

Environmental report

2023

Helsinki

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Helsinki

Table of contents

4	Address by the Deputy Mayor
6	Helsinki in a Nutshell
8	Environmental management and partnerships
16	Securing biodiversity
24	Water protection
31	Mitigating climate change
40	Adapting to climate change
43	Energy
51	Construction
56	Transport
63	Air protection
66	Noise abatement
71	Procurements
76	Circular economy
82	Environmental awareness and education
86	Environmental risks
88	Environmental economy
91	Environmental indicators

Address by the Deputy Mayor

The year 2023 was busy for Helsinki's climate and environmental work. The closure of the Hanasaari coal power plant was a moment for the history books. The closing of the plant reduced Helen Ltd's direct greenhouse gas emissions by a historic 38 per cent and its use of coal by nearly half.

Helsinki's overall emissions dropped to their lowest level since 1990, and the city's emissions per capita were also record-breakingly low. Of course, this is a necessity and the decline in emissions must continue as we look around us and see the dramatic impacts of the rapidly warming climate.

We took action to prevent biodiversity loss. The City Board proposed six new nature reserves to the Centre for Economic Development, Transport and the Environment (ELY Centre), which then issued a founding decision on a total of five new nature reserves in Helsinki. At the end of 2023, 4.4 per cent of Helsinki's land area was protected. An OmaStadi project was carried out to create new meadows in areas such as Töölönlahti Park, Savelanpuisto, the southern slope of Alppikylänhuippu and Nummisuutaripuisto.

Helsinki's range of polypore species was also surveyed in 2023. Of the roughly 260 polypore species found in Finland, up to 200 have been observed in Helsinki, indicating that the forests of Helsinki have an exceptionally high level of biodiversity and there is a great amount of natural forests and forests returning to their natural state.

We reported our nature monitoring data in accordance with the Green City Accord network to the European Commission. Helsinki's Nature Information System was used for calculating figures such as the amount of forested and wooded areas within the city's land area. Roughly 42 per cent of Helsinki's surface area consists of wooded areas and roughly 35 per cent of forests. One interesting finding was that the total amount of wooded areas and forests in Helsinki has not changed substantially over the last decade. This means that the city has not grown at the expense of nature, even though we have to make difficult demarcation decisions from time to time.

We still have a lot of work to do in reducing traffic emissions. However, we did take many steps forward: our electric car charging network was expanded and the proportion of fully electric vehicles clearly increased. In a momentous occasion, light rail line 15 began operating in October! We also reached our target for the number of electric buses ahead of schedule as HSL added roughly 100 new electric buses to its fleet.

As the first city in Finland, Helsinki has set a limit value for the lifecycle carbon footprint of new apartment buildings.

The City's actions show that we are able to get things done and that we still have our work cut out for us, as we are aiming to achieve carbon neutrality by 2030. Like other cities, Helsinki must also prepare for extreme weather phenomena, and in addition to emissions reductions, adaptation requires efforts from us. In particular, Helsinki must prepare for increasing and intensifying torrential rains and heat waves. Green solutions play a key role in climate change adaptation.

Thank you to everyone who took part in the environmental work and reporting!

Anni Sinnemäki

Deputy Mayor for Urban Environment



Helsinki in a Nutshell

Helsinki is the centre of a rapidly growing large metropolitan city area. Helsinki, together with the municipalities of the Helsinki Metropolitan Area (Espoo, Vantaa, and Kauniainen) and ten neighbouring municipalities, forms an area with a population of over 1.5 million residents, which is referred to as the Helsinki region. As of 31 December 2023, Helsinki had a population of 674,500.

As of the end of 2023 the population density was 3,144.4 residents per land area square kilometre. There were a total of 474,200 jobs in Helsinki in 2023. Helsinki accounts for 18 per cent of Finland's jobs. The city of Helsinki's surface area is 715.48 km², of which 214.51 km² (30.0 %) is land, 0.84 km² is inland waters, and 500.13 km² sea waters.

From an environmental impact's perspective, the City of Helsinki is one of the most significant actors at a national scale. For instance, Helsinki serves as the largest public procurer in the country, with an annual procurement volume of around four billion euros. Helsinki accounts for approximately 5 percent of Finland's overall greenhouse gas emissions. The Viikinmäki wastewater treatment plant processes wastewater from approximately 900,000 people. Additionally, as Finland's largest employer, the City's activities carry significant environmental implications.

The Helsinki City Group comprises the following entities:

- The City of Helsinki as a parent entity (4 divisions, City Executive Office, Audit Department and 5 municipal enterprises).
- Subsidiary entities, i.e. organisations which are owned directly by the City (76 subsidiary organisations and 13 foundations).
- Associated entities, i.e. companies, foundations and joint municipal authorities in which the City has a 20–50 per cent ownership stake (3 holding companies, 35 associated companies and 4 joint municipal authorities).

At the end of 2023, the City employed 37,559 people.



Helsinki

Population: 674,500

Population density: 3,144.4 / km²

Surface area: 715.48 km²

Jobs: 474,200, 18 % of Finland's jobs



Environmental management and partnerships

Helsinki's City Strategy for 2021–2025, entitled A Place for Growth, states that Helsinki will have a good future when it is based on sustainable growth. Sustainable growth is in harmony with ecological boundary conditions and creates socially, economically and culturally sustainable wellbeing. One focus of the strategy is ambitious climate responsibility and nature conservation. The objective is to facilitate a carbon-neutral Helsinki that achieves its goals, sets an example and does more than its fair share in preventing climate change. The City is adapting to the consequences of the planet's climate crisis by preparing for extreme weather phenomena and their indirect impacts. Helsinki is continuing its shift towards a circular economy and is actively protecting and cherishing its diverse nature. The City is ensuring that all residents will continue to have local nature sites only a short distance away. Helsinki cherishes the Baltic Sea and its shores and is decreasing emissions into the sea.

The City's environmental protection objectives for 2040 complement the current City Strategy with regard to environmental protection. By monitoring the environmental protection objective indicators set out in the Environmental Report, the City is also partially monitoring the implementation of the City Strategy. In addition to the Environmental Report, Helsinki Environmental Statistics also offer multifaceted information about the City's environmental status. The information in the Environmental Report and statistics is open data.

Even more comprehensive environmental management

The City of Helsinki's objective is to make continuous improvement of environmental management a natural part of all management operations. The environmental management objective set in the City's overall environmental protection objectives is for the City's divisions, as well as enterprises and subsidiaries with significant environmental impacts, to have an audited

environmental management system and/or a responsibility programme that takes the UN Sustainable Development Goals extensively into account. The City also aims to have its other enterprises and subsidiaries include environmental management in their operations by adhering to the principles of lighter environmental management systems and/or creating a responsibility programme for themselves by 2025.

The Helsinki Group uses the EcoCompass, Green Office and ISO14001 environmental management systems, as well as the Eco-Schools programme and the OKKA certificate for sustainable development for educational institutions and daycare centres.

In 2023, the EcoCompass environmental management system certificate was granted for the first time to the City Executive Office and the Villa Ullas young people's workshop of Helsinki Vocational College and Adult Institute. Of the City's subsidiaries, the first Green Office certificate was granted to Helsinki Partners Oy.



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Progress of the objectives of the environmental programmes of the City's divisions and enterprises

Toimiala/ liikelaitos	Ympäristöohjelmien tavoitteiden eteneminen
Urban Environment Division	<ul style="list-style-type: none"> • No division-specific EcoCompass environmental programme in place, but the division is responsible for City-level programmes for various environmental protection sectors. • In 2023, the division began its 'Sustainable Urban Environment Division' work to shift to more comprehensive sustainable development management from an environmental management perspective. • The work has involved determining boundary conditions for sustainability management and prioritised sustainability objectives for the division. These will be integrated into operational and financial year clock functions in order to make the division's work more sustainable more comprehensively.
Education Division	<ul style="list-style-type: none"> • No division-specific environmental programme. • 33 of the division's schools, daycare centres and upper secondary schools have an Eco-Schools or OKKA certificate for sustainable development.
Culture and Leisure Division	<ul style="list-style-type: none"> • No division-specific environmental programme. • However, several service departments have their own EcoCompass programmes. • Library Services: The objectives of the EcoCompass environmental programme for 2021–2023 were to increase environmental awareness among Helsinki residents and City staff, reduce environmental impacts in the service process, improve recycling and reduce energy consumption. 4/5 of the objectives of the programme were achieved and 92% of its measures were carried out by the end of 2023. • Cultural Services, City Museum: The objectives of the EcoCompass environmental programme for 2021–2023 were to increase environmental awareness among stakeholders and City staff, make environmentally responsible procurements, reduce waste and increase the waste sorting rate, and to take material efficiency and lifecycles into account in operations. 1/4 of the objectives of the programme were achieved and 66% of its measures were carried out by the end of 2023. • Sports Services: The objectives of the EcoCompass environmental programme for 2023–2025 are related to energy efficiency and renewable energy, responsible procurements, logistics and transport, and communication. 0/9 of the objectives of the programme had been achieved and 11% of its measures had been carried out by the end of 2023. The programme period has only recently begun, and the objectives are progressing on schedule. • Youth Services: The main objectives of the EcoCompass environmental programme for 2023–2025 are to increase environmental awareness and know-how, strengthen young people's environmental influencing, responsible procurements and environmental activities/education. 2/7 of the objectives of the programme had been achieved and 59% of its measures had been carried out by the end of 2023.

Toimiala/ liikelaitos	Ympäristöohjelmien tavoitteiden eteneminen
Social Services, Health Care and Rescue Services Division	<ul style="list-style-type: none"> • The development subjects of the Social Services, Health Care and Rescue Services Division's EcoCompass environmental programme for 2021–2023 were the reduction and sorting of waste, energy efficiency and renewable energy, responsible procurements, and communication and influencing. • 6/11 of the objectives of the programme had been achieved and 53% of its measures had been carried out by the end of 2023. • The Social Services, Health Care and Rescue Services Division has a sustainable development programme for 2024–2026, approved by the management of the division in December 2023. • Of the UN Sustainable Development Goals, climate action (SDG 13), reduced inequalities (SDG 10), sustainable cities and communities (SDG 11) and responsible consumption and production (SDG 12) were set as the focal points of the programme.
City Executive Office	<ul style="list-style-type: none"> • The objective of the EcoCompass environmental programme for 2023–2026 focused on internal environmental communication, environmental influencing through supporting tourism sector businesses in becoming more ecological by means of the Sustainable Travel Finland label, and reducing the environmental impacts of procurements. • 1/3 of the objectives of the programme had been achieved and 50% of its measures had been carried out by the end of 2023.
Financial Management Services (Talpa)	<ul style="list-style-type: none"> • No enterprise-specific environmental programme.
Occupational Health Helsinki	<ul style="list-style-type: none"> • No enterprise-specific environmental programme.
Palvelukeskus Helsinki	<ul style="list-style-type: none"> • The objectives of the EcoCompass environmental programme for 2023–2025 are to reduce emissions from food transport operations, electrify the vehicle stock, promote sustainable commuting, reduce food waste, increase the recycling rate, take nature into account in food procurements, develop environmentally friendly recipes, make responsible procurements, increase awareness and cooperate in responsibility matters. • 3/8 of the objectives of the programme had been achieved and 44% of its measures had been carried out by the end of 2023. • Palvelukeskus Helsinki has a responsibility programme for 2022–2024, the key responsibility work objectives of which are ambitious climate and environmental work, responsible and impactful procurements, the promotion of equality and diversity, and operating as a responsible employer and partner.
Stara	<ul style="list-style-type: none"> • The objectives of the EcoCompass environmental programme for 2023–2025 are to reduce the amount of waste through sorting and utilisation, switch to electronic waste reporting, develop the responsibility of procurements, improve chemical safety and achieve fossil-free transport by 2030. • 1/6 of the objectives of the programme had been achieved and 6% of its measures had been carried out by the end of 2023. The programme period has only recently begun, and the objectives are progressing on schedule.



Eco-support activities focused on training

At the end of 2023, the parent organisation of the City of Helsinki employed 866 eco-supporters. Six eco-support activity training courses were held in 2023. These courses were attended by a total of 62 new eco-supporters.

In addition to coaching, the eco-supporters were provided with further training courses on varying subjects, networking meetings and visits at different sites in the environmental sector in cooperation with member organisations of the Helsinki Metropolitan Area eco-support network. Financial support for eco-support activities was granted to eight work communities to promote aspects such as sustainable consumption, environmental education and sustainable transport.

