

Environmental responsibility 2015

**Purely better,
every day**

“HSY is one of the main producers of renewable energy in the Helsinki Metropolitan Area and utilisers of **EKOenergy** in Europe”



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HSY in everyday environmental acts

HSY is actively involved in the everyday lives of the million residents in the Helsinki Metropolitan Area.

- » **We produce** high quality drinking water and deliver it to our customers reliably. We ensure the efficient treatment of the wastewater generated.
- » **We produce** waste management services in an environmentally responsible manner. Almost all domestic waste is utilised in the Helsinki Metropolitan Area.
- » **We measure** air quality in the area and report it in real-time.

We provide these services as efficiently as possible while preserving the environment.

For our own part, we promote the utilisation of materials and nutrients as well as the circular economy.

We are also a significant environmental actor. We campaign for environmental issues and provide guidance to residents on waste sorting, among other things. We help the area's residents, companies and communities to act for a better environment.

With the regional and environmental information we produce, we help decision-makers, planners and research institutes create a healthy and pleasant urban environment.

Environmental responsibility in our operational policy

- » **We take care** of our environment by improving the area's material- and energy-efficiency, by increasing the utilisation of waste and by reducing nutrient and greenhouse gas emissions.
- » **We are committed** to the principles of sustainable development by taking the environment, people and the economy in to account in decision-making and operations.
- » **We are aware** of the environmental impacts of our operations and we report on them openly and honestly to all our interest groups.
- » **Our operational culture** includes every employee being responsible for meeting our goals. Our personnel are aware of the environmental and occupational safety impact that their work has and they aim to reduce harmful impact.

The goals set in our strategy for 2015-2020 focus especially on improving the environmental impact and performance of our operations with the main focus being on material and energy efficiency. These are also expected to yield economic benefit.

The environmental management system supports management in environmental issues

HSY's management system meets the international quality and environmental requirements (ISO 9001:2015, ISO 14001:2015). HSY's quality and environmental management systems were certified in 2015.



Commitments

HSY is committed to several societal initiatives and agreements on sustainable development:

- » Baltic Sea Challenge
- » Energy-efficiency Agreement
- » Mitigating climate change
- » Adapting to climate change
- » Society's Commitment to Sustainable Development

Investments in the environment and the future

In future years, HSY will be faced with a challenge in the form of an extensive investment programme and its financing.

Blominmäki Wastewater Treatment Plant

- » **The total cost** estimate for the Blominmäki wastewater treatment plant is €371 million.
- » **The observation** of environmental aspects is key in the planning, implementation and commissioning of the project.
- » **With the commissioning** of the treatment plant, the treatment efficiency of wastewater increases considerably. The treatment results of the wastewater treatment plant to be completed in 2020 will be the best in Finland and in the entire Baltic Sea region.
- » **In addition**, the plant will be the most energy-efficient treatment plant in Finland and possibly in all of Europe.

Ämmässuo Waste Treatment Centre

- » **The total amount** of investments planned for Ämmässuo in 2015-2019 is approximately €40 million.
- » **Significant** investments are allocated, for example, to biomass processing and the utilisation of biogas. In 2015, a new biogas facility was commissioned.
- » **The renovations** of the composting facility and the biogas facility ensure the operational reliability of the plants and continuing environmentally friendly operations.
- » **Environmental impact** is also mitigated by investing in the gas collection and water management systems of the landfills and by constructing dense landfill surface structures. The goal is to reduce environmental hazards.
- » **The preparations** for extreme weather conditions include the renovation of the area's wastewater equalising basin and constructing a new equalising basin for the area's wastewater.
- » **The field capacity** and renewable energy will be increased.



Responsible utilisation of **natural resources and waste**

Goals for 2015-17:

- » The amount of domestic waste per household to decrease.
- » The energy utilisation ratio of domestic mixed waste to increase while the material utilisation ratio also increases.
- » The amount of glass, metal and fibre packaging to reduce in mixed waste.

