

# **RESPONSIBILITY REPORT**

2018

15.3.2019 Helen Oy





RESPONSIBILITY REPORT 2 (34)

### 15.3.2019

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The photo on the cover page by Katri Tamminen: The solar wall for Helen's solar power plant in Suvilahti, Helsinki.



### 1 WE ALL SHARE RESPONSIBILITY

We want to ensure that we can produce clean city energy now and in the future. We develop new solutions for increasingly low-carbon 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.

ECONOMIC RESPONSIBILITY Economic 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 Helsinki.

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

**The corporate social responsibility report** 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 describes the calendar year 2018. 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 2019.

The total number of visits to the online corporate social responsibility report was 12 100. The number of visits decreased slightly compared with two previous years.



We have published a separate report on social responsibility since 2014. Before that, responsibility was reported as part of the annual report.

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 cleaner energy for our customers and our environment.



We aim to be the most responsible operator in the market. Responsibility requires that we take into account the demands of our stakeholders. Customers, citizens 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. We will renew our strategy during 2019.

In addition to its strategy and values, Helen's corporate responsibility is directed especially by its policy on corporate social responsibility and ethical principles. Ethical principles are the foundation of all our operations. All of our employees must commit themselves to complying with the principles in their work, and the principles are part of the induction programme for new employees. It is the duty of every employee to report any action that does not comply with the ethical principles. In 2018, we introduced an external reporting channel in addition to other reporting options. As a result of the new reporting channel, there is an option to anonymously report on an action that is contrary to the ethical principles. Suspected misconduct and any measures are reported regularly to the audit committee.

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 via operating systems and environmental guidelines. Helen's power 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. Our headquarters in Kamppi and Käpylä both 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.

### MATERIAL RESPONSIBILITY THEMES

During 2018, we selected the responsibility themes that are most material for Helen. We made the choice on the basis of the impacts on the environment and society, as well as on the wishes and expectations of our stakeholders.

Theme	Goal	Realisation 2018
Climate- neutral energy	We aim for a climate-neutral energy system	The amount of renewable energy we produced was 12 per cent and the amount of carbon-free production was 22 per cent. The new pellet-fired heating plant and heat pump plant were completed.
Origin and sustainability of energy	We know the origin of the energy we produce, as well as the environmental impacts for its entire lifecycle.	We focused especially on the origin of wood pellets and on the development of procurement. We set the target on the procurement of 100% sustainable biomass.
Climate- neutral products and services	We develop products and services that support climate neutrality and meet the cus- tomers' needs.	We launched on the market the smart heat distribution centre, the open district heat service, as well as the producer package that combines solar panels and the electricity storage facility.
Responsible supply chain	We improve the sustainability of our supply chain.	We updated internal quidelines of responsible procurement and audited our service providers responsibility via HSEQ Cluster.

### 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 operations. 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 2018 we launched several new services for both companies and households, e.g. a producer package combining solar panels and an electricity storage facility, and an open district heat service that enables a two-way district heat market.

### Excess heat is recovered more efficiently

In the future, energy is not wasted, but it is recycled as far as possible.

In 2018, we completed the Esplanade heating and cooling plant, which is used for recycling and reusing the surplus heat of our customers. We also decided to expand the Katri Vala heating and cooling plant.

### 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 2018, we made a decision on building a large heat storage facility and carried out a research and development project related to heat demand response.

#### 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.

The Salmisaari pellet-fired heating plant was completed in 2018. We also investigated numerous different options to replace fossil fuels.

### Research, development, education and innovations are invested in

We are involved in several research projects and trials.

In 2018, we carried on cooperation in various communities for growth companies and took part in several development projects, such as mySMARTlife, SysFlex and FlexCHX.

### 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 carbon dioxide levels 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. We will phase out coal use in 2029.

### **ENERGY PRODUCTION IN 2018**

In 2018, the share of renewable energy in our energy mix was 12 per cent, which was at the same level as in the previous year. Carbon-free production accounted for 22 per cent. We generate carbon-free energy from nuclear power and renewable energy: hydropower, wood pellets, wind power, biogas and solar energy, as well as from various waste energy flows with heat pumps.

#### Share of renewable energy



We produce energy mainly in our power plants and heating plants in different parts of Helsinki. We also supplement our production from outside Helsinki through our associated companies and purchases.