In 2023, the eco-support activity networking coordinated by the City of Helsinki was joined by five new organisations. At the end of 2023, a total of 38 municipalities, municipal federations and other organisations were involved in the activities.

Helsinki submitted its third Voluntary Local Review to the UN

Helsinki continued its active work towards achieving the Sustainable Development Goals of the 2030 Agenda. The City submitted its third Voluntary Local Review to the UN and took part in the UN's High-Level Political Forum (HLPF) on sustainable development in July 2023.

Helsinki's third review painted an overall picture of the City's state and progress in the realisation of the Sustainable Development Goals. Helsinki is very successful in realising many social sustainability objectives, but the City has plenty of challenges with themes of ecological sustainability, such as coordinating material flows and the city's growth with biodiversity. A City-level sustainable development working group took part in creating the review, as did a number of the City's sustainability specialists, who highlighted the City's successes and areas in need of development. The Voluntary Local Review can be read on the Sustainable Helsinki website (kestavyys.hel.fi/en).

The environmental management model of the City of Helsinki

The City Council has approved the City Strategy for 2021–2025, which is a document that steers the City's operations. The City Board has approved the City's environmental protection objectives for 2040, which complement the current City Strategy with regard to environmental protection. The environmental protection objectives set are medium-term and long-term, and they are pursued through the programmes of various environmental protection sectors, the most significant of which are listed below with the body that decided on the programme in parentheses:

- Carbon-neutral Helsinki Emissions Reduction Plan (City Board)
- Climate change adaptation policies for 2019–2025 (City Board)
- Noise Abatement Action Plan 2018–2022 (Environment and Permits Sub-committee)
- Air Protection Plan 2017–2024 (Environment and Permits Sub-committee)
- Baltic Sea Action Plan 2024–2028 (City Board)
- City of Helsinki Nature Conservation Programme 2015–2024 (Environment Committee)
- City of Helsinki Biodiversity Action Plan 2021–2028 (Urban Environment Committee)
- Action Plan for the Circular and Sharing Economy (City Board)
- Littering Mitigation Action Plan 2022–2025 (City Board)

The City has made an Energy Efficiency Agreement of the municipal sector 2017–2025 with the state, as well as an Action Plan of Rental Housing Communities in the Housing Property Sector 2017–2025 related to an Energy Efficiency Agreement of the Property and Building Sector, which sets an energy savings objective for the agreement period. Progress towards this objective is reported on annually.

The City Board approves the instructions for drafting and following the budget, which include instructions on recording and taking environmental matters into account.

The City's divisions, enterprises and subsidiaries implement the City Strategy, as well as the programmes of various environmental protection sectors, in their operations. Several divisions, enterprises and subsidiaries have also introduced environmental management systems and sustainable development programmes. Below is a list of the systems in use:

- ISO 14001 environmental management system: Metropolitan Area Transport Ltd, Finlandia Hall Ltd, Helen Ltd, Port of Helsinki Ltd
- Certified EcoCompass environmental management system: Urban Environment Division, City Executive Office, Social Services, Health Care and Rescue Services Division, Pakila Work Centre, Youth Services, Sports Services, Helsinki City Library, Helsinki City Museum, Stara, Palvelukeskus Helsinki, Villa Ullas of Helsinki Vocational College and Adult Institute, Helsingin Asumisoikeus Oy, Helsingin Seniorisäätiö, Helsinki City Theatre, Jääkentäsäätiö, Oulunkylä Rehabilitation Centre, Metropolilab Oy, Helsinki City Housing Company Ltd, Korkeasaaren eläintarhan säätiö sr (Korkeasaari Zoo), Urheiluhallit Oy, Helsinki Metropolitan Area Reuse Centre, Niemikoti Foundation, Stadium Foundation, Kiinteistö Oy Auroranlinna, Helsinki Events Foundation, Kiinteistö Oy Kaapelitalo, HAM Helsingin taidemuseosäätiö sr (Helsinki Art Museum), Helsinki Biennial
- EcoCompass environmental management system in the works: Helsinki City Premises Ltd
- Audited Green Office environmental management system: Helsinki Metropolitan Area Reuse Centre, Port of Helsinki Ltd, Helsinki Partners Oy
- Eco-Schools or OKKA certificate for sustainable development for educational institutions: 33 City schools, daycare centres and upper secondary schools

There are eco-supporters working in the City's divisions, enterprises and subsidiaries who promote environmentally sustainable operating methods and increase environmental awareness on top of their own work.

The divisions and enterprises have the opportunity to set binding environmental objectives in the budget. In 2023, objectives were set by the Urban Environment Division, Helsinki City Transport (HKL) and City of Helsinki Construction Services Stara. The City's environmental work is reported on annually in its annual Environmental Report, which also monitors environmental protection objective indicators. The Environmental Report is reviewed by the City Board and the City Council.



Towards more sustainable tourism and event production sector

The Helsinki City Strategy aims at developing Helsinki into the world's smartest and most sustainable tourism destination. The Helsinki Tourism and Event Operating Plan also aims at placing Helsinki at the global forefront in sustainability, as verified by indexes and certifications. In 2023, Helsinki took fourth place in the Global Destination Sustainability (GDS) index, which measures the sustainability of travel destinations. This was a notable eight-place improvement from 2022. The index measures the sustainability of travel destinations in four different categories with 70 indicators. Helsinki will continue pursuing an improved ranking in the GDS index in the future.

A climate roadmap for tourism in Helsinki was created as part of the measures of the Glasgow Declaration on Climate Action in Tourism. Furthermore, the carbon footprint of tourism in Helsinki was calculated together with several other municipalities in Uusimaa. An analysis of the current state of inclusive tourism in Helsinki and a related action plan were also created for the City. The implementation of the plan began with

a Matkailu kuuluu kaikille ('Tourism Belongs to All') seminar held at City Hall. The City continued its strong allocation of resources to promoting the Sustainable Travel Finland programme in the business sector. More than 60 tourism businesses have now been granted the label. Additionally, Helsinki began a process towards Green Destinations travel destination certification. The process is expected to be completed in 2024.

In May 2023, the City published a handbook for events, as well as a calculator for calculating the carbon footprint of events. A Social Responsibility Compass for events was also produced in 2023, enabling event organisers to examine and develop the realisation of social responsibility.

The Urban Environment Division grants a 30 per cent discount on the rent charged for the use of its areas against an audited EcoCompass environmental management system in order to encourage events to use the system. In 2023, the City granted the discount to the Flow Festival, Naisten Kymppi – Women's Fun Run, Great Beers – Small Breweries and Helsinki City Running Day events.



Eyes on the future

The City's updated medium-term and long-term environmental protection objectives were approved by the City Board on 11 March 2024. These objectives will be pursued through means such as visits to the management meetings of all of the City's divisions and enterprises in 2024. The City's environmental and climate network will be expanded to cover all the themes of the City's environmental protection objectives, in addition to which the network's work will be intensified further. The City will continue developing Helsinki Environmental Statistics in 2024 to make them support decision-making better.

Programmes and websites

[Helsinki's environmental protection objectives 2040 \(in Finnish\) >>](#)

[From Agenda to Action – Implementation of the UN Sustainable Development Goals in Helsinki 2023 review >>](#)

Securing biodiversity

The City of Helsinki is committed to securing biodiversity in its City Strategy and environmental protection objectives. This objective is being pursued in the planning of land use and public areas, by protecting the areas listed in the City's Nature Conservation Programme 2015–2024, and through the measures featured in the City of Helsinki Biodiversity Action Plan 2021–2028 (LUMO). 79 percentage of the 92 measures in the LUMO action plan are progressing on schedule.

A growing city, local nature and biodiversity

Taking nature values into account and developing ecological and recreation networks are part of the planning of land use and public areas. The broad, unitary green fingers extending to the region as designated in the City Plan form a framework for the entire green infrastructure of Helsinki. Helsinki's green fingers, seaside trail and maritime recreation and green areas, as well as its green connections, parks and local nature that cover the entire city, serve as the basis for biodiversity and a pleasant living environment. The city-wide ecological network is supplemented by a forest, meadow and blue network and nature reserves.

The green area factor was integrated into Helsinki's building regulation in 2023. In order to increase the amount of green area, Helsinki's detailed planning process involves using the green area factor tool to determine how compliance with the building regulation can be achieved. The green area factor is used to pursue sufficient preservation of green area on plots while also preventing stormwater floods. Orders regarding green roofs and walls can be used as an additional means of increasing biodiversity.

In 2023, the City worked on preparing the same four local master plans as the previous year: Viikinkaari-Lahdenväylä, Östersundom, Länsiväylä and Vartiosaari. In all four, biodiversity has been a prominent aspect from the start of the preparation work, and every project has involved carrying out necessary nature mappings, such

as bird surveys. In accordance with the City Strategy, Vartiosaari has been planned entirely as a recreation area, with broad nature reserves designated as part of it. In May, the City held a seminar focusing on promoting the biodiversity of the built environment.

Nature investments

Helsinki is a member of several cooperation networks that monitor the state of nature in different cities. In 2023, the City reported its nature monitoring data in accordance with the Green City Accord network to the European Commission. Helsinki's Nature Information System was used for calculating figures such as the amount of forested and wooded area within the city's land area. Roughly 42 per cent of Helsinki's surface area consists of wooded areas and roughly 35 per cent of forests. The total amount of wooded areas and forests in Helsinki has not changed substantially over the last decade. In the Kaarela public area plan created in 2023, as well as the planning of the Mäkelänkatu boulevard plan frame, the development of the forested and wooded area network has been taken into account with the objective of ensuring that the connections remain usable.

Helsinki also systematically developed its meadow network in 2023. The City's OmaStadi projects involved founding new meadows in areas such as Töölönlahti Park, Savelanpuisto, Kurranummi, the southern slope of Alppikylänhuippu and Nummisuutaripuisto. Furthermore, the



City has converted dozens of scarcely used lawns into meadows in East Helsinki and other parts of the urban area by changing the grass maintenance procedures.

In 2023, the City surveyed aspects such as the range of polypore species in Helsinki. Based on surveys conducted over several years, the city's range of polypore species is known well. It is unlikely that a range of polypore species as rich as that of Helsinki is known anywhere else in Finland. Of the roughly 260 polypore species found in Finland, up to 200 have been observed in Helsinki, indicating that the forests of Helsinki have an exceptionally high level of biodiversity and there is a great amount of natural forests and forests returning to their natural state. Helsinki could justifiably be called the polypore capital of Finland, perhaps even the world. Helsinki has good polypore sites in Central Park, East Helsinki and the archipelago, but Seurasaari and Taivaskallio are also valuable polypore sites. The forests of Helsinki feature polypore species such as *Mycoacia uda*, *Crustoderma corneum*, *Scytinostroma galactinum*, *Amylocorticium subincarnatum*, *Aporpium canescens* and *Crustoderma dryinum*, all of which have rather peculiar-sounding names in Finnish.

In 2023, Helsinki conducted a mammal monitoring project that involved collecting residents' observations regarding six mammal species. The last time a similar monitoring project was carried out was a decade ago. This time, the project also utilised wildlife camera materials, expanding the observation materials significantly. A thesis for the University of Helsinki was also completed in the project. Observations on foxes, badgers, squirrels, rats, hedgehogs and raccoon dogs showed that Helsinki is populated by mammals in ample numbers. Residents reported their mammal observations actively via an online service.

Nature management

Helsinki is updating and modernising its nature management policies. In 2023, the City continued updating its forest management

principles to conform to the City Strategy. The key objective is to increase the biodiversity of recreation and nature areas and forested areas in a systematic manner while also promoting the natural ageing of forests. The City also takes other objectives into account, such as needs regarding the recreational use of forest areas, safety, scenic values and securing the sustainability of forests. Helsinki has a total of 4,650 hectares of forests within its borders, and the City's forest management operations do not aim at financial profit. Next, the City will update its nature management policies pertaining to meadows and open areas, as well as its work instructions pertaining to nature management.

Once again, invasive alien species were combated through volunteer work. The City continued holding invasive alien species prevention events open to all residents in collaboration with WWF Finland and Helsingin luonnonsuojeluyhdistys. Six volunteer work events to combat the rugosa rose and thirteen events to combat the Himalayan balsam were held across Helsinki. In Uutele, the Canada goldenrod was also combated in addition to the Himalayan balsam. One event for combating the lupin was also held, as was one for combating the butterbur. Some of the volunteer work events involved collaborations with businesses, planned for the staff of a business as part of their opportunity to allocate working time to volunteer activities. A total of 22 invasive species prevention volunteer work events were held, attended by a total of 182 volunteers. Helsinki also continued its involvement in the Soolotalkoot campaign of the Finnish Association for Nature Conservation's Viekas LIFE project, in which people are encouraged to independently combat invasive species.

