts of gas and oil are sourced
- The main sourcing countries are Russia (45%), Poland (15%) and Colombia (20%) for coal, and Estonia, Latvia, Portugal and Lithuania for biomass
- Bilateral hard coal and biomass contracts include an ethical clause that includes the ten principles of the UN Global Compact or Vattenfall's Code of Conduct for Suppliers, or alignment with relevant industry initiatives such as Bettercoal or the Sustainable Biomass Partnership
- We have identified areas of improvement for all coal suppliers and developed an engagement strategy for each supplier to engage in a dialogue and improve on-the-ground performance
- Three new criteria were introduced for our Colombian suppliers to push for reconciliation for victims of past human rights violations
- We engaged external stakeholders directly and through Bettercoal. Examples include:
  - Meetings with civil society organisations, including PAX, Forum Syd, Action Aid, OECD and UNGC in Germany
  - Meetings with government representatives, including the Dutch Ministry of Foreign Affairs
  - Meetings with various mining companies, including Drummond and Glencore, on our criteria for Colombian suppliers
- About 30% of our biomass suppliers are SBP-certified, including all suppliers with medium- or long-term contracts, and more are in the process of becoming certified. Certification is considered as compliance with the Code of Conduct for Suppliers and is regarded to be equivalent to an external audit, including the requirements for corrective actions

Number of suppliers: **~30**
Share of total sourcing & purchasing spend: **~15%**
Number of suppliers representing 80% of spend: **~10**

Nuclear fuel

- No new suppliers in 2016. Uranium deliveries were equally spread among Namibia, Canada, Australia, Kazakhstan and Russia. All uranium suppliers are regularly audited (every 3–6 years) and are continuously assessed if non-conformities or other events are reported during the contract period
- Vattenfall's Code of Conduct for Suppliers, quality and environmental requirements, and adherence to UN Global Compact 10 principles are included in all new supplier contracts and are the basis for supplier assessments
- Screening and approval of all nuclear fuel suppliers that made deliveries in 2016 were performed prior to delivery
- Management systems are generally at a high standard. Key findings are normally related to documentation management and use of personal safety equipment
- In 2016 we conducted a pilot project in which we integrated human rights aspects into a supplier audit. In 2017 we will develop a plan to further integrate human rights considerations into supplier evaluations

Number of suppliers: **~20**
Share of total sourcing & purchasing spend: ~**5%**
Number of suppliers representing 80% of spend: **~5**

Human rights

Vattenfall conducts its operations primarily in Northwest Europe (Sweden and the other Nordic countries, Germany, the Netherlands and the UK). All of these countries have confirmed that they adhere to the International Labour Organization's eight fundamental conventions. Protecting human rights is important for us and our stakeholders. We have explicitly stated our commitment to respecting human rights in our Group-wide Sustainability Policy, Code of Conduct, Code of Conduct for Suppliers, and in our statement on slavery and human rights (in accordance with the UK Modern Slavery Act).

Human rights was an area of focus for Vattenfall in 2016, and during the year we took a number of measures to strengthen human rights protections throughout the value chain. We have emphasised the importance of human rights considerations in our supply chain by strengthening our due diligence procedures and revising the Code of Conduct for Suppliers. We also commissioned an independent third party to conduct a screening of human rights impacts throughout our value chain and to identify the most significant risks in our business.

The impact screening indicates a generally strong internal commitment to human rights, especially from top management and specialists. Environment, health and safety issues are well integrated into the organisation, and we hold our contractors to the same standard. Further, we have made good progress in emphasising the importance of human rights considerations in our supply chain by strengthening our due diligence procedures and conducting supplier human rights assessments. One area in need of improvement is the implementation of activity-specific influence and consequence assessments that cover all aspects of human rights. These form the foundation for our work on devising targeted action plans, including training and education. We also need to more clearly delineate how we integrate all human rights aspects into our processes and governance throughout the value chain.

Additionally, we have prepared a statement on slavery and human rights in accordance with the UK Modern Slavery Act which contains more details on our actions, with a focus on the supply chain. For the complete statement, please see corporate.vattenfall.com/statement-on-slavery

Tax policy

Tax policy

Vattenfall is a major taxpayer in the markets in which we operate. According to our policy, we pay taxes in the country where the profit is generated and in accordance with local laws and regulations. Vattenfall's Tax Risk Policy states that taxes within the Vattenfall Group should be handled in a compliant and prudent way and is approved by the CFO and the Audit Committee. The tax philosophy for the Group is to act as a good citizen.

Tax trends

Vattenfall welcomes the trend of increasing tax transparency. Among the most important new developments are projects both in the EU and OECD aimed at counteracting profit shifting and erosion of Member States' tax bases, as well as concrete measures to prevent aggressive tax planning, boost tax transparency and create a level playing field for all businesses in the EU. The aim is to help Member States to take strong and coordinated action against tax evasion and ensure that companies pay tax wherever they make their profits in the EU. One direct manifestation of these efforts is that country-by-country reporting is now a legal requirement in all of the countries in which Vattenfall operates.

Vattenfall as taxpayer

The total taxes Vattenfall pays have a significant impact on our operating countries and in local communities. In addition to the payment of taxes and fees, our operations bring benefit to local economies by providing employment opportunities.

In addition to corporate income taxes, Vattenfall pays taxes on production and property as well as social security charges and taxes for employees. In many of our operating countries, these non-income-based taxes account for a majority of the tax costs. In the Income Statement, these taxes are included in the cost of goods sold, and thus income taxes are only a part of the total taxes paid by Vattenfall. Total taxes for 2016 amounted to SEK 12.4 billion, of which corporate income taxes accounted for SEK 2.6 billion.

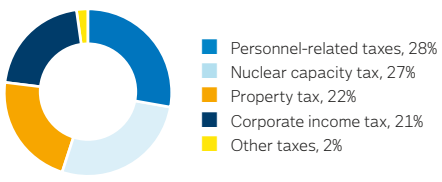
Vattenfall has a conservative view of tax planning and has established tax steering and follow-up processes to ensure alignment with tax legislation. The units for tax matters at the Group and country levels ensure that the Vattenfall Group's business activities are carried out in a proactive and tax compliant way, i.e., in a socially responsible manner.

Tax history by country

SEK million	SE	DE	NL	Other	Total
2016	9,894	2,157	316	53	**12,419**
2015	9,578	-641	520	42	**9,500**
2014	10,687	4,219	379	169	**15,454**

Taxes 2016

SEK million	Sweden	Germany	Netherlands	Other	Total
Personnel-related taxes	1,781	1,455	268	34	**3,538**
Nuclear capacity tax	3,318	–	–	–	**3,318**
Property tax	2,663	57	24	22	**2,766**
Income tax	2,074	571	–	-4	**2,642**
Other taxes	58	74	23	–	**156**
Total taxes 2016	**9,894**	**2,157**	**316**	**53**	12,419



Environment

Goals coupled to the EU 2020 targets

Vattenfall informs the Swedish Parliament yearly via the Government Offices on developments in relation to the EU's 2020 targets. The three relevant targets are the CO_2 emissions reduction target, the renewable energy target, and the energy efficiency target.

CO_2 emissions

Climate impact is Vattenfall's most important environmental aspect and is a core parameter in the definition of our strategy. Vattenfall has set a target to reduce its absolute CO_2 emissions to 21 million tonnes by 2020 and to be climate-neutral by 2050, and by 2030 in the Nordic countries. Our targets for 2020 are set on a pro rata basis to reflect Vattenfall's share of ownership in the various operations.

We strive for transparency in our environmental work, and part of this involves our voluntary reporting of climate-related data and information to the CDP. Reporting to the CDP also helps us to identify areas of improvement for our climate-related work. Our Climate Score for 2016 was B (on an A to D- scale), which is above the industry average but still below the leading utilities. We improved our score significantly from 2015 to 2016, and we aim to further improve our score in 2017.

Vattenfall's main climate footprint is linked to our direct emissions. With the sale of the lignite operations, the relative importance of upstream and downstream emissions will increase.

Other emissions

In addition to CO_2, the combustion of fossil fuels and biomass in power plants emits sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and particulates. The construction, operation and dismantling of our power plants and networks also produce noise and dust. Vattenfall attaches great importance to complying with all legal emission thresholds and uses innovative technologies to reduce its emissions.

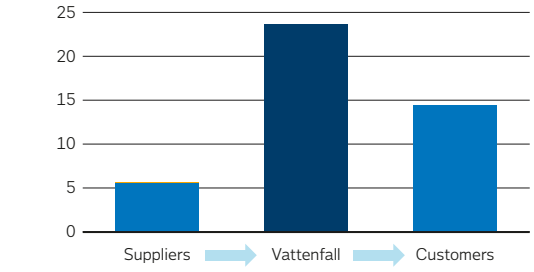
Following are examples of our efforts to reduce our emissions:

- Primary measures such as targeted mixing of coal quality or combustion controlling (NOx, CO) reduce combustion emissions, and secondary measures such as electrostatic precipitators or filter bags (particulates), flue gas desulphurisation (SO_2) and DENOX cleaning of flue gas (NO_x)
- Noise protection walls and facades or encapsulation of units dampens noise from our operations
- Through the use of combined heat and power (CHP) we improve fuel efficiency and thereby reduce our specific emissions. In addition, the expansion of district heating replaces a lot of single heating units with high specific emissions
- The shift to biomass is contributing to a reduction of SO_2 in particular

Energy efficiency

We have set a target to exceed 1,000 GWh of cumulative energy efficiency improvements for the period 2016–2020. In 2016 we achieved 330 GWh in efficiency improvements, mainly through upgrades of nuclear and hydro power plants and by exchanging local boilers with district heating. Vattenfall is working continuously to increase its energy efficiency by changing over to more efficient components, expanding district heating networks, and also by helping customers adopt energy efficiency measures.