Our production volumes increased in 2018: we produced 6,700 gigawatt-hours of electricity, 7,200 gigawatt-hours of heat and 190 gigawatt-hours of cooling (140 gigawatt-hours in 2017).



In 2018, the share of energy we produced with **coal** decreased by 8 per cent to 6,000 megawatt-hours and, correspondingly, the share of natural gas production increased by 27 per cent to 4,800 megawatt-hours. This trend arises from changes in the energy market: the dry hydrological year and increased consumption due to economic growth pushed up the electricity and emission allowance prices, and subsequently the focus of production moved from coal to natural gas. The share of coal will fall significantly in the future when the Hanasaari power plant will be decommissioned by the end of 2024 and we will phase out coal in 2029.

We produced 1,500 gigawatt-hours of **nuclear power** through Teollisuuden Voima Oy and purchases. Nuclear power production grew by 6 per cent. Hydropower production decreased by 8 per cent due to the dry hydrological year.

The amount of energy we produced from various types of **excess heat**, such as heat from purified waste water and excess heat of properties using heat pumps, was at the previous level, 570 gigawatt-hours. The high price of electricity reduced the use of heat pumps towards the end of the year.

The amount of energy we produced from **wood pellets** and **biogas** fell slightly. Due to operational problems at the Salmisaari pellet-fired heating plant, which was inaugurated in 2018, we were unable to operate the plant according to plan. Remedial changes have been made in the pellet-fired heating plant, and therefore we will be increasing the use of pellets during 2019. We continued co-combustion of wood pellets also in the Hanasaari and Salmisaari power plants.

## Energy produced from wood pellets and biogas



We produced more energy from **wind power** than before, a total of 63 gigawatt-hours (39 gigawatt-hours in 2017). We procured wind power through our associated company Hyötytuuli Oy. The production volume increased as the first offshore wind farm of Hyötytuuli Oy in Tahkoluoto and the Annankangas onshore wind farm were completed in autumn 2017, and year 2018 was their first full year in operation. Furthermore, Hyötytuuli acquired the Jokela wind farm in autumn 2018, and therefore wind power production is expected to rise also in 2019.

We also increased **solar energy** production. Our photovoltaic power plants in Kivikko and Suvilahti produced a total of 1.0 gigawatt-hours of electricity in 2018 (0.96 gigawatt-hours in 2017). We expanded the Suvilahti solar power plant with a photovoltaic panel wall. We also built PV plants at our customers' properties and continued solar heat recovery from properties with the aid of district cooling.

#### INVESTMENT IN LOW-CARBON ENERGY PRODUCTION

The target of climate-neutral energy system directs the development of our future energy system. We aim to make progressive investments in reducing emissions and increasing renewable energy, and we utilise all the opportunities offered by new technologies. We also develop new energy production solutions together with our customers.

During 2018, we invested EUR 14 million in the reduction of emissions and the increase of low-carbon energy production. We completed two new energy production plants and took investment decisions on new projects.

The **Salmisaari pellet-fired heating plant** was completed. The plant's rated thermal input is 100 megawatts and it generates renewable district heat for the needs of about 25,000 one-bedroom flats. The pellet-fired heating plant reduces carbon dioxide emissions by about 58,000 tonnes a year.

The construction work of the **Esplanade heating and cooling plant** was completed: the plant produces district heat and district cooling from the excess heat of properties and data centres. The thermal output of the plant is 22 megawatts and its cooling output is 15 megawatts, and it reduces our carbon dioxide emissions by more than 20,000 tonnes per year.

Our nuclear power assets will increase when continuous use of the Olkiluoto 3 **nuclear power plant** will start at the beginning of 2020.

We are building a **new heat pump** to add to the Katri Vala heating and cooling plant. The district heat output of the new heat pump is 18 megawatts and its cooling output is 12 megawatts. As a result, the thermal output of the Katri Vala heating and cooling plant will rise to 123 megawatts and its cooling output to 82 megawatts. The production volume of the plant will grow by up to 30 per cent. The value of the investment is about EUR 20 million and, as a result, our carbon dioxide emissions will fall by 65,000 tonnes per year. The heat pump will be completed in 2021. We are also building a **large heat storage facility** in the disused oil caverns in Mustikkamaa, deep in the Helsinki bedrock. The volume of the facility is 260,000 cubic metres and it can store 12 gigawatt-hours of heat. The charging and discharging capacity of the heat storage facility is 120 megawatts, i.e. discharging and charging with full capacity takes four days. The storage facility increases flexibility of our energy system and reduces the use of fossil fuels. The value of the investment is about EUR 15 million. The construction work on the heat storage facility will start in 2019 and completion is due in 2021.