The Helsinki Urban Plant Life Guide was updated with regard to invasive species in accordance with changes made to Finnish legislation. Some plant species that used to be commonly used as decorative plants are now deemed invasive and have been removed from the list of recommended species.

Nature conservation

In 2023, the City Board proposed six new nature reserves to be founded to the Centre for Economic Development, Transport and the Environment (ELY Centre). Two sites proposed by the City Board, the Patterimäki and Varjakanpuisto areas, are yet to enter the ELY Centre's decision-making process. The ELY Centre issued founding decisions on five new nature reserves in 2023. The founding decisions were issued for the areas of the Veräjämäki forest, the Oulunkylä hardwood forest, Hallainvuori, the Kivikko fortification rocks and the Uusillanpuisto meadows.

The City's plans for 2024 include protecting areas such as the southern section of Mustavuori, the Mellunmäki flood meadow, the southern shore of Porvarinlahti, Helsinki's areas on Kalkkisaari, the Meri-Rastila forest and ancient rocky shore, the Tali coastal grove and Mätäojarvarsi.

In 2023, the City began preparing its fourth Nature Conservation Programme. The programme is being drawn up for the period of 2025–2034. The Nature Conservation Programme determines sites to be designated as nature reserves in accordance with the Nature Conservation Act.

Helsinki's Nature Conservation Programme is connected to Finland's National Biodiversity Strategy 2035 and the EU Biodiversity Strategy. Their objectives include having at least 10% of land and sea areas under strict protection, and Helsinki is also striving towards this with great ambition, as is stated in Helsinki's environmental protection objectives for 2040. The Nature Conservation Programme is based on natural science, and it also pertains to the areas of other landowners, but in these areas, the City's role only involves planning. In the founding phase, a maintenance and utilisation plan is created for each new nature reserve, determining measures to facilitate nature management and sustainable recreational use. The City aims to complete the new Nature Conservation Programme within 2024.

At the end of 2023, Helsinki had 76 nature reserves with a total area of 1,424.0 hectares. The proportion of nature reserves in Helsinki's land area increased by 0.4 percentage points from 2022, from 4.0 per cent to 4.4 per cent. The total area of protected water areas did not change, as no new conservation areas were founded on water bodies.

Surface areas of the current nature reserves, other protected sites and areas proposed to be founded in 2023

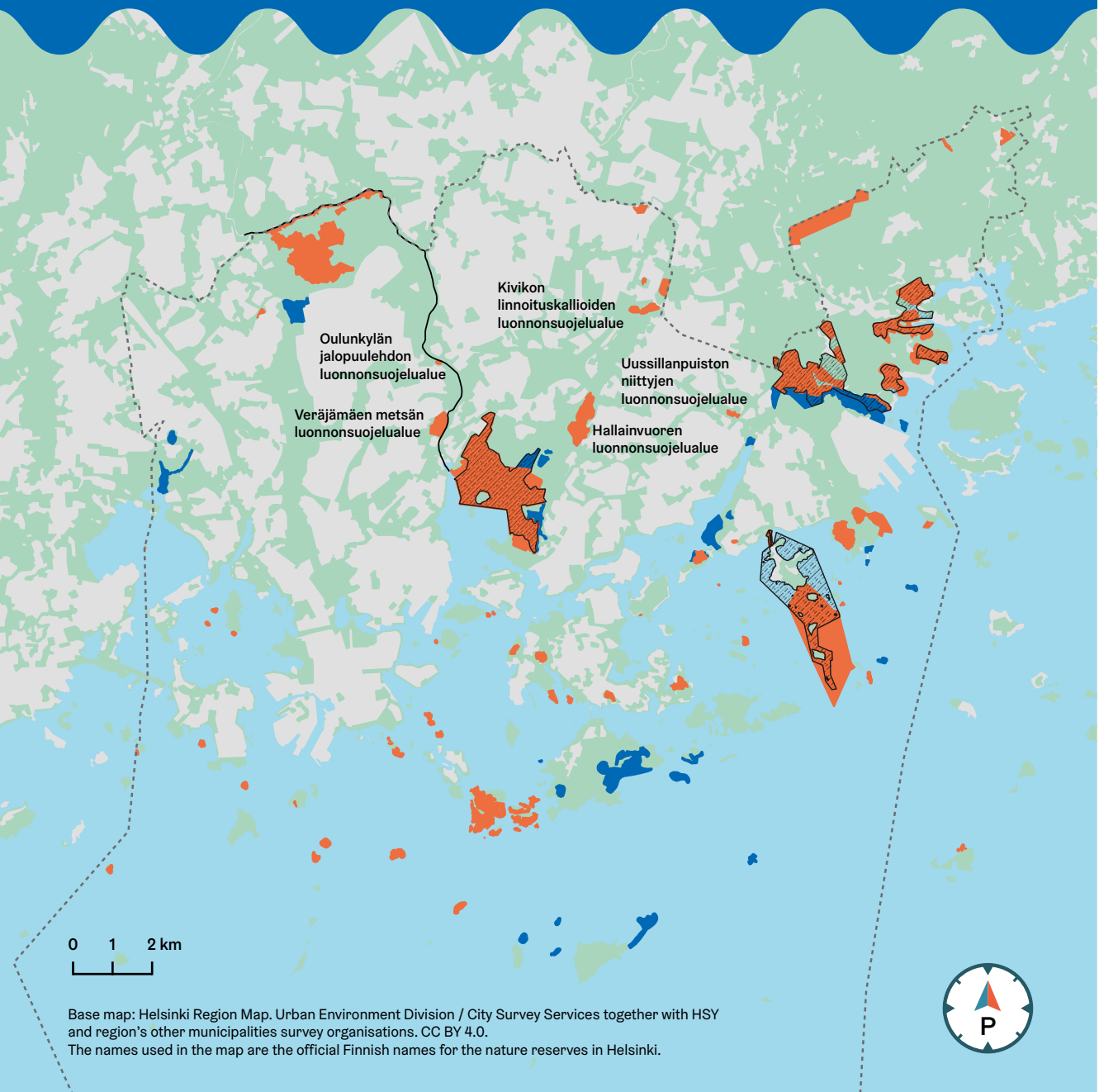
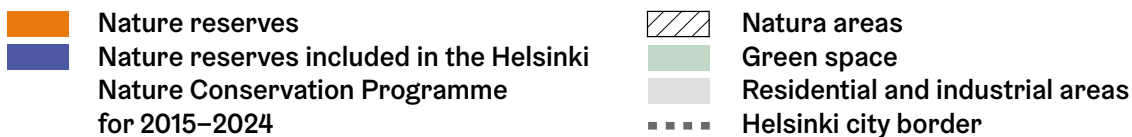
	Area (ha)	Share of land area (%)	Share of water area (%)
Land area			
Nature reserves	931.2	4.4	
Other protected sites*	122.2	0.6	
2023 applications	56.7	0.3	
Total	1110.1	5.3	
Water area			
Nature reserves	492.8		1.0
Other protected sites*	243.6		0.5
2023 applications	0		0
Total	736.4		1.5

* protected nature types, species protection areas and Natura areas not protected by the Nature Conservation Act

Nature reserves in Helsinki

Helsinki

Map 31 December 2023



0 1 2 km

Base map: Helsinki Region Map. Urban Environment Division / City Survey Services together with HSY and region's other municipalities survey organisations. CC BY 4.0.
The names used in the map are the official Finnish names for the nature reserves in Helsinki.

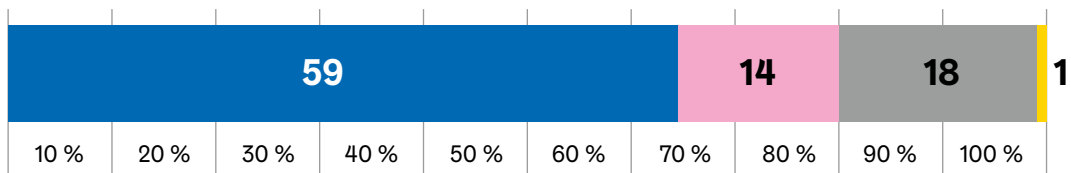


Strengthening nature knowledge

Work on the City's first nature service development plan made progress and will be completed in 2024. The plan will be used to develop recreational use so that all residents are guaranteed equal recreational use opportunities and wear on nature is prevented in the most sensitive areas. In 2023, two new nature observation structures were completed in Vanhankaupunginlahti: an accessible hide on Lammassaari and a multi-level viewing deck in Hakalanieniemi. The nature reserves of Haltialanmetsä and Hallainvuori received signposts that feature maps and steer people towards sustainable and responsible recreational

use, and trail markings were added to the areas. Two new nature trails were created in Uutela: a forest nature trail and a herp trail, the latter being Finland's first trail that teaches visitors about reptiles and amphibians. Additionally, the Siimespolku trail of Haltialanmetsä received new rest areas and Kruunuvuorenlampi received viewing platforms. The City revised its nature reserve protection order signs together with residents as part of an OmaStadi project. The new signs present the protection orders that are the most essential to recreational users and the preservation of nature even more clearly than before.

Status of the actions included in City of Helsinki Biodiversity Action Plan 2021–2028 on 2 April 2024



- On time - Implementation phase
- On time - Planning phase
- Not started
- Ready



Eyes on the future

The Urban Environment Division will continue to carry out closer cooperation in order to coordinate growth and the preservation of local nature in as early a planning stage as possible, e.g. in the planning of land use and public areas, as well as the maintenance and nature management of areas. Ecological compensation will be added to the City's toolbox for securing biodiversity. In 2024, the City will carry out calculations to test the effectiveness of compensation in projects and prepare for the introduction of a compensation system as part of preserving scenery-level nature values.

In March 2024, the City completed a guide for assessing and enriching urban biodiversity in the built environment. This new guide can be used to assess and utilise the biodiversity potential of the built environment in work such as the planning of renovations, maintenance and development. The guidebook compiles nature-based solutions and site examples and is intended particularly for clients, planners and implementers.

As of spring 2024, Helsinki is involved in the national Muuttolintujen kevät ('Spring of Migratory Birds') citizen science project. The project involves participants recording birdsong in point calculation locations with their mobile phones and using AI to submit these recordings for analysis. The extensive materials collected in the project will prove an opportunity to monitor the bird population of the area more closely than before.

Helsinki is also planning to join the Luontoviisaat kunnat ('Nature-wise Municipalities') network, which aims to mitigate biodiversity loss, promote biodiversity and reduce activities that undermine nature, as well as develop municipalities' nature operations in a comprehensive manner. Joining the network will strengthen Helsinki's image in accordance with the City Strategy as a city that conserves nature ambitiously and cherishes its biodiversity. The network may enable Helsinki to find new solutions for preventing biodiversity loss and share its own good practices with the other members of the network, thus standing out as a pioneer in the local implementation of global nature responsibility.

Programmes and websites

[City of Helsinki Biodiversity Action Plan 2021–2028 >>](#)

[City of Helsinki Nature Conservation Programme 2015–2024 >> \(in Finnish\)](#)

LUMO-vahti is the monitoring tool
of City of Helsinki Biodiversity
Action Plan (LUMO programme).



Water protection

The water areas of Helsinki include extensive marine areas as well as the freshwater areas of the Vantaa River, various creeks, ditches, ponds and springs. In accordance with the City Strategy, the state of the small water bodies and coastal waters of Helsinki will be improved and the revival of the migratory fish stock will be paid attention to. The significance of the sea will be strengthened and opening the nearby archipelago to public use will be continued. In addition to the City's environmental protection objectives, water protection in Helsinki is regulated by the Small Water Bodies Programme, the Stormwater Management Programme, the Instructions on Prevention and Control of Floods, the Baltic Sea Action Plan, and the Water Resources Management and Sea Management Plans.