Vattenfall's climate footprint



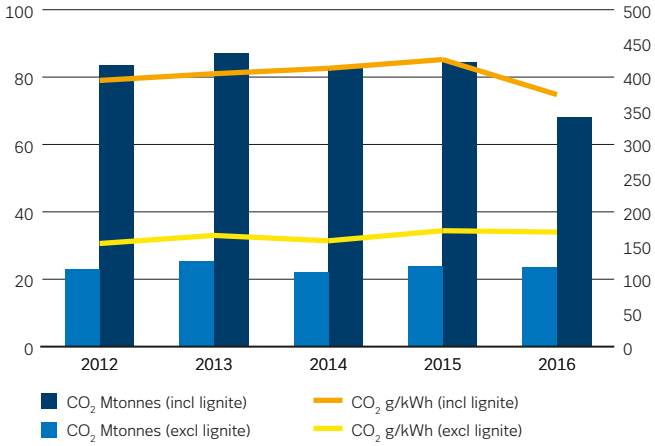
Scope 1: emissions include CO_2, SF_6 and N_2O emissions; 0.2 Mtonnes CO_2 equivalent consist of SF_6 and N_2O emissions.

Scope 2: the majority of energy used is bought from Vattenfall's own production facilities and is therefore included in Scope 1; through application of market-based emission factors (residual mix), Vattenfall's Scope 2 emissions amounted to 0.2 Mtonnes CO_2.

Scope 3 emissions include fuel production and transports, non-fuel procurement, business travel and emissions linked to fuel sales to customers. Total Scope 3 emissions amounted to 19.9 Mtonnes CO_2.

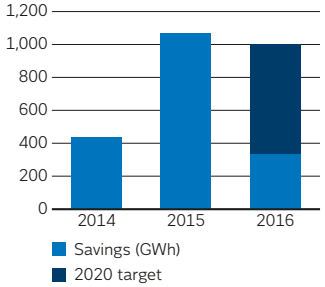
Emissions factors have been obtained from the IPCC Fifth Assessment Report, average national grid factors from the Association of Issuing Bodies and Scope 3 emissions calculated from lifecycle data and information from suppliers.

CO_2 emissions

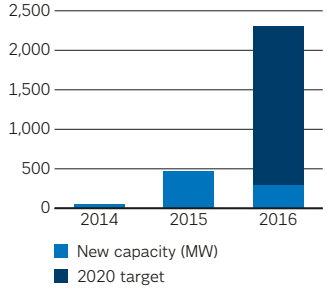


Vattenfall's total CO_2 emissions in 2016 amounted to 68.2 Mtonnes. The reduction in both total and specific emissions is mainly due to the divestment of the lignite operation, which was completed on 30 September 2016.

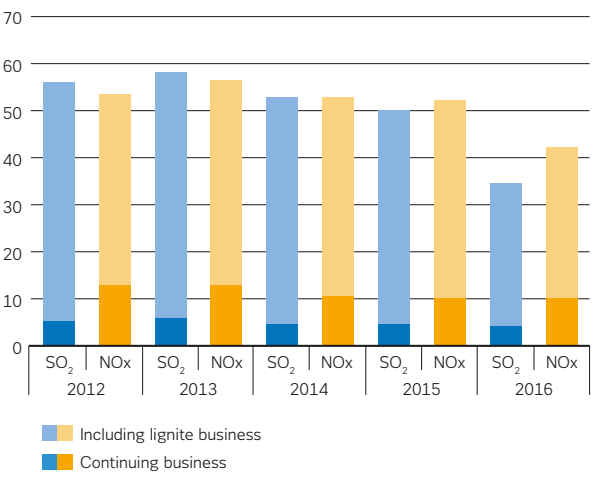
Energy efficiency improvements



New renewable capacity



Nitrogen oxide (NOx) and sulphur dioxide (SO_2)



The EU Energy Efficiency Directive sets the requirement that all large companies must carry out an energy audit to identify economically viable energy saving initiatives. In Vattenfall audits have been conducted, or are ongoing, in line with requirements in the various national implementations of the directive. Vattenfall meets the requirements of the legislation through existing certified Energy Management Systems or by adapting existing certified Environmental Management Systems and through the use of energy auditors. Vattenfall also has its own certified auditors that support other large companies to identify energy savings potential and to meet the requirements of the legislation.

Renewable energy

Our renewable energy target is to install at least 2,300 MW of cumulative additional capacity between 2016 and 2020. In 2016 we installed 297 MW of new renewable energy capacity. A large share of this comes from the Sandbank offshore wind farm in Germany (216 MW installed of total 288 MW planned). Additional capacity came from the Högabjär (38 MW) and Höge Väg (38 MW) onshore wind farms in Sweden, plus 5 MW of solar energy adjacent to the Parc Cynog wind farm in Wales.

Environmental management

Vattenfall's environmental management system is part of the Vattenfall Management System (VMS) and is based on ISO 14001. Many units within Vattenfall have their own local environmental management systems, some of which are certified according to ISO 14001, EMAS or other standards. In 2016, 99.7% of our electricity generation and 97.9% of our heat production came from facilities with certified environmental management systems. Our environmental activities are governed by an environmental policy and operational instructions which describe the principles for environmental governance and environmental management.

Biodiversity

Vattenfall's operations have direct impacts on biodiversity through the use of land, alteration of natural landscapes, and emissions. We also have indirect impacts throughout our operational value chain. As our operations require permits, compensation measures for biodiversity impacts are agreed to during the permitting procedures in consultation with authorities and other stakeholders, including local communities. Thus, sound management of biodiversity ensures we fulfil all legal requirements, minimises the risk on our licence to operate and mitigates the risk of project delays due to permitting obstacles.

Our approach to biodiversity management includes introducing biodiversity considerations early in project and site planning, increased attention on biodiversity in permit procedures, and enhanced communication of our activities in order to increase transparency and meet the expectations of public stakeholders. Vattenfall is active in biodiversity research, mainly in the wind and hydro power areas, with the aim of increasing knowledge in order to better conduct our operations with the smallest possible impact.

Biodiversity and wind power

It is Vattenfall's goal to implement the right environmental solutions when planning, constructing, operating and expanding our wind farms.

Vattenfall is active in peatland and upland habitat restoration in the UK. Our Pen y Cymoedd wind farm is located in a commercial forest in the famous coalfields of South Wales. Vattenfall has committed GBP 3 million to support a Habitat Management Plan to deliver key restoration and conservation priorities. The plan will be guided by a steering group of external experts. Some of the opportunities include restoring and maintaining peat bodies, managing stream corridors and restoring native woodland, creating feeding and breeding habitats for important species, and improving the biodiversity potential of the site.

Vattenfall is active in various research programmes in partnership with industry and other key stakeholders to learn more about the impact of onshore and offshore wind farms on birds and marine mammals.

At the Smøla wind farm in Norway, which is owned and operated by Statkraft, we are part of a project to investigate the effectiveness of various solutions to mitigate the risk of birds colliding with turbine blades. One of the proposals being evaluated is to paint one of the rotor blades black to make them more conspicuous to the birds. The researchers hope that this will help birds detect and avoid the blades more easily. At our Thanet offshore wind farm in the UK, we are part of an ambitious project using radar and video devices to better understand bird collision risk and avoidance rates.

In addition to birds, offshore wind farms can also impact the habitat of a wide range of marine plant and animal species. During construction, one concern involves the impact of underwater noise on marine mammals during foundation installation. At the DanTysk and Sandbank offshore wind farms in Germany we are working actively to reduce this noise and other environmental impacts. For example, we use seal-scarers prior to piling to make the animals leave the site, and new methods of reducing noise with air bubbles (Big Bubble curtains) or sound mitigating elements (Hydrosound damper) are employed around the installation vessels and foundations.

Very little is known about the response of marine mammals to the underwater noise of foundation installation. To find out more, Vattenfall is actively involved in research projects in this area, such as GESCHA and DEPONS.

DEPONS (http://depons.au.dk/) is a Vattenfall-led research project conducted by Aarhus University in Denmark in collaboration with other international offshore developers and government bodies. The project aims to develop an evidence-based modelling tool for assessment of the consequences of piling noise disturbance effects from wind farms on the harbour porpoise population in the North Sea.

GESCHA is a joint industry project with 20 partners that is comprehensively investigating the behaviour of harbour porpoises during pile driving for offshore wind farms in the German Bight of the North Sea.

Biodiversity and hydro power

Large-scale hydro power is of vital importance to Sweden's national energy system, and its flexible characteristics can be used to balance an increased amount of intermittent wind energy production in the system. The construction of hydro power plants and reservoirs has resulted in large impacts on the landscape and natural environment. Effects of hydro power on biodiversity are specially handled in the EU Water Framework Directive, the Habitat Directive, and eel fishing regulations. To identify measures and work to improve biodiversity in connection to our hydro power plants, while maintaining a high production and regulation capacity, Vattenfall Hydropower has initiated a biodiversity action programme. A number of projects are being conducted together with authorities, universities and other stakeholders to identify the best way of reducing the impact of Sweden's hydro power fleet while at the same time safeguarding our renewable energy generation.

