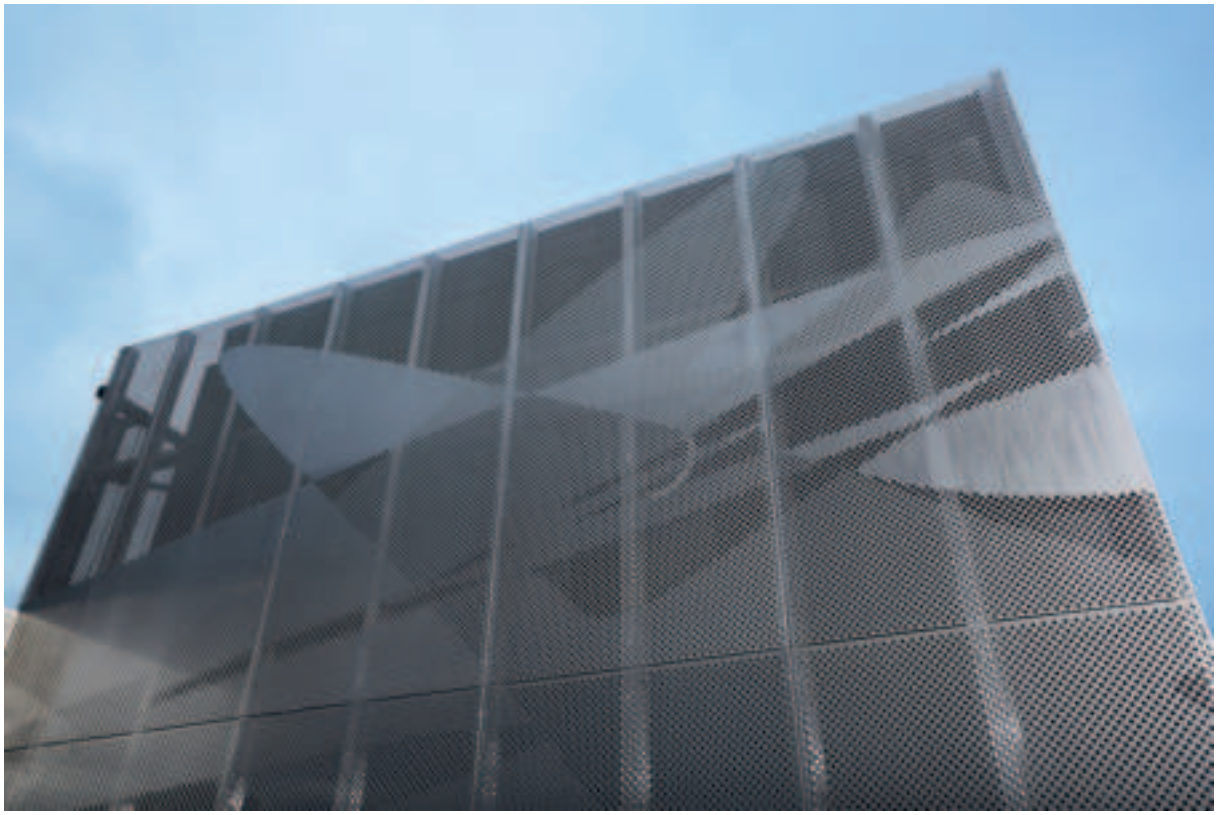


RESPONSIBILITY REPORT

2017

15.3.2018
Helen Ltd

HELEN

15.3.2018

CONTENTS

1 WE ALL SHARE RESPONSIBILITY

We want to ensure that we can produce the world's best city energy now and in the future. We develop new solutions for increasingly cleaner energy production and sustainable consumption.

RESPONSIBILITY MANAGEMENT
We aim to be the most responsible operator in the market. We are developing new, more sustainable energy solutions for our customers.

ENVIRONMENTAL RESPONSIBILITY
Reduction of environmental impacts is an important part of our activities.
Our long-term goal is climate-neutral energy production.

PEOPLE
Our operations have an impact on many people. We want to create and maintain an open dialogue with our stakeholders.

FINANCIAL RESPONSIBILITY
Financial responsibility is a basic requirement for our operations.

1.1 CORPORATE SOCIAL RESPONSIBILITY REPORT

The report on corporate social responsibility describes the operations of Helen Ltd and its subsidiaries Helen Electricity Network Ltd (100%) and Oy Mankala Ab (100%).

Helen Ltd offers its customers electricity, district heat and district cooling, as well as services for small-scale energy production and customers' own energy use and improvement of efficiency. Helen produces energy at power plants and heating plants located in Helsinki, as well as through its power assets. The company is owned by the City of Helsinki.

Helen Electricity Network Ltd offers its customers electricity transmission and distribution services in almost all areas in the Helsinki region.

Oy Mankala Ab owns the Mankala, Ahvenkoski, Klåsarö and Ediskoski hydroelectric power plants on the River Kymijoki. Oy Mankala Ab also owns 8.1% of Teollisuuden Voima Oyj, 12.5% of Suomen Hyötytuuli Oy and 50% of Suomen Merituuli Oy.

The report on corporate social responsibility consists of four parts: responsibility management, the environment, people, and the economy. The report complements our annual report that describes the business operations and financial key figures of the Helen Group.

The corporate social responsibility report is meant for all stakeholders interested in us and our operations. It focuses on describing our key activities and impacts in corporate responsibility, and presents Helen's current status and its future outlook.

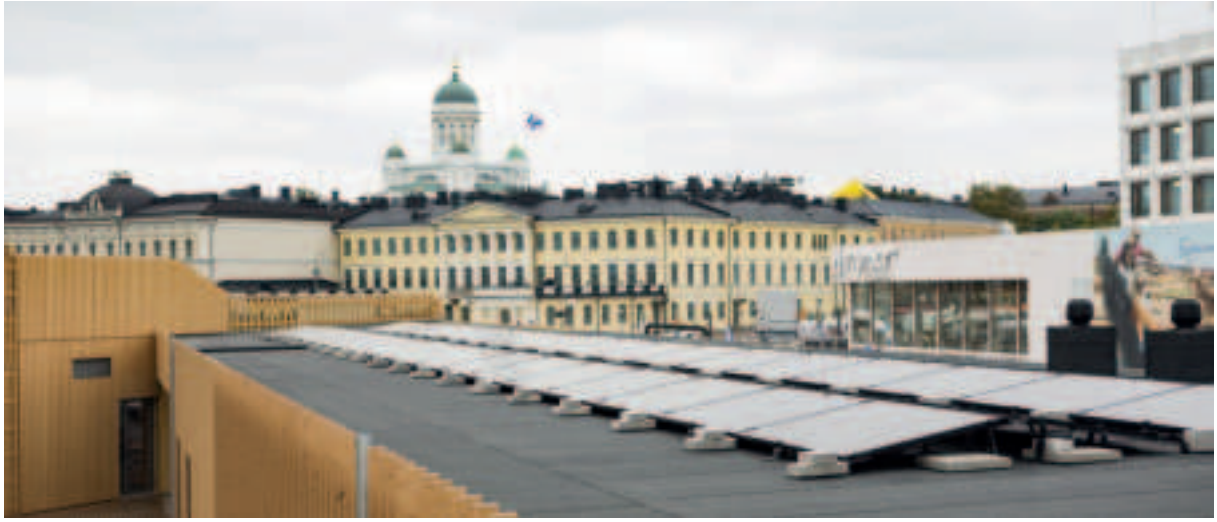
The report on social responsibility describes the calendar year 2017. The progress of various projects related to responsibility can be monitored in our news and blog (in Finnish), which are kept constantly up to date. The report was published in March 2018.