We are increasing **hydropower** production by carrying out a modernisation project on the Klåsarö hydropower plant located on the River Kymijoki. The plant's output is 4.6 megawatts and annual production about 32 gigawatt-hours. As a result of the upgrade of the power plant's turbines, the production volume of the plant will rise by about 18 per cent. The upgrade will be carried out during 2019–2020.

We are building a **photovoltaic plant** on the roof of the Messukeskus Expo and Convention Centre in summer 2019. The plant will consist of 2,300 photovoltaic panels and its output is 695 kilowatts.

### CONSTRUCTION OF BIOENERGY HEATING PLANTS IS EXPLORED We are exploring various options of building new bioenergy heating plants in Helsinki. The bioenergy heating plants would be built in stages, and the first plant would be commissioned by 2024. The planned sites are in Patola, Tattarisuo and Vuosaari. The bioenergy heating plants will replace coal use and ensure sufficient district heat supplies.

During 2018, we continued the planning of bioenergy heating plants: we specified the plans and made progress in the permit process of the plants. An environmental permit was granted for the Patola pellet-fired heating plant and the revision of the town plan was launched. We launched the environmental impact assessment of the Tattarisuo heating plant, on which the Uusimaa Centre for Economic Development, Transport and the Environment will deliver its opinion in early 2019. The environmental permit process for the Vuosaari heating plant was also started in 2018.

We are preparing to make decisions on the next stage of the implementation of bioenergy heating plants in 2019.

### PROMOTING SOLUTIONS FOR THE FUTURE

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

The heating and cooling networks are independent of fuels or production methods. In addition to increased use of biomass, we are investigating, for example, the utilisation of various kinds of heat pumps, solar heat, geothermal heat as well as small and modular nuclear reactors. We are also evaluating the possibilities offered by demand response, distributed generation, storage, and energy saving, as well as production and energy efficiency solutions implemented together with our customers. We are investigating the possibilities of **heat recovery at the Kilpilahti refineries** in cooperation with Neste, Borealis Polymers, Porvoon Energia, Keravan Energia and energy companies in the Helsinki region. Kilpilahti produces a substantial amount of low-temperature excess heat, the utilisation of which has not been possible so far. The preliminary study will be completed in 2019.

We are planning to build a **seasonal heat storage** in the disused oil caverns in Kruunuvuorenranta. In the solution, the large caverns of the seasonal storage of Kruunuvuorenranta will be filled with sea water heated by the sun in the summer. The water will then be 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.

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

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 excess heat and recycled heat, to optimise production and to enhance the use of energy for internal consumption at substations.

In 2018, we launched an energy audit on Vuosaari B power plant, where all potential areas to improve the efficiency of energy use are investigated and an action plan to implement the improvement measures is drawn up. 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 2019, we will carry out an energy audit for enterprises in accordance with the Energy Efficiency Act.

In 2018, the efficiency of energy production at the Helen Group was 94.4 per cent (91.1 per cent in 2017).

### 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 dioxide, nitrogen oxide and particulate emissions, within the constantly tightening limit values specified by the authorities.

In 2018, our sulphur dioxide emissions decreased by about 5 per cent on the previous year. Nitrogen oxide emissions remained at the previously level. The reduction in sulphur dioxide emissions was due to the efficient operation of the cleaning equipment and the increased use of low-sulphur fuels.



### Acidifying emissions

Particulate emissions fell by about 14 per cent on the previous year due to improved desulphurisation. Efficient desulphurisation also reduces particulate emissions at the same time.



#### Particulate emissions

In the Hanasaari B power plant, the monthly emission limit for particulates was exceeded once during 2018. The exceedance did not cause any harm to the environment or human health. Emissions in other power plants were below the emission limits. We always report any exceedances to the authorities.

We are constantly developing our operations in order to reach the tightening emission limit values. In 2018, we introduced low-sulphur fuel oil at the Jakomäki heating plant, which will reduce the plant's 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 energy produced. In 2017, the calculation was specified by including the electricity used by heat pumps and district heat pumping in the calculation of emissions.