Examples of mitigation measure carried out are:

- Construction of a fish passage at the Långed hydro power station in the Upperudsälven river
- Trapping and transportation of spawning European eels past hydro power stations in the Göta älv river between Lake Vänern and the Kattegatt sea
- Biotope restoration of tributaries to the Säveån, Upperudsälven, Göta älv and Luleälven rivers
- Increasing passage efficiency for spawning salmon and sea trout in the old river channel downstream from Stornorrfors hydro power station in the Ume älv river

Knowledge-building activities include both research and pilot studies, for example:

- Participation in research programmes to find measures to minimise effects from hydro power on biodiversity without affecting the hydro power system itself
- Studies of the possibility to restore the natural reproduction of salmon and sea trout in the lower part of the Dalälven river
- Optimisation of restoration measures and morphology relative to minimum flow in the Juktån river, a tributary to the Ume älv river
- Participation in pilot studies to find measures in accordance with the Water Framework Directive together with authorities for the Dalälven and Luleälven rivers
- Combining expertise in ecology and hydraulics to developan ecohydraulic centre in Älvkarleby together with Vattenfall Research and Development

Water management

Cooling water

Vattenfall's fossil fuel and nuclear power plants use large amounts of cooling water. Flow through cooling is used when large volumes of water, like river or sea water, are available. Cooling towers utilise closed cooling cycles and use considerably less water. Compared with flow through cooling, cooling towers reduce warming of watercourses by approximately 95%. Vattenfall complies with all respective regulations stipulating the requirements on water quality. Water temperature is strictly controlled in the outlet water stream to prevent harm to the aquatic fauna and flora.

Environment, cont.

Wastewater

Wastewater from Vattenfall's installations is carefully cleaned and constantly monitored. We also conduct comprehensive laboratory controls. No untreated wastewater is discharged into watercourses.

Waste management

Vattenfall strives to work according to the waste hierarchy and to continuously reduce its amount of waste and optimise the use of by-products. Waste and by-products are generated during the operation and maintenance of power plants, electricity and heating networks, and during construction and dismantling of power generation systems. The activities conducted at Vattenfall's offices also generate waste, albeit only a minor portion compared with the other parts of the Group's operations. Depending on the content and potential further utilisation, waste is classified as non-hazardous waste, hazardous waste or as a by-product. Radioactive waste is a special form of waste derived from the operations of nuclear power plants.

By-products

By-products, mainly ash and gypsum, are produced in flue gas cleaning associated with the combustion of solid fuels, such as lignite and hard coal. The volumes of waste and by-products are a direct effect of how much fuel is used and how effective the flue gas cleaning is. Vattenfall optimises the quality of by-products to facilitate reuse. For example, ash from Vattenfall's hard coal–fired plants is used in the production of cement and asphalt for road construction. In addition, Vattenfall is an important producer of synthetic gypsum (a by-product of flue gas desulphurisation) and supplies high-quality gypsum to the construction industry.

Radioactive waste

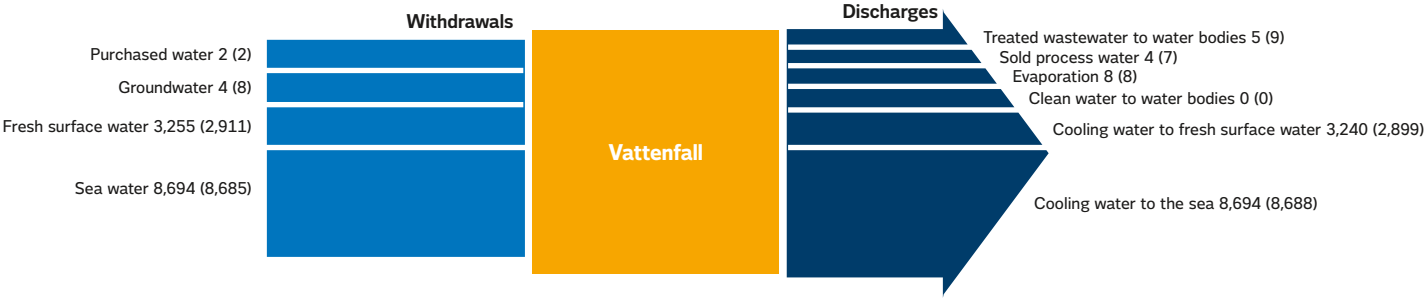
Vattenfall operates nuclear power plants in Sweden and Germany. It is the operator's responsibility to have reliable solutions for managing nuclear waste.

High-level, long-life radioactive waste, primarily consisting of spent nuclear fuel, must be carefully shielded during handling and transportation. When the waste is stored, it is encapsulated to prevent leakage. The type and location of storage depends on the radioactive level of the waste and its ability to generate heat. The entire disposal process is strictly regulated and monitored. (More information about radioactive waste can be found on page 172).

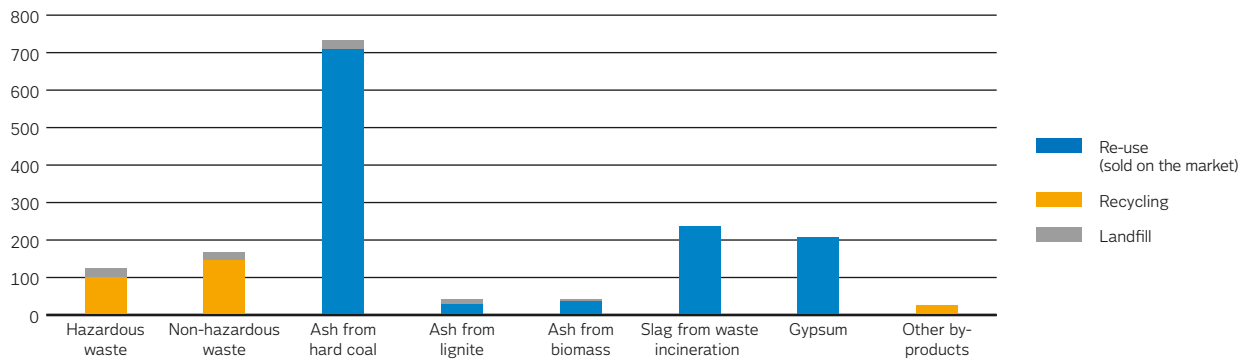
Chemicals

Chemicals are used in our electricity and heat operations on a daily basis, and Vattenfall is continuously working to improve occupational health and safety by eliminating and/or substituting hazardous chemicals. We are constantly working on development of technical processes that require less hazardous or lower use of chemicals. We also take steps to ensure that the chemicals can be used for as long as possible. The oils used in wind turbine gearboxes are an example. As a part of the maintenance plan development, the oils are checked at regular intervals and are changed or replaced if needed. This process not only contributes to optimal use of the oils, but also increases the reliability of the gearboxes and improves the availability of the wind turbines.

Total withdrawals and discharges of water[1] (million m³)



Waste and by-products[1] (ktonnes)



ktonnes	Hazardous waste[2]	Non-hazardous waste	Ash from hard coal	Ash from lignite	Ash from biomass	Slag from waste incineration	Gypsum	Other by-products
2016 (incl lignite business)	119	198	734	3,957	41	237	2,341	26
2016	106	133	734	41	41	237	208	26
2015	76	128	745	46	38	229	193	32

Waste from construction and demolition make up a small portion compared with the by-products that are created at combustion plants.

[1] Data for continuing business, i.e. excluding lignite operations, unless otherwise stated.
[2] Includes fly ash from waste incineration.

Human Resources

Vattenfall's remuneration strategy

Vattenfall's overall remuneration strategy outlines the guidelines for compensation and benefits in Vattenfall within the framework for state-owned companies. The strategy supports the Group Strategic Direction and the Vattenfall People Strategy and aims to promote an engaging, high performance culture, develop relevant and diverse competencies, and ensure an effective and purposeful HR organisation.

Variable pay programmes

Remuneration in Vattenfall consists of fixed salary, short-term and long-term variable compensation, pensions and other benefits. Vattenfall offers variable pay programmes to employees to strengthen the connection between performance and reward, increase performance, and to attract, retain and motivate employees of all levels. Our employees contribute to the success of Vattenfall and should share in that success through short-term remuneration that rewards and recognises performance to a greater extent.

The programmes are set up based on local legal requirements, collective agreements, and market conditions and therefore may differ from country to country. Pursuant to an Annual General Meeting resolution and in accordance with the Swedish' state's guidelines, senior executives do not receive any variable pay.

Diversity

Vattenfall is a strong proponent of human rights and has integrated equal opportunity into its hiring strategies and governance principles. Our goal is to have the same gender composition in management positions as the company as a whole. This year brought us closer to our goal, as women represented more than 30% of all managerial hires, increasing the share of female managers from 19% in 2015 to 22% in 2016.

Training and education

We believe that our employees are the company's most important asset, and that continuous development increases their job satisfaction and performance. Accordingly, we update our training catalogue regularly with best in class courses and experienced instructors to offer suitable high quality courses for our employees. We encourage our employees to find and participate in courses that are relevant for them.

Name of programme	Why	How	Who	Amount, SEK 000s[1]
Profit sharing	Designed to share the overall success of Vattenfall	Based on the Vattenfall Group's targets	23,000	24,048
Short-term incentive programme	Designed to reward and recognise performance to a greater extent as well as ensure alignment with Vattenfall's strategy and business plan	Based on the Vattenfall Group's, Business Areas' and individual targets. The performance measures are determined annually	4,000	222,633
Long-term incentive programme	Designed to reward employees' long-term performance	Based on individual performance, thus creating a direct link to performance achievement	80	25,157[2]

[1] Payment in 2016 is based on the 2015 earnings year.

[2] Based on payments for both 2014 and 2015.