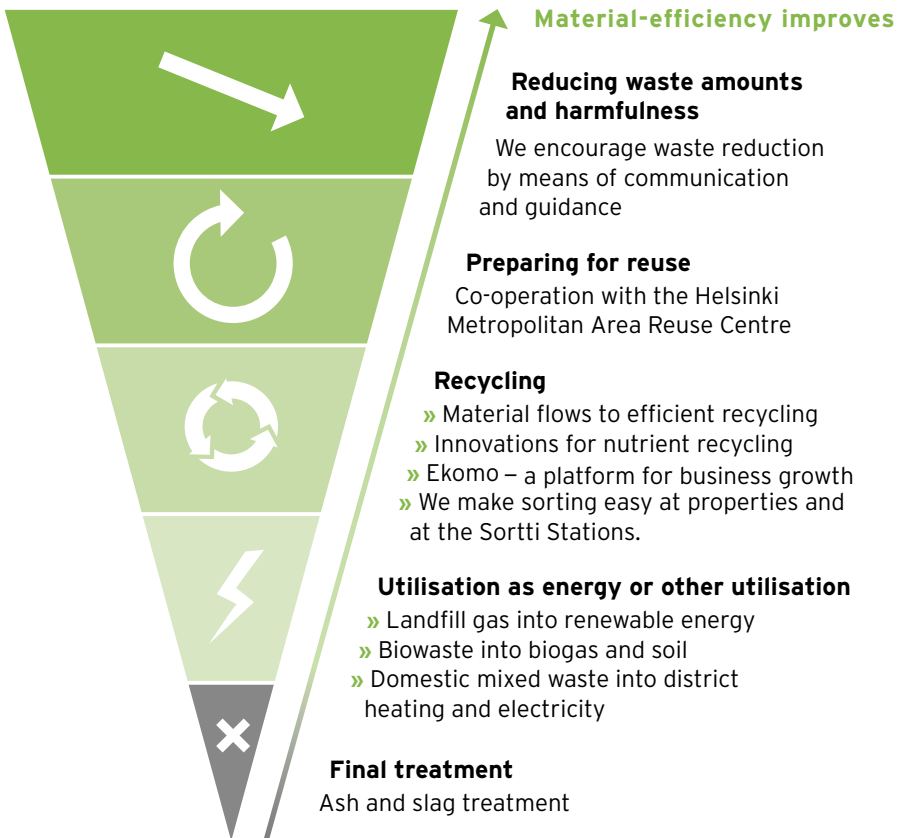
The largest waste treatment centre in the Nordic countries is located in Ämmässuo, Espoo. HSY aims to reduce the amount of mixed waste, improve sorting and increase the overall utilisation ratio of domestic waste.

The amount of waste going to landfill decreased significantly when in total around 219,000 tonnes of mixed waste were delivered to the waste-to-energy plant for energy utilisation. In 2015, approximately 12,000 tonnes of waste went to landfill, which is considerably less than in the previous years.

Reducing natural resources and the legislation are shifting the focus of waste management from waste treatment to material refining.

With the organic waste landfill ban, the disposal of mixed waste has ended and it is currently used to produce energy in the waste-to-energy plant of Vantaa Energy.

Actions at HSY according to the order of priority



Ekomo - promoting industrial symbioses

Goal for 2015-17:

- » The Ämmässuo eco-industrial centre utilising the area's material flows to launch its operations

In the Ekomo eco-industrial centre the public and private sector can cooperate according to the principles of industrial symbioses while utilising the material flows and the extensive investments made in the infrastructure.

Significant material flows, such as biomass and rock waste are taken to Ekomo.

Ekomo also serves as a pilot platform for companies. Later, the pilots may lead to acquisitions that can serve as important references especially for small companies. HSY as a reference assists in getting orders from companies for similar items, which promotes circular economy investments and the creation of jobs.

ekomo



We make sorting easy

Waste containers for recyclable waste are found nearby, often in your own waste container storage area: glass and metal collection is provided in all properties of at least 20 flats and carton and biowaste collection in all properties of at least 10 flats. In addition, in the Helsinki Metropolitan Area and Kirkkonummi, there are HSY Sortti Stations, containers for hazardous waste and approximately 130 recycling points that are maintained by RINKI Oy and HSY.

In autumn 2015, a new Sortti Station was opened in Ruskeasanta, Vantaa. A new Sortti Station to be opened in Jorvas, Kirkkonummi, in 2018 will further improve and expand the services.

In the construction of the new Sortti Stations, environmental aspects are taken into account by using, for example, green roofs and high quality recycled materials, by producing the electricity needed for the operations of the station with solar energy and by naturally cleaning the stormwater.

Material balance

Goal for 2015-17:

- » The creation of a monitoring system for the material flows of own operations

HSY has investigated the balance of its own operations and the materials passing through HSY in 2014. The material balance enables the improvement of HSY's operations in operative processes and the use of raw materials. The visualisation of the material flows in HSY's own operations enables the production of high-quality domestic water, sewerage and the treatment of wastewater, and contributes to waste management meeting the environmental requirements - cost-efficiently and with wise use of resources.