### 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 2018, we produced a total of 114,000 tonnes of by-products (119,000 tonnes in 2017). Utilisation of by-products in landfill structures continued and the use of bottom ash in earth construction was a success, as a result of which the utilisation rate increased to 97 per cent (91 per cent in 2017).

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



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 2018, we produced 4,800 tonnes of waste (5,600 tonnes in 2017), 77 per cent of which was utilised as material and 10 cent as energy (88 per cent and 7 per cent in 2017). The amount of waste decreased especially on worksites. Utilisation of waste as energy increased, and the amount of waste taken to the landfill was lower than in the previous years.



## Utilisation of waste produced in Helen's properties and, from 2016, in the energy network areas, tonnes

### 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 excess heat ending up in the sea.

In 2018, a total of 126 gigawatt-hours of excess 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 (120 gigawatt-hours or 1.0 per cent in 2017). 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 NON-CONFORMATIONS ARE INVESTIGATED In 2018, there were two environmental non-conformations. We investigate all non-conformations and, if necessary, we will change our procedures in order to prevent them.

In February 2018, ash escaped into the environment from the chimney of the Munkkisaari heating plant in connection with test runs. In October 2018, at the Hanasaari heating plant, one cubic metre of glycol-water solution entered the sewer as a result of human error. Due to both of these non-conformations, technical changes were made in the plants' systems in order to prevent similar incidents in the future. The guidelines and procedures were also amended. The incidents did not cause any harm to human health or the environment.

### 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 2018, the carbon dioxide emissions of our fossil-based energy production remained at the previous year's level.

With the aid of wood pellets and biogas, we reduced our carbon dioxide emissions by about 1.3 per cent compared with a situation where we would have used fossil fuels only (2.3 per cent in 2017). Carbon dioxide emissions



Carbon dioxide emissions, total



Specific carbon dioxide emissions

\* 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 the electricity used in heat pumps and district heat pumps in the calculation of emissions.

We participate in the EU Emissions 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 Emissions 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.

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 2018, a total of 3 kilograms of refrigerants was leaked.

We use SF6 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 SF6 equipment and the recovery and recycling of gas, and we monitor the gas balance on a regular basis. Our target is to reduce SF6 emissions from machinery to below 0.25 per cent of the total amount of gas. We reached these targets in 2018 as the emissions amounted to 0.06 per cent of the total amount (0.12 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.

Active debate on the sustainability of biomass continued in 2018. Towards the end of the year 2018, the European Commission published the clean energy package, which included requirements concerning the sustainability of solid biomass. We are already making provisions for the forthcoming sustainability criteria.

### ORIGIN OF FUELS

We know the origin of our fuels. In 2018, we procured fuels with a total of EUR 360 million (EUR 310 million in 2017).

The coal we procured in 2018 came from Russia. 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 2018.

### ORIGIN OF WOOD PELLETS

The majority of the wood pellets we use are manufactured in Finland from by-products of the sawmill and wood processing industries. In 2018, we also procured pellets from Estonia, Russia and Germany. The raw materials of pellets procured from overseas were by-products of the sawmill and wood processing industries, wood chips, and round timber.

In 2018, we set the target for sustainability in 100 per cent of our procured biomass. In practice, this means that we procure pellets that have sustainability certification (e.g. PEFC, FSC or SBP) or are from otherwise controlled sources. Of the pellets used in 2018, 85 per cent had sustainability certification, and the rest came from certificate controlled sources or originated from certified suppliers. In the future we will report the achievement of the target annually in our corporate social responsibility report.

We request the pellet suppliers to provide information about the origin of the pellets and their raw materials, and about the supply chain and certification of the pellets. The pellet suppliers are also required to commit themselves to responsible business practices. We will continue to carry out audits on pellet suppliers, paying 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 power plant emissions 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 fuels 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 use. We offset the disadvantage caused by our hydropower plants located in the western branch of the River Kymijoki with the fishery management fee.

We were 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 provided 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 ended 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 study was completed in 2018. The work continues in 2019 with the fish radio telemetry study with an objective of tracking the actual movement of fish.

### 3 PEOPLE

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



We have an impact both the environment and people. Heat and electricity enable us to live in the cold North, but 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 us and our operations and to openly discuss the impacts we have on the environment and society together with our stakeholders. We present our operations with, e.g. power plant visits and in various events and meetings in addition to our customer magazine 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 through various channels, which helps us to develop our operations. We focus our stakeholder interaction especially on topical themes and stakeholders that are interested in us.