We have published a separate report on social responsibility since 2014. Before that, responsibility was reported as part of the annual report. Since 2013, we have published the report in electronic format only.

Helen Ltd operated as Helsingin Energia public utility until 31 December 2014. The information reported as from 2015 applies to Helen Ltd. Information prior to 2015 concerns the operations of Helsingin Energia.

1.2 RESPONSIBILITY MANAGEMENT

Our task is to produce the world's best city energy for our customers and our environment.



We aim to be the most responsible operator in the market. Responsible operations require that we take into account the demands of our stakeholders. Customers, Helsinki residents and other interest groups demand, for example, reliable and competitive energy production and reduction of emissions.

In order to meet the demands of the stakeholders, we are developing new solutions for increasingly cleaner energy production and more sustainable consumption. We all share responsibility: it is developed together with our customers and partners, and it has an impact on the whole of society.

MANAGEMENT OF CORPORATE SOCIAL RESPONSIBILITY
Management of corporate social responsibility is based on Helen's strategy and values, its corporate governance, and the Group's policies and their complementary operating principles. Our strategic targets for 2016–2020 are sharing in success, growth, climate-neutral energy, improved profitability, and responsibility as a competitive edge.

In addition to its strategy and values, Helen's corporate responsibility is directed especially by its sustainability policy and ethical operating principles.

Our corporate responsibility is coordinated by the Sustainability and Public Affairs group. In practice, responsibility work is carried out within the business areas and service functions.

Targets related to the environment and responsibility are part of Helen's key performance indicators. We monitor the implementation of these targets on a monthly basis in Helen's management group and in the management groups of the business areas and service functions.

We carry out practical responsibility and environmental management with the aid of operating systems and environmental guidelines. Helen's electricity generation and the production and distribution of heating and cooling are certified in accordance with the ISO 14001 environmental management system standard. Helen Electricity Network Ltd is in the process of adopting an operating system complying with the ISO 55000 asset management standard. The operating system will be certified with the OHSAS 18001 occupational health and safety management system also in the future. We reduce the environmental impacts of our offices with the Green Office programme audited by WWF. In addition to our headquarters, two of our offices have the Green Office label.

Responsibility is also connected to Helen's comprehensive risk management. For us, risk management means a systematic and predictive way of identifying, analysing and managing uncertainties related to our activities. In the Helen Group, risk management is directed by the risk management policy, which describes the targets, procedures, responsibilities and reporting related to risk management. We regularly identify and assess the key risks and uncertainties in our operating environment.

KEY RESPONSIBILITY THEMES

During 2016, we selected the key responsibility themes for Helen on the basis of the stakeholders' wishes and expectations and Helen's competitiveness impact.

Theme	Goal	Realisation 2017
Climate-neutral energy	We aim for a climate-neutral energy system.	The amount of renewable energy we produced rose to 12 %. We invested in a new pellet-fired heating plant and a heat-pump plant.
Origin and sustainability of energy	We know the origin of the energy we produce, as well as its environmental impacts for its entire life-cycle.	We focused especially on the origin of wood pellets. We audited the first pellet supplier.
Excellent customer experience	We offer the best customer experience in the sector.	Our customer satisfaction improved. More than 80% of our consumer customers are happy with our operations.
Economic sustainability	We increase the market share of the current main products and expand the sale of new energy solutions and services. We improve the efficiency of our operations to ensure the competitiveness of our services and continuity of our operations.	Helen Group's result for the financial year realised as forecasted, above the previous year's level.
Open communication and interaction	Our actions and messages are consistent, building genuine thought leadership and responsibility.	We carried on providing information about topical issues, e.g. on our website. We held two open stakeholder events.

VALUES
We implement our targets according to our values. Our values tell us how to achieve our goals.

Responsibility for sustainable development
Our ways of operation mitigate climate change, are environmentally sound and promote the wellbeing of people and the success of companies.

Skills and courage to succeed
We boldly seek and utilise new ideas and ways of operation to promote Helen's success. We are the customer's top choice as a responsible and reliable energy company that develops new solutions.

Openness and mutual trust
We expand and share our expertise in order to promote Helen's targets and goals. We are open to development ideas.

2 ENVIRONMENTAL RESPONSIBILITY

Our long-term goal is climate-neutral energy production.

Reduction of environmental impacts is an important part of our activities. Climate change mitigation plays a significant role in the planning of our future energy solutions and in our future investments, while the reduction of other environmental impacts is part of our daily routines and development of operations.

Climate-neutral energy is one of the focus areas of our strategy. Climate-neutral energy production means production that does not increase the levels of carbon dioxide in the atmosphere.

A major climate challenge of a global scale cannot be resolved with an individual technology or deed, but several methods and everyone's input are needed to mitigate climate change. Especially the role of city residents and customers is growing.

HELEN'S FIVE SOLUTIONS FOR A CLIMATE-NEUTRAL ENERGY FUTURE

The role of citizens is growing
The residents also become energy producers with the increase of solar and electricity storage solutions and various hybrid heating systems. In 2017, we launched several new services for companies and households, including a new solar power plant concept and services for demand response and battery storage.

Waste heat is recovered more efficiently
In the future, energy is not wasted, but it is recycled as far as possible. In 2017, we set a new production record in the Katri Vala heat pump plant that processes waste heat. We were also building the Esplanade heating and cooling plant, which will be used for recovering and reutilising the surplus heat of our customers. The plant is due for completion in spring 2018.

Flexibility is needed
As a result of the significant increase of intermittent solar and wind power in the electricity market, various flexibilities in both the production and use of energy are needed. In 2017, we investigated the implementation of rock cavern heat storage facilities and developed services related to electricity and heat demand response and battery storage.

Moving from fossil fuels to X economy via bioeconomy
Bioeconomy is an intermediate stage in the process of moving from fossil fuels to climate-neutral production. In 2017, we focused particularly on replacing hard coal with biomass: we built the Salmisaari wood pellet heating plant and planned new bioenergy heating plants.

Research, development, education and innovations are invested in
We are involved in several research projects and trials. In 2017, we invested especially in the speeding up of the service development process, carried on cooperation in various communities for growth companies, and took part in several development projects, such as the mySMARTlife and SysFlex projects.

