Together for a sustainable future

HSY's Sustainability Report 2022

Helsingin seudun ympäristöpalvelut -kuntayhtymä
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1 Introduction

1.1 Foreword

In 2022, the operating environment was characterised by Russia's war of aggression against Ukraine, which started in February 2022, and the general weakening of the security environment, the energy crisis and the risk of limited availability of critical raw materials that followed the attack. Nevertheless, we were able to manage our production and services extremely well and our customer satisfaction remained at a high level.

Our goal is to be carbon-neutral by 2030, and our greenhouse gas emissions are on a strong downward trend. In 2022, we achieved a reduction of 9% from the previous year. Our long-term work in managing landfill gas, improving the energy efficiency of our processes and utilising renewable energy is paying off.

The 17-year project of the Blominmäki wastewater treatment plant was finalised, and the plant started its operations at the end of the year. Our treatment plant received the 2022 RIL Award. The award was based on Blominmäki's role in fulfilling a basic function of the society as well as energy smart solutions.

In 2022, we worked on a broad front to promote recycling. We continued to share information, give advice and campaign for the matter. In November 2022, we introduced the first fully electric refuse truck in the inner city. We also prepared for extending the separate collection of biowaste to cover properties for 1–4 apartments, instead of the previous five apartments. The amount of mixed waste collected from properties per capita decreased by about seven percent from the previous year, to 136 kg in 2022.

We paid special attention to well-being at work, for example, through surveys and by investigating cases of inappropriate treatment and bullying. Based on a pulse survey conducted in the autumn of 2022, our efforts paid off.

We revised our strategy "HSY 2030 – Together for a Sustainable Future". The strategy was launched in 2023, and its vision is to make the Helsinki Metropolitan Area the world's most sustainable metropolitan area. The four strong focal points of the strategy are environmental responsibility, changing work, sustainable finances and resident experience. Strong urban growth, rail transport projects and our large plant investments have increased our loan burden. When drawing up the new strategy, we paid particular attention to improving productivity and efficiency and achieving an economic balance. We will continue to build the world's most sustainable metropolitan area together based on this solid foundation.

Helsinki, 22 June 2023

Tommi Fred

Executive Director

1.2 Sustainability is at the core of our operations

We are the largest environmental actor in Finland. We clean wastewater, produce clean drinking water and organise waste management in the Helsinki Metropolitan Area. In addition, we produce information on the air quality and greenhouse gas emissions in the Helsinki Metropolitan Area, promote the achievement of regional climate goals and provide geographic information. Thus, our basic duties bring benefits to both people and the environment. The objectives of our new strategy include, among other things, carbon neutrality, a strong circular economy and minimising the harm to biodiversity caused by our operations.

Sustainability is the ultimate goal of our operations and strategy. We take the sustainability perspective into account in all planning across our operations without a separate sustainability programme.

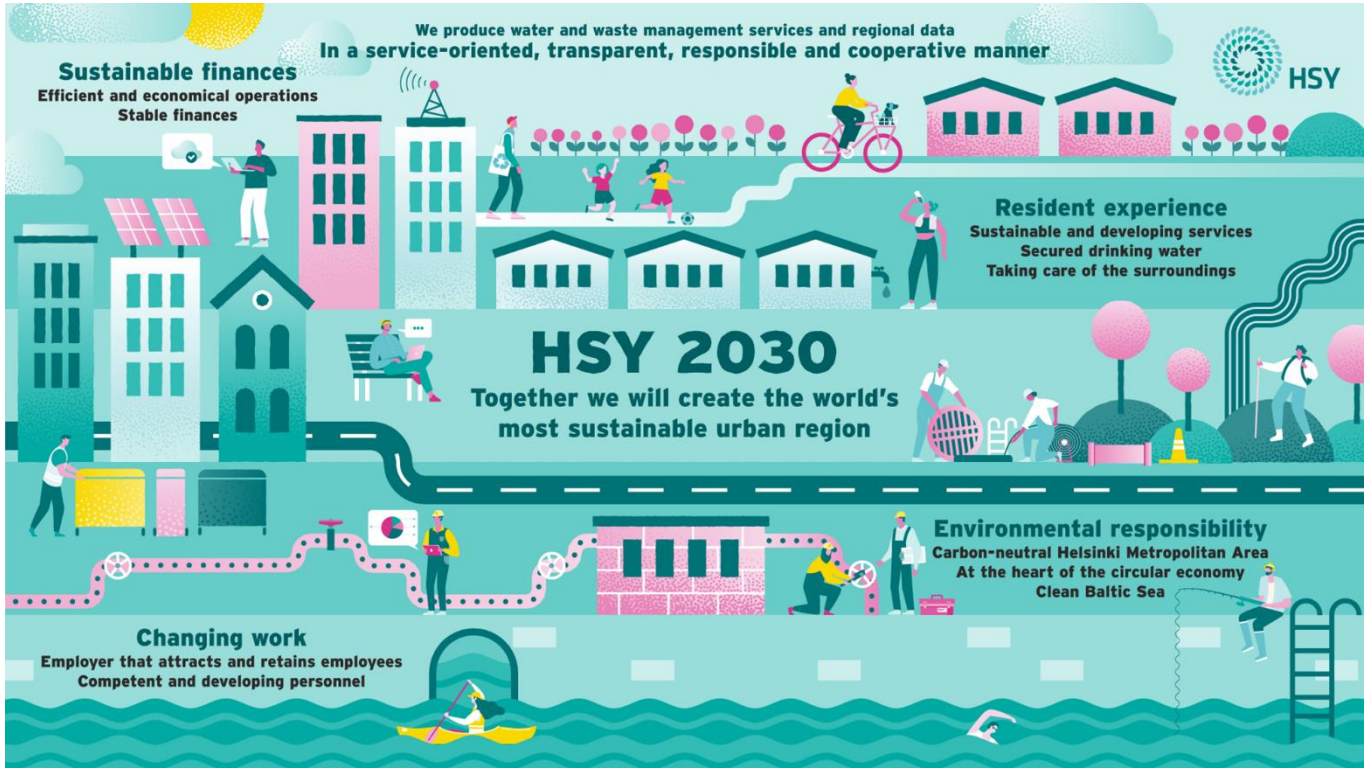


Image 1 We prepared our new strategy in cooperation with our stakeholders in 2022.