# SECURITY OF SUPPLY AND PHASING OUT FOSSIL FUELS ARE IMPORTANT TO OUR STAKEHOLDERS

In 2018, we sought our stakeholders' views of Helen's responsibility work via an online dialogue. The dialogue had more than 500 participations. More than 70 per cent of the representatives of our external stakeholders who took part in the survey regarded Helen as a responsible actor. We asked the same question in 2014, at which time the share of satisfied respondents was 44 per cent.

With the dialogue, we sought our stakeholders' views on how we could act in an even more responsible way. The participants answered the question in their own words and prioritised the suggestions of other participants according to what is most important in Helen's responsibility. The concept of phasing out fossil fuels generated the highest number of spontaneous thoughts – just over one-fifth of the more than 560 open responses were related to the reduction in the use of fossil energy. Increasing the use of renewable energy sources, especially solar energy, and emissions reduction were topics that sparked off the second highest number of comments.

The security of energy supply was voted as the most important theme. According to the comments, Helen must ensure security of supply in Helsinki and partly also in the rest of the country, as well as electricity self-sufficiency. Taking care of the security of supply in connection with the introduction of renewable energy forms was also regarded as important.

The results of the survey have an impact on the development of our operations. We used the survey results in the selection of Helen's key responsibility themes and in the development of communications, such as the corporate social responsibility report.

### DEBATE ON COAL AND BIOENERGY

The topics that attracted the most debate among Helen's stakeholders in 2018 were the ban on the energy use of coal, the sustainability of bioenergy, and the impacts of the Tattarisuo bioenergy heating plant on the environment and society.

In spring 2018, the Government published a legislative proposal to **ban the energy use of coal**. The proposal raised a lot of questions and debate, for example, concerning the time schedule and means of replacing coal in Helsinki. We took part in the debate by highlighting Helen's solutions to replace coal.

Discussion on the **sustainability of bioenergy** continued, for example, with the processing of the EU renewable energy directive that includes criteria for the sustainability of bioenergy. Sufficiency of bioenergy, biodiversity, carbon sequestration, and climate impacts throughout the life cycle raised a lot of discussion.

The planning of the **Tattarisuo bioenergy heating plant** continued during 2018. A statutory environmental impact assessment was carried out on the heating plant, assessing the impacts of the bioenergy heating plant on the environment and people. As a result of stakeholder feedback, we included another site option south of Tattarisuo in the planning. Plans for the heating plant raised many concerns among the local residents, and therefore we had a considerable amount of discussion about the heating plant's impacts on people and the environment. In addition to the events related to the environmental impact assessment, we also held an extra event for residents and had also consultations with the residents. The environmental impact assessment process will be completed in 2019, after which a decision will be made on the start of the plant's land use planning and licensing processes. No investment decision has been made on the Tattarisuo heating plant.

During 2018, we held discussion forums for our stakeholders concerning Helen's bioenergy plans, future energy system and the renewal of the heat market. We will continue organising discussion forums also in 2019.

### RECOGNITION ON BRAND RESPONSIBILITY

In 2018 we received positive feedback: based on the Sustainable Brand Index survey, we are the most responsible brand among energy companies for the second time in a row. 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 had an overall ranking of 32 (28 in 2017).

The Helen brand also gained international recognition as it was awarded as one of the world's best energy brands in the CHARGE energy branding competition. The award-winning brands were selected on the basis of results from a panel of experts, a customer survey and an independent analysis. We were included in the biggest category of the contest, best-established brands.

### 3.1 EXCELLENT CUSTOMER 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 2018, the number of our customers continued to rise and is now more than 450,000. During the year, we continued to develop sales and customer service through all 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 2018, the annual outage time for our electricity distribution customers was 4.9 minutes.

In July, the network of Helen Electricity Network Ltd in Katajanokka in Helsinki had an exceptionally long power cut, lasting about 12 hours. It was due to an exceptional situation in the Helsinki electricity network when two simultaneous faults occurred in the medium-voltage network. We paid the standard compensation to the customers due to the power cut in accordance with the Electricity Market Act.

According to Finnish Energy's statistics on power outages in the entire country, electricity distribution was interrupted for an average of 25 minutes per electricity user living in an urban area in 2017.