2.1 CLIMATE-NEUTRAL ENERGY

Our long-term target is to produce energy in a climate-neutral way.

Climate-neutral energy production means production that does not increase the amount of carbon dioxide in the atmosphere and therefore does not add to global warming. Our target by 2025 is to reduce carbon dioxide emissions by 40 per cent compared to the 1990 levels, to increase the share of renewable energy to 25 per cent, and to halve the amount of coal we use.

MORE RENEWABLE ENERGY
In 2017, the share of renewable energy in our energy mix increased to 12 per cent. We also generate renewable energy from hydropower, heat pumps, wood pellets, wind power and solar energy.

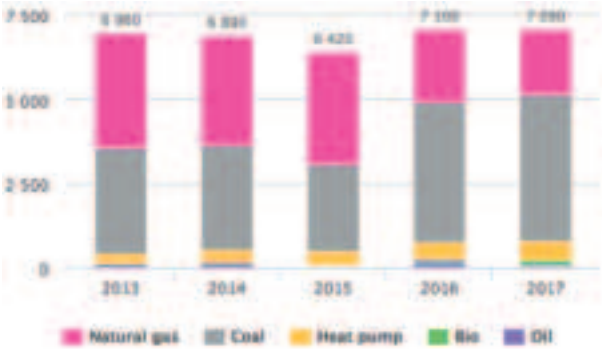
In 2018, the share of renewable energy will increase due to the completion of the Salmisaari wood pellet heating plant and the Esplanade heating and cooling plant.

Share of renewable energy

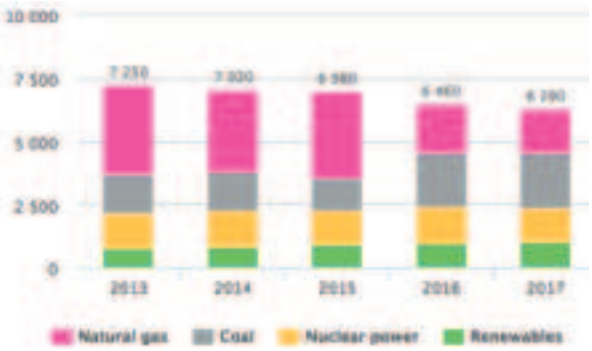
We produce energy mainly in our power plants and heating plants in different parts of Helsinki. We also supplement this with production from outside the Helsinki region.

In 2017, we produced 6,300 gigawatt-hours of electricity, 7,100 gigawatt-hours of heat and 140 gigawatt-hours of cooling.

Origin of district heat, GWh



Origin of electricity, GWh



In 2017, the share of energy we produced in co-combustion of coal and wood pellets increased and, correspondingly, the share of natural gas production decreased. This trend, which started in 2016, is due to changes in the energy market, which have resulted in higher profitability of energy produced from coal. In the next few years, the share of renewables will increase with the commissioning of new heat pump plant and bioenergy heating plants. The share of coal will fall significantly in the future when the Hanasaari power plant will be decommissioned according to our plan by the end of 2024.

The amount of energy we produce with **heat pumps** also increased in 2017. We produced more heat with heat pumps than ever before, 570 gigawatt-hours. In 2018, the amount of energy we produce with heat pumps will increase further when the Esplanade heating and cooling plant is completed.

We continued co-combustion of **wood pellets** in the Hanasaari and Salmisaari power plants. We also started trial operation of the Salmisaari wood pellet heating plant towards the end of 2017. We used more wood pellets in 2017 than before, a total of 46,000 tonnes (38,000 tonnes in 2016). We continue to further increase the use of pellets in energy production.

Energy produced from wood pellets and biogas

We produced more energy from **wind power** than before, a total of 39 gigawatt-hours. We procured wind power through our associated company Hyötytuuli Oy. The production volume increased because Hyötytuuli's wind farms in Raahe and in Tahkoluoto in Pori were completed during 2017.

We are also increasing **solar energy** production. Our solar power plants in Kivikko and Suvilahti produced a total of 0.96 gigawatt-hours of electricity in 2017 (0.91 gigawatt-hours in 2016). We also built the first power plants generating solar power for our customers' properties.

We continued solar heat recovery from properties with the aid of district cooling. We use district cooling for recycling the heat produced by the sun, machines and equipment, and people.

MORE RENEWABLE ENERGY IN THE COMING YEARS

The most significant strategic policy with respect to the development of Helen's energy production structure is our long-term target of climate-neutral energy production. Our target for year 2025 is to increase the use of renewable energy, to reduce carbon dioxide emissions and to halve the amount of coal we use. Therefore, we are preparing for the decommissioning of the Hanasaari power plant by the end of 2024.

We aim to make progressive investments in reducing emissions and increasing renewable energy, and we make use of all the opportunities offered by new technologies. We also develop new energy production solutions together with our customers.

During 2017, we invested about EUR 30 million in replacing fossil fuels: we were building our new wood pellet heating plant and heating and cooling plant. The **Salmisaari wood pellet heating plant** will be completed in early 2018, and it is one of the largest investments in renewable energy in Finland. The plant's output is 100 megawatts and it will generate renewable district heat for the needs of about 25,000 one-bedroom flats. The pellet-fired heating plant will reduce carbon dioxide emissions by about 58,000 tonnes a year.

The construction work of the **Esplanade heating and cooling plant** also progressed to plan. The heating and cooling plant has two industrial-scale heat pumps that produce both heat and cooling. The new heat pumps will be able to recycle increasing amounts of waste energy from properties, homes and data centres. To be completed in spring 2018, the thermal output of the plant is 22 megawatt-hours and its cooling output is 15 megawatts. The investment will reduce our carbon dioxide emissions by an estimated 20,000 tonnes per year.

During 2017, we continued the preparation of our major investment programme. In the next stage, we are planning bioenergy heating plants, which would be completed in phases and the first one of them would be commissioned by 2024. The planned areas are in Vuosaari, Patola and Tattarisuo. The bioenergy heating plants will replace coal use and ensure sufficient district heat supplies.

PROMOTING NEW SOLUTIONS

The energy system in Helsinki is flexible and highly suitable for enabling various renewable and low-emission energy solutions.

The heating and cooling networks are independent of the fuel used. In addition to increased use of biofuels, we are investigating, for example, extensive utilisation of various kinds of heat pumps, solar heat and geothermal heat. We are also evaluating the possibilities offered by demand response, distributed generation, storage, and energy saving.

We are planning to build a large energy storage facility in disused underground oil caverns in Mustikkamaa deep in the bedrock of Helsinki. The planned storage facility could hold about 260,000 cubic metres of water for storing 12 gigawatt-hours of heat. The **Mustikkamaa heat storage facility** would be about ten times the size of the heat storage facility located at the Vuosaari power plant. The charging and discharging capacity of the heat storage facility would be 120 megawatts, i.e. discharging and charging with full capacity would take four days. During the coldest days of the winter, the start-up of individual natural gas and oil-fired heating plants could be avoided by using the storage facility. We will go ahead with the project if its technical and financial preconditions are met.