Our sustainability report is based on our new and old strategies, which were prepared in cooperation with our most important stakeholders. We have also used our strategies as the basis for our previous sustainability reports. In addition to our strategies, our sustainability report is based on the poll and workshops that we organised for the purpose of defining the content of this report.

In this report, we combined our old strategy that was still in force in 2022 and our new strategy that we prepared in 2022 so that the report contains the objectives and indicators from both the old and the new strategies. In cases where a particular year is covered by indicators from both strategies, the new indicator is given priority. The old objectives and indicators that are not part of the new strategy are marked with the additional heading “from the 2025 strategy”. We also included the objectives and indicators that only appear in the new strategy in the report, because we want to communicate our future objectives, although they may not have been realised in 2022.

Vision: Together we will create the world's most sustainable metropolitan area

Strategic focus areas	Strategic objectives	Objective 2030
Environmental responsibility	Carbon-neutral Helsinki Metropolitan Area	Carbon-neutral water services and waste management. Climate resilient Helsinki Metropolitan Area.
	At the center of the circular economy	The amount of mixed household waste is reduced. HSY promotes the circular economy in the region.
	Clean Baltic Sea	The nutrient load on water systems is reduced.
Changing work	Employer that attracts and retains employees	The personnel is motivated and recommends HSY as a workplace. We provide a great employee experience.
	Competent and developing personnel	Meaningful and evolving tasks, the ability to change and cooperation serve as the basis of our operations and support our expertise.
Sustainable finances	Efficient and economical operations	Services are produced sustainably and more efficiently than at present.
	Stable finances	The incurrence of additional debt has been brought to an end. Investments can be financed by water and service fees.
Resident experience	Sustainable and developing services	Services are smooth, multi-channel and accessible.
	Secured drinking water	Preparedness for disruptions and operational reliability are at an excellent level.
	Taking care of the surroundings	We promote the good state and diversity of the surrounding environment.

Image 2 Our new strategy.

2 Environmental responsibility

2.1 We reduced our greenhouse gas emissions

In order to reduce the amount of greenhouse gas emissions, we optimise processes, utilise landfill gas and biogas, improve energy efficiency, transfer to the use of renewable traffic fuels and are actively researching other relevant opportunities to reduce the emissions, such as the reduction of nitrous oxide emissions from wastewater treatment.

We achieved our 2022 emissions target easily. In 2022, our total emissions were approximately 97,000 t CO2eq, which means that our emissions decreased by about 9% from the previous year and more than 50% from 2015. In 2022, greenhouse gas emissions from our own operations amounted to 92,000 t CO2eq, and emissions from external operations to about 5,000 t CO2eq. The biggest underlying factor in the reduction of emissions was the reduction of fugitive emissions from landfills (-40%) due to reduced gas formation and improved landfill gas recovery. For example, emissions from external services and HSY's own vehicles and machinery both decreased by 39%. In contrast, greenhouse gas emissions from heating energy increased by 45%. The amount of purchased heat and fuels needed for heating increased from the previous year, because the Blominmäki digester plants had to be heated with fuel oil at start-up. In a plant that is in production, the digesters would be heated by the gas and heat recovered from the plant itself.

Our strategic objectives

- Carbon-neutral water services and waste management
- Climate resilient Helsinki Metropolitan Area

How we measure our success - Indicators

HSY's total emissions, t CO2eq/year (Company-owned and controlled ghg-emissions and emissions from main outsourced activities)

- 2022: 130.000 t CO2eq
- 2023 102,000 t CO2eq
- 2025: 89,000 t CO2eq (56% reduction compared to 2016 level)
- 2030: 64,000 t CO2eq (67% reduction compared to 2016 level)

What did we do?

- Among other things, we required our suppliers to use renewable fuel in all new transport service contracts.
- We produced about 60 t CO2eq carbon sinks at our pyrolysis pilot plant, which we developed as part of our Sludge char project.

Read more:

- Emissions from the Ämmässuo eco-industrial centre reduced by almost one-third last year (in Finnish)
- Bioenergy from landfill gas and a 70% self-sufficient wastewater treatment plant – This is how HSY reduces its emissions (in Finnish, subscription to Tekniikka & talous magazine is required for reading):