At 2.2 hours, the average outage time for district heat customers remained at the previous level. In the entire country, the average customer-specific district heat outage time was 1.6 hours in 2017 according to Finnish Energy's statistics on district heating outages. The outage time in district cooling was longer as there were more repair works. There were also more new-build properties in challenging locations connected to the network. We aim to minimise any disadvantage to the customers by carrying out the outages at night time.



### 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 fell slightly in 2018. Helen's result was just above the sector average.



#### Customer satisfaction, EPSI Rating index Source: EPSI Rating Finland 2018

We measure the satisfaction of our customers and the reputation of our company on an annual basis. In 2018, we carried out an extensive customer survey amongst our private customers, according to which 84 per cent of our electricity customers and 82 per cent of our district heat customers are extremely satisfied or satisfied with our services. Helen also has an excellent image among its own customers. More than 90 per cent regard Helen as more reliable and responsible than energy companies in general. There is also room for improvement: customers wish for, e.g. more competitive prices.

Based on the survey aimed at our business customers, customer satisfaction is at a good level. Business customers regard Helen as a reliable operator. Responding to customer's growing expectations and development of reporting services were highlighted as areas 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 2018, we launched several new services for both companies and households.

We launched the **smart heat distribution centre**, which saves energy and reduces the customers' heating costs. The new service entity for housing companies with a monthly fee covers the upgrade of the heat distribution centre, equipment maintenance and repairs, and optimisation of the indoor conditions in the building.

We published the **open district heat service** where customers can sell the heat they produce to Helen. In the service, which is especially aimed at industrial operators, we buy heat that is suitable for utilisation as such in the district heating network.

We were the first company in Finland to launch on the market a **producer package** designed for domestic customers, including photovoltaic panels and an electricity accumulator. With the electricity accumulator, a microgenerator will gain greater benefits from their photovoltaic panels while becoming part of Helen's virtual power plant and smart electricity market through the demand response system.

We also implemented a research and development project related to **heat demand response** together with the housing company Helsingin kaupungin asunnot Oy (Heka). Helen provides a new service for the metering and reporting of indoor temperatures and humidity in Heka homes. The service will enable improved energy efficiency in residential apartment blocks in a cost-effective and easy way.

We also developed our service provision in **electric traffic**. We offer housing companies a solution for charging electric vehicles, from planning to installation and maintenance. We launched a remote survey that shows the housing company's capacity for installing electric vehicle charging points.

### 3.2 CITIZENS

We want to join forces with all Helsinki residents, customers and partners to build cleaner energy future.



### 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 built a substation in the growing and developing district of Kalasatama in Helsinki, and it was completed in 2018. The central location of the substation in the middle of a culturally important district also set high architectural standards for the substation, and these were 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. In 2018, we continued the project of painting the distribution cabinets together with various stakeholders. We implemented 11 art projects in all: a total of more than 80 cabinets and two transformer substations were painted. The overall number of art cabinets is already more than 400.

### LEARNING ABOUT THE ENERGY SECTOR IN YRITYSKYLÄ

For the seventh year running we have been involved in Yrityskylä, which is implemented by Economic Information Office TAT. Yrityskylä is an innovative learning programme for 6th graders to learn about society, economics and working life. Yrityskylä Helsinki-Vantaa reaches about 8,000 children from Helsinki, Vantaa, Kerava and Pornainen each year.

During the Yrityskylä 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 in society and about energy saving.

WE ENCOURAGE ENERGY SAVING We help our customers to save energy.

During 2018, we provided information about energy, its smart use and the energy sector to about 3,500 people at our Energy Gallery and at power plants (3,800 in 2017).

To mark the energy saving week, we donated more than 70 meters to evaluate living conditions at home to Helsinki public libraries for lending to city residents.

In future, we will focus on providing energy advice especially through the customer magazine and electronic channels. A good example of a new kind of approach is the My2050 climate game, with which we started a partnership in 2018. Aimed especially at young people, the simulation game is a new and inspiring way to learn about climate change and the future it will shape.

### 3.3 RESPONSIBLE EMPLOYER

At Helen, we carry out meaningful work: we take care of our customers' energy needs and develop more sustainable energy system.



We employ directly about 930 professionals in tasks related to the sale, development, distribution, production and maintenance of electricity, heat and cooling. In 2018, the number of employees fell on the previous year due to business efficiency measures 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
- Inspiring and innovative working community
- Healthy and safe workplace

#### Personnel by function group, Helen Ltd and Helen Electricity Network Ltd 31.12.2018

Number of employees, Helen Ltd and Helen Electricity Network Ltd

936

2018



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

#### SKILLED AND MOTIVATED PERSONNEL

The skills and wellbeing of our staff are 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 career prospects with a wide scope, for example, by improving and expanding one's competence.