We are also planning to build a seasonal heat storage facility in the disused oil caverns in Kruunuvuorenranta. In the solution, the large caverns of the **seasonal storage facility of Kruunuvuorenranta** will be filled with sea water, which is heated by the sun in the summer and utilised in the winter as an energy source for heat pumps. The total volume of the caverns is about 300,000 cubic metres. We will go ahead with the project if its technical and financial preconditions are met.

We continued the use of the **Suvilahti electricity storage facility**, completed in 2016, as well as the development of related business models. The electricity storage facility has concurrently produced rapid frequency-regulated power control for the needs of the transmission system and reactive power compensation and voltage maintenance for the needs of the distribution network. The electricity storage facility has also locally improved the utilisation of the Suvilahti solar power plant by balancing its production.

In October 2017, we opened Finland's first **two-way charging point for electric vehicles** in Suvilahti in Helsinki. The charging point enables not only charging of electric vehicles, but also using them as an electricity storage unit and utilising them in the regulation of the electricity system.

Construction of **wind power** in Helsinki is also an option. If suitable sites are found and the investments prove to be worthwhile, we will be interested in building wind power in the sea area outside Helsinki.

ENERGY EFFICIENCY IS THE BACKBONE OF OUR OPERATIONS

Combined heat and power (CHP) generation together with district heat and the rapidly increasing district cooling form the basis for an energy-efficient energy system in Helsinki.

Our long-term energy-efficiency work was awarded when the Ministry of Economic Affairs and Employment, the Energy Authority and Motiva acknowledged Helen for its commendable energy-efficiency work during the energy efficiency agreement period 2008–2016. Helen's most significant individual project during the agreement period was the Katri Vala heating and cooling plant, which recycles waste heat for reutilisation.

We aim to improve energy efficiency by 5.4 per cent from the 2015 level by 2025. We strive to further increase the efficiency of utilising waste heat and recycled heat, to optimise production and to enhance the use of energy for internal consumption at substations. The next power plant energy audit will be carried out at our largest production unit, Vuosaari B.

During 2017 we further improved energy efficiency with a number of measures. We completed the modernisation of the Mankala hydropower plant, as a result of which the utilisation of the power plant will improve by about 3–4 per cent. This corresponds to an increase of approximately 6 gigawatt-hours in annual electricity generation. We also improved the efficiency of production and distribution with changes in the operating methods of power plants, equipment replacements and refurbishment of the district heating network.

In 2017, the efficiency of energy production at the Helen Group was 91.1 per cent.

2.2 ENVIRONMENTAL IMPACTS

Flue gas emissions from energy production constitute our most significant environmental impact.

We aim to keep the emissions of our power plants having an impact on air quality, i.e. sulphur, nitrogen and particulate emissions, within the constantly tightening limit values specified by the authorities.

In 2017, our sulphur dioxide emissions decreased by over 20 per cent. The reduction in emissions is due to the efficient operation of the desulphurisation plants. Nitrogen oxide emissions remained at the previously reported level.

Acidifying emissions

Particulate emissions fell by about 8 per cent on the previous year due to improved desulphurisation. Efficient desulphurisation also reduces particulate emissions at the same time.

Particulate emissions

In 2017, we were below the emission limits in all of our power plants with the exception of Salmisaari, where the monthly emission limit for nitrogen oxides in plant A was exceeded on two occasions. The exceedances did not cause any harm to the environment or human health. We always report any exceedances to the authorities.

We are constantly making changes in order to reach the tightening emission limit values. In 2017, we replaced the fuel of the Jakomäki heating plant with low-sulphur fuel oil, which will reduce sulphur dioxide emissions.

We monitor the emissions of our power plants according to the monitoring plans approved by the authorities. An independent accredited tester ensures the quality of our measurements each year.

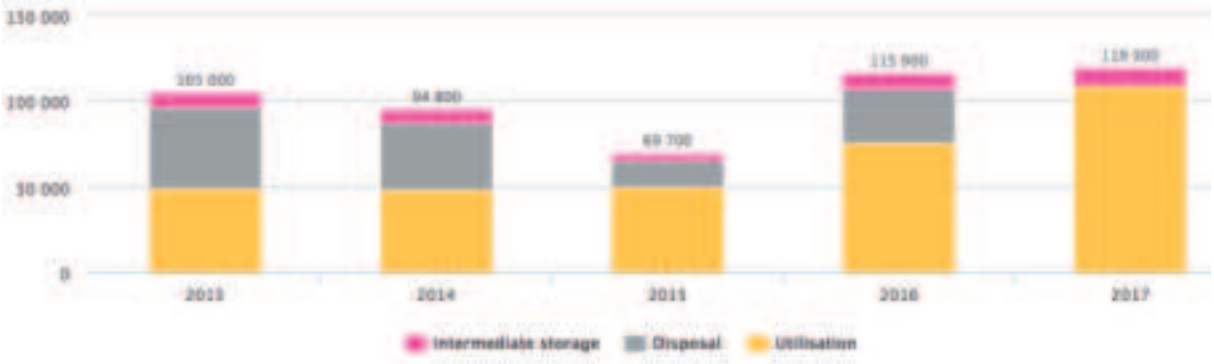
* Acidifying emissions and particulate emissions mg/kWh are calculated by dividing the emissions of our energy production and co-owned production by the total energy sold. Production and distribution losses have been taken into account when calculating the amount of produced energy. In 2017, the calculation was specified by including in the emissions of electricity used in heat pumps and district heat pumping.

BY-PRODUCTS AND WASTE ARE UTILISED

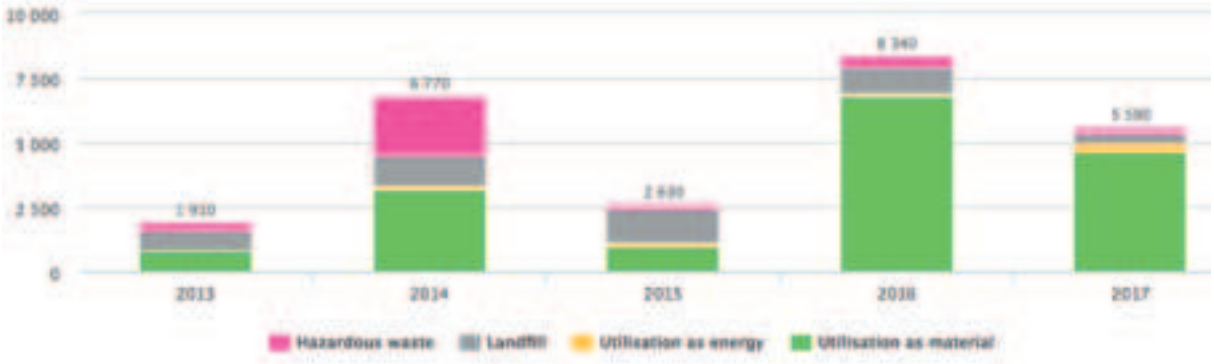
The by-products of energy production mainly consist of ashes and the end product created in flue gas desulphurisation. In 2017, we produced a total of 119,000 tonnes of by-products (116,000 tonnes in 2016). The use of by-products in landfill structures continued, due to which the utilisation rate increased to 91 per cent (71 per cent in 2016).