Indicator

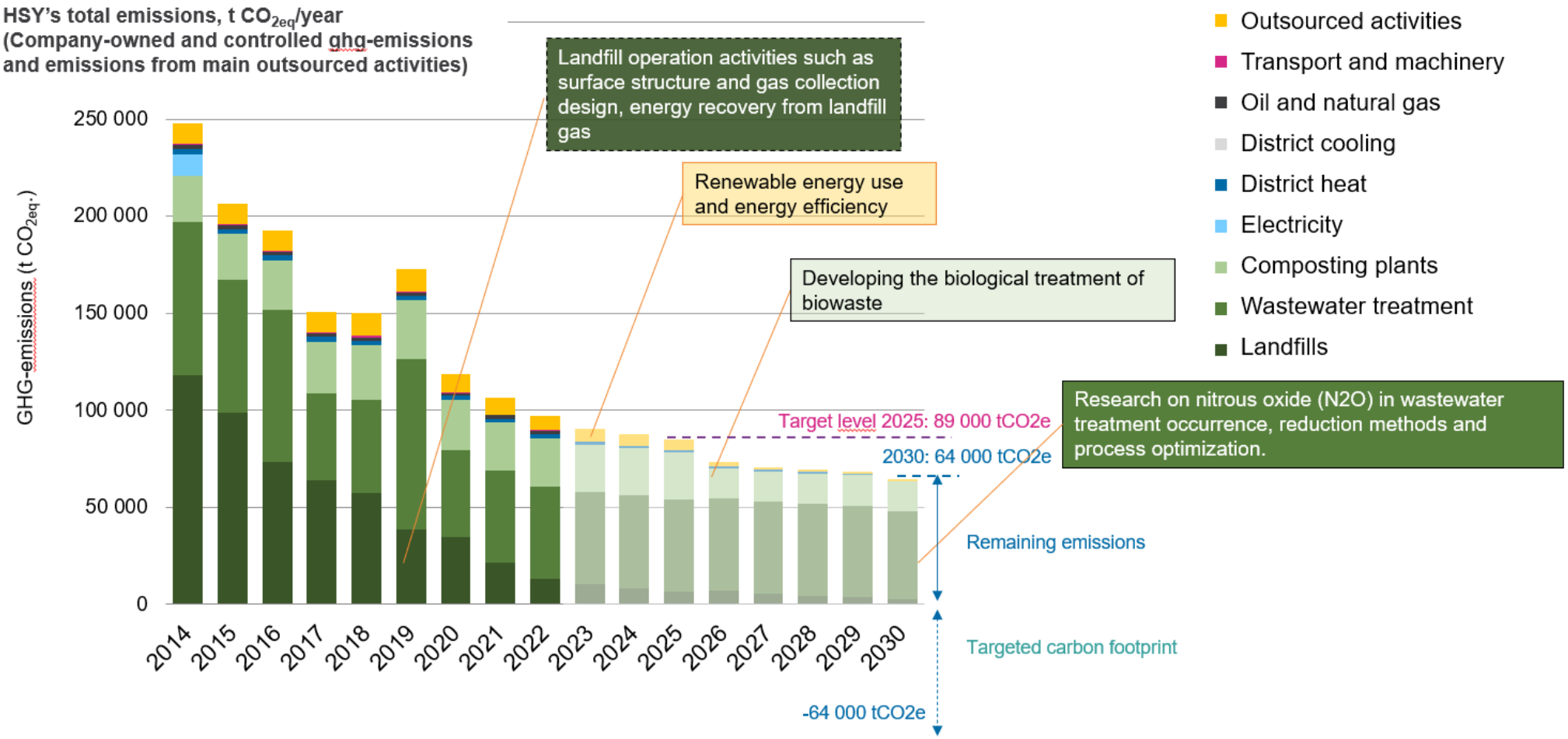


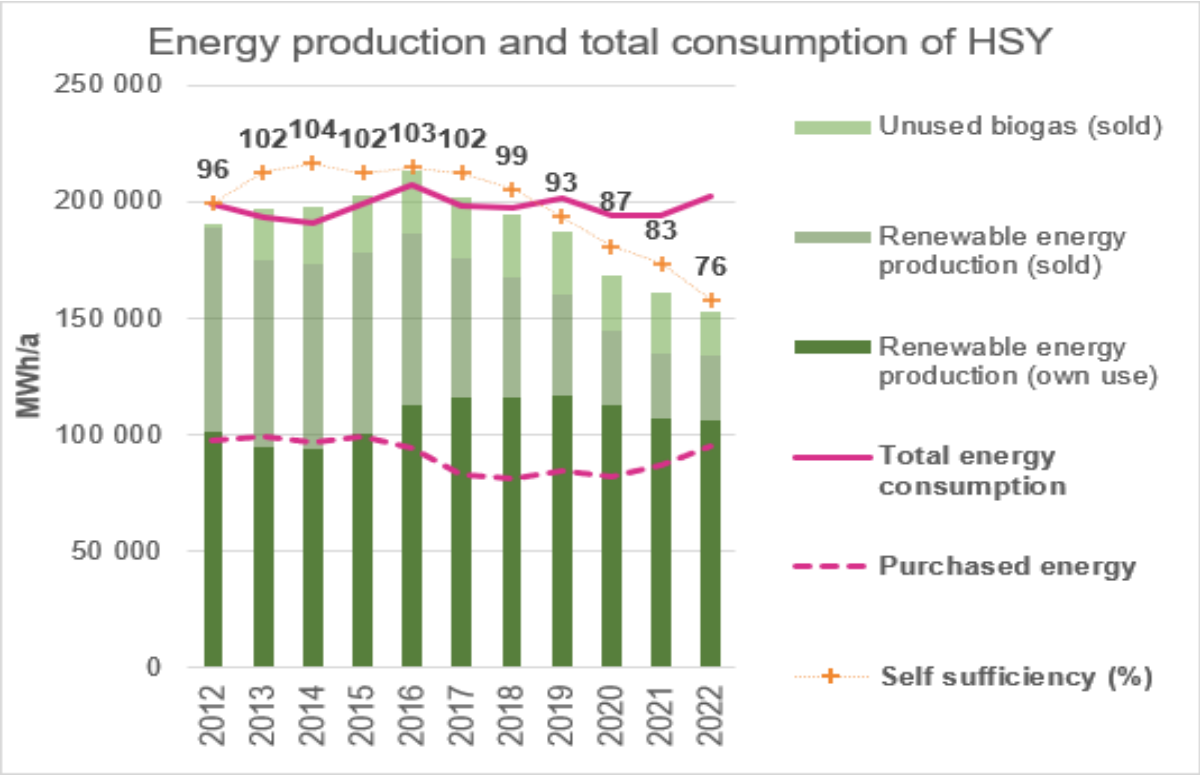
Image 3 HSY's emission reduction pathway target for 2030.

The largest sources of climate emissions in our operations are related to waste treatment processes, landfill operations, wastewater treatment and the composting of biowaste and sewage sludge. We have been systematically promoting the use of renewable energy for years. For this reason, our climate emissions caused by energy use are relatively low, at about 5–10% of the total emissions. We have managed to reduce our emissions significantly during the last ten years. Successful landfill gas management and collection has had a significant impact on this development, but the formation of landfill gas is also steadily decreasing. In addition to our own energy use, renewable energy is also increasingly utilised in external operations, which reduces the (greenhouse gas) emissions caused by them.

2.2 Our energy consumption increased

Our total energy consumption in 2022 was approximately 202,000 MWh, which means that our energy consumption increased by approximately 4% from the previous year. Our renewable energy production was 153,000 MWh, including electricity and heat production as well as the biogas we sold. Total production decreased by about 5% from the previous year. The production volumes were affected by, among other things, the maintenance of ORC units and gas engines and, in particular, the decrease in biogas production. The weakening of our energy self-sufficiency and increased energy consumption were also affected by the transfer of Suomenoja's operations to Blominmäki: heat consumption increased while the utilisation of energy from sewage sludge decreased during the transition period.