HSY is one of the main producers of renewable energy in the Helsinki Metropolitan Area

Goals for 2015–17:

- » The energy amount consumed in inhouse operations to be further decreased and
- » The share of renewable energy produced and purchased by HSY out of the energy amount used to reach the level of 100%.

In 2015, HSY consumed 198,900 MWh of energy. Energy consumption increased by 4% from 2014, when 190,400 MWh of energy was consumed. The increase was due to increasing the utilisation of renewable heat at the Ämmässuo waste treatment centre. HSY's goal according to the energy-efficiency agreement is to improve energy consumption by 2,800 MWh per year.

HSY consumes a lot of energy but at the same time is one of the main producers of renewable energy in the Helsinki Metropolitan Area.

In 2015, HSY's own energy production was approx. 177,700 MWh and HSY was 89% self-sufficient. When including the sale of biogas, HSY produced more energy than it consumed (102%) in 2014. Biogas was sold in the amount of 29,000 MWh to be refined into transport fuel.

HSY among Europe's main utilisers of EKOenergy

HSY's own electricity production was approved for the EKOenergy production 2015 and HSY shifted to using EKOenergy-labelled electricity exclusively. HSY is one of the largest users of EKOenergy in Europe.

In addition to electricity and heat produced from renewable energy resources, HSY sells biogas for transport fuel production.

Examples of renewable energy production:

- » Biogas collected from the landfills at the Ämmässuo waste treatment centre is utilised in electricity production at its own gas power plant. Due to the district heating network, the gas power plant also produces all the heat that the waste treatment centre requires.
- » Biogas is produced by digesting wastewater sludge
- » Part of the need for heat energy of the wastewater treatment plants and Pitkääkoski water treatment plant is covered by means of heat recovery.
- » Biogas from the Suomenoja wastewater treatment plant is sold as transport fuel.
- » Energy formed by the current of the raw water in the Päijänne tunnel is utilised in Pitkääkoski and in the Kalliomäki power plant of Pääkaupunkiseudun Vesi Oy.

- » A new biogas facility was commissioned in Ämmässuo in 2015. By digesting biowaste, the plant produces annually an estimated 4 million m³ of biogas that is utilised in electricity and heat production.
- » Helen's Katri Vala and Fortum's Suomenoja heat pump plants utilise to a great extent the heat energy of wastewater treated by HSY in the production of district heating.



LANDFILL AND BIOGAS



➔ **60 000** residents get electricity,
heat corresponding to the consumption
amount of **3 000** one-bedroom flats