We aim to utilise by-products as efficiently as possible. By-products are used, e.g. in cement manufacture and earth construction. Utilisation of by-products reduces the use of pristine mineral aggregate and soil.

Utilisation of by-products, tonnes



Waste produced in Helen's properties and, from 2016, in the energy network areas, tonnes



Our operations also produce various types of waste. Primarily, we aim to prevent the production of waste. Any waste we produce is sorted and recycled wherever possible. We maintain waste bookkeeping and hand over waste only to transport companies that are in the waste management register and to recipients entitled to receive the waste in question.

In 2017, we produced 5,600 tonnes of waste (8,300 tonnes in 2016), 83% of which was utilised as material and 7% as energy (82% and 1% in 2016). The amount of waste decreased especially on worksites. We have reduced the amount of landfill waste by increasing waste-to-energy use.

LOW IMPACT ON WATERCOURSES

The majority of the heat we produce is utilised as district heat, which considerably diminishes the volume of heat conducted into the sea and, that way, the impacts on watercourses. We also utilise the heat of purified waste water in the Katri Vala heating and cooling plant, which reduces the volume of waste heat ending up in the sea.

In 2017, a total of 120 gigawatt-hours of waste heat and cooling energy from power plants and cooling centres was released into the sea. This is 1.0 per cent of the used fuel energy. Since year 2000, the annual load has varied between 120 and 2,200 gigawatt-hours.

The principal impacts of our energy production on watercourses are the result of conducting cooling water, i.e. warmed-up sea water, to the sea. When studying the impacts of power plants on watercourses, no eutrophication impacts have been detected. Eutrophication in the Helsinki sea areas is caused by other loading, basically by waste waters from households and by scattered loading.

In addition to cooling waters, small amounts of waste and washing waters from power plants, as well as neutralised washing waters from wastewater treatment plants and laboratories, are conducted into the sea. The flow rate, temperature, temperature rise, acidity and hydrocarbon, i.e. oil contents, of the waters conducted into the sea are monitored and reported to the authorities. The entry of oil into the waterways is prevented with oil separation pools equipped with alarm systems.

ENVIRONMENTAL DEVIATIONS ARE INVESTIGATED

In 2017, there were three environmental deviations. We investigate all deviations and, if necessary, we will change our procedures in order to prevent them.

In 2017, two refrigerant leaks occurred in the Salmisaari cooling plant in connection with the refilling of the cooling compressor. A total of 55 kilograms of refrigerant was leaked. Refrigerant measurements are taken from the cooling equipment, and the functioning of the equipment is checked at regular intervals.

At the Vuosaari power plant, 5 cubic metres of sulphuric acid leaked into the protection basin. The leak did not cause harm to the employees or the environment. We will take the possibility of malfunction into account in tank inspections.

2.3 CLIMATE IMPACTS

Our aim is to reduce climate-changing carbon dioxide emissions.

We strive to reduce the carbon dioxide emissions of our energy production by 40 per cent by 2025 compared with the 1990 levels. Our long-term target is climate-neutral energy production.

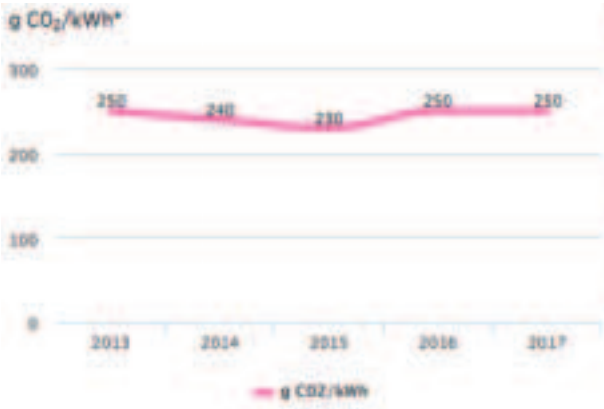
In 2017, the carbon dioxide emissions of our fossil-based energy production remained at the previous year's level.

We increased renewable energy production in 2017 with heat pumps, wood pellets and biogas, which yielded a record amount of energy. With the aid of wood pellets and biogas, we reduced our carbon dioxide emissions by about 2.3 per cent compared with a situation where we would have used fossil fuels only (1.5 per cent in 2016).

Carbon dioxide emissions

In 2018, the amount of renewable energy will increase further when the Salmisaari wood pellet heating plant starts production use and the new heating and cooling plant under the Esplanade Park is completed.

Specific carbon dioxide emissions



Carbon dioxide emissions, total

* The specific carbon dioxide emissions g/kWh are calculated by dividing the emissions of our energy production and co-owned production by the total energy sold. Production and distribution losses have been taken into account when calculating the amount of energy produced. In 2017, the calculation was specified by including in the emissions of electricity used in heat pumps and district heat pumping.

We participate in the EU Emission Trading Scheme, and we carry out emission reduction within the scheme either by ourselves or by purchasing emission allowances from areas where emission reduction is more cost-effective. The Emission Trading Scheme guarantees desired emission reduction at the EU level.

Helen has been granted a total of 6.9 million tonnes of carbon dioxide in emission allowances for the period 2013–2020. In the 2017 trading, the emission allowances and corresponding allowances bought physically totalled 0.2 million tonnes.

We measure our emissions ourselves according to the monitoring plans approved by the authorities. An independent verifier ensures that the fuel amounts, temperature values, emission coefficients and carbon dioxide emissions are correct.

OTHER GREENHOUSE GAS EMISSIONS

In addition to carbon dioxide, our operations may also cause other greenhouse gas emissions, such as fluorinated gas (F-gas) emissions, nitrous oxide and methane, as a result of leaks or other exceptional situations. The climate impacts of other greenhouse gas emissions are very small in comparison with our carbon dioxide emissions.

We use F-gases in the cooling and electrical equipment. We keep a record of the amount of F-gases and prevent leakage in the equipment with appropriate maintenance and inspections. In 2017, a total of 55 kilograms of refrigerants was leaked.

We use SF_6 gas, i.e. sulphur hexafluoride, in electrical equipment as an insulation agent and as an arc-quenching medium. We use gas in closed systems only. We also take care of the leakproofness of SF_6 equipment and the recovery and recycling of gas, and we monitor the gas balance on a regular basis. Our target is to reduce SF_6 emissions from machinery to below 0.25 per cent of the total amount of gas. We reached these targets in 2017 as the emissions amounted to 0.12 per cent of the total amount (0.34 per cent in 2016).