Our electricity consumption decreased from the previous year, for example, at water production plants and in properties. Wastewater treatment plants were the largest user of electricity in 2022. They accounted for 44% of HSY's electricity consumption. Heat consumption increased, in particular, at wastewater treatment plants (+20%) and water production plants (+17%).



Our strategic objectives (from the 2025 strategy)

- We will carry out projects that improve energy efficiency

How we measure our success - Indicators

HSY's energy-saving measures and their effects, MWh/year

- 2025: 7,5 % energy consumption reduction compared to 2015 level)

What did we do?

- We implemented nearly 3,800 MWh of energy-saving measures, the most important of which were the development of heat recovery and aeration at the Viikinmäki wastewater treatment plant, as well as process optimisations at the Ämmässuo eco-industrial centre and the Pitkäkoski water production plant. We will reach the 2025 savings target three years ahead of schedule.
- We collected about 26,000 tons of landfill gas and biogas from the digestion of biowaste and sewage sludge. We produced energy and electricity from the gas.
- We increased the share of renewable fuel in our own fleet to about 97%.

2.3 We promoted the circular economy and waste recycling

We strengthened the circular economy in the region

We coordinated circular economy partnership projects in our region, including the CIRCuIT project and the Circular Green Blocks project, which also promoted the regional Sustainable urban life programme (in Finnish). The programme focuses on, among other things, greenhouse gas emissions caused by consumption choices, sustainable urban planning, the circular economy of construction and climate change adaptation. The programme is linked to other regional and national strategies and plans and HSY's strategy to 2030.

We were also involved in the Helsinki-Uusimaa Circular Valley project to map potential regional circular economy indicators, as well as in the Cool4City project to promote the recovery of waste-to-energy plant slag.

Household waste recycling rate is increasing

The recycling rate of household waste has been increasing moderately. In 2021, the recycling rate of was 47%, marking a 1.3% increase from the previous year. The official figure for 2022 will be updated in the autumn, when the data will be published on our website. However, it is estimated that we will not reach our 2022 target (54%). The revision of waste management regulations in connection with the Waste Act reform, development projects and our campaign to increase sorting among residents will help us to achieve the objective in the future.

Learn more about our recycling and circular economy activities:

- HSY pours 6,000 kilograms of bio soil at the Havis Amanda statue and gives 1,000 violets to the residents (in Finnish)
- Trial use of electric refuse truck yielded encouraging results (in Finnish)
- Ventilated biowaste container (in Finnish)
- Our material and nutrient flows
- Waste management on our website
- You can also search for waste management reports on our Publications and reports page (in Finnish).

Our strategic objectives

- We promote the circular economy in the region.
- We increase the recycling rate of household waste and decrease the amount of mixed waste

How we measure our success - Indicators

Amount of mixed waste collected from properties, kg/resident/year

- 2025: 100 kg/resident/year
- 2030: 85 kg/resident/year

Household waste recycling rate, %

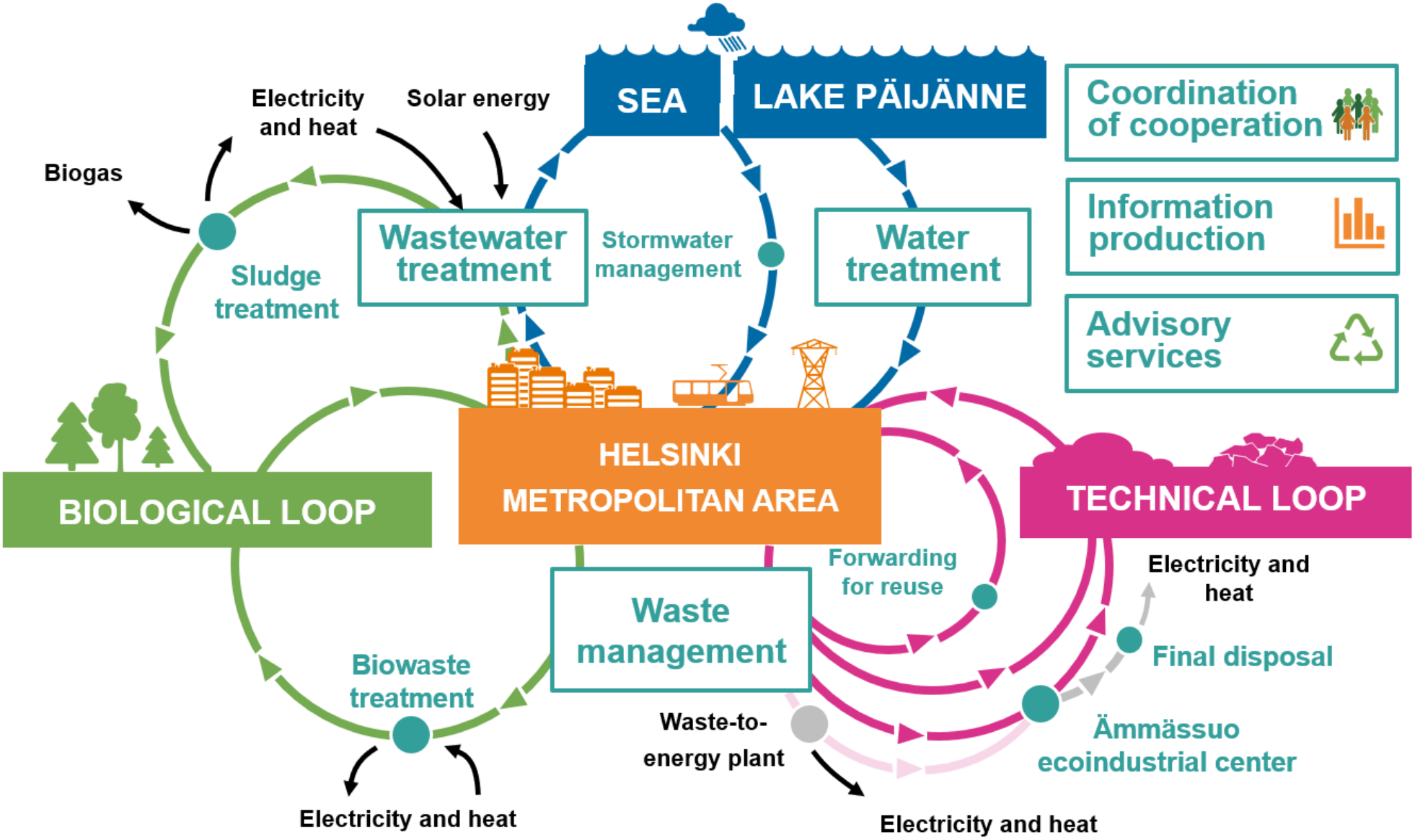
- 2022: 54 %
- 2023: 56%
- 2025: 60%
- 2030: 63%