HYDROPOWER

➔ electricity in the amount
corresponding to the c

1 500 residents

Ämmässuo
Waste Treatment Centre

Water Treatr

Was

BIOGAS

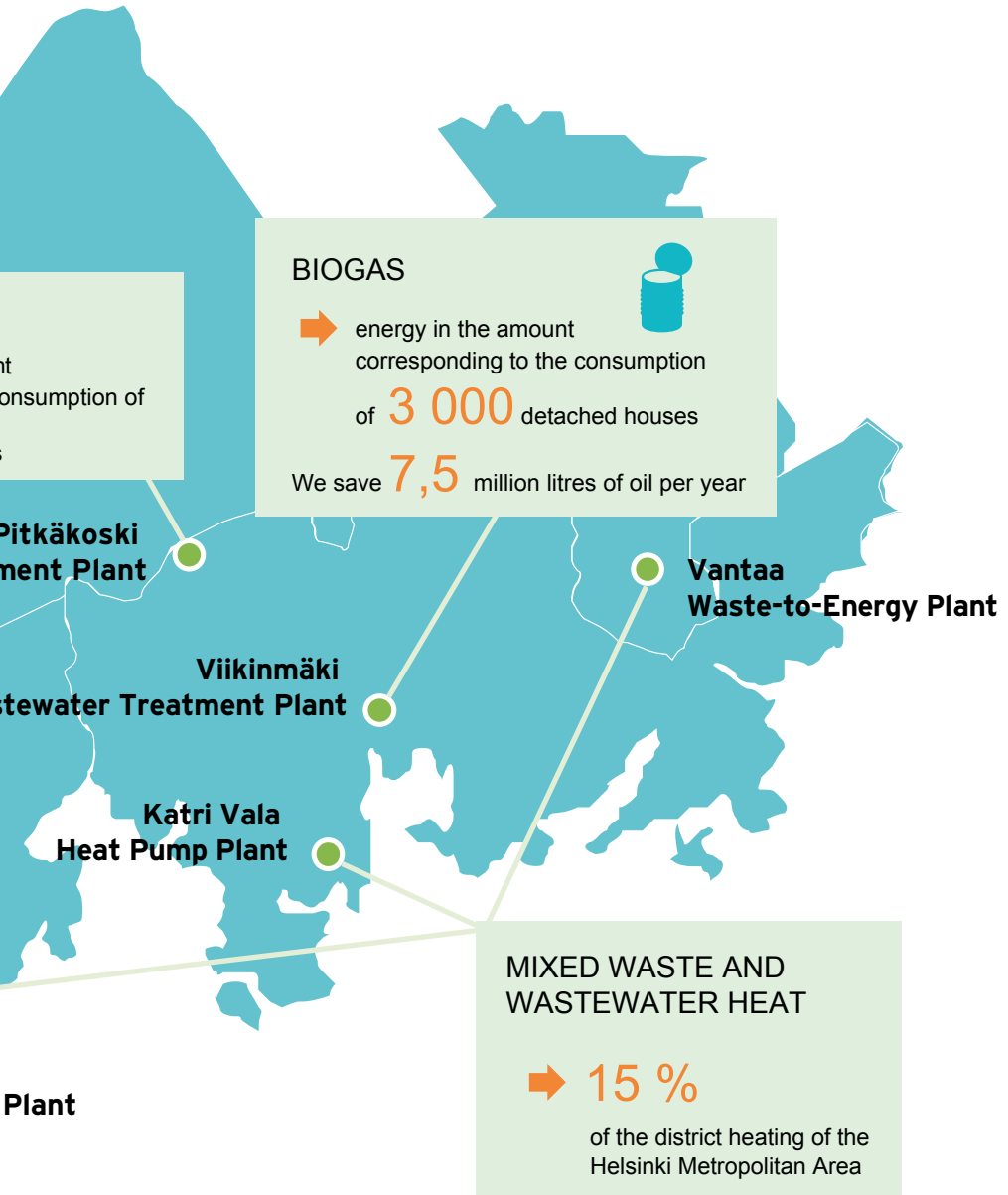
➔ **55**
buses
get fuel

➔ **6**
million emission-free
commutes



Suomenoja
Wastewater Treatment Plant

Suomenoja
Heat Pump





Greenhouse gas emissions

Goals 2015–17:

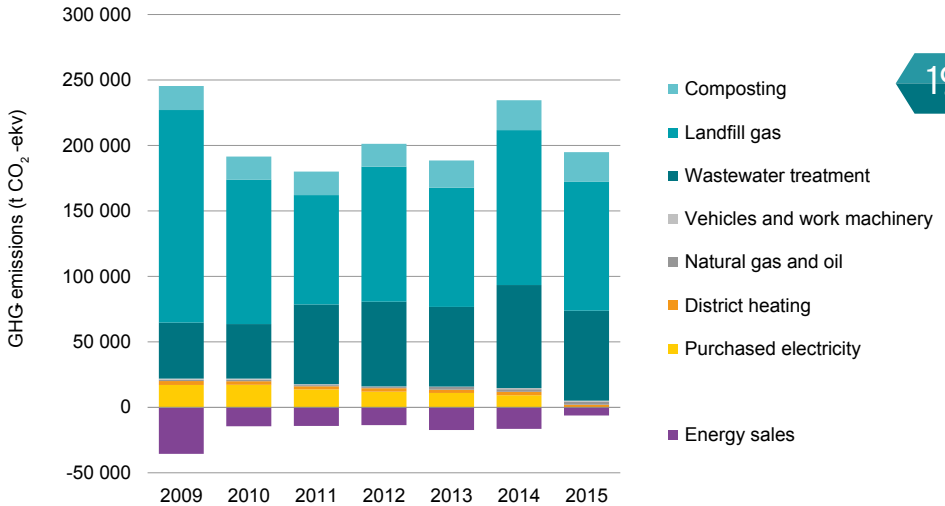
- » The greenhouse gas emissions of HSY's own operations to be reduced by 6% from the level of 2013.
- » Emissions in the Helsinki Metropolitan Area to be reduced by 10% from the level of 1990 according to the climate strategy.

In 2015, HSY's greenhouse gas emissions were 194,400 tCO₂-ekv., which is approx. 3.5% of the overall emissions of the Helsinki Metropolitan Area. The emissions were reduced by 17% from 2014 to 2015.

The reduction of emissions was due to a reduction in wastewater treatment process emissions and in landfill gas fugitive emissions as well as the acquisition of renewable electricity.

HSY's own energy production based on renewable energy sources reduces the need for purchase energy and, thus, emissions of the regional authority. The heat energy produced by HSY itself replaces district heating, natural gas and oil.