Employee key ratios

	Number of employees	Women	Men	–29	30–49	50–
Managers	1,865	22%	78%	1%	57%	42%
Country						
Sweden	8,684	25%	75%	10%	50%	39%
Germany	6,998	22%	78%	10%	42%	48%
Netherlands	3,595	24%	76%	7%	61%	32%
Other	658	26%	74%	11%	68%	21%
Total	**19,935**	**24%**	**76%**	**10%**	**50%**	**40%**

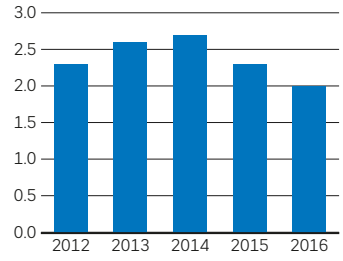
Training and education

	Sweden	Germany	Netherlands	Total
Training days per employee	1.5	1.2	0.8	1.3
Training cost per employee (EUR)	836	773	585	775

LTIF[1] – Lost Time Injury Frequency for employees

	Sweden	Germany	Netherlands	Vattenfall total[2]
LTIF internal employees	1.6	2.3	2.0	**2.0**
Fatal accidents				–
LTI external (contractors)[3]	33	59	6	**101**
Fatal accidents				–
Sick leave per country 2016				
Men	1.9%	4.8%	4.5%	**3.5%**
Women	4.0%	7.0%	6.0%	**5.4%**
Total	**2.4%**	**5.3%**	**4.9%**	**4.0%**

LTIF internal employees 2012–2016



[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] Including Denmark and the UK.

[3] Since the contractor LTIF cannot be calculated with sufficient reliability, only LTI is reported.

During the year a Health & Safety maturity model was implemented in parts of the organisation, which contributed to a reduction in LTIF. The indicator 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.

GRI Index and additional 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 2016 Vattenfall adheres to the GRI G4 Guidelines and reports according to the Core option. This means that Vattenfall has identified the aspects that are significant for the company and reports at least one indicator per aspect. Omitted information is reported in the GRI Index on pages 168–171. Certain aspects, such as water, effluents and waste, are most relevant at the local level and are not as significant 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 most significant 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 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 2016 financial year, unless indicated otherwise, and the figures provided pertain to the 2016 financial year. Vattenfall reports sustainability data annually, and the preceding year's report was published on 23 March 2016.

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 G4 entails 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 71. Changes in Vattenfall's supply chain are described on pages 159–160. Changes in the capital structure and other changes in capital are described in Note 42 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 160. A supplier of goods and services is defined as an entity providing goods and services to Vattenfall and whose paid invoices exceed SEK 3,000 in 2016. For commodity fuels, a coal supplier is an entity which delivered coal to Vattenfall's power plants for its own use. A supplier of biomass, nuclear fuel or heat fuels is an entity Vattenfall has a contract with. For all categories, a new supplier is an entity which did not previously have a contractual relationship with Vattenfall and which signed its first contract with us during the 2016 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. The 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 persons due to the difficulty in obtaining quality data for this type of reporting.

External assurance
The sustainability information in the Annual and Sustainability Report for 2016 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's Global Compact and to adhere to the OECD Guidelines for Mulitnational 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 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
- UNEP Sustainable Innovation Forum
- The World Economic Forum
- WindEurope

Vattenfall mainly operates in Northwest Europe (Sweden and the rest of the Nordic region, Germany, the Netherlands and the UK). 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.

UN Global Compact – 10 Principles

Human Rights

1 Businesses should support and respect the protection of internationally proclaimed human rights; and
2 make sure that they are not complicit in human rights abuses.

Labour

3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
4 the elimination of all forms of forced and compulsory labour;
5 the effective abolition of child labour; and
6 the elimination of discrimination in respect of employment and occupation.

Environment

7 Businesses should support a precautionary approach to environmental challenges;
8 undertake initiatives to promote greater environmental responsibility; and
9 encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

10 Businesses should work against corruption in all its forms, including extortion and bribery.

UN Sustainable Development Goals

Vattenfall's strategy is aligned with the UN Sustainable Development Goals (SDGs). Based on the updated materiality analysis, an analysis of our strategic targets, and internal dialogues and workshops, we have identified the five SDGs most relevant to our business areas and towards which Vattenfall makes the most meaningful global contribution:

– 7: Affordable and clean energy
– 9: Industry, innovation and infrastructure
– 11: Sustainable cities and communities
– 12: Responsible consumption and production
– 13: Climate action

Vattenfall impacts a number of other SDGs as well, locally or via our suppliers. As our strategic focus evolves, so too will our prioritisation of the various SDGs, but our focus for now remains on the five SDGs listed above.

Swedish Environmental Objectives

As a Swedish state-owned company, Vattenfall takes its responsibility to Sweden, its people, and its environment very seriously. By investing in new renewable energy generation, supporting the introduction of electric transportation and conducting environmental improvements in our power plants, we contribute to several Environmental Objectives, including Reduced Climate Impact, Clean Air, Flourishing Lakes and Streams, and A Good Built Environment.

General standard disclosure

DMA and indicator		Page or reference	Omissions	UNGC Principle(s)
Strategy and analysis				
G4-1	Statement from the most senior decision-maker of the organisation	4–5		
Organisational profile				
G4-3	The name of the organisation	Cover, Note 1		
G4-4	Brands, products and services	26–27		8–9: Environment
G4-5	Location of the organisation's headquarters	3		
G4-6	The number of countries and their names where the organisation has significant operations	3, 178		
G4-7	Nature of ownership and legal form	3		
G4-8	Markets served (including geographic breakdown, sectors served, and types of customers)	3, 178		
G4-9	Scale of the organisation, including number of employees, operations, net sales, total capitalisation (debt/equity)	3–4		
G4-10	Number of employees by employment contract, gender, region, and permanent employees/seasonal employees	165		6: Labour
G4-11	Percentage of total employees covered by collective bargaining agreements	98% at Group level		3: Labour
G4-12	The organisation's supply chain	159–160		
G4-13	Changes in the organisation's size, structure, ownership, supply chain	8–9, Note 4, Note 5, Note 20		
G4-14	Handling of the precautionary principle	57–63		1–10
G4-15	External sustainability principles and initiatives to which the organisation subscribes or which it endorses	166		
G4-16	Memberships of associations and industry advocacy organisations	166		
EU1	Installed capacity	178–180		
EU2	Energy production, net	178–180		
EU3	Number of customers	3, 178–179		
EU4	Length of transmission and distribution lines, based on voltage	178–179		
EU5	Allocation of CO_2 emission allowances	178–179		

General standard disclosure

DMA and indicator		Page or reference	Omissions	UNGC Principle(s)
Identified Material Aspects and Boundaries				
G4-17	Entities included in the reporting, or not	166, Note 3, Note 20		
G4-18	Process for defining the report content	158, vattenfall. com/sustainability		
G4-19	Identified material Aspects	157–158, vattenfall.com/sustainability		
G4-20	Aspect Boundaries for each material aspect within the organisation	166, vattenfall.com/sustainability		
G4-21	Aspect Boundaries for each material aspect outside the organisation	166, vattenfall.com/sustainability		
G4-22	The effect of any restatements of information provided in previous reports	166		
G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries	166		
Stakeholder Engagement				
G4-24	List of stakeholder groups	157		
G4-25	Basis for identification and selection of stakeholders	157, vattenfall. com/sustainability		
G4-26	Approach to stakeholder engagement	157 vattenfall.com/sustainability		
G4-27	Key topics, concerns and the organisation's response, including through its reporting	157–158, vattenfall.com/sustainability		
Report Profile				
G4-28	Reporting period	166		
G4-29	Date of most recent previous report	166		
G4-30	Reporting cycle	166		
G4-31	Contact information	Back Cover		
G4-32	GRI content and references	168–171		
G4-33	Policy for external assurance	69, 155		
Governance				
G4-34	Governance structure, including committees and board responsibility for decision-making on economic, environmental and social impacts	64–78		
Ethics and Integrity				
G4-56	Values, principles and codes of conduct	53–55, 70–71, 159, 161		1–10

Specific standard disclosure

DMA and indicator		Page or reference	Omissions	UNGC Principle(s)
Economic				
Sector specific aspect: Research and development				
G4-DMA	Research and development activities	48–49	No reporting on allocation of R&D resources for strategic and competetive reasons.	
Sector specific aspect: Plant decommissioning				
G4-DMA	Plant decommissioning	31, 41		
Environmental				
Aspect: Energy				
G4-DMA	Energy	19–20, 30–31		8–9: Environment
Specific DMA	Energy regulations	14–15		
G4-EN3	Energy consumption within the organisation	172	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.	
Aspect: Water				
G4-DMA	Water	164		8–9: Environment
Sector specific DMA	Access to water		No reporting due to insignificance, as Vattenfall has no power plants in areas with poor access to water.	
G4-EN8	Water sources	164	Rain and waste water from other organisations are not reported, as this is not significant compared with other water flows.	
Aspect: Emissions				
G4-DMA	Emissions	19–20, 30–31, 40–41		7–9: Environment
Specific DMA	Emissions regulations	14-15	Focus on regulations and policies for CO_2, as this is most significant for Vattenfall.	
G4-EN15	Direct greenhouse gas emissions	6, 19–20, 40–41, 162, 172		8: Environment
G4-EN18	Greenhouse gas emissions intensity	162, 172	CO_2 emissions (Scope 1) are reported	
G4-EN21	Emissions to air	40, 162, 172	Emissions of POP, VOC and HAP are not reported because they are not measured regularly, since they are not significant for Vattenfall's plants. There are no specific legal requirements associated with these emissions.	
Aspect: Effluents and waste				
G4-DMA	Effluents and waste	164		8–9: Environment
Sector specific DMA	Nuclear waste	33, 164, 172		
G4-EN22	Water discharge	164		
G4-EN23	Waste	164		
Aspect: Supplier environment assessment				
G4-DMA	Audit of suppliers	159–160		7: Environment
Specific DMA	Audit system for new suppliers	159–160		
G4-EN32	Audit of new suppliers	159–160, vattenfall. com/sustainability		