- **Recovery of phosphorus and nitrogen from wastewater**
- 2022: RAHI project proceeds as planned
- 2025: We have found recycling technologies for phosphorus and nitrogen and we have found utilization channels for the end products.

Progress with the recovery of phosphorus and nitrogen from wastewater

We achieved our phosphorus and nitrogen recovery target for 2022 in full. In the RAHI 2 project, we piloted two nutrient recovery technologies at Finnish treatment plants: the RAVITA process and bio sludge pyrolysis. In 2022, we produced about 60 t CO2eq of carbon sinks at our pyrolysis pilot plant.

HSY's activities in the circular economy



2.4 We purified wastewater for a cleaner Baltic Sea

HSY is the largest waste management operator in Finland. The volume of water we process is almost five times higher than the second largest water supply plant's in Finland, which makes our operations important for the management of the environmental load of water supply. Water treatment does not cause emissions to the water system. Instead, its effects are limited to the extraction of raw water. We extract the majority of our raw water – about 96 million cubic metres per year – from Päijänne. This is about 1% of the lake's flow, and the effect of abstraction on the lake is small. On the other hand, the wastewater that comes to HSY for treatment contains a great amount of phosphorus and nitrogen, which would increase eutrophication significantly if led directly to the sea. Wastewater treatment is an important part of the protection of coastal waters and the Baltic Sea.

From the point of view of wastewater treatment, 2022 was a year with mixed results. We achieved our strategic objective for harmful substances and microparticles in full. We achieved our strategic objective for nitrogen and phosphorus loads only partially, with a phosphorus load of 29.5 tonnes and a nitrogen load of 1,252 tonnes. The Suomenoja treatment plant achieved an excellent treatment result, but the Viikinmäki wastewater treatment plant experienced a significant process failure due to melting snow in the winter and spring of 2022, which resulted in a significant bypass of the biological process, a lower treatment result than usual, and exceeding the permit limits for phosphorus and biological oxygen consumption in the first quarter.

Our strategic objectives

- We reduce the load on water systems

How we measure our success - Indicators

Nitrogen and phosphorus load on the sea, t/y

- 2025: N 750 t, P 25 t
- 2030: N 700 t, P 18 t

Inhibiting the release of harmful substances and microparticles into the sea (from the 2025 strategy)

- 2022: Estimating the load with the calculation method we developed

In the autumn of 2022, we commissioned the new Blominmäki wastewater treatment plant, which will significantly improve wastewater treatment in the Helsinki Metropolitan Area from 2023 onwards. During the start-up phase in 2022, the treatment result for phosphorus was already good, but we were unable to fully implement the nitrogen removal process, which resulted in a lower outcome for nitrogen.

We aim to curb the increase of the nitrogen load in wastewater through communication and guidance. We communicate, for example, about the eutrophic effect of excessive consumption of protein on the Baltic Sea, as well as harmful substances, their reduction and correct handling.

Read more about wastewater treatment and our actions for the Baltic Sea and other water bodies:

- Blominmäki wastewater treatment plant received the 2022 RIL award (in Finnish)
- HSY is committed to the Green Deal for municipal wastewater treatment (in Finnish)
- Our Baltic Sea Challenge Report and Action Plan 2022–2023 (in Finnish)
- Wastewater treatment in the Helsinki Metropolitan Area 2022 report (in Finnish)
- Excessive consumption of protein causes eutrophication of the Baltic Sea
- Hazardous substances and chemicals in wastewater
- Water supply on our website

Image 1 We distributed dish cloths about the nitrogen load at events. The image on the dishcloth is from sculptor Tommi Toija's Bad Bad Boy sculpture.

2.5 Protecting biodiversity and the local environment

Our operations have both negative and positive effects on biodiversity. It can be said that our basic operations support biodiversity. For example, wastewater treatment and waste treatment protect the environment and, consequently, biodiversity. However, our operations take up land and cause emissions that affect, for example, the ecosystems of the Baltic Sea.

Although we adopted the strategic goal that is explicitly related to biodiversity and the local environment only in the autumn of 2022, we have been implementing measures to safeguard biodiversity for years. In 2022, we gained control over the repeated wastewater overflows in the Espoo Gräsanoja catchment area by renewing some of the drainage sections. In recent years, we have also built fishways and removed unnecessary water system regulations.

In the field of waste management, we continued to develop our insect bar in 2022. The insect bar is a 3,500 square meter insect-friendly environment with meadows and ponds in the Ämmässuo Waste Treatment Centre area. At Ämmässuo, we also combated invasive alien species that threaten biodiversity.

In addition, we produce reliable and up-to-date information and communications on air quality in the Helsinki Metropolitan Area and Uusimaa.

Read more:

- About dismantling the migration barriers in the Gumbölenjoki and Glomsinjoki rivers and other measures to protect the aquatic environment in our Baltic Sea Challenge Action Plan (in Finnish)
- About the insect bar and the combatting of alien species in the Ämmässuo Waste Treatment Centre annual report 2022 (in Finnish)
- Up-to-date air quality information on our website: hsy.fi/en/air-quality-and-climate/air-quality-now/

Our strategic objectives

- We promote biodiversity, the good state of the surrounding environment and environmental health.