2.4 ORIGIN AND SUSTAINABILITY OF ENERGY

The origin and supply chain of energy have an impact on the environment and sustainability.

In addition to environmental impacts and risks, the supply chains of fuels also involve financial and social impacts and risks. We aim to know the origin of the energy we produce and its environmental impacts throughout its life cycle.

The debate on the sustainability of biomass continued because the European Commission's proposal for a Directive related to the sustainability of solid biomass was discussed further during 2017. We are making provisions for the forthcoming sustainability criteria already in advance.

ORIGIN OF FUELS
We know the origin of our fuels. In 2017, we procured fuels with a total of EUR 310 million (2016: EUR 280 million).

The coal we procured in 2017 came from Russia and Kazakhstan. We require that the coal suppliers are committed to the practices of responsible business, at least to the UN Global Compact principles.

The natural gas we use arrives through a pipeline from Western Siberia in Russia.

The fuel oil we use as start-up and reserve fuel and as fuel in peak-load heating plants came from Finnish and Nordic refineries in 2017.

The majority of the wood pellets we use are manufactured in Finland from the by-products of sawmilling. We also procure pellets from Estonia and Russia.

We request the pellet suppliers to provide information about the origin of the pellets and their raw materials, and about their supply chain and possible certification. We aim to know the origin and life cycle of the pellets we use. The pellet suppliers are also required to commit themselves to responsible business practices. In 2017, we carried out an audit on one pellet supplier. In the audit, we paid particular attention to the security of supply, pellet quality, and the origin and sustainability of pellets.

THE ENTIRE LIFE CYCLE IS IMPORTANT

We aim to know the environmental impacts of the energy we produce for its entire life cycle. We have estimated the impact of increased use of renewable energy on the environment and on emissions throughout the life cycle of energy production. Studies conducted in cooperation with the Finnish Environment Institute show that emissions from a power plant are reduced when coal is replaced with biomass.

Our aim is to find out the environmental impacts for the entire life cycle already in advance when we introduce new fuel fractions or energy production methods.

HYDROPOWER HAS AN IMPACT ON LOCAL WATER SYSTEMS

Hydropower is a renewable energy form, but it alters the ecosystems of local water systems and restricts the migration of fish. Hydropower production requires regulation of waters, which also has an impact on their recreational usage. We offset the disadvantage caused by our hydropower plants located in the western branch of the River Kymijoki with the fishery management fee.

We are involved in a project of the Natural Resources Centre investigating the management measures for migratory fish populations in regulated rivers along the Rivers Kemijoki, Ounasjoki and Kymijoki. The project provides information, e.g. on the functioning of the Korkeakoski fishway, which was recently built in the eastern branch of the river. It is important for us to gain information about various methods that have an impact on the migration of fish. The project is due to end in 2018.

In 2017, we launched a study on the best and most cost-effective way to safeguard the passage of migratory fish past the power plant dams on the River Kymijoki. We also want to investigate new and innovative solutions. The study is part of the Government's key projects, and it is carried out in cooperation with the Ministry of Agriculture and Forestry and the Uusimaa Centre for Economic Development, Transport and the Environment. The task will be completed in 2018

3 PEOPLE

We want to involve city residents, customers and partners in the creation of a carbon-neutral future.

In addition to the environment, our operations have an impact on many groups of people. Heat and electricity enable us to live in the cold North, power plants alter the landscape, the energy network zigzagging the city must be maintained and repaired, and fuel has to be transported. Many people are interested in energy production, and it even provokes passions.

Our aim is to tell about our operations and to openly discuss the impacts they have on the environment and society together with our stakeholders. We present our operations with, e.g. power plant visits and in various meetings in addition to our customer magazines and website.

In order to operate responsibly, we must know our stakeholders and their expectations. We probe the views of our stakeholders with surveys and meetings. We also receive a lot of feedback, which helps us to develop our operations. We focus our stakeholder interaction especially on topical themes and stakeholders that are interested in us.

In 2017 we received positive feedback: Based on the Sustainable Brand Index survey, we are the most responsible brand among energy companies. The Sustainable Brand Index is the most extensive brand survey on sustainability in the Nordic countries, capturing the citizens' views of the sustainability of companies. Helen jumped five places with the overall ranking being 28 (33 in 2016).

DEBATE ON ENERGY STORAGE FACILITIES AND HEAT PUMPS
The topics of discussion among our stakeholders in 2017 included, e.g. increasing renewable energy, the sustainability of bioenergy, and fishways.

We held discussion forums for our stakeholders concerning the role of heat pumps in the energy system in Helsinki and the possibilities offered by energy storage. We will continue organising discussion forums also in 2018.

3.1 EXCELLENT SERVICE

Taking care of the security of energy supply, developing future energy solutions and having an uncomplicated service attitude form the basis of our operations.

Our aim is to provide even more comprehensive energy-related services and to offer more extensive packages tailored to the needs of our customers. In 2017, the amount of customers increased to over 400,000. We continued to develop all of our sales and customer service channels.

HIGH SECURITY OF SUPPLY
Maintaining a high security of supply is extremely important to us. We take account of the security of supply in the planning, operation and maintenance of energy production and distribution systems.

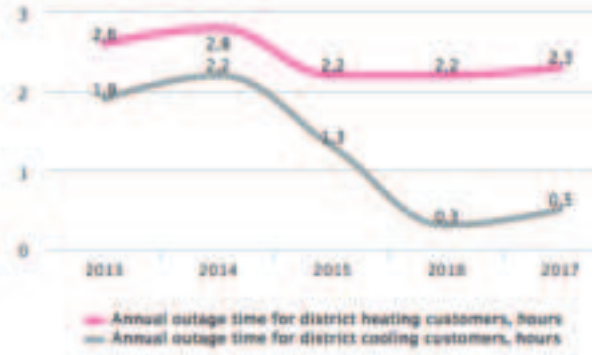
The security of energy supply remained at an excellent level. In 2017, the annual outage time for our electricity distribution customers was 3.3 minutes.

According to Finnish Energy's statistics on power outages, electricity distribution was interrupted for an average of 28 minutes per electricity user living in urban areas in 2016.

The average outage time for district heat and district cooling customers remained at the previous level.

Security of electricity supply

Security of heat and cooling supply



SATISFIED CUSTOMERS

We aim to provide the best customer service experience in the industry. According to the annual international and impartial EPSI Rating survey, we have succeeded well in our customer service. Customer satisfaction in the entire sector rose to a record level in 2017. Helen also reached the highest level of the past five years.