Preparations were made for a new Baltic Sea Action Plan

Helsinki is committed to reducing the load on the Baltic Sea and cherishing the sea and its shores. Together with the City of Turku, Helsinki aims to set an example with a shared Baltic Sea Action Plan. Of the 91 measures listed in the previous four-year action plan (2019–2023), 69 per cent were carried out. The new action plan for 2024–2028 was prepared by involving the staff of the City and its enterprises in the process. In addition to the City's divisions, the Helsinki Region Environmental Services Authority (HSY), the Port of Helsinki and Helsinki City Construction Services Stara took part in the work. In the spring and summer of 2023, the staff were provided with workshops focusing on brainstorming and concretising ideas, giving thought to what Helsinki could do for the Baltic Sea over the next five years. 27 concrete measures were selected for the action plan for 2024–2028, and these measures were then prioritised based on their effectiveness and feasibility. The objectives of the action plan shared with Turku include reducing eutrophication, increasing biodiversity, reducing littering, promoting sustainable use of the sea, reducing harmful substances, and increasing cooperation and participation. The Helsinki City Board approved the action plan in January 2024.

International cooperation

The BALTIPLAST Interreg project of the EU launched in early 2023. The objective of the project is to identify, test and introduce measures that will promote circular economy solutions and facilitate reducing the consumption of plastic in the city and thus mitigating the amount of litter in land and water areas. The joint Baltic Sea challenge of the Cities of Helsinki and Turku was also involved in the BALTICITIES project led by the Finnish Environment Institute. The project aims at improving the state of the shores of Finland and the Baltic countries by strengthening cooperation networks and increasing citizens' awareness of the state of the marine environment.

The state of our coastal waters is being regularly monitored

The state of the sea areas of the Helsinki Metropolitan Area is being regularly monitored. There are plenty of observation sites from the inner bays all the way to the outer archipelago, and samples are taken all year round. The ecological condition of the coastal waters varies within the sea area of Helsinki, from passable to satisfactory. The ecological condition is impacted particularly by eutrophication.

The water quality of the sea area has remained relatively stable in recent years, but momentary worsening can occur due



to factors such as overflow incidents, dumping or sea fill projects. In 2023, the sea water was repeatedly observed to be exceptionally turbid at several observation sites, but the situation evened out towards the end of the year.

The structural and qualitative state of small water bodies to be established in greater detail

The Urban Nature themed map of the Helsinki City Plan illustrates the City's ecological networks, forest network, meadow network and blue network. The City's blue network survey launched in 2021 involved specifying information related to the ecology and status of water bodies and converting it into a more readily usable form. Further planning of the work began in 2023, and the City's aim is to continue the network review and supplement it with ecological quality parameters, such as biota surveys. The information on the blue network survey on the degree of naturalness of small waters, shores and the sea area make it easier to take natural values into account when planning land use, monitoring waters and otherwise developing the areas. The accuracy of the location data analysis was improved through land surveys in 2023 with regard to aspects such as streamlets. The mapping process revealed new creek beds and streamlets, which were added to the Geographical Information System. The information will be supplemented in 2024 through land surveys and geographical information modelling.

The quality of small water bodies has remained stable

The water quality of the creeks and ponds of Helsinki has been monitored since 1982. Samples are taken twice a year and analysed for the most common parameters indicating the quality of the water. The quality of Helsinki's small water bodies has remained unchanged from previous years, save for individual exceptional situations. In 2023, the monitoring of water quality was

intensified through constant measuring of the water of Haaganpuro. The City aims to continue this monitoring in alternate months at Helsinki's key trout creeks.

In addition to the traditional parameters, the City collaborated with the NonHazCity3 project in 2023 to analyse potential harmful substance emissions from the built environment into stormwaters and small water bodies. However, the analyses only revealed minor concentrations of harmful substances dissolved into the waters. In 2024, the City aims to carry out a broader examination of previously less analysed harmful substances in the creeks of Helsinki. The results of this examination can then be used to target any necessary water protection measures in the areas.

The monitoring of water protection focused on the different types of damage caused by worksites and the duties prescribed in the Act on Water Services

The City prepared instructions for the treatment of worksite water in cooperation with the environmental protection authorities of the other cities of the Helsinki Metropolitan Area and Helsinki Region Environmental Services Authority (HSY). Construction sites are one of the most significant sources of harmful substance loads on stormwaters in cities. A set of worksite water instructions for the Helsinki Metropolitan Area was almost completed. However, the finalisation and introduction of the instructions were delayed to take place in 2024. The instructions emphasise damage prevention, good planning, proper treatment of worksite water, system maintenance and in-house control at worksites.

In connection with the creation of worksite water instructions, the cities of the Helsinki Metropolitan Area have utilised available materials to prepare a separate map level for the open map service of each city. This map level is entitled 'Sensitive water sites'. The purpose of the map level is to help planners and contractors identify

sites that require special care in their worksite water management. The aim of this is to protect the most sensitive water nature sites from environmental damage and wear. The 'Sensitive water sites' map level covers aspects such as the known habitats of the extremely endangered sea trout.

In response to the new worksite water instructions, the Urban Environment Division began process development work that resulted in the identification of several development measures needed to achieve better worksite water management in the City's construction projects.

In 2023, the City had to continue focusing authority resources on duties prescribed in the Act on Water Services, as a congestion of applications brought about by HSY's sewer renovation projects in stormwater drain exemptions pursuant to the Act on Water Services had to be worked through. This had an impact on how resources could be focused on other water protection development, permit and supervision work.

Due to the prioritisation of duties, the threshold for initiating the processing of hazard reports submitted by municipality residents and other active parties was raised further. The City also aimed to minimise the number of inspections carried out due to hazard reports by means such as requesting the reporting party to provide as detailed hazard observations as possible with a hazard report form, by email or by phone. In 2023, hazard reports were received particularly with regard to damage to water bodies caused by worksites and geothermal heat well drilling operations. The majority of the damage caused to creeks by geothermal heat well drilling occurred in the summer. Geothermal heating has been gaining popularity, and it is important that wastewater containing solids (sludge) generated from drilling is being treated appropriately in order to avoid adverse impacts on water bodies. There was a wide variety of hazard reports submitted, and several complaints regarding graffiti removal methods and chemi-

cals stood out from the others. The operators that were complained about were instructed to remove graffiti in a manner that prevents environmental hazards.

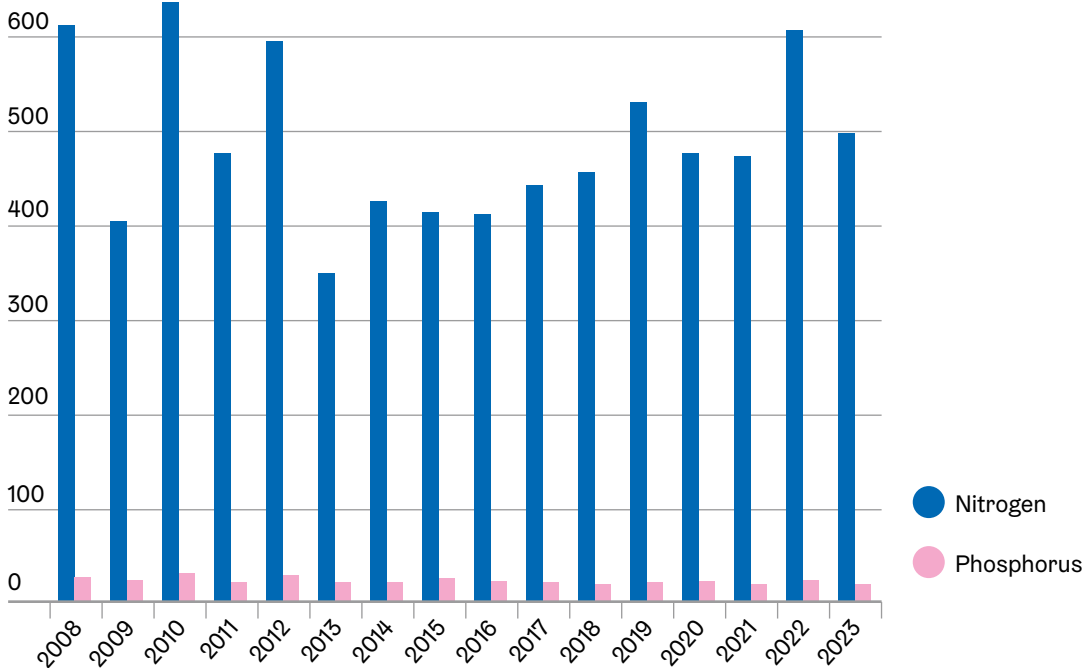
Wastewater was treated efficiently

The amount of water pumped into the water supply network in 2023 was 93 million cubic metres in the Helsinki Region Environmental Services Authority's (HSY) water supply area, with 50 million cubic metres pumped into the Helsinki network.

The Viikinmäki Wastewater Treatment Plant in Helsinki is the largest water treatment plant in all of Finland and the Nordic region. The plant treated a total of 105.7 million cubic metres of wastewater, 75 million cubic metres of which came from Helsinki. Both the total amount of wastewater and the amount of wastewater from Helsinki were greater than in the previous year. The Viikinmäki treatment plant met 96 per cent of the requirements of the environmental permit. Combined sewer network overflows amounted to 0.14 per cent of the overall amount of sewage in Helsinki.

The 2023 treatment efficiency for phosphorus in Viikinmäki was 97 per cent. For biological oxygen demand, the removal efficiency was 96 per cent, and for nitrogen, 91 per cent. The treated wastewater is conducted through a 16-kilometre-long tunnel to the open sea. The phosphorus load from the Viikinmäki sewage treatment plant on the sea areas in front of Helsinki was 19 tonnes (-13 per cent from the 2022 level), and the nitrogen load was 499 tonnes (-18 per cent from the 2022 level). The 2023 treatment result was an improvement from the previous year, as an exceptionally difficult disruption occurred in the biological process of the sewage treatment plant in 2022, undermining that year's treatment result.

Nitrogen and phosphorus load channeled to the sea from the Viikinmäki treatment plant, tons per year



Eyes on the future

The joint Baltic Sea Action Plan of the Cities of Helsinki and Turku for 2024–2028 sets measures that should be carried out in the City organisation within the next five years. These measures take into account both opportunities to make changes in modes of operation to improve the state of water bodies and aspects such as individual communication measures. Examples of the focal areas of the action plan include developing stormwater management from planning to maintenance, increasing biodiversity in small water bodies and on coasts, reducing point-source loads from small boat harbours, and strengthening Helsinki residents’ Baltic Sea identity. In 2024, the City will carry out more extensive surveys on the aquatic vegetation of the sea area and the occurrence of harmful substances in the water. These surveys will be part of the joint sea area monitoring programme of the Helsinki Metropolitan Area. Furthermore, the Nature Conservation Programme currently being prepared will cover valuable underwater nature sites that have been previously identified as locally ecologically significant underwater marine nature areas, the Finnish-language acronym for which is PEMMA.

The City’s objective for 2024 is to apply the new worksite water instructions (in Finnish) for the Helsinki Metropolitan Area actively and monitor how the level of water treatment at worksites potentially improves based on the instructions.



Programmes and websites

[Joint Baltic Sea Action Plan of the Cities of Helsinki and Turku 2024–2028 >>](#)

[Joint Baltic Sea Action Plan of the Cities of Helsinki and Turku 2019–2023 >> \(in Finnish\)](#)

[Worksite water instructions for the Helsinki Metropolitan Area >> \(in Finnish\)](#)



Mitigating climate change

The City of Helsinki aims to become carbon-neutral by 2030. This means that direct emissions (Scope 1 and 2) must be reduced by at least 80 per cent from the 1990 level, whereby the remaining 20 per cent can be compensated for outside the city limits. The City has also set the target of achieving carbon zero status by 2040, and carbon negativity after that. Carbon zero status means that emissions generated and sequestered by the City must be in balance within the city limits. In turn, carbon negativity means that emissions generated within the city limits must be lower than the City's ability to sequester carbon through its own actions.

The implementation of the Carbon Neutral Helsinki Action Plan is making good progress, and in accordance with the City Strategy, the measures of the plan focus on heating, traffic and construction. The Ambitious Climate Responsibility programme group chaired by the Mayor decides on guidelines for climate work and ensures an adequate level of ambition in both mitigation and adaptation work.

Total greenhouse gas emissions decreased significantly

According to the data of the Copernicus Climate Change Service (C3S) of the EU, the temperature of the planet from the beginning of 2023 to the beginning of 2024 was 1.52 °C higher than in the pre-industrial era. The limit set in the Paris Agreement has not previously been exceeded continuously for an entire year, nor does the latest statistic mean that the critical limit has been now exceeded permanently, but it does indicate that the climate is warming at a faster rate than has been previously estimated. The increase is enough to cause damage around the world in the form of phenomena such as heat waves, drought, floods, storms and water shortages. In 2023, Europe suffered extreme heat waves and record-breaking temperatures.