How we measure our success - Indicators

The surrounding environment index consists of five indicators

1. **Established meadows** in land areas managed by HSY, 8 ha in 2025 and 15 ha in 2030
2. **Stocked fish** (qty), sea trout: 30,000 in 2025 and 40,000 in 2030; whitefish: 237,500 in 2025 and 250,000 in 2030
3. **Wastewater overflows** (m3/year calculated as a rolling average over 5 years), 2025: 7,500 and 2030: 7,000
4. **Continuity of air quality measurements** (temporal coverage of measurement results), % 2025: ≥98% and 2030: ≥98%
5. **Number of environmental feedback**, feedback days/year

3 We improved well-being at work

In 2022, we could finally start building the new normal after the COVID-19 pandemic. In order to maintain mental well-being, we offered our personnel, among other things, the support of an occupational health nurse and psychologist, as well as the Mielen tuki chat service to support mental health.

Our Net Promoter Score (NPS) for employee experience in 2022 was -14, which is an improvement from 2020 (-16) but not from 2021 (-13). The employee experience includes, for example, perceived fairness, equality, pay equality and indiscrimination. We will continue to work to improve the employee experience.

The personnel survey 2021 revealed experiences of harassment and inappropriate treatment, which is why we focused on well-being at work in 2022. For example, we started several targeted discussions and mediation processes within the work community. Our work yielded results. Based on the Pulse survey conducted in the autumn, the experiences of inappropriate behaviour and bullying had decreased and confidence in HSY's management and in other work community members had increased. In 2022, we also invested in occupational safety, but our progress did not adhere to our objectives. The indicator of competence, the ability to change and cooperation was formulated for the first time in our new 2022 strategy, so there are no figures from the previous year for this indicator.

In 2022, we participated in the Oikotie Responsible Summer Job campaign for the fourth time and received good feedback from our summer employees. For example, our NPS was 85. In the autumn, we joined the Oikotie Responsible Employer community and are committed to developing a more responsible workplace, which is a good fit for our new strategic objectives of being an employer that attracts and retains talent.

We met part of the objectives of our equality and non-discrimination plan for 2021–2022. For example, we changed our job titles to be gender neutral and organised training for managers on equal recruitment. However, the autumn inspection by the occupational safety and health authorities revealed that we have not sufficiently assessed the realisation of equality in our workplace in our equality and non-discrimination plan. We will take the observations by the authorities into account when preparing our equality and non-discrimination plan for 2023–2024.

Read more about our work and personnel goals and actions:

- In our HR Report 2022 (in Finnish)
- Our Equality and non-discrimination plan 2021–2022 (in Finnish)

Our strategic objectives

- We provide a great employee experience.
- Meaningful tasks, the ability to change and cooperation serve as the basis of our operations.

How we measure our success - Indicators

Employee experience indicator NPS

- 2025 = 0
- 2030 = 13

Index of competence, the ability to change and cooperation

Average score for four personnel survey questions:

1. At HSY, we invest sufficiently in personnel development.
2. HSY is a developing and renewing organisation.
3. The personnel's views are taken sufficiently into account in the development of operations.
4. Cooperation between different units is smooth.

- 2021: 3.25
- 2025: 3.5
- 2030: 4.0

4 We strive for sustainable finances

Our objective is efficient and balanced finances, as well as services and purchases that promote sustainable development. All in all, the impacts of the pandemic on our finances were quite limited. On the other hand, the increased energy and material prices in 2022 had an impact on our finances and on the implementation of our strategic indicators.

We managed to push our operating expenses below the target, and the achieved self-sufficiency rate of 46.9% in waste management clearly exceeded the target. Otherwise, we did not achieve the strategic financial goals for 2022, which was affected by, among other things, the rise in prices. For example, the weighted index of the procurement basket increased by 119%, instead of decreasing, and the restructuring debt continued to grow as the investment programme had to be adjusted and projects postponed. However, we continued to develop the management of renovations.

You can find the realisation of our strategic metrics, our operative income and expenses, and other key financial figures in our financial statements for 2022 (in Finnish).

Procurement

We take into account the principles of sustainable development, innovation, material and energy efficiency, environmental impacts, and the need for the client's preparation at different stages of our procurement process. For all transport purchases, we require zero-emission power. We use life cycle emissions calculation models in material purchases, whenever applicable.

We are part of the ICLEI (Local Governments for Sustainability) Procura+ network for sustainable procurement, the ecological procurement network of hankintaKEINO, HankintaSuomi and Motiva and in cooperation between public procurement authorities in the Helsinki Metropolitan Area, as well as Finland's first Green Deal on zero-emission construction sites.

In all service purchases exceeding EUR 7,000, we require suppliers to fulfil the contractor's obligations concerning the fight against the shadow economy, and this was also the case in 2022. We monitor our service providers annually and make sure that the responsibilities are in effect. In addition, we provide the tax authorities with the required information about HSY's construction sites on a monthly basis. The fight against the shadow economy is based on the Act on the Contractor's Obligations and Liability, which specifies the monitoring limit at EUR 9,000. Therefore, we also monitor the implementation of the contractor's obligations and liabilities in purchases that fall below the statutory threshold.

Our strategic objectives

- Our services are produced sustainably and more efficiently than at present.
- Our investments can be financed by water and service fees.

How we measure our success - Indicators

Operating expenses EUR/resident/year

(currency value taken into account, significant non-recurring items excluded)

- 2022: EUR 151/resident*
- 2025: EUR 145/resident*
- 2030: EUR 135/resident*
- (*2021 currency value)

= Annual increase in productivity at least 1.5%

Additional debt, EUR/resident/year

- 2021: additional debt EUR 100/resident/year (debt EUR 1,500/resident)
- 2025: additional debt EUR 20/resident/year (debt EUR 1,600/resident)
- 2030: additional debt EUR 0/resident/year (debt EUR 1,600/resident)

Self sufficiency rate

- 2022: water supply 25 %, waste management 36 %
- 2025: water supply 29 %, waste management 38 %

Restructuring debt

- 2022: the debt does not grow
- 2025: the debt decreases

Proportion of uninvoiced water of the water volume pumped into the network

- 2022 and 2023: max. 19 %

Procurement efficiency (weighted index of the procurement basket)

- 2022: index decreases by 1.5 % from the year before. Life cycle calculation model and reporting in place and operating.
- 2025: index decreases by 6 % from 2017 level (in real terms). Life cycle sustainability according to an indicator defined for the purpose.