Specific standard disclosure

DMA and indicator		Page or reference	Omissions	UNGC Principle(s)
Social				
Working conditions				
Aspect: Occupational Health & Safety				
G4-DMA	Occupational Health & Safety	53–54, 166		1-2: Human Rights 4-6: Labour
Specific DMA	Programme for handling illnesses	53–54		
G4-LA6	Injuries, absences and work-related fatilities	6, 53–54, 166		
Aspect: Training and education				
G4-DMA	Training and education	53–54, 166		6: Labour
G4-LA11	Performance and career development	166	No reporting per employee category, since such a categorical breakdown does not exist in Vattenfall.	
Aspect: Diversity and equal opportunity				
G4-DMA	Diversity and equal opportunity	53–54, 166		6: Labour
G4-LA12	Composition of governance bodies	166, 74-75	No reporing per minority group, as this is prohibited by rules in certain markets.	
Aspect: Supplier labour assessment				
G4-DMA	Audit of suppliers	159–160		3-6: Labour
Specific DMA	Audit system for new suppliers	159–160		
G4-LA14	Audit of new suppliers	159–160, vattenfall. com/sustainability		
Human rights				
Aspect: Supplier human rights assessment				
G4-DMA	Audit of suppliers	159–160, 31		1–2: Human Rights
Specific DMA	Audit system for new suppliers	159–160		
G4-HR10	Audit of new suppliers	159–160, vattenfall. com/sustainability		
Society				
Aspect: Local communities				
G4-DMA	Local communities	37–38, 45, 157		1–2: Human Rights 8–9: Environment
G4-SO2	Actual and potential negative impacts on local communities	37–38, 45, 157		
Sector specific DMA	Stakeholders' participation in decision-making processes	157		1–2: Human Rights
Aspect: Anti-corruption				
G4-DMA	Anti-corruption	55		10: Anti-corruption
Specific DMA	Risk assessment process	55, 58, 70		10: Anti-corruption
G4-SO4	Communication and training on anticorruption policies and procedures	55		
Aspect: Anti-competitive behaviour				
G4-DMA	Anti-competitive behaviour	55, 70		10: Anti-corruption
G4-SO7	Legal actions against anti-competitive operations	55, Note 44		
Product responsibility				
Aspect: Product and service labelling				
G4-DMA	Product and service labelling	20, 26–27		
Specific DMA	Customer satisfaction	6, 26		
G4-PR5	Customer satisfaction	6, 26		

Five-year overview of sustainability data

	2012	2013	2014	2015[5]	2016[5]
Production and the environment					
Electricity generation	178.9	181.7	172.9	117.4	119
– of which hydro power	42.2	35.6	34.3	39.5	34.8
– of which nuclear power	48.9	51.9	49.9	42.2	46.9
– of which fossil power	81.7	87.9	82.7	29.2	30.8
– of which wind and solar power	3.6	3.9	4.1	5.8	5.8
– of which biomass and waste	2.5	2.4	2	0.7	0.7
Energy consumption, TWh					
Gas	32.5	37.1	31.7	27.7	32.5
Hard coal	41.5	45.1	35.2	46.1	43.9
Lignite	152.8	157	153.5	3.2	3.2
Peat	0.6	0.7	0.4	0.5	0.5
Waste (non-biogenic)	2.9	3.2	2.9	1.8	1.9
Biomass, waste (biogenic)	10.5	9.8	7.1	4.3	4.6
Other fuels, including oil	5.9	5.7	5.7	1.5	1.5
Uranium (tonnes)	126	133	119	143	119.6
Emissions to air[1]					
Carbon dioxide (CO_2), Mtonnes	83.5	86.9	82.7	23.9	23.7[2]
Specific CO_2 emissions, g/kWh	400	412	421	172	170
Biogenic CO_2[3], Mtonnes	3.6	3.4	2.4	1.5	1.6
Nitrogen oxides(NOx), ktonnes	53.4	56.5	52.8	10.1	10.2
Specific NOx emissions, g/kWh	0.258	0.268	0.271	0.073	0.073
Specific NOx emissions (only combustion plants), g/kWh	0.460	0.458	0.474	0.196	0.196
Sulphur dioxide (SO_2), ktonnes	56.1	58.2	53.1	4.5	4.2
Specific SO_2 emissions, g/kWh	0.272	0.276	0.272	0.032	0.03
Specific SO_2 emissions (only combustion plants), g/kWh	0.483	0.472	0.476	0.087	0.081
Particulate matter (PM), ktonnes	1.9	2.1	1.7	0.3	0.3
Specific PM emissions, g/kWh	0.009	0.010	0.008	0.002	0.002
Specific PM emissions (only combustion plants), g/kWh	0.016	0.017	0.015	0.005	0.005
Waste and by-products, ktonnes					
Hazardous waste	431	194	123	76	106
Non-hazardous waste	447	349	416	128	133
Ash from hard coal	667	738	578	745	734
Ash from lignite	5,330	5,388	5,334	45	41
Ash from biomass	64	67	42.3	38.3	41.3
Slag from waste incineration	317	330	245	229	237
Gypsum	3,154	3,219	3,000	193	208
Other by-products	75	73	48	32	26
Radioactive waste					
Low and medium radiactive operational waste, m^3	1,277	883	2,251	3,353	1,013
Core components, tonnes	18	18	10	7	17
Spent nuclear fuel, tonnes	147	161	193	197	124
SAIDI (minutes/customer)					
Sweden	217	183	177	212	150
Germany	12	13	15	11	10
SAIFI (number/customer)					
Sweden	2.6	2.1	2.4	2.2	2.1
Germany	0.3	0.3	0.2	0.2	0.2
Employees					
Number employees, FTE,	32,794	31,819	30,181	28,567	19,935
– of which females	7,928	7,485	6,983	6,399	4,773
– of which temporary employed (not permanent contract)	1,234	1,154	882	761	550
Sick leave					
men %	N/A	3.8%	3.7%	4.1%	3.5%
females %	N/A	5.3%	5.0%	5.8%	5.4%
Working related accidents					
Internal LTIF (employees)	2.3	2.6	2.7	2.6	2.0
External LTI[4] (contractors)	N/A			133	101
Gender diversity					
Female managers %	19%	18%	18%	19%	22%
Share of managers per age category total					
–29	1%	2%	2%	1%	1%
30–49	55%	51%	54%	52%	56%
50–	44%	47%	45%	46%	43%

[1] Emissions are presented in accordance to financial accounting and consolidated.

[2] Total greenhouse emissions amount to 23.9 Mtonnes, 0.2 Mtonnes consist of SF_6 and N_2O emissions. Characterisation factors are obtained from the IPCC Fifth Assessment report.

[3] CO_2 emissions from combustion of biomass.

[4] As the Contractor LTIF calculation is not reliable enough, only LTI is reported.

[5] Figures refer to continuing business.

Quarterly overview

	2015				2016			
Amounts in SEK million	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Income statement items								
Net sales, continuing operations	39,318[1]	30,951[1]	30,939[1]	42,368[1]	41,619	30,047	29,746	37,796
EBITDA, continuing operations	11,847[1]	5,211[1]	5,816[1]	7,730[1]	13,736	4,274	5,886	3,313
Operating profit (EBIT), continuing operations	8,066[1]	-19,116[1]	2,340[1]	3,641[1]	10,198	-8,272	2,251	-2,841
Underlying operating profit, continuing operations	7,386[1]	4,056[1]	2,680[1]	6,407[1]	8,299	3,701	2,602	7,095
Financial income, continuing operations	414[1]	1,005[1]	703[1]	633[1]	640	897	241	-11
Financial expenses, continuing operations	-1,817[1]	-2,276[1]	-1,677[1]	-1,761[1]	-2,213	-1,740	-2,190	-2,006
Profit before income taxes, continuing operations	6,661[1]	-20,386[1]	1,366[1]	2,514[1]	8,625	-9,115	302	-4,858
Profit for the period, Total Vattenfall	4,987	-28,812	1,600	2,460	6,602	-28,644	188	-4,152
– of which, attributable to owners of the Parent Company	4,679	-24,996	1,403	2,243	6,272	-28,508	-35	-4,055
– of which, attributable to non-controlling interests	308	-3,816	197	217	330	-136	223	-97
Cash flow items, Total Vattenfall								
Funds from operations (FFO)	9,795	4,154	5,698	9,362	9,082	6,446	5,501	7,157
Cash flow from operating activities	6,753	9,717	14,868	9,595	-2,658	9,858	12,521	11,062
Free cash flow	4,003	6,218	10,520	4,270	-4,997	6,889	10,170	7,155
Balance sheet items[2]								
Cash and cash equivalents and short-term investments	57,240	54,012	43,364	44,256	37,425	30,958	38,548	43,292
Equity	134,678	108,303	114,440	115,956	124,368	87,713	86,806	83,800
– of which, attributable to owners of the Parent Company	120,367	97,646	103,043	103,984	109,756	72,955	71,276	68,272
– of which, attributable to non-controlling interests	14,311	10,657	11,397	11,972	14,612	14,758	15,530	15,528
Interest-bearing liabilities	137,379	128,162	111,046	110,585	100,158	96,634	98,572	96,667
Net debt	78,825	72,839	65,405	64,201	60,729	63,654	57,971	50,724
Adjusted net debt	150,737	149,080	143,061	137,585	137,387	128,948	124,108	124,741
Provisions	137,554	139,536	141,983	138,263	138,727	126,832	128,582	138,344
Noninterest-bearing liabilities	102,774	87,548	89,889	97,513	98,935	105,772	85,648	90,449
Capital employed, average	298,803	287,377	274,459	279,435	283,833	251,859	249,809	248,640
Balance sheet total	512,385	463,549	457,358	462,317	462,188	416,951	399,608	409,260