Customer satisfaction, EPSI Rating index

Source: EPSI Rating Finland 2017

We measure the satisfaction of our customer and the reputation of our company on an annual basis. In 2017, we carried out an extensive customer survey amongst our private customers, according to which 84 per cent of our electricity customers and 83 per cent of our district heating customers are extremely satisfied or satisfied with our services. Helen also has an excellent image among its own customers. For example, 92 per cent of our customers regard Helen as more responsible than energy companies in general, and 95 per cent consider Helen to be more reliable than energy companies in general. According to the survey, we still have room for improvement in communications related to electricity products and prices.

Based on the survey, the level of customer satisfaction among our business customers has risen considerably. The perception of Helen offering favourable prices has also increased. Responding to the growing expectations of customers became an area for further development.

NEW PRODUCTS AND SERVICES

We develop products and services that reduce consumption, balance consumption peaks and cut down carbon dioxide emissions in response to our customers' needs. Customers are given the opportunity to take part in and influence product development and to improve their user experiences.

In 2017, we launched several new services for both companies and households.

We launched a new kind of solar power plant concept aimed at companies, where business customers gain all the benefits of their own solar energy without having to make capital investments. Helen takes care of the implementation, financing and maintenance of the plant. We built solar power plants based on this concept in different parts of the country. We also published a solar calculator based on open data. The objective is to offer suitable solutions and indicative calculations about the benefits of solar electricity in an easy way to customers who are interested in solar power.

We launched a demand response service for companies and households. In our Demand Response service, a company is part of a virtual power plant with a task of balancing Finland's power grid. The regulated power loads and back-up power generators of the virtual power plant are controlled during national grid disturbances or shortage of electricity. In practice, the customers agree to instantaneously fine-tune their consumption. Demand Response enables improved security of supply in the electricity network and an increased share of variable renewable energy.

We were the first company in Finland to launch an electricity storage service aimed at companies. When the customer does not need the full capacity of its electricity storage facility, we can purchase the surplus operating time and make it available in the electricity market. We also prepared a storage service aimed at consumer customers.

3.2 CITIZENS

We want to join forces with all Helsinki residents, customers and partners to create the world's best city energy.

A VISIBLE PART OF HELSINKI
Our power plants and energy distribution network are a visible, and sometimes also invisible, part of Helsinki. We take the urban environment into account in the planning of new sites and in the landscaping of old ones.

We are in the process of building a substation in the growing and developing district of Kalasatama in Helsinki, and it is due for completion in 2018. The central location of the substation in the middle of a culturally important district also sets high architectural standards for the substation, and these have been taken into account in its planning. The substation will be surrounded by a graffiti wall to link it even more closely to the surrounding cityscape.

Thousands of power distribution cabinets are an important part of the electricity distribution network. Improvement of distribution cabinets with street art livens up the urban landscape and reduces vandalism. Year 2017 was a record year in the painting of distribution cabinets. We implemented a total of 14 painting projects with various interest groups: a total of more than 80 cabinets and three transformer substations were painted.

An art wall designed by the architect Nina Rusanen was built on the grounds of the Munkkisaari heating plant to landscape the structures of the heating plant.

LEARNING ABOUT THE ENERGY SECTOR IN ENTERPRICE SOCIETY

For the sixth year running we have been involved in Enterprise Society, which is part of the youth programme of the Economic Information Office TAT. Enterprise Society is an innovative education programme for 6th graders to learn about society, economics and working life. Enterprise Society Helsinki-Vantaa reaches about 8,000 children from Helsinki, Vantaa and Kerava each year.

During the Enterprise Society day, all pupils have their own professional task, which they will manage all day. In the Helen work area, the children learn about the role of an energy enterprise in society and about energy saving.

WE ENCOURAGE ENERGY SAVING

We help our customers to save energy.

During 2017, we provided information about energy, its sensible use and the energy sector to about 3,800 people at our Energy Gallery and in power plants and schools. In 2016, our audience totalled 6,800.

In future, we will focus on providing energy advice especially through the customer magazine and digital channels.

3.3 RESPONSIBLE EMPLOYER

At Helen, we carry out significant work: we produce the best city energy in the world.

We employ over 1,000 professionals in tasks related to the production, distribution, sale and maintenance of electricity, district heat and district cooling. In 2017, the number of employees fell from the previous year due to transfers of business and retirement.

Our human resource management is based on Helen's values and responsible operating principles.

The main principles of our human resource management are:

- Equality and non-discrimination
- Goal-oriented and responsible leadership and management
- Personnel planning that implements our strategy
- Incentive and fair remuneration and rewarding
- Development of expertise and engagement
- Healthy and safe workplace

Personnel by task group, Helen Ltd and Helen Electricity Network Ltd 31.12.2017

Number of employees, Helen Ltd and Helen Electricity Network Ltd

The energy sector is undergoing major changes, which also has an impact on the personnel and management. Organisational changes will continue to take place, and we aim to prepare for the changes in good time, taking into account particularly the impact on human resources. We always process the changes together with personnel representatives.

SKILLED AND MOTIVATED PERSONNEL
The skills and wellbeing of our staff are extremely important to us.

Due to Helen's diverse activities, it is possible to develop personal skills in various tasks through training courses, online learning, on-the-job training, and coaching. We also aim to promote internal mobility and viewing of career prospects with a wider scope, for example, by improving or expanding one's competence.

Helen Ltd and Helen Electricity Network Ltd carried out extensive personnel surveys in order to gain information about the experience of staff members and, above all, to utilise the results in the development of the organisation. In both companies, e.g. the employees stressed the importance of their own role as a strength, which was featured throughout the organisation. On the other hand, the development areas varied between organisations and personnel groups.

In accordance with Helen's strategy, we invested in the development of leadership and managerial work. The coaching programme for all managers continued, e.g. with the themes of self-management and performance management. We carried out a 360-degree assessment of all managers as a tool to identify their own strengths and development areas. We also utilised the results of the study in the development of management from the viewpoint of the entire Group.

We also offered an expert 270-degree feedback survey for those working in specialist tasks to provide a tool for personal development and self-management.

ZERO ACCIDENTS AS A TARGET
We aim for a zero-accident workplace where everyone is involved in maintaining and improving occupational safety. We reduce the number of occupational accidents and alleviate their consequences, e.g. with risk assessment of tasks and through the work of occupational safety and health partners. At our sites, we take care of the safety of every employee, also our contractors.

In 2017, the frequency of occupational accidents remained at the same level as in the previous year. Helen Electricity Network Ltd had zero occupational accidents. At Helen Ltd, the frequency of occupational accidents resulting in absence of at least one day was 8.2 accidents per one million working hours. In order to improve the situation, we launched an occupational safety campaign in spring 2017 and achieved a new record: 121 days without an accident resulting in absence.

Frequency of occupational accidents at Helen Ltd

Frequency of occupational accidents, target

We encourage our employees to report hazardous situations and near-misses in order to prevent occupational accidents.