5 We provided high-quality services reliably

Operational reliability

With our affordable and reliable services, we ensure smooth everyday life across the entire metropolitan area. We have managed to keep the prices of our services reasonable, while ensuring good operational reliability and service quality at the national level. According the water services information system VEETI, we, once again, performed better than average in 2022 in almost all water supply indicators, including the quality of supply water and treated wastewater, the number of pipe breakages and the price of the service. In 2022, we also received an honorary reward for procuring clean tap water for the residents and visitors in Helsinki when Helsinki Tourism Foundation gave its annual Helsinki Travel Awards (link in Finnish).

With regard to the quality of the waste management service, we achieved our targets in terms of both delivery reliability (timely emptying of waste containers) and complaint percentage. The decline in operational reliability was due to a difficult winter and sickness absences among contractors caused by the pandemic.

	2020	2021	2022
Operational reliability, %	99.8	99.3	95.77
Complaint percentage, ‰	0.06	0.07	0.04

Image 2 Operational reliability and complaint percentage in waste management in 2020–2022.

Customer satisfaction

We regularly monitor the quality of our service, for example, through feedback, customer satisfaction surveys and self-assessments. We utilise customer feedback and customer and stakeholder interviews in the development of our services. In 2022, the smoothness of our services received a rating of 4.08/5 in the customer satisfaction measurement, which fell slightly short of our target of 4.3, but shows that we met the customers' expectations well. In February 2022, we introduced a new customer service system, which makes it easier to measure customer satisfaction and service speed.

In 2022, we also succeeded in our goal of reducing the response times of our customer and connection services. The response time for our customer service is now three days and for connection services 5.5 weeks. By contrast, the shares of digital customer contacts fell short of the targets we set for 2022, being 58 per cent in water supply and 13 per cent in waste management.

Our strategic objectives

- Our services are smooth and accessible.

How we measure our success - Indicators

Proportion of electronic customer contacts of all customer contacts, %

- 2022: share of digital water meter notifications 85 %; share of digital waste service orders 70 %
- 2025: 75 %
- 2030: 80 %

Annual customer satisfaction by customer group and function

- 2022: smoothness of service 4,3

Operational reliability index, five indicators

(1. Water interruptions (qty/year), 2. Number of pipe breakages in critical water mains (qty/year), 3. Proportion of residents who receive secured water supply from two directions (%), 4. Water production capacity in the event of a disruption (%), 5. Cyber security)

- 2025: 5/5 (2025 targets achieved)
- 2030: 5/5 (2030 targets achieved)

(1 = 20 % of our targets achieved; 2 = 40 %; 3 = 60 %; 4 = 80 %; 5 = 100 %)

6 We reacted to the global situation

As a provider of essential basic services, we have been paying attention to preparedness and threat prevention for years, but as the general security situation deteriorated in 2022, these areas became even more important. We paid particular attention to the undisturbed operation of water services, since they are critical in terms of the security of supply, but safeguarding other operations is important as well. We established a preparedness group led by the Executive Director in the week following the beginning of the war in Ukraine. We intensified our cooperation with emergency supply pools and the authorities and elevated the level of preparedness across HSY.

In 2022, we enhanced our preparedness for physical and cybersecurity threats, increased security and access control, and reviewed and restricted access rights, especially at operational sites, where we also prohibited visits. We intensified cooperation with important system suppliers and reminded the personnel of secure practices. We also studied the possibility to implement personal security clearances.

We made action plans for electricity shortages and power outages, in addition to which we discussed our role in a potential electricity shortage situation with the authorities. The uncertainty in the electricity market made it difficult to predict the future cost of energy. We established a work group to manage the challenges related to the availability and cost of energy and to develop energy saving actions and energy preparedness in our own operations.

Supplier safety stock has been included in the contracts for critical products for a long time, but due to price and availability pressure, we paid particular attention to the availability of critical process chemicals, spare parts, reserve power and materials and contract management in the quickly changing situation. Starting in spring 2022, we also took into account the sanctions imposed by the EU and the UN on Russia in our purchases and considered extending personal security clearances to cover contractors.

7 Content, coverage and initial data of the report

7.1 Coverage

Our sustainability report has been prepared in accordance with the requirements of the Global Reporting Initiative (GRI) standard and it describes the year 2022. The report covers only HSY. The report has not been verified by an independent third party, but the report has been approved by HSY's management group and notified to the Executive Board of HSY.

Helsinki Region Environmental Services HSY has reported in accordance with the GRI Standards for the period from 1 January 2022 to 31 December 2022.

7.2 Materiality analysis and specification of the reported content

Our sustainability report is based on our previous sustainability reports, our old strategy that was still in force in 2022, our new strategy that we prepared in 2022, and the poll and workshops, which we used for both confirming our existing priorities and finding new initiatives and perspectives. The poll was based on the objectives of our new and old strategy, the pre-selected GRI standards and the proposals made by HSY's personnel. The results were discussed further on the basis of GRI's materiality analysis guidelines in two internal expert workshops. The outcome of this process, which, in addition to our previous sustainability reports and strategies, determined the content of the Sustainability Report 2022, is attached to the report. The same appendix also contains the GRI table of contents.

The core of our sustainability report remained fairly unchanged: we continue to attach great importance to, for example, waste recycling, the circular economy, our GHG emissions and our effluents to water. We summarized our report considerably and narrowed down our topics more thoroughly than in previous years. However, we also discovered new topics based on the poll and the workshops. New topics that we discuss in the report include preparedness and responses to the changed world situation.

7.3 Initial information

Greenhouse gas emissions

In our emissions calculation, we take into account three main greenhouse gases: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). The results are presented in carbon dioxide equivalents, which means that methane and nitrous oxide emissions are converted into the equivalent amount of carbon dioxide in terms of their global warming potential.