Footnotes: For explanation, see page 174

cont. Quarterly overview

	2015				2016			
	Q1	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Key ratios								
In % unless otherwise stated. (x) means times.								
Operating margin, continuing operations	20.5	-61.8	7.6	8.6	24.5	-27.5	7.6	-7.5
Operating margin, continuing operations[3]	18.8	13.1	8.7	15.1	19.9	12.3	8.7	18.8
Pre-tax profit margin, continuing operations	16.9	-65.9	4.4	5.9	20.7	-30.3	1.0	-12.9
Pre-tax profit margin, continuing operations[3]	15.2	9.0	5.6	12.5	16.2	9.5	2.2	13.9
Return on equity, Total Vattenfall	-10.1	-32.6	-14.8	-16.8	-15.8	-20.6	-23.6	-33.4
Return on capital employed, continuing operations	N/A[4]	N/A[4]	N/A[4]	-1.8	-1.0	3.1	3.1	0.5
Return on capital employed, Total Vattenfall	-1.9	-14.6	- 7.1	-8.2	-7.5	-5.5	-5.8	-8.5
Return on capital employed, continuing operations[3]	N/A[4]	N/A[4]	N/A[4]	7.3	7.6	8.4	8.4	8.7
Return on capital employed, Total Vattenfall[3]	7.6	7.5	8.1	7.4	7.4	8.3	8.5	8.7
EBIT interest cover, continuing operations, (x)	N/A[4]	N/A[4]	N/A[4]	-0.8	-0.2	2.2	1.9	0.5
EBIT interest cover, continuing operations, (x)[3]	N/A[4]	N/A[4]	N/A[4]	4.8	4.7	5.2	4.7	4.6
FFO interest cover, continuing operations, (x)	N/A[4]	N/A[4]	N/A[4]	6.5[5]	6.4	7.5	7.3	6.5
FFO interest cover, continuing operations, net, (x)	N/A[4]	N/A[4]	N/A[4]	9.4[5]	9.6	12.6	9.9	7.7
Cash flow interest cover after maintenance investments, continuing operations, (x)	N/A[4]	N/A[4]	N/A[4]	8.8[5]	6.0	8.1	5.7	5.6
FFO/gross debt, continuing operations	N/A[4]	N/A[4]	N/A[4]	23.2[5]	27.0	29.8	30.1	27.8
FFO/gross debt, Total Vattenfall	22.7	24.5	28.9	26.2	28.3	31.7	30.8	29.2
FFO/net debt, continuing operations	N/A[4]	N/A[4]	N/A[4]	39.9[5]	44.5	45.3	51.2	53.0
FFO/net debt, Total Vattenfall	39.5	43.2	49.1	45.2	46.6	48.1	52.4	55.6
FFO/adjusted net debt, continuing operations	N/A[4]	N/A[4]	N/A[4]	18.6[5]	19.7	22.4	23.9	21.6
FFO/adjusted net debt, Total Vattenfall	20.7	21.1	22.5	21.1	20.6	23.7	24.5	22.6
EBITDA/net financial items, continuing operations, (x)	13.7	4.9	13.3	11.6	14.3	10.2	4.6	2.5
EBITDA/net financial items, continuing operations, (x)[3]	12.8	7.3	14.0	15.3	12.3	17.4	4.8	8.1
Equity/total assets, Total Vattenfall	26.3	23.4	25.0	25.1	26.9	21.0	21.7	20.5
Gross debt/equity, Total Vattenfall	102.0	118.3	97.0	95.4	80.5	110.2	113.6	115.4
Net debt/equity, Total Vattenfall	58.5	67.3	57.2	55.4	48.8	72.6	66.8	60.5
Gross debt/gross debt plus equity, Total Vattenfall	50.5	54.2	49.2	48.8	44.6	52.4	53.2	53.6
Net debt/net debt plus equity, Total Vattenfall	36.9	40.2	36.4	35.6	32.8	42.1	40.0	37.7
Net debt/EBITDA, continuing operations, (x)	N/A[4]	N/A[4]	N/A[4]	2.1	1.9	2.0	1.8	1.9
Net debt/EBITDA, Total Vattenfall, (x)	2.1	2.0	1.8	2.0	1.8	1.8	1.7	1.8
Adjusted net debt/EBITDA, continuing operations, (x)	N/A[4]	N/A[4]	N/A[4]	4.5	4.2	4.1	3.9	4.6
Adjusted net debt/EBITDA, Total Vattenfall, (x)	4.0	4.0	4.0	4.2	4.1	3.7	3.7	4.4
Other information								
Investments, continuing operations	4,992[1]	5,908[1]	7,339[1]	7,538[1]	3,334	4,287	6,734	7,568
Electricity generation, TWh, continuing operations	32.4[1]	26.9[1]	26.2[1]	31.9[1]	34.5	26.6	25.2	32.6
Sales of electricity, TWh, continuing operations	53.4	45.9	46.1	51.8	56.0	46.4	50.1	40.7
Sales of heat, TWh, continuing operations	8.2[1]	3.9[1]	2.5[1]	6.1[1]	7.9	3.1	1.8	7.6
Sales of gas, TWh, continuing operations	21.8	8.4	5.4	15.1	22.0	8.3	4.4	18.3
Number of employees, full-time equivalents, Total Vattenfall	29,341	28,977	28,744	28,567	27,512	27,980	27,131	19,935

[1] The value for 2015 has been recalculated compared with information previously 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 amounts as per Q2-Q4 2016 pertain to continuing operations and the amounts as per 2015 and Q1 2016 pertain to Total Vattenfall.

[3] Based on underlying Operating profit, that is, Operating profit excluding Items affecting comparability.

[4] This key ratio has not been calculated, as it is based on trailing 12-month values, which have not been recalculated for the continuing operations for 2014.

[5] The key ratio has been adjusted compared with the value presented in Vattenfall's 2016 year-end report due to an adjustment of FFO by SEK 1,200 million. The adjustment of FFO was due to an incorrect allocation of FFO between continuing and discontinued operations.

Ten-year overview

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Income statement items										
Net sales	143,639	164,549	205,407	213,572	181,040	167,313	172,253	165,945	143,576[1]	139,208[2]
EBITDA	45,821	45,960	51,777	60,706	54,538	54,271	43,554	41,038	30,604[1]	27,209[2]
Operating profit (EBIT)	28,583	29,895	27,938	29,853	23,209	25,958	-6,218	-2,195	-5,069[1]	1,337[2]
Underlying operating profit	28,497	30,220	31,294	36,838	30,793	27,530	28,135	24,133	20,529[1]	21,697[2]
Financial income	2,276	3,412	2,814	2,514	3,843	2,636	1,416	2,590	2,755[1]	1,767[2]
Financial expenses	-6,926	-9,809	-13,018	-10,944	-12,754	-10,476	-10,453	-8,635	-7,531[1]	-8,149[2]
Profit before income taxes	23,933	23,498	17,734	21,423	14,298	18,118	-15,255	-8,240	-9,845[1]	-5,045[2]
Profit for the year	20,686	17,763	13,448	13,185	10,416	17,047	-13,543	-8,284	-19,766	-26,004
– of which, attributable to owners of the Parent Company	19,769	17,095	12,896	12,997	11,083	16,759	-13,668	-8,178	-16,672	-26,324
– of which, attributable to non-controlling interests	917	668	552	188	-667	288	125	-106	-3,094	320
Cash flow items										
Funds from operations (FFO)	34,049	30,735	36,700	40,108	38,256	34,419	31,888	32,131	29,009	28,186
Cash flow from operating activities	32,331	36,194	46,246	41,231	33,468	28,485	37,843	40,146	40,934	30,783
Free cash flow	19,650	18,963	27,566	23,846	17,637	12,619	23,579	23,234	25,013	19,217
Balance sheet items										
Cash and cash equivalents and short-term investments	22,659	40,236	56,940	43,873	28,685	46,495	27,261	45,068	44,256	43,292
Equity	124,132	140,886	142,404	133,621	138,931	149,372	130,718	128,462	115,956	83,800
– of which, attributable to owners of the Parent Company	111,709	129,861	135,620	126,704	131,988	140,764	120,370	115,260	103,984	68,272
– of which, attributable to non-controlling interests	12,423	11,025	6,784	6,917	6,943	8,608	10,348	13,202	11,972	15,528
Interest-bearing liabilities	67,189	107,347	213,494	188,277	170,350	160,261	126,488	125,928	110,585	96,667
Net debt	43,740	66,000	154,987	144,109	141,089	111,907	98,998	79,473	64,201	50,724
Adjusted net debt	—	—	205,028	173,409	176,031	154,335	162,590	158,291	137,585	124,741
Provisions	73,985	89,799	91,100	87,822	91,719	103,832	118,166	138,567	138,263	138,344
Noninterest-bearing liabilities	72,930	107,795	155,129	131,712	123,558	114,899	110,112	104,252	97,513	90,449
Capital employed, average	—	—	—	—	317,799	313,124	302,743	293,992	279,435	248,640
Balance sheet total	338,236	445,827	602,127	541,432	524,558	528,364	485,484	497,209	462,317	409,260
Key ratios										
In % unless otherwise stated. (x) means times.										
Operating margin	19.9	18.2	13.6	14.0	12.8	15.5	-3.6	-1.3	-3.5[4]	1.0[4]
Operating margin[3]	19.8	18.4	15.2	17.2	17.0	16.5	16.3	14.5	14.3[4]	15.6[4]
Return on equity	17.6	13.6	9.5	10.0	8.6	12.3	-11.4	-6.9	-16.8	-33.4
Return on capital employed	—	—	—	—	7.3	8.3	-2.1	-0.8	-1.8[4]	0.5[4]
Return on capital employed[3]	—	—	—	—	9.7	8.8	9.3	8.2	7.3[4]	8.7[4]
EBIT interest cover, (x)	6.7	4.5	3.1	4.1	2.6	3.7	-0.7	-0.1	-0.8[4]	0.5[4]
EBIT interest cover, (x)[3]	6.7	4.6	3.4	5.0	3.3	3.9	4.1	5.0	4.8[4]	4.6[4]
FFO interest cover, (x)	8.6	5.4	4.8	6.2	4.9	5.7	5.4	7.3	6.5[4,5]	6.5[4]
FFO interest cover, net, (x)	12.2	7.1	5.6	7.5	5.8	6.6	6.2	10.1	9.4[4,5]	7.7[4]
FFO/gross debt	50.7	28.6	17.2	21.3	22.5	21.5	25.2	25.5	23.2[4,5]	27.8[4]
FFO/net debt	77.8	46.6	23.7	27.8	27.1	30.8	32.2	40.4	39.9[4,5]	53.0[4]
FFO/adjusted net debt	—	—	17.9	23.1	21.7	22.3	19.6	20.3	18.6[4,5]	21.6[4]
Equity/total assets	36.7	31.6	23.7	24.7	26.5	28.3	26.9	25.9	25.1	20.5
Gross debt/equity	54.1	76.2	149.9	140.9	122.6	107.3	96.8	98.0	95.4	115.4
Net debt/equity	35.2	46.8	108.8	107.8	101.6	74.9	75.7	61.9	55.4	60.5
Gross debt/gross debt plus equity	35.1	43.2	60.0	58.5	55.1	51.8	49.2	49.5	48.8	53.6
Net debt/EBITDA, (x)	1.0	1.4	3.0	2.4	2.6	2.1	2.3	1.9	2.1[4]	1.9[4]
Adjusted net debt/EBITDA, (x)	—	—	4.0	2.9	3.2	2.8	3.7	3.9	4.5[4]	4.6[4]
Other information										
Dividend to owners of the Parent Company	8,000	6,900	5,240	6,500	4,433	6,774	—	—	—	—[6]
Investments	18,964	42,296	102,989	41,794	35,750	29,581	27,761	29,032	25,776[1]	21,921[2]
Electricity generation, TWh	167.6	162.1	158.9	172.4	166.7	178.9	181.7	172.9	117.41[1,7]	119.0[2]
Sales of electricity, TWh	193.8	189.3	194.6	194.2	209.4	205.5	203.3	199.0	197.2[1]	193.2[2]
Sales of heat, TWh	36.2	35.6	37.9	47.1	41.6	29.8	30.3	24.1	20.6[1]	20.3[2]
Sales of gas, TWh	—	0.3	20.0	63.2	53.8	52.4	55.8	45.5	50.7[1]	53.1[2]
Number of employees, full-time equivalents	32,396	32,801	36,593	38,459	37,679	33,059	31,819	30,181	28,567	19,935