The total greenhouse gas emissions generated by residents, services and industry in Helsinki in 2023 amounted to 1,947 kt CO₂e, decreasing by 26.1 per cent from the previous year. The most significant reason for the strong decrease in emissions was the cessation of coal burning in the Hana-saari power plant. That, combined with other emissions-reducing district heating solutions such as heat pumps and bio-fuels, reduced emissions from district heating by 35 per cent from the previous year. Emissions from electricity consumption decreased by 23 per cent, which is partly explained by a decrease in the national emissions factor of electricity. Among key reasons for this were the completion of the Olkiluoto 3 nuclear power plant and investments made in wind power. Electricity consumption decreased by two per cent from the previous year. Traffic emissions decreased by eight per cent from the previous year. This is explained particularly by a decrease in lorry traffic, a slight increase in the distribution obligation and the continuing electrification of transport. Compared to 1990, the total emissions of Helsinki were 45 per cent lower. Emissions per capita were 2.9 t CO₂e, i.e. they decreased by 27 per cent from the previous year and were 60 per cent lower than in 1990.

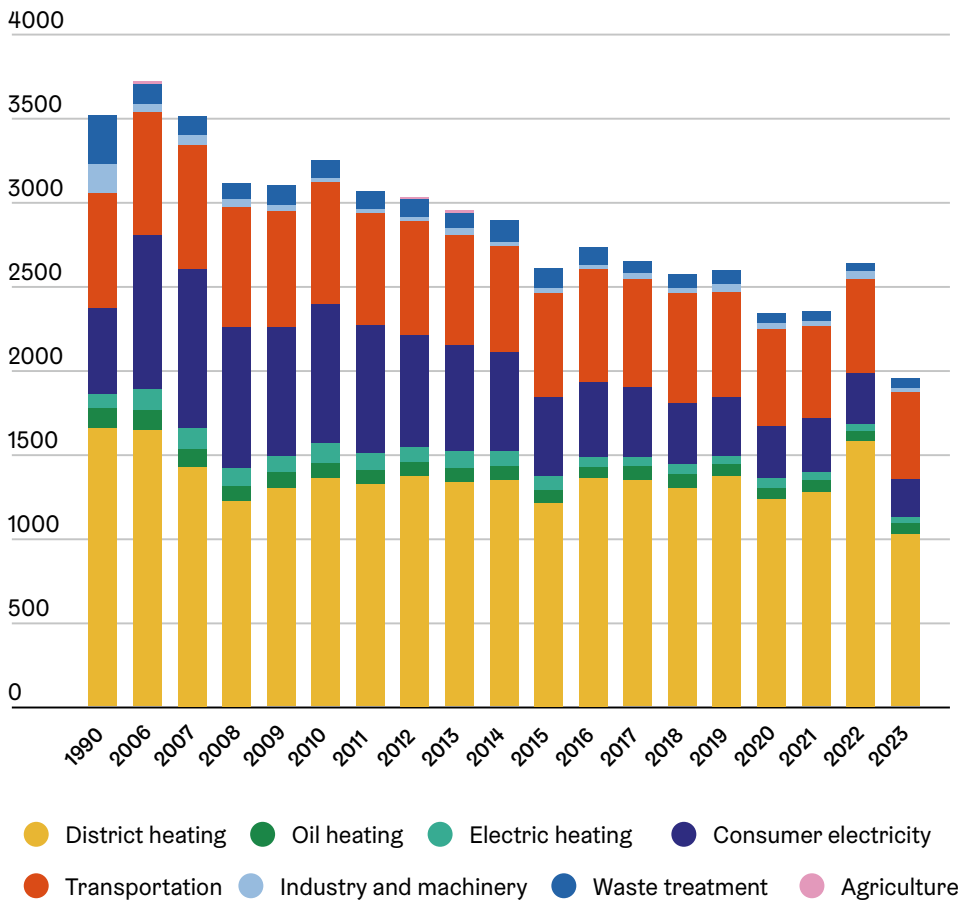
Renewable energy accounted for 26 per cent of the energy produced by Helen in 2023. All in all, 55 per cent of the energy produced was carbon-neutral.

Carbon-neutral Helsinki

The implementation of the Carbon Neutral Helsinki Action Plan is progressing as shown in the table below. The measures involved are discussed in greater detail in the ‘Energy’, ‘Construction’ and ‘Transport’ chapters of this report.

Total greenhouse gas emissions in Helsinki

Total emissions in Helsinki (1,000 t CO₂e)



Status of the actions included in Carbon Neutral Helsinki Action Plan on 13 March 2024

Action	Sector	Progress
Category 1: Actions that reduce emissions		
Planning and implementing City facilities and service buildings so that the E value will be -30% of the national threshold value for the use class.	Heating	Well underway
Renovation projects of City facilities and service buildings will be implemented so that the E value will decrease by 34% of the buildings' original E value.	Heating	Well underway
Requiring energy class A of residential blocks of flats (use class 2) in the property conveyance conditions.	Heating	Carbon footprint steering adopted
Requiring energy class A of residential blocks of flats (use class 2) in detailed planning.	Heating	Carbon footprint steering adopted
In detailed planning, buildings other than residential ones will be required to be of a class that is -20% of the national norm set for that type of building.	Heating	Well underway
The main heating system selected for the City's facilities and service buildings will be a heat pump system if its repayment period is under 15 years and its implementation is technically feasible.	Heating	Well underway
Exchanging City-owned passenger cars for electric cars in 2021–2025.	Transport	Not on schedule
Adjusting the ventilation in City facilities to an appropriate level.	Heating	Progressing moderately well
Lowering temperatures in City-controlled facilities.	Heating	Done
Low-emission concrete in infrastructure projects.	Construction (Scope 3)	Done
Reducing the emissions from the preconstruction at the former Malmi Airport area by 50%.	Construction (Scope 3)	Well underway
Replacing outdoor lights with LED lights.	Electricity	Well underway
Implementation of financially viable energy efficiency measures in business premise and service buildings administrated by the City's Facility Service	Heating	Well underway
Energy management of City-owned business premise and service buildings	Heating	Well underway
Implementation of changing heating methods in the City's business premise and service buildings heated with oil and direct electricity	Heating	Well underway
Abolishing the use of lime cement as a ground reinforcement binding agent	Construction (Scope 3)	Well underway

Action	Sector	Progress
Category 2: Required actions that facilitate emissions reduction		
Launching Energy Renaissance guidance services.	Heating	Done
Allowing the construction of geothermal heating systems in public areas.	Heating	Done
The plot conveyance conditions will require that new sites' parking spaces be implemented so that they are electrified and one third of the spaces are equipped with a charging station.	Transport	Well underway
Implementing the Bicycle Action Plan.	Transport	Well underway. Construction of the inner city target network: 50.0 km (target of 140 km); construction of the Baana cycling network: 18.3 km (target of 150 km); modal share of cycling: 9% (target 20%).
Principles for low-temperature regional heating entities.	Heating	Done
Reprogramming the implementation plan of the Baana cycling network and the target network up to 2030.	Transport	Well underway
"Constructing charging stations for electric cars in line with the forecast on the number of electric cars.	Transport	Progressing moderately well
Establishing tendering processes for the energy solutions for City-owned facilities.	Heating, Electricity	Not on schedule
Implementation of electric car charging stations on the City's properties so that the delay in the electrification of the vehicle stock can be compensated for	Transport	Progressing moderately well
Tendering out the electrification of water bus traffic	Transport	Not on schedule

Action	Sector	Progress
Category 3: Surveys to determine new emissions reduction actions		
Review on steering construction through carbon footprint.	Heating, Construction (Scope 3)	Done
Accelerating the energy efficiency improvements on City-owned properties outside renovation projects (Definition of the implementation process for energy surveys).	Heating, Electricity	Well underway
Review of emissions reduction methods for transport.	Transport	Well underway
Promoting the definition of effective regional emissions reduction measures on mobility.	Transport	Progressing moderately well
Report on steering the procurement of natural stones used in public areas through emission criteria	Building (Scope 3)	Progressing moderately well
Trials reducing emissions in the construction phase in the City's own business premise and service building production	Building (Scope 3)	Well underway

Climate change mitigation in the City's divisions and enterprises

Climate change has different manifestations and impacts in different sections of the City organisation. The City's divisions and enterprises play different roles in climate change mitigation. The City is encouraging its staff to carry out their work remotely where possible and supports the use of public transport by means of work commute benefits and business travel tickets, as well as city bike and bicycle benefits. Digitalisation and electronic services make it possible for clients to access and receive the City's services without needing transport, and electronic communication reduces transport needs among employees.

The Urban Environment Division bears the main responsibility for the implementation of the measures of the Carbon Neutral Helsinki Action Plan. The division also plays a key role in improving the energy efficiency of the City's property stock and private housing companies, as it administrates a large proportion of the City's properties

in use, while the Energy Renaissance team supports private housing companies in energy renovations and surveys. The division also exerts significant influence over construction emissions through aspects such as carbon footprint steering for apartment buildings implemented in detailed planning and plot conveyance operations, E value targets, emissions reduction measures in infrastructure construction, and the Green Deal for emission-free worksites. More information about the aforementioned is provided in the 'Construction' and 'Procurements' chapters of this report. Additionally, the division is in charge of city and traffic planning, which has a significant impact on the development of emission levels.

The Education Division's most important climate change mitigation measure is the development of a sustainable development study path. On this study path, learners of all ages get to delve into and study climate change and sustainable development. The study path is made tangible by aspe-



cts such as the Kettu model, surveys on people's concept of the future, the Ilmari project and a 'Carbon-neutral Helsinki' study course, which combine climate and environmental education, futures literacy and design-based learning. Additionally, the City's adult education centres provide a wide range of courses and lectures that encourage residents to participate in climate change mitigation. The climate and environmental impacts of the division's own operations are reduced through Eco-Schools and OKKA certificate work. More information about the aforementioned is provided in the 'Environmental awareness and education' chapter of this report.

The Education Division carries out close cooperation with Palvelukeskus Helsinki and other food service providers to reduce the climate impacts of food. The amount of red meat featured on the menus of daycare centres and schools has been reduced, which is related to the City's objective of halving the consumption of meat and dairy products, and this work continues. In particular, Palvelukeskus Helsinki has been

developing the identification of the environmental impacts of meat and dairy product procurements, as well as responsibility criteria. The enterprise is also constantly developing environmentally friendly recipes. In the Education Division's latest tendering processes for food services, potential food service providers have been required to create a responsibility plan that pays special attention to the use of responsible raw ingredients, the consumption of vegetarian food and the reduction of food waste. These matters are also promoted by the Responsible Menu Development Working Group consisting of representatives of the Education Division, Palvelukeskus Helsinki and the Social Services, Health Care and Rescue Services Division. Pupils are activated to take part in reviewing vegetarian recipes and making development suggestions in tasting panels. The generation of food waste is also being prevented collaboratively, e.g. in the Food Waste Ecosystem project. In addition to reducing the climate impacts of food services, Palvelukeskus Helsinki also takes climate change mitiga-

tion into account in its vehicle fleet, which is being switched to electric vehicles in accordance with the Clean Vehicles Directive. The climate emissions of food transports are also being monitored, and the aim is to reduce them by means such as route optimisation and increasing the proportion of electric transport vehicles.

The Culture and Leisure Division's offices are carrying out energy efficiency measures as part of the Carbon Neutral Helsinki Action Plan. More information about the City's energy efficiency work is provided in the 'Energy' chapter of this report. The division has commissioned its first electric machines, improved cycling and walking opportunities in the city and built charging stations for electric cars. For its part, Helsinki City Museum is aiming at sustainable use of the built cultural environment through the steering of planning and construction projects and statement work. In youth work, the climate theme is an integral part of operations. Helsinki City Library took part in a project to calculate the carbon footprint of libraries in the autumn of 2023. The calculations yielded CO₂ indicators for book loans (1.38 kg of CO₂e), physical library visits (2.31 kg of CO₂e) and e-book loans (0.032 kg of CO₂e).

In the Social Services, Health Care and Rescue Services Division, a key aspect of climate change mitigation work is improving the energy efficiency of premises and electrifying the vehicle stock. A tendering process for passenger vehicles carried out in 2023 yielded an agreement which is estimated to reduce the CO₂ emissions of the division's vehicles by 300 tonnes per year from May 2024 onwards.