Our emissions monitoring relies on the GPC standard Scope 2 review, covering process emissions from waste treatment and wastewater treatment, fuel use of our own vehicles and machinery, as well as emissions from the purchase of energy for our properties. The calculation is based on the IPCC emission inventory methodology and calculation parameters, as well as the emission factors of Statistics Finland's fuel classification. Our current emissions indicator (HSY's operating emissions as tCO2eq./year)

does not cover indirect emissions from the use of materials (for example, emissions from the manufacture of chemicals or pipe materials). However, we have conducted life cycle analyses that take into account indirect emission impacts in different parts of HSY.

Emission data for landfill and wastewater treatment are mainly based on measurements carried out at the plants. Emissions from biowaste and sludge composting are computed by using the KASNEVER calculation method and tool developed by the Finnish Environment Institute.

In addition to direct greenhouse gas emissions from our own operations, we also monitor the greenhouse gas emissions of external service providers. The emissions review that covers the external services includes the most important outsourced activities from the point of view of our operations, such as the transport of service providers and the use of vehicles and machinery, as well as commuting by personnel. The monitoring of GHG emissions from external services is based on the monitoring of deliverables related to the activities. These deliverables include, for example, the number of transports, the transport volume in tonnes, the average transport distance and the annual fuel consumption. At present, many of the transport tasks are only powered by renewable energy, which reduces the GHG emissions caused by our operations.

Effluents to water

Information and calculations concerning wastewater treatment are available in the Wastewater Treatment in the Helsinki Metropolitan Area 2022 report (in Finnish).

Waste and material balance

We did not prepare annual statistics and annual report on waste management in 2022, like we normally do.

The material balance is an indicative calculation. The initial information for the calculation has been collected from databases, our own annual reports and our experts. The calculation covers the material flows of HSY's own operations, i.e. the materials used in our processes (water treatment, wastewater treatment, sewerage and water supply networks, waste management), the materials we have received and sent for processing, as well as the materials remaining and stored in our area. Individual construction projects and, for example, office supply purchases have been excluded from the calculation, as have all material flows that fall below 10 tonnes per year. Materials in stock distort the balance, as materials ending up in stock are not necessarily discharged during the same calendar year, and the weight of the materials in stock varies as a result of evaporation and precipitation.

Breakdown of the material balance:

Inflows

- Received waste: Different waste types received by Sortti Stations and the Ämmässuo Waste Treatment Centre, as well as mixed waste collected from properties (excluding materials from Ekomo operations or packaging waste collected from the property, as HSY is not responsible for the treatment of these).
- Chemicals and support materials: Chemicals and support materials used in the Ämmässuo Waste Treatment Centre, in water and wastewater treatment and in the composting of sludge
- Other materials: Incoming spoils and pipe materials for HSY's water services, as well as fuels
- Raw water: purified raw water

- Wastewater: includes both invoiced wastewater and leaked water into the wastewater network

HSY bar

- Materials used in structures: in both landfill and other environmental structures (permanent placement)
- Final-disposal waste: amount of final-disposal waste in landfills
- Storage for future use: stored waste and materials, for example, waste bales, blasted rock
- Biogas for own use: biogas from the digestion of biowaste and wastewater treatment sludge and landfill gas collected from the final disposal area of the Ämmässuo Waste Treatment Centre and the old landfill, which HSY utilises internally

Outflows

- Mixed waste to the waste-to-energy plant: waste delivered to the plant from properties, Sortti Stations and the Ämmässuo Waste Treatment Centre
- For earthworks: for example, blasted rock, slag minerals and soil masses used in earthworks or in landfill structures outside of HSY
- Topsoil: Metsäpirtti soil products
- Compost: compost produced from the processing of biowaste and digestion of sewage sludge
- Other recovered material: non-biological waste directed to operators external to HSY for recycling (for example, metals, glass, cardboard, WEEE)
- Sludge: sludge directed to outside HSY
- Biogas for electricity production: electricity produced from biogas to the national grid (converted into tonnes)
- Other recovered energy: waste directed to other energy recovery processes (for example, hazardous waste, wood chips)
- Biogas sales: biogas sold to outside HSY
- To landfills: Materials generated by HSY in connection with excavation within the networks and delivered to the landfill site
- Biogas torch combustion: unutilised biogas
- To the supply water network: includes approved use and leakage water
- Treated wastewater: volume of treated effluent to the sea

Nutrient balance

We utilise the bioenergy contained in biowaste and sewage sludge in our own operations and recycle nutrients as compost and soil products. The nutrient flow diagram helps to detect at which stages of the cycle we can prevent nutrient loss, as well as how different changes in the processes or sources of nutrients are reflected in the nutrient cycle. The nutrient balance is a simplified calculation of the extent to which nutrients (N and P) are returned to the circulation through these processes.

The nutrient flow diagram provides an overview of the nutrients that pass through HSY. It covers the most important nutrients (nitrogen and phosphorus). The nutrient balance indicates the share of the nutrients that is recovered and the share that is removed from the circulation. This data helps us to develop measures to promote the circular economy of nutrients. The data is based on calculations and partly on estimates, averages and mass balances and, therefore, also contains uncertainty. Furthermore, not all incoming masses are processed in the same calendar year.

Residents and personnel

The personnel data has been collected from our 2022 Personnel Report and Equality and Non-Discrimination Plan for 2021–2022 (both available in Finnish).

The quality and price data of our water supply services, as well as the corresponding comparative data from other water supply facilities, have been collected from the water supply information system VEETI.

The Net Promoter Score (NPS) is the most widely used measure of loyalty internationally. It measures the willingness to recommend, using a single question. The metric is commonly used in customer and personnel satisfaction surveys. Calculation method: the share of promoters (respondents who answered 9 or 10) minus the share of retractors = NPS.

The opinions of the residents have been collected from our customer satisfaction survey. The annual customer satisfaction surveys examine HSY's customer satisfaction as well as consumers' experiences and assessments of water and waste management. In odd years, the survey is carried out for waste management services, and in even years, for water supply services.

8 Appendices

Materiality analysis of the Sustainability Report 2022 and GRI Content Index

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