In 2017, the number of safety observations reported was clearly higher than in the previous years, although we fell slightly short of the target. We invested especially in the observation processing times and managed to reach our target. During 2018, we will make a particular effort to engage the office employees in making observations.

Safety observations at Helen Ltd.

Processing of safety observation within the time limit at Helen Ltd

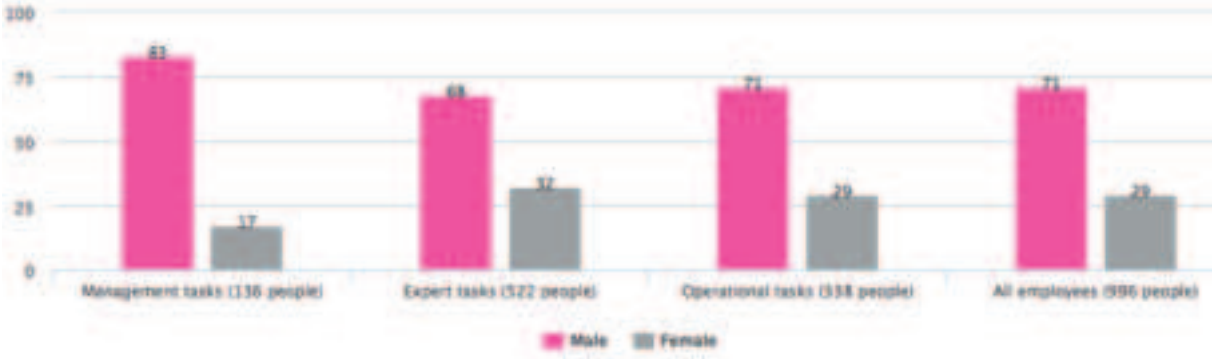
EQUALITY AND NON-DISCRIMINATION

The promotion of equality and non-discrimination is part of our everyday activities. An equal workplace is able to extensively utilise the diverse competence and experience and the various qualities and skills of employees. An equal and non-discriminatory workplace increases work motivation, wellbeing and productivity.

The purpose of our equality and non-discrimination plan is to ensure the impartial and fair treatment of our employees. We monitor the implementation of equality, e.g. with staff statistics and the results of the personnel surveys, and with a pay survey carried out every two years.

During 2017 the share of woman increased in all task groups.

Gender distribution by task group 31 Dec. 2017, % Helen Ltd and Helen Electricity Ltd



COOPERATION WITH STUDENTS

We want to ensure the availability of competent employees also in the future by raising the attractiveness of the energy sector and Helen as a workplace. One way of ensuring the availability of competent employees is to carry on cooperation with students and educational establishments. We organise excursions to our power plants for students of technology. We also provide funding for master's theses related to the protection of the Baltic Sea through the Helsingin Energia Centenary Fund.

4 FINANCIAL RESPONSIBILITY

We act in a financially responsible way.

Financial responsibility is a basic requirement for our operations. With our operations, we create value for our customers and for society, as well as for our owner, the City of Helsinki.

We aim to increase the market share of our current main products in a profitable way and to launch new and growing energy solutions and services on the market. We also aim to improve the efficiency of our operations in order to ensure the competitiveness of our services and continuity of our operations.

In 2017, the Helen Group's results were at the anticipated level, which was higher than in the previous year. The positive profit trend in the network business, the low market price of electricity and the increased fuel costs had a key impact on the performance.

During 2017, we continued the planning of our extensive investment programme. We aim to make progressive investments to reduce emissions and increase renewable energy and to make use of all the opportunities offered by new technologies. In 2017, we invested a total of some EUR 30 million in the Salmisaari wood pellet heating plant and the Esplanade heating and cooling plant.

In 2017, Helen Ltd paid EUR 20 million in dividends on its 2016 results to its owner, the City of Helsinki.

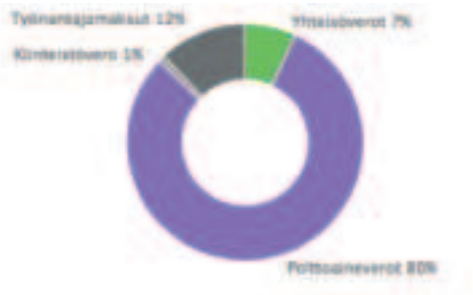
TAX FOOTPRINT
The tax footprint describes our impact on the surrounding society. In 2017, Helen Ltd and its subsidiaries Oy Mankala Ab, Helen Electricity Network Ltd, Helsingin Energiatunnelit Oy and Suomen Energia-Urakointi Oy paid a total of EUR 118 million in various taxes and tax-like payments (EUR 127 million in 2016). We also have an indirect impact on the tax revenues for the State and several municipalities by employing more than 1,100 people.

Helen Ltd and its subsidiaries pay all their taxes in Finland.

The Helen Group paid a total of EUR 118 million in taxes and tax-like payments.

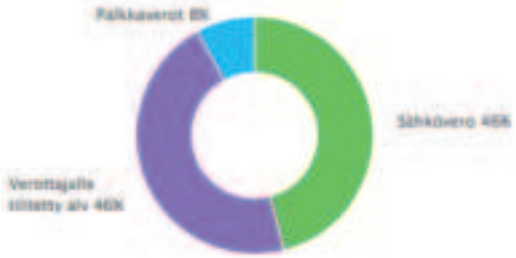
Electricity taxes paid by the customers of the Helen Group, withholding taxes on our employees' wages, and value added tax amounted to a total of EUR 202 million.

Taxes and tax-like payments 2017



The Helen Group paid a total of EUR 118 million in taxes and tax-like payments.

Taxes remitted in 2017



Electricity taxes paid by the customers of the Helen Group, withholding taxes on our employees' wages, and value added tax amounted to a total of EUR 202 million.

SUSTAINABLE PROCUREMENT

We aim to promote sustainability in our procurement. We take sustainable development into account in the entire procurement process whenever possible. We also make an effort to take the entire lifecycle of products and services into consideration.

In connection with competitive tendering, we request all tenderers to submit an account of environmental efforts in their operations. We also ask for further information on the acquisition with respect to, e.g. the environmental aspects related to the manufacture, use and disposal of products or the provision of a service. We require our contractors to act responsibly and to comply with the law.

We do not accept grey economy in any shape or form. We verify that our suppliers are registered in the trade, prepayment, employer and VAT registers. We also investigate whether the company has paid its taxes and statutory pension insurance contributions, complied with the collective bargaining agreements for the sector or the key contents of the terms of employment, and provided occupational health services. Furthermore, we monitor together with our suppliers that the agreed matters are carried out even with respect to the subcontractors.

We are members of the HSEQ cluster. In the cluster, we assess occupational health and safety issues, environmental responsibility and quality output in partnership with other industrial client companies. In 2017, we assessed six of Helen's service providers, e.g. industrial cleaning and high-power vacuuming services, pressure equipment welding and installation services, and crane maintenance and repairs.