In accordance with Helen's strategy, we invested in the development of leadership and managerial work. In 2018, we implemented the 360-degree appraisal with all managers. The overall result of the appraisal, the leadership index, showed considerable improvement and was significantly better than peer group scores in Finland. Development was shown in all of the evaluated leadership areas.

#### 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 aim to remove accident risks, e.g. with good induction training, risk assessment of tasks and an active and positive attitude towards occupational health and safety among all employees. At our sites, we take care of the occupational safety of every employee, also our contractors.

In 2018, the frequency of occupational accidents improved on the previous year.





At Helen Ltd, the frequency of occupational accidents resulting in absence of at least one day was 5.8 accidents per one million working hours. At Helen Electricity Network Ltd, the frequency of occupational accidents was 5.0.

We encourage our employees to report hazardous situations and near-misses in order to prevent occupational accidents. In 2018, the number of various safety observations reported was 1,400. We invested especially in reducing the observation processing times, but fell slightly short of our target. In 2019, we aim for 1,500 safety observation reports.









### EQUALITY AND NON-DISCRIMINATION

The promotion of equality and non-discrimination is part of our everyday activities. In an equal workplace, diverse competence, experience and various qualities and skills are utilised extensively.

The purpose of our equality and non-discrimination plan is to ensure the impartial and fair treatment of our employees, taking individuality and diversity into account. We monitor the implementation of equality, e.g. with staff statistics and personnel surveys, and with a pay survey carried out every other year.

During 2018 the share of women among all employees increased by one percentage point.



### Gender distribution by function group 31.12.2018, % 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. We carry on cooperation with students and educational establishments. We organise excursions to our power plants for students of technology and recruit students as summer employees and trainees.

### 4 ECONOMIC RESPONSIBILITY

Economic responsibility is a basic requirement for our operations.



Economic 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 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.

Helen recorded an excellent financial result for 2018. The market price of electricity in the Nordic countries was at a high level throughout the year, rising strongly in the second half due to low rainfall towards the end of the year and the increased cost of fuels and emission allowances. The volume of power production increased clearly on the normal level along with the price.

During 2018, we continued the planning of our extensive investment programme. We aim to make progressive investments to reduce emissions and increase renewable energy and to utilise all the opportunities offered by new technologies.

In 2018, we invested EUR 14 million in reducing emissions and increasing renewable energy. Our biggest investment projects in 2017–2018 were the Salmisaari pellet-fired heating plant and the Esplanade heating and cooling plant.

In 2018, Helen Ltd paid EUR 31 million in dividends on its 2017 results to its owner, the City of Helsinki (EUR 20 million in 2017).

### TAX FOOTPRINT

The tax footprint describes our impact on the society. In 2018, 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 137 million in various taxes and tax-like payments (EUR 118 million in 2017). We also have an indirect impact on the tax revenues for the state and several municipalities by employing almost 1,100 people.

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

#### Taxes and tax-like payments in 2018



The Helen Group paid a total of EUR 137 million in taxes and tax-like payments.

#### Taxes remitted in 2018



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 237 million.

#### SUSTAINABLE PROCUREMENT

We aim to promote sustainability in our procurement. In 2018, we prioritised the sustainability of supply chain as one of the most material sustainability issue, so during the coming years we will focus to develop the sustainability of our supply chain.

We take sustainability 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. Our procurement processes comply with the legislation and regulations in accordance with our ethical guidelines and good business practice. In procurement, we ensure that any conflicts of interest have no impact on the handling of purchases or decision-making. We do not accept bribery in supplier cooperation. In 2018 we updated the internal guideline for responsible procurement.

In connection with competitive tendering, we request all tenderers to submit an account of the way they observe sustainable development in their operations and, having regard to the nature of procurement, we appreciate consideration of sustainability in the criteria used in the tendering process. We also ask for further information on individual purchases with respect to, e.g. sustainability considerations 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, and whether it complies with the collective bargaining agreements for the sector or the key contents of the terms of employment and provides occupational health services. Furthermore, we monitor together with our suppliers that the agreed matters are carried out also with respect to the subcontractors.

We monitor the responsibility of our suppliers with audits, if necessary, and are a member 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.