[1] The value for 2015 has been recalculated compared with information previously 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 relates to continuing operations.

[3] Based on underlying Operating profit, that is, Operating profit excluding Items affecting comparability.

[4] The key ratio is based on continuing operations.

[5] The key ratio has been adjusted compared with the value presented in Vattenfall's 2016 year-end report due to an adjustment of FFO by SEK 1,200 million. The adjustment of FFO was due to an incorrect allocation of FFO between continuing and discontinued operations.

[6] Proposed dividend.

[7] The value has been adjusted compared with information previously presented in Vattenfall's 2015 interim reports, year-end report and Annual and Sustainability Report.

Definitions and calculations of key ratios

The key ratios are presented as percentages (%) or times (x). Key ratios based on continuing operations (except for return on equity which is based on Total Vattenfall) and full year 2016.

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 non-recurring items. Also included here are, for trading activities, unrealised changes in the fair value of energy derivatives, which according to IAS 39 cannot be recognised using hedge accounting and unrealised changes in the fair value of inventories.

Underlying EBITDA – Underlying operating profit before depreciation, amortisation and impairment losses.

Underlying operating profit – Operating profit (EBIT) excluding items affecting comparability.

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 definitions

Hybrid Capital – Perpetual subordinated securities, junior to all Vattenfall's unsubordinated debt instruments.

LTIF – Lost Time Injury Frequency 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	1,337	=	1.0
		Net sales	139,208		
Operating margin excl items affecting comparability, %	= 100 x	Underlying EBIT	21,697	=	15.6
		Net sales	139,208		
Pre-tax profit margin, %	= 100 x	Profit before income taxes	-5,045	=	-3.6
		Net sales	139,208		
Pre-tax profit margin excl items affecting comparability, %	= 100 x	Profit before income taxes excl items affecting comparability	15,491	=	11.1
		Net sales	139,208		
Return on equity, %	= 100 x	Profit for the period attributable to owner of the Parent Company	-26,324	=	-33.4
		Average equity for the period attributable to owner of the Parent Company excl the Reserve for cash flow hedges	78,716		
Return on capital employed, %	= 100 x	EBIT	1,337	=	0.5
		Capital employed, average	248,640		

Return on capital employed excl items affecting comparability, %	= 100 x	Underlying EBIT / Capital employed, average	21,697 / 248,640	=	8.7
EBIT interest cover, (x)	=	EBIT + financial income excl return from the Swedish Nuclear Waste Fund / Financial expenses excl discounting effects attributable to provisions	2,238 / 4,906	=	0.5
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	22,598 / 4,906	=	4.6
FFO interest cover, (x)	=	FFO + financial expenses excl discounting effects attributable to provisions / Financial expenses excl discounting effects attributable to provisions	31,801 / 4,906	=	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	30,900 / 4,005	=	7.7
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	22,163 / 3,952	=	5.6
FFO/gross debt, %	= 100 x	FFO / Interest-bearing liabilities	26,895 / 96,667	=	27.8
FFO/net debt, %	= 100 x	FFO / Net debt	26,895 / 50,724	=	53.0
FFO/adjusted net debt, %	= 100 x	FFO / Adjusted net debt	26,895 / 124,741	=	21.6
EBITDA/net financial items, (x)	=	EBITDA / Financial items net excl discounting effects attributable to provisions and return from the Swedish Nuclear Waste Fund	27,209 / 4,005	=	6.8
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	36,144 / 4,005	=	9.0
Equity/total assets, %	= 100 x	Equity / Balance sheet total	83,800 / 409,260	=	20.5
Gross debt/equity, %	= 100 x	Interest-bearing liabilities / Equity	96,667 / 83,800	=	115.4
Net debt/equity, %	= 100 x	Net debt / Equity	50,724 / 83,800	=	60.5
Gross debt/gross debt plus equity, %	= 100 x	Interest-bearing liabilities / Interest-bearing liabilities + equity	96,667 / 180,467	=	53.6
Net debt/net debt plus equity, %	= 100 x	Net debt / Net debt + equity	50,724 / 134,524	=	37.7
Net debt/EBITDA, (x)	=	Net debt / EBITDA	50,724 / 27,209	=	1.9
Adjusted net debt/EBITDA, (x)	=	Adjusted net debt / EBITDA	124,741 / 27,209	=	4.6

Facts about Vattenfall's markets 2016[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2016							
Hydro power[2]	8,700	124	—	2,880	24	—	11,728
Nuclear power	7,254	—	—	—	—	—	7,254
Fossil-based power	699	—	—	4,902	4,048	—	9,649
– of which, gas	—	—	—	*1,238*	*3,398*	—	*4,636*
– of which, lignite	—	—	—	*165*	—	—	*165*
– of which, hard coal	—	—	—	*2,866*	*650*	—	*3,516*
– of which, oil and other	*699*	—	—	*632*	—	—	*1,331*
Wind power	375	—	338	516	215	698	2,142
Biomass, peat, waste	189	—	—	90	2	—	281
Solar power	—	—	—	—	7	5	12
Total	**17,217**	**124**	**338**	**8,388**	**4,296**	**703**	**31,066**
Installed capacity heat, MW, 31 December 2016	2,167	—	—	7,985	1,326	—	11,478
Generated electricity, TWh							
Hydro power[2]	31.8	0.4	—	2.5	0.1	—	34.8
Nuclear power	46.9	—	—	—	—	—	46.9
Fossil-based power	—	—	—	16.1	14.7	—	30.8
– of which, gas	—	—	—	*3.1*	*10.5*	—	*13.6*
– of which, lignite	—	—	—	*0.6*	—	—	*0.6*
– of which, hard coal	—	—	—	*12.1*	*4.2*	—	*16.3*
– of which, oil and other	—	—	—	*0.3*	—	—	*0.3*
Wind power	1.0	—	1.0	1.5	0.4	2.0	5.8
Biomass, peat, waste	0.3	—	—	0.5	—	—	0.8
Solar power	—	—	—	—	—	—	—
Total	**80.0**	**0.4**	**1.0**	**20.6**	**15.2**	**2.0**	**119.0**
Production of heat, TWh							
Fossil-based heat	0.4	—	—	13.7	2.2	—	16.3
– of which, gas	—	—	—	*5.5*	*2.2*	—	*7.7*
– of which, lignite	—	—	—	*2.1*	—	—	*2.1*
– of which, hard coal	—	—	—	*5.6*	—	—	*5.6*
– of which, oil and other	*0.4*	—	—	*0.4*	—	—	*0.7*
Biomass, peat, waste	3.2	—	—	0.9	—	—	4.1
Total heat Production	**3.6**	**—**	**—**	**14.6**	**2.2**	**—**	**20.4**
Sales of electricity, TWh	80.6	8.9	2.7	82.1	19.0	—	193.2
Sales of Heat, TWh	4.1	—	—	14.1	2.1	—	20.3
Sales of gas, TWh	—	—	—	9.6	43.5	—	53.1
Number of retail customers	940,000	380,000	—	3,040,000	1,980,000	—	6,340,000
Electricity volume, TWh retail customers	8.8	3.1	—	7.9	10.3	—	30.1
Electricity volume, TWh resellers	4.1	0.6	0.8	31.5	—	—	37.0
Electricity volume, TWh businesses	27.3	4.9	—	19.7[5]	—	8.6	60.5
Number of network customers	950,000	—	—	2,320,000	—	—	3,270,000
Number of gas customers	—	—	—	460,000	1,730,000	—	2,190,000
Electricity network							
Transited volume[3], TWh	73.1	—	—	13.4	—	—	86.5
Distribution network, km	133,000	—	—	35,000	—	—	168,000
Number of employees (full-time equivalents)							
Per country	8,684	66	231	6,998	3,595	217	19,791
Group total[4]							19,935
CO_2 emissions per country, Mtonnes	0.3	—	—	15.4	8.0	—	23.7
CO^2 emission allowances received, Mtonnes CO_2/year	0.4	—	—	1.6	0.3	—	2.3

[1] Rounding differences may be present for certain items.