In terms of electricity, HSY shifted in 2015 exclusively to both using and producing EKOenergy-labelled electricity with zero emissions. In terms of purchased electricity, HSY is emissions neutral.



HSY's greenhouse gas emissions in 2010-2015 and that of similar operations in 2009. An advance estimate for district heating emissions in 2015.

Air emissions in the Helsinki Metropolitan Area are diminishing rapidly

HSY is committed to reducing greenhouse gas emissions according to the Helsinki Metropolitan Area Climate Strategy by 20% from the level of 1990 by 2020 and to carbon neutrality by 2050.

HSY monitors the development of greenhouse gas emissions in the Helsinki Metropolitan Area and promotes climate work together with the member cities. The total greenhouse gas emissions of the cities in the Helsinki Metropolitan Area were, calculated as carbon dioxide, 5.3 million tonnes in 2015, which is 4.7 tonnes per residents. The overall emissions have diminished by 11% in comparison to 1990.



Environmental impact to water environments

Goals for 2015–17:

- » The phosphorus load of wastewater treatment to not increase and the nitrogen loads to decrease by 2% from the level of 2012.
- » The amount of wastewater leaking in the combined sewerage system to decrease from the level of 2013.
- » The amount of water pumped into the system per resident to diminish.

Wastewater treatment is an integral part of protecting coastal waters and the Baltic Sea as the wastewater to be treated includes a great deal of phosphorous and nitrogen nutrients, which, if discharged into the sea, would cause abundant eutrophication.

Largest wastewater treatment plants in Finland

HSY's wastewater treatment plants in Viikinmäki, Helsinki, and Suomenoja, Espoo, are in charge of wastewater treatment in the Helsinki Metropolitan Area. The plants are the largest in Finland and they serve over a million residents in the Helsinki Metropolitan Area. The third Blominmäki wastewater treatment plant is under construction.

The residents and businesses of the Helsinki Metropolitan Area consume approximately 90 million cubic metres of domestic water per year. The water treatment plants in Vanhakaupunki and Pitkääkoski use water from Lake Päijänne as raw water. The water we use is about one per cent of the lake's discharge.

The residents and companies in the Helsinki Metropolitan Area generate a total of 100 million cubic metres of wastewater per year. Wastewater is fed through the sewer network for treatment before being reintroduced into the water bodies. Over 95% of organic waste matter is removed in the treatment process, 98% of phosphorus and 70-90% of nitrogen.

In 2015, despite the increase in the amount of wastewater, HSY's wastewater treatment plants met the operational level according to the environmental permit regulations as well as HSY's own tonne-based goals that are stricter than those of the environmental permit regulations. The nitrogen load on the sea was 983 tonnes (goal of under 1,200 tonnes) and phosphorus load 35 tonnes (goal of under 40 tonnes).

Sludge put to **good use**

The wastewater treatment is conducted by means of a biochemical process that produces sludge and biogas as by-products. The sludge is processed into soil, and the gas is utilised as an energy source. The treated wastewater is fed through a tunnel into the sea.

The amount of water **is being reduced**

The goal is to reduce the amount of water pumped into the network by decreasing the amount of leaks. Leak water is water that leaks from a pressurised water pipe due to pipe breakage, for example. Hidden leaks not visible on the surface form a significant part of leak water.



Procurement is used to promote material- and energy-efficiency **and to look for new innovative solutions**

Goals for 2015–17:

- » The observation of energy efficiency in the procurement to expand to apply also to HSY's service and equipment acquisitions.
- » Environmental responsibility in the procurement to be estimated and verified systematically. The key environmental responsibility indicators, goal levels and life cycle costs that can be verified in most procurement cases to be determined.

Procurement supports HSY's strategy where financial factors, material- and energy-efficiency, environmental responsibility and innovativeness form a balance. The Act on Public Contracts is applied to HSY's acquisitions.

The principles of sustainable development, innovativeness, material- and energy-efficiency, environmental impacts and the customer's precautionary needs are taken into consideration in the different procurement phases (item specification - determining tenderers' suitability instructions - evaluation criteria of the tenders - cooperation during the contract period).



Reliable information encouraging residents **to act for a better environment**

We help the area's residents, companies and communities to act for a better environment. It is our goal to improve the state of the environment.

With the regional and environmental information we produce, we help decision-makers, planners and research institutes create a healthy and pleasant urban environment.

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climateinfo

Climateinfo forms a part of HSY. The service provides guidance and encouragement to residents and SMEs to take action in order to mitigate climate change.



HSY



Our latest GRI G4 report (Only available in Finnish.)

hsy.fi/ymparistovastuu