The objective of the Helsinki Tourism and Event Operating Plan for 2022–2026, coordinated by the City Executive Office, is that Helsinki is an international pioneer and solution provider in sustainability in the tourism and event sectors. The strategic choices involved are 1) environmental sustainability and carbon neutrality as the focus area of development, 2) Helsinki re-

sidents, inclusivity and social and cultural sustainability at the centre of development, and 3) Helsinki being a global leader in sustainability as authenticated by indexes and certifications.

City of Helsinki Construction Services Stara has been carrying out energy optimisation projects on properties and produces some of the energy for its bases with solar panels. The enterprise takes part in the implementation of the Green Deal for low-emission worksites, uses renewable (HVO) diesel and fuel oil in its vehicles and machinery, procures renewable electricity, procures and leases out electric vehicles and machinery, and installs charging stations for electric cars at its bases. Driving tracking devices are used to optimise transport and avoid unnecessary driving.

Mitigating climate change in the City's subsidiaries

The City's subsidiaries have carried out plenty of climate change mitigation measures, such as installing solar panels, carrying out major energy efficiency projects and minor energy conservation measures on properties, switching to renewable electricity, and taking the climate perspective into account in procurements. More detailed information about the energy efficiency work of the City's subsidiaries is provided in the 'Energy' chapter of this report.

The Ports and Cities of Helsinki and Tallinn have launched a Green Corridor project in cooperation with shipping companies operating between Helsinki and Tallinn and the Ministry of Climate of Estonia. The objective of the project is to create a sustainable and environmentally neutral sea traffic route for passenger and cargo traffic clients between the Port of Helsinki and the Port of Tallinn, as well as between Vuosaari Harbour and Muuga Harbour, as soon as possible. The green sea traffic route will serve as an umbrella for projects aiming at emissions reductions or zero emission status on the ship route between Helsinki and Tallinn.

Helen Ltd continuing investments in carbon-neutral energy

In late 2023, Helen Ltd published a new strategy with the green transition, flexibility and profitability as its core focal areas. Profitable business activities will facilitate significant investments in green transition projects, which the company will then carry out in a manner that increases the flexibility of the energy system. Helen Ltd's objective is to achieve carbon-neutral energy production by 2030. The company is also planning to cease all burning operations by 2040 and, to that end, signed a letter of intent concerning small-scale nuclear power in 2023.

Over the year, a significant structural change towards cleaner energy production took place in Helen Ltd's electricity and heat production. The company's direct greenhouse gas emissions were reduced by a historic 38 per cent, and its use of coal was nearly halved as the result of shutting

down the Hanasaari power plant.

Over the year, the company's use of biofuels doubled, and the amount of heat produced with heat pumps increased by roughly 35 per cent. This change was brought about by factors such as the beginning of heat production at the Vuosaari bio-heating plant at the turn of the year and the commissioning of the seventh heat pump at the Katri Vala heat pump plant in the spring of 2023.

In electricity production, the commissioning of the Olkiluoto 3 nuclear plant unit partially owned by Helen Ltd doubled the company's amount of electricity produced with nuclear power. The company's wind power production was also increased during the year. The most significant changes concerning wind power will be concretised when the company's wind farms currently being built are completed and ready for production in 2024–2025.



Eyes on the future

The Carbon Neutral Helsinki work will continue towards 2030, but at the same time, attention must be paid to the long-term objectives of carbon zero status and carbon neutrality. Particular attention must be paid to increasing the amount of carbon sinks, as their amount will determine the emissions level. Preparations for compensation efforts related to the carbon neutrality objective must also begin.

Programmes

[Carbon Neutral Helsinki Action Plan >>](#)



Adapting to climate change

Adapting to climate change, or climate change adaptation, refers to the means of preparing for extreme weather phenomena, adapting to long-term global warming and reducing the detrimental effects of and vulnerabilities caused by climate change. According to the City Strategy, “we will all have to adapt to the consequences of our planet’s climate crisis. The health, property and way of life of Helsinki’s inhabitants must be protected. The goal is to prepare Helsinki well for extreme weather phenomena and their indirect effects.” Preparation must be integrated into city planning, new construction and reconstruction projects. The amount of trees and verdancy in the city will be increased.

Helsinki has assessed the weather and climate risks pertaining to the city. The city’s key climate risks are stormwater floods caused by torrential rains, heat waves and drought, a sudden rise in the sea level caused by storms, slipperiness, extreme and abnormal winter conditions, and the eutrophication of the Baltic Sea. Other environmental risks are described in greater detail in the ‘Environmental risks’ chapter of this report.

Preparing for torrential rains and heat waves

Based on a risk assessment carried out, the Climate Unit is prioritising preparations for increasing and intensifying torrential rains and heat waves as the most urgent areas of adaptation. The City began planning preparing for torrential rains in the inner city in 2023, and a report on legislation pertaining to the matter and models of the flood hazard areas of the inner city were completed in early 2024. This work also yielded a rain scenario analysis regarding the statistical recurrence of rains brought about by the future climate in Helsinki. In order for the City to be able to assess the costs of floods and potential preparation solutions, more detailed modelling of the causes for torrential rains in the inner city

area is needed. This work will start in 2024.

Having started its operations, the City’s flood group has determined the tasks involved in preparing for seawater floods and identified operators responsible for these tasks. The group’s work will continue with regard to tasks for which a party responsible has not been identified within the City organisation.

So far, the City’s work on preparing for increasing heat waves has consisted of separate local efforts. City-wide objectives and a plan for preparing for heat waves are needed and require cooperation between the City’s divisions. The Climate Unit will produce a preliminary report that will serve as background material for the actual planning work. This work was started in 2023.

Strengthening the green infrastructure

In 2023, the City allocated resources to strengthening the effectiveness of the green efficiency of green area factor tools. The partially EU-funded ARVO – Viherrakenteen arviointi ja vahvistaminen kaupunkien maankäytön suunnittelussa (‘Valuation and Strengthening of Urban Green Spaces in Landscape Planning in Cities’) project launched in 2023 focuses on strengthening the green infrastructure in detailed



planning by means of further developing the City's regional green area factor tool and putting it to use. The regional green area factor is a continuation of the City's plot-specific green area factor work, extending the green area factor from plots to broader public areas. The plot-specific green area factor is included in the new building regulation approved in the summer of 2023. Work on updating the tool to focus more on climate change adaptation and biodiversity began the same year.

Healthy nature and a functional green infrastructure are a necessary part of managing water circulation and heat in the local

environment. Because of this, the amount of and changes to the green infrastructure and trees in particular are important gauges of the City's adaptability. The City's Urban Environment Division has access to laser scanning materials, the classification of which is being developed so that the materials identify trees, medium-sized vegetation and low-growing vegetation. In the future, the City's own materials can be used to monitor the amount of green infrastructure, as well as impermeable and permeable surface area, and to interpret changes occurring between years.



Eyes on the future

The City will continue to improve the effectiveness of climate change adaptation work and develop its monitoring and assessment methods. The adaptation work will be prioritised on a risk basis. The City's knowledge base regarding preparing for torrential rains will be improved with comprehensive water management modelling, the costs of the exceptional stormwater floods of the inner city will be assessed, and alternative solutions for preventing floods will be determined. The City began planning preparing for increasing heat waves in 2024, and this work will be carried out as a City-level cooperation. As part of the planning work on preparing for heat waves, the City will also carry out a climate change impact vulnerability assessment to form a picture of the equality of the adaptation measures. The City's work on developing the regional and plot-specific green area factor to strengthen climate change adaptation and biodiversity will continue.

Programmes

[Helsinki's climate change adaptation policies >>](#)



Energy

The production and use of energy play a very significant role in the achievement of the City of Helsinki's carbon neutrality objective. 52 per cent of CO₂ emissions in the urban area of Helsinki are generated from district heat consumption and 13 per cent from the electricity consumption of properties. The CO₂ emissions of the Helsinki Group account for 13 per cent of the emissions of the entire urban area. Of this proportion, roughly 93 per cent is caused by the energy consumption of buildings.

Helsinki's energy conservation work is based on the Carbon Neutral Helsinki Action Plan, which aims for the City to become carbon-neutral by 2030. Helsinki has been involved in the energy efficiency agreements made between municipalities and the Finnish government. These agreements are used to implement the measures required by the national energy and climate strategy at the municipal level.

Carbon dioxide emissions from energy use at the level of the previous year

The Helsinki Group accounted for 12 per cent of the consumption of electricity, 18 per cent of the consumption of district heat and roughly two per cent of the consumption of district cooling in the entire Helsinki urban area.

The energy consumption and CO₂ emissions of the Helsinki Group in 2022 and 2023 are presented in the table. The Helsinki Group's total energy consumption decreased by two per cent from 2022, while its CO₂ emissions remained unchanged.

Despite the decrease in total energy consumption, the development of the Helsinki Group's CO₂ emission levels does not show a similar trend. This is because the emission factor of the basic electricity product purchased from Helen Ltd, which the majority of the Group's electricity procurements concern, doubled from the factor used in the previous year's emission calculations. The reason for this is the new Act on Verifi-

cation and Notification of Origin of Electricity, which stipulates that certified and separately sold nuclear electricity is classified as emission-free. By contrast, the emission factor of Helen Ltd's district heating decreased by 27 per cent from 2022 due to the closure of the Hanasaari coal power plant and the Vuosaari bio-heating plant being in operation all year round.

Of the Helsinki Group's electricity procurements, roughly 40 per cent are classified as emission-free. Green electricity is procured by operators such as Helsinki City Housing Company Ltd (Heka), Helsingin asumisoikeus Oy (Haso), Urheiluhallit Oy, Korkeasaaren eläintarhan säätiö sr (Korkeasaari Zoo) and Kiinteistö Oy Kaapelitalo. The electricity used by Metropolitan Area Transport Ltd for its transport operations is certified nuclear electricity. District heating classified as emission-free is procured by Korkeasaari Zoo and the Olympic Stadium.

The electricity consumption of the Helsinki Group's properties increased by one per cent, while their consumption of district heating decreased by roughly two per cent from 2022. The energy consumption of the properties varies annually due to changes in the property stock, changes in the occupancy rate and equipment level of the buildings, and changing weather conditions. The reliability of the reporting on electricity consumption has been undermined in recent years by problems with the availability of consumption data in Fingrid's datahub

Energy consumption and CO₂ emissions of the Helsinki Group in 2022* and 2023

PREMISES, owned by the city**	GWh, 2022	GWh, 2023	GWh, change % 2022-2023	CO ₂ kilo- tonnes, 2022	CO ₂ kilo- tonnes, 2023	CO ₂ , change % 2022-2023
Electricity	189	195	3 %	44,5	92,1	107 %
District cooling	2,41	2,65	10 %	0	0	0 %
District heating	384	372	-3 %	85,4	60,3	-29 %
Total	575	570	-1 %	130	152	17 %
Premises, other (incl. subsidiary communities)						
Electricity	191	190	-1 %	28,2	44,6	58 %
District cooling	3,13	2,46	-21 %	0	0	0 %
District heating	741	737	0 %	164	119	-28 %
Total	959	930	-3 %	192	163	-15 %
Outdoor lighting, traffic lights						
Outdoor lighting, electricity	37,1	34,6	-7 %	8,73	16,31	87 %
Traffic lights, electricity	1,19	1,21	1 %	0,28	0,57	103 %
Total	38,3	35,8	-7 %	9,01	16,88	87 %
Public areas						
Electricity	3,48	2,5	-28 %	0,82	1,18	44 %
District heating	5,11	3,85	-25 %	1,14	0,62	-45 %
Total	8,59	6,35	-26 %	1,96	1,8	-8 %
Traffic						
Metro traffic, electricity	49,1	53,1	8 %	0	0	0 %
Tramline traffic, electricity	26,8	30,6	15 %	0	0	0 %
Ferry traffic, fuel	6,53	6,48	-1 %	1,69	1,2	-29 %
Total	82,4	90,3	10 %	1,69	1,2	-29 %
Vehicles and machinery						
Fuels	24,7	21,3	-14 %	4,6	3,43	-25 %
Electricity	0,15	0,16	4 %	0,035	0,073	107 %
Total	24,9	21,5	-14 %	3,78	3,5	-7 %
Total	1689	1654	-2 %	339	339	0 %

*The 2022 figures have been retroactively adjusted in part as more accurate data has become available

**Service buildings directly owned by the City where consumption is monitored by the hour (in the Nuuka system with about 750 properties)

The CO₂ emissions for 2023 have been calculated by using the product-specific emission factors of Helen Ltd, which are the following:

- 162 g/kWh for district heating
- 471 g/kWh for electricity (data for 2022; the factor for 2023 is not available)
- 0 g/kWh for cooling

The CO₂ emissions for 2022 have been calculated by using the product-specific emission factors of Helen Ltd, which are the following:

- 223 g/kWh for district heating
- 235 g/kWh for electricity (data for 2021; the factor for 2022 is not available)
- 0 g/kWh for cooling

service. The datahub is a centralised data exchange system for the electricity retail market, commissioned in February 2022.