[2] In Germany mainly pumped-storage power plants.

[3] Excl. generation transiting.

[4] There are 144 employees in other countries.

[5] Including 1,4 TWh in France.

Facts about Vattenfall's markets 2015[1]

	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW, 31 December 2015							
Hydro power[2]	8,700	124	—	2,880	24	—	11,728
Nuclear power	7,197	—	—	—	—	—	7,197
Fossil-based power	699	—	—	4,925	4,070	—	9,694
– of which, gas	—	—	—	*1,261*	*3,420*	—	*4,681*
– of which, lignite	—	—	—	*165*	—	—	*165*
– of which, hard coal	—	—	—	*2,866*	*650*	—	*3,516*
– of which, oil and other	*699*	—	—	*632*	—	—	*1,331*
Wind power	297.0	—	341	300	222	698	1,858
Biomass, peat, waste	189	—	—	92	2	—	283
Solar power					7		7
Total	**17,082**	**124**	**341**	**8,197**	**4,325**	**698**	**30,767**
Installed capacity heat, MW, 31 December 2015	2,226	—	—	8,156	1,326	—	11,708
Generated electricity, TWh							
Hydro power[2]	36.1	0.4	—	2.9	0.1	—	39.5
Nuclear power	42.2	—	—	—	—	—	42.2
Fossil-based power	—	—	1.9	14.3	13.0	—	29.2
– of which, gas	—	—	—	*2.5*	*8.5*	—	*11.0*
– of which, lignite	—	—	—	*0.5*	—	—	*0.5*
– of which, hard coal	—	—	*1.3*	*10.9*	*4.5*	—	*16.7*
–of which, oil and other	—	—	*0.5*	*0.3*	—	—	*0.9*
Wind power	0.9	—	1.1	1.1	0.5	2.2	5.8
Biomass, peat, waste	0.3	—	—	0.5	—	—	0.7
Solar power	—	—	—	—	—	—	—
Total	**79.5**	**0.4**	**3.0**	**18.8**	**13.6**	**2.2**	**117.4**
Production of heat, TWh							
Fossil-based heat	0.4	—	2.0	12.7	2.1	—	17.4
– of which, gas	—	—	—	*4.5*	*2.1*	—	*6.7*
– of which, lignite	—	—	—	*2.0*	—	—	*2.0*
– of which, hard coal	—	—	*1.1*	*5.8*	—	—	*6.9*
– of which, oil and other	*0.4*	—	*1.0*	*0.4*	—	—	*1.8*
Biomass, peat, waste	2.9	—	—	0.9	—	—	3.8
Total heat Production	**3.4**	**—**	**2.0**	**13.7**	**2.1**	**—**	**21.2**
Sales of electricity, TWh	73.9	8.4	5.8	89.8	19.4	—	197.3
Sales of Heat, TWh	3.6	—	1.9	15.1	2.0	—	22.6
Sales of gas, TWh	—	—	—	8.9	41.8	—	50.7
Number of retail customers	929,000	388,000	—	2,935,000	1,973,000	—	6,225,000
Electricity volume, TWh retail customers	8.3	2.6	—	8.4	7.4	—	26.7
Electricity volume, TWh resellers	4.2	0.6	1.8	27.0	—	—	33.6
Electricity volume, TWh businesses	27.6	4.6	—	21.7	8.9	—	62.8
Number of network customers	899,000	—	—	2,304,000	—	—	3,203,000
Number of gas customers	—	—	—	348,000	1,714,000	—	2,062,000
Electricity network							
Transited volume[3], TWh	69.2	—	—	13.3	—	—	82.5
Distribution network[4], km	131,000	—	—	36,000	—	—	167,000
Number of employees (full-time equivalents)							
Per country	8,859	65	323	14,998	4,014	177	28,436
Group total[5]							28,567
CO_2 emissions per country, Mtonnes	0.3	—	1.7	14.3	7.6	—	23.9
CO^2 emission allowances received, Mtonnes CO_2/year	0.5	—	—	1.9	0.3	—	2.7

[1] Rounding differences may be present for certain items.

[2] In Germany mainly pumped-storage power plants.

[3] Excl. generation transiting.

[4] Calculation method was updated in 2016. 2015 figures have been adjusted for consistency.

[5] There are 131 employees in other countries.

Pro rata[1]

2016	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW							
Hydro power[2]	8,483	124	—	2,880	24	—	11,511
Nuclear power	4,964	—	—	282[6]	—	—	5,246
Fossil-based power	699	—	—	4,820	4,048	—	9,567
– of which, gas	—	—	—	*1,206*	*3,398*	—	*4,603*
– of which, lignite	—	—	—	*165*	—	—	*165*
– of which, hard coal	—	—	—	*2,817*	*650*	—	*3,467*
– of which, oil and other	*699*	—	—	*632*	—	—	*1,331*
Wind power	356	—	337	285	304	625	1,907
Biomass, waste	189	—	—	75	2	—	266
Solar power	—	—	—	—	7	5	12
Total	**14,692**	**124**	**337**	**8,342**	**4,385**	**630**	**28,509**
Installed capacity heat, MW	2,056	—	—	7,543	1,326	—	10,926
Generated electricity, TWh							
Hydro power[2]	31.0	0.4	—	2.5	0.1	—	33.9
Nuclear power	32.0	—	—	2.2	—	—	34.2
Fossil-based power	—	—	—	15.7	14.7	—	30.4
– of which, gas	—	—	—	*3.0*	*10.5*	—	*13.5*
– of which, lignite	—	—	—	*0.6*	—	—	*0.6*
– of which, hard coal	—	—	—	*11.9*	*4.1*	—	*16.0*
– of which, oil and other	—	—	—	*0.3*	—	—	*0.3*
Wind power	0.9	—	1.0	0.8	0.6	1.8	5.1
Biomass, waste	0.3	—	—	0.5	—	—	0.7
Solar power	—	—	—	—	—	—	—
Total	**64.1**	**0.4**	**1.0**	**21.7**	**15.4**	**1.8**	**104.3**
CO_2 emissions per country, Mtonnes	0.3	—	—	14.9	8.0	—	23.2

Footnotes: For explanations, see page 178.

2015	Sweden	Finland	Denmark	Germany	Netherlands	UK	Total
Installed capacity electricity, MW							
Hydro power[2]	8,483	124	—	2,880	24	—	11,511
Nuclear power	4,924	—	—	282	—	—	5,206
Fossil-based power	911	—	—	4,843	4,070	—	9,612
– of which, gas	—	—	—	*1,229*	*3,420*	—	*4,649*
– of which, lignite	—	—	—	*165*	—	—	*165*
– of which, hard coal	—	—	—	*2,817*	*650*	—	*3,467*
– of which, oil and other	*699*	—	—	*632*	—	—	*1,331*
Wind power	278	—	340	175	322	698	1,813
Biomass, waste	189	—	—	77	2	—	268
Solar power					7		7
Total	**14,785**	**124**	**340**	**8,256**	**4,418**	**698**	**28,417**
Installed capacity heat, MW	2,097	—	—	7,714	1,326	—	11,137
Generated electricity, TWh							
Hydro power[2]	34.9	0.4	—	2.9	0.1	—	38.3
Nuclear power	28.8	—	—	2.1	—	—	30.9
Fossil-based power			1.9	14.0	13.0		28.9
– of which, gas				*2.5*	*8.5*		*11.0*
– of which, lignite				*0.5*			*0.5*
– of which, hard coal			*1.3*	*10.6*	*4.5*		*16.5*
– of which, oil and other			*0.5*	*0.4*			*1.0*
Wind power	0.8	—	1.1	0.6	0.8	2.2	5.6
Biomass, waste	0.3			0.4			0.7
Solar power							
Total	**64.9**	**0.4**	**3.0**	**20.1**	**13.9**	**2.2**	**104.4**
CO_2 emissions per country, Mtonnes	0.3		1.7	13.9	7.6		23.4

Footnotes 1–5: For explanations, see page 179

[6] The technical capacity of Krümmel nuclear power plant is 673 MW pro rata. However, Krümmel 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 spotmarket 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).

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.

LTIF (Lost Time Injury Frequency) Work-related accidents. Expressed in terms of the number of lost time work injuries (per 1 million hours worked), resulting in absence longer than one day, and accidents resulting in fatality.

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, or 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.

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.

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.

SF6 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).

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.

For definitions of **financial key ratios**, see pages 176–177.

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
27 April 2017 Annual General Meeting
28 April 2017 Interim report January–March
21 July 2017 Interim report January–June
27 October 2017 Interim report January–September
7 February 2018 Year-end report for 2017 (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 2016 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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