The consumption of district cooling among properties decreased by nearly eight per cent from 2022. Correspondingly, there was less need for cooling in 2023 than in 2022.

The electricity consumption of public areas decreased by 28 per cent and their consumption of district heating by 25 per cent from 2022. The savings in electricity consumption resulted from turning off staircase and ramp heating systems, turning off the Töölönlahti seawater pump for the winter and optimising the indoor temperature of public toilets.

The electricity consumption of outdoor lighting was reduced by seven per cent through switching to LED lights, turning off the lights of parks at night and optimising the turn-on and turn-off times and dimming levels of lights.

The electricity consumption of metro traffic increased by eight per cent and the consumption of tram traffic by 15 per cent from 2022. This is due to an increase in mileage from 2022. In 2023, the metro line was extended, and an entirely new tram line began operating towards the end of the year after preceding test drives.

The energy consumption of ferry traffic decreased by one per cent from 2022. CO₂ emissions generated from fuel consumption decreased by nearly 30 per cent as ferries switched from diesel to fuel oil, 20 per cent of which was renewable.

District heating amounted to 67 per cent of the city's total energy consumption (1,114 GWh), electricity amounted to 31 per cent (508 GWh), district cooling amounted to 0.3 per cent (5.1 GWh) and fuels amounted to 1.7 per cent (27.3 GWh).

Per capita energy consumption decreasing

The graph provided shows the trends in the per capita energy consumption of the City's own operations over the last 18 years. During the period in question, per capita

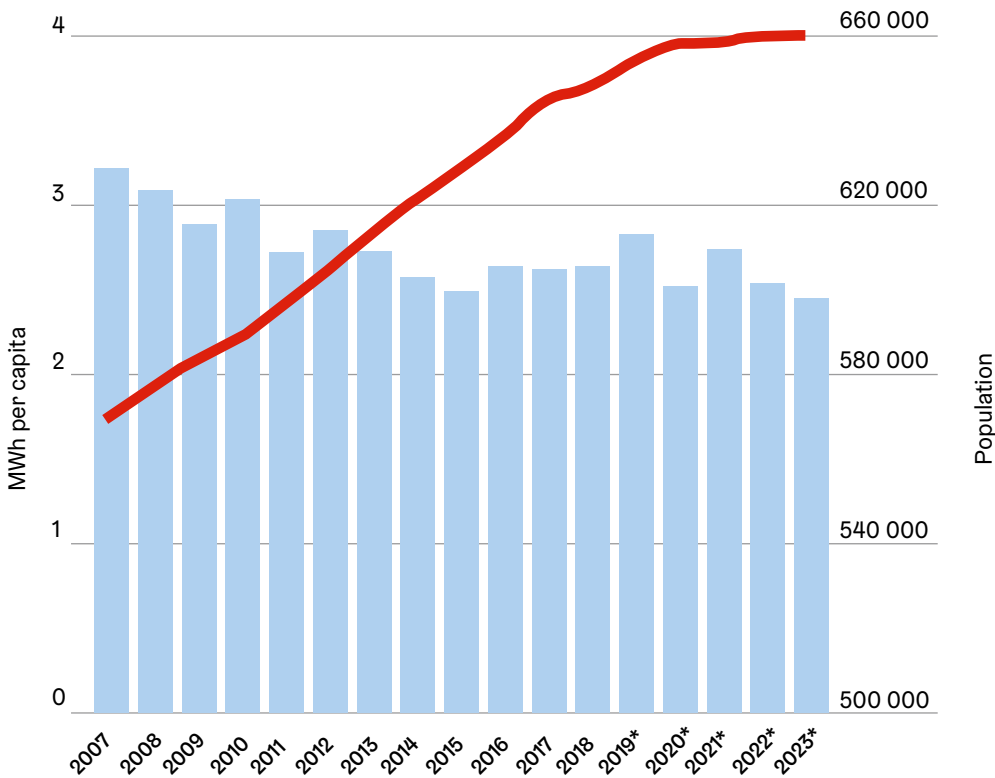
energy consumption has decreased by 27 per cent as a result of the City's persistent energy efficiency work. Since 2019, energy consumption data has become more comprehensive, which is why the reduction achieved in per capita energy consumption during the period examined is greater in reality than presented here.

More energy-efficient construction than the national requirement

The standards and requirements regarding energy efficiency remained unchanged in 2023, i.e. the City's own new and renovation construction projects had to be planned and implemented with a level of energy efficiency higher than the national requirement. The energy class of a building is based on its calculated energy efficiency reference value, i.e. its E value (kWh/m²/a). In service buildings, the average E value of new permanent buildings commissioned in 2023 was 67 kWh_E/m²/a and the average E value of new building projects calculated in the building permit application process was 59 kWh_E/m²/a, the requirement being 100 kWh_E/m²/a. In housing production, the average E value of new buildings commissioned in 2023 was 70 kWh_E/m²/a and the average of the E values calculated in the building permit application process was 70 kWh_E/m²/a, the requirement being 90 kWh_E/m²/a.

As with before, operators were required to select a heat pump system as the primary heating system if technically feasible and financially viable. Of all service buildings commissioned in 2023 (permanent buildings only), 83 per cent had a heat pump as the primary heating form based on the surface area. In projects for which a building permit was applied for in 2023, the corresponding number was 100 per cent. In Helsinki Housing Production Department's projects for which a building permit was applied for in 2023, 69 per cent had a geothermal heat pump as the primary heating form. Of completed projects, 27 per cent featured geothermal heating. Four of Helsinki Housing Production Department's

The development of the energy consumption of the City's own operations, divided by the City population



*Reporting principle changed due to improved comprehensiveness of energy consumption data

● MWh per capita ● Population

buildings completed in Postipuisto also introduced wastewater heat recovery systems for the first time.

As with before, buildings were required to be equipped with a solar power system. Almost all of Helsinki Housing Production Department's new and renovation construction sites that were commissioned or for which a building permit was applied for in 2023 featured a solar power system. Nearly all of the Facility Service's projects also included a solar power system. More information about the environmental impact of construction is provided in the 'Construction' chapter of this report.

Investments in energy efficiency and renewable energy production

In addition to new and renovation construction projects, the City is installing solar power stations as separate investments on existing properties. The total power rating of the solar power systems installed in service buildings has already exceeded 2 MWp. In addition to this, the Helsinki Group's subsidiaries have been investing in solar power in recent years.

The Port of Helsinki is aiming at carbon neutrality in its own operations by 2025. In 2023, the Port made significant energy efficiency investments at Katajanokka Termi-

nal, at Olympia Terminal and in Satamatalo. These projects involved measures such as overhauling indoor and outdoor lights, changing ventilation units and modernising building automation systems.

The City's transition to using LED lights for public outdoor lighting made progress in 2023. The sizeable lighting overhauls combined with measures related to lighting control and dimming resulted in a total of 2.5 GWh of energy savings in 2023. The objective is for all public outdoor lighting (some 92,000 lights) to be LED-based and controllable by 2030.

Measures for improving energy efficiency

The effectiveness of the measures carried out to prepare for the energy crisis in late 2022 were assessed in the spring of 2023, and viable measures were put to permanent use.

As in the previous years, the City continued its energy audit operations by carrying out energy efficiency measures assessed to be viable in audits and ordering an energy audit for roughly 30 new buildings for the heating season of 2023–2024. The City also carried out an internal inspection on the energy audit process to help develop the process towards increased effectiveness.

In the autumn of 2023, three energy and condition management service entities available on the market were piloted at the Facility Service's service buildings. The service typically includes active monitoring of the energy consumption, the indoor conditions and the functionality of the building services systems of buildings and reacting to any deviations observed. Based on these observations, the service provider then makes remedial adjustments as agreed through an automation system and provides the property management department and the property manager with instructions for carrying out remedial procedures. The service provider also supervises that the necessary procedures are carried out.

The service facilitates remedying various disruptions and finding procedure and investment suggestions for improving energy efficiency and the performance of building services. In the best-case scenario, the service will pay for itself in less than a year.

The most significant observation made during the pilot was that all buildings had something to improve. The most typical remedial procedures carried out by the service provider were various technical adjustments, such as adjusting the ventilation time profiles and intake air temperatures to correspond with actual needs and the instructed level. The service provider submitted service requests to the maintenance department regarding issues such as malfunctioning CO₂ sensors and heat recovery equipment, as well as automation errors. Typical viable investments proposed by the service provider included overhauling ventilation units or equipping them with heat recovery technology and switching to LED lighting.

As one example of the results of the pilot, a target group of ten schools and daycare centres was calculated to have achieved energy savings of 12 per cent from the baseline situation. The realisation of the desired conservation effect is being monitored, and it is expected to be visible in monthly consumption rates in 2024. In general, the monitoring of the energy consumption of buildings and the authentication of conservation effects were hindered by changes in the usage times and equipment levels of properties.

Energy efficiency is promoted in projects as well

The Energiaomavaraiset korttelitaso alueelliset ratkaisut ('Energy Self-sufficient Block-level Areal Solutions') project funded by the Ministry of the Environment was completed at the end of 2023. The project produced up-to-date data for planning, implementing and procuring an areal block-level energy solution that is as self-sufficient as possible, possibly even carbon-negative.

In 2023, Helsinki City Housing Company Ltd (Heka) and Helen Ltd launched a co-development project entitled Lämpöoptimi ('Temperature Optimum'), which involves developing a new heating control service to reduce overheating and facilitating demand response in district heating. Through demand response, Heka is able to contribute to reducing emissions from district heating production, resulting in a greater impact than from energy conservation alone. The objective of the project is to reduce the heat consumption of properties by four per cent. The actual pilot phase will start in 2024.

Heka is involved in the innovation programme of the HELENA project, which involves piloting low-carbon construction and housing solutions, such as a smart electricity storage, room-specific heating control and dynamic radiator valves. In 2023, the project yielded an interim analysis regarding Heka's energy efficiency work and the lessons learned from the project up to that point, which can be utilised during the rest of the project. A multi-target optimisation model was also co-developed last year by generating information models of properties with artificial intelligence to serve as baseline data for optimisation processes. The project will continue until the autumn of 2024.

In 2023, Heka began its participation in the BuildOn project funded by the EU's Horizon programme. The objective of the project is to improve the energy efficiency of properties with digital solutions. Heka takes part in the project with one pilot property with the aim of acquiring technology such as a room-specific temperature regulation system for the building. The project facilitates trying new digital solutions that can easily be expanded to other sites if they are found to be viable.

Helen Ltd has already achieved its energy conservation objectives based on the energy efficiency agreement

Helen Ltd's goal is to improve energy efficiency by 5.4 per cent from the 2015 level by 2025. In 2023, the most significant measures with regard to the energy efficiency of production were the completion of the Katri Vala heat pump plant's seventh heat pump and raising the connection power for district and internal cooling, which facilitated the utilisation of waste heat from sources such as data centres. On the side of energy distribution, the district heating network was renovated and management of the network was improved by utilising artificial intelligence, and a site inspection process was carried out to survey the impact of reducing network losses by lowering the temperature.

Helen Ltd also allocated resources to digital services that support residents in energy conservation. The number of users in the Oma Helen service increased to an impressive 520,000 as people became more motivated to monitor their energy consumption. 20,000 copies of the *Ellenin energiaseikkailu* ('Ellen's Energy Adventure') e-book, which won Helen Ltd the title of Energy Genius of the Year, were delivered to the schools of Helsinki.

Helen Ltd has exceeded its energy conservation objectives based on the energy efficiency agreement in force. More information about Helen Ltd's sustainability actions is provided in Helen's annual review.

Two thirds of the KETS and VAETS target achieved

Helsinki is committed to an energy conservation target of 61 GWh in the municipal energy efficiency agreement (KETS), while subsidiary companies of the City that own rental apartments are committed to an energy conservation target of 55.7 GWh in the energy efficiency agreement for rental apartments (VAETS) during the contract period 2017–2025. The contractual obligations are implemented with energy conser-

vation measures, the energy conservation effects of which are reported to Motiva annually.

By the end of 2025, the total energy savings achieved by the known energy efficiency actions (KETS + VAETS) of the City will have amounted to approximately

78 GWh, which is 66 per cent of the total conservation target for the entire agreement period. Some of the energy conservation measures proposed in the energy audits and implemented during the agreement period are still in progress, so they could not be taken into account in this report.



Eyes on the future

Based on the experiences gained from the pilot on an energy and condition management service for service buildings, a more extensive service procurement will be prepared in 2024.

The building automation systems of the City's service buildings will be connected in phases to the City of Helsinki's information network (RAUNET). This will facilitate remote monitoring and management of the building services of properties to optimise the permanence of their energy efficiency and indoor conditions. RAUNET connections were built in more than 300 buildings in 2023, and this number will increase in the coming years.

Cooperation within the City organisation to carry out energy consumption management and energy efficiency measures and make energy efficiency investments will be intensified in the coming years.

In 2023, Heka had good experiences with the Enerkey energy management system. The objective is to expand the system to also cover using AI-based data analytics in the identification of the energy conservation potential of buildings.





Construction

Last year, plans were drawn up for more than 320,256 square metres of floor area in Helsinki, nearly 241,943 square metres of which was designated for supplemental construction. Plot project reservations and plot conveyance competitions were prepared for approximately 4,000 apartments. Plots were conveyed for housing construction purposes for roughly 2,770 apartments. Construction projects for more than 5,000 apartments were started in the City of Helsinki area, approximately 1,435 of which are located on plots conveyed by the City. The year of operation was made challenging particularly by the prevalent construction market situation, which has hindered both housing and infrastructure construction projects.

City planning

In accordance with the City Plan 2016, the measures carried out in city planning in Helsinki aim at defragmenting and supplementing the urban structure by relying on public transport. In 2023, the City continued supplementing the City Plan 2016 through work on four local master plans (Östersundom, Viikinjärvi-Lahdenväylä, the Länsiväylä area and Vartiolahti). The local master plans for Östersundom and the Länsiväylä area involved a scenario analysis phase that entailed extensive environmental impact assessments, including a climate impact assessment.

In order to assess climate impacts, a new practice was developed for carrying out lifecycle-based assessments, starting from local master plan work. The analysis covers construction-phase emissions, usage emissions and potential climate benefits realised outside the planning area. The results reinforced the notion that the construction phase produces a very large proportion of the total climate emissions, and they also yielded new information about regional climate benefits, which turned out to be smaller than previously estimated. The results of the climate impact assessments were forwarded to decision-makers as part of the local master plan sets.

In detailed planning, the City continued using its assessment method for the low-carbon qualities of detailed plans (the

HAVA method), which has been in use since 2021. The use of this tool was expanded to other cities in a development project, which also involved specifying the calculation principles of the assessment method. New features were also added to the tool: it was made geographical-information-based, and an automated calculation method for pre-construction and foundation engineering was added to the results. This development project will end in 2024. The tool provides a clear and easy-to-use method that operators can use to assess the low-carbon solutions and climate impacts of detailed plan work.

As the first city in Finland, Helsinki set a limit value for the lifecycle carbon footprint of new apartment buildings. The limit value calculated for a usage period of 50 years, 16.0 kgCO₂e/m²/a, was approved by the Urban Environment Committee in June 2023. New detailed plans provide for the carbon footprint by referring to the limit value in force at the given time. This prevents the limit value from becoming outdated when a plan is in force for several years. The limit value is also set as a requirement in the City's general plot reservation conditions with regard to new plot reservations for which the requirement is not set in the plan. Thus, the requirement can enter into force more extensively and quickly than through plan governance alone.

Emissions reduction in the City's own housing construction

Carbon footprint calculations carried out in the Housing Production Department's projects were utilised as background materials for setting the City's limit value. All projects of the Housing Production Department in the planning phase involved surveying methods for achieving the limit value and implementing methods that were feasible within the financial framework of the projects.

Examples of significant low-carbon measures in the City's housing production and construction of business premises include good energy efficiency and heat pumps, which have been a requirement for a long time now. Going forward, material-specific emissions must also be reduced. Using low-carbon concrete is one of the most essential ways to reduce material-specific emissions. The cost effect of low-carbon concrete on projects is being surveyed.

The City's instructions for carbon footprint calculations in housing construction, published in 2022, were updated, and a template was created for reporting the baseline information and results of carbon footprint calculations in a formal manner. Several other cities have also adopted Helsinki's instructions or parts thereof.

Steering the environmental objectives of construction projects

Two buildings of Helsinki City Housing Company Ltd (Heka) and two buildings of Helsingin asumisoikeus Oy (Haso) (Kustinpölkku 7, As Oy Helsingin Kuriiri, Haso Postijooni and Haso Postimies) were the first residential buildings in Finland to reach the four-star level in Rakennustieto Oy's environmental classification. This high ranking was based on factors such as energy class A and careful moisture control planning and monitoring, which also resulted in the projects receiving the construction quality association RALA ry's Kuivaketju10 status. Of business premise projects, Rakennustieto Oy's environmental classification (four stars) was awarded to Daycare Verkkosaa-

ri. As with before, Rakennustieto Oy's environmental classification (three-star level) will continue to be used in overall responsibility contracts in both housing production and business premise construction. In other projects, planning is steered through the City's lifecycle management model (housing production) and objectives for ecologically sustainable construction (business premises).

In 2023, Metropolitan Area Transport Ltd developed an investment carbon management model that is used to integrate climate emissions into the planning and decision-making processes of investment projects. Construction projects are assigned numeric emissions reduction objectives to steer the planning and implementation of the project. These objectives are being made incrementally stricter towards the target year of 2030.

An environmental documentation set was introduced in the City's infrastructure construction operations and won the Municipal Engineering Achievement 2023 award. The purpose of this documentation set is to deploy sustainable development measures in a systematic manner, from the commissioning of the project to its implementation, at the levels of the City's different organisations and stakeholders, and for consultants and contractors to use. The documentation set features additions to documentation, instructions and quality requirements related to the planning and commissioning of projects. An environmental matter checklist and an environmental document are two new documents introduced.

Low-carbon infrastructure construction

The City has been developing ways to steer operators towards low-carbon planning and construction in infrastructure projects. This work is part of development work on the national infrastructure database and emissions calculation system led by the Finnish Transport Infrastructure Agency in partnership with the Finnish Environment Institute (SYKE). The objective has been to

unify the means by which operators calculate the climate impacts of infrastructure construction and facilitate comparisons of the emissions generated. The City of Helsinki tested the functionality of this emissions calculation method and the comprehensiveness of the emissions database in connection with 12 street and park plans. The report was completed in the spring of 2023, yielding valuable information for national emissions calculation development work. The Infrastructure Cost Management System (Ihku) now enables operators to carry out emissions calculations automatically alongside their cost calculations. The emission factors used in the Ihku calculation service are based on the infrastructure database.

In accordance with the Carbon-neutral Helsinki action plan, the City used low-carbon concrete in roughly 90 per cent of infrastructure construction projects in 2023. Low-carbon concrete has been estimated to be roughly 10–20% more expensive than conventional concrete.

In urban traffic railway and depot projects, Metropolitan Area Transport saved a total of 4.5 million kilograms of greenhouse gas emissions by using low-carbon concrete. Using low-carbon concrete in class GWP.85 or better has been set as a requirement in Metropolitan Area Transport's own projects.

One of the measures listed in the Carbon-neutral Helsinki action plan is reducing the emissions generated in the pre-construction of Malminkenttä by 50 per cent by 2030. In 2023, the City carried out several measures to achieve this objective, such as determining reference levels and low-carbon objectives for the area, creating detailed plan area specific carbon budgets and including emissions monitoring in the planning and contract documents of projects in the area. The City also monitored low-carbon stabilisation trials.

Use of plastic in infrastructure construction in Helsinki

The PlastLIFE project coordinated by the Finnish Environment Institute was launched in 2023. The objective of Helsinki's sub-project is to promote the circular economy of plastic and reduce the adverse impacts of plastic in infrastructure and green construction. It was identified in a report on the use of plastics in Helsinki's infrastructure construction projects commissioned by the City that plastic filter fabrics are being used too much in places. The City's instructions for planning should specify in greater detail in which structures filter fabric is necessary and where it can be omitted. It was also concluded in the report that there is a need for recycling construction waste and taking it into account starting from the planning phase.

A sustainability card added to Helsinki Design Manual

Helsinki Design Manual is an open and constantly developing guide that supports good urban environment planning. The key principles of sustainability work pertaining to the urban environment are compiled in a practical manner in the 'Sustainable urban space' instruction card (in Finnish) of the Design Manual to steer the planning and construction of urban space.

Sustainability reporting changing the field

The Urban Environment Division is surveying how the requirements of the EU Corporate Sustainability Reporting Directive and taxonomy impact the division. Heka and Haso will be required to report their business activities in accordance with the requirements of sustainability reporting as of 2025. At the same time, they will become subject to the requirement pertaining

to their share in accordance with the EU taxonomy. As part of the value chain of its business activities, the Housing Production Department must meet the reporting requirements with regard to the construction and renovation of new apartment buildings and require reporting from its contractors.

The requirements of the Corporate Sustainability Reporting Directive for businesses pertain to Metropolitan Area Transport Ltd as well. In 2023, the company began preparing for these requirements by carrying out a double relevance analysis. At the beginning of 2024, Metropolitan Area Transport Ltd identifies and projects its development needs.

Green funding projects

Green funding is intended for funding climate and environmentally friendly investments. It is granted to investment projects that yield clear and measurable beneficial impacts on the climate and the environment. Green funding is more affordable than an ordinary loan. The greener the project, the more affordable the funding.

The Kalasatama–Pasila alliance railway project was the first project in Finland to be awarded a perfect score in Municipality Finance Plc’s (MuniFin) green funding assessment. The score was awarded based on emissions calculation, the use of responsibility certification as a framework and the integration of responsibility into the management system, taking biodiversity into account, commitment to the Green Deal for emission-free worksites, resource-wise operations and tying responsibility to key result targets. Of Metropolitan Area Transport’s other projects, green funding was granted to the Ruskeasuo depot and Jokeri Light Rail.

In recent years, several new production and renovation projects in housing production have been granted green funding, mainly by MuniFin and other operators. In 2023, all 18 new construction projects and two renovation projects were funded

with green loans. For ARA projects, loans are granted by MuniFin, the most essential requirement of which in new construction is that the building is in energy class A, and in renovation projects, the energy figure must improve by at least 30%. Other requirements in accordance with the EU taxonomy are also taken into account when granting loans, such as carbon footprint calculations. Hitas loans are tendered out in the market, and in 2023 all three projects received a green loan.

National influencing

In 2023, the City took part in stakeholder work organised by the Ministry of the Environment for developing the climate regulation of the Building Act. The City also participated in the challenge bundle work of the Sustainable City programme coordinated by the Ministry of the Environment. The work involved examining solutions for environmental crises related to the development of cities together with other cities, the Ministry and various experts. In particular, the work highlighted the difficulty of finding solutions for the biodiversity and climate crisis in relation to path-dependent urban development that primarily supports growth.

The UUMA4 project was concluded at the end of 2023, and preparations for the fifth project period began. UUMA programmes have promoted practices related to the use of recovered materials in groundworks and establishing these practices in the infrastructure sector. The City of Helsinki has had a prominent role in this programme work.



Eyes on the future

The EU's sustainability reporting regulation and taxonomy have had significant impacts on the sector. The stricter requirements regarding reporting and transparency will affect the City. Among other things, the taxonomy objectives and criteria will require further surveys in the following year. The overall EU regulations further highlight the previously identified need to develop reporting contents and practices to make them more systematic, and to improve information management.

Increasing biodiversity and adapting to climate change are increasingly important themes that the City aims to take into account better in construction projects. For example, taking into account the nature values of a planning area or plot and its surroundings in planning and implementation are things that will require more attention going forward. Development work on the green area factor will also support taking biodiversity and climate change adaptation into account in construction more.

Transport

The City Strategy aims for the City of Helsinki's work on carbon neutrality to focus on the electrification of the transport system and the promotion of sustainable and smart transport solutions. When the strategy is implemented, the detrimental air pollution and noise caused by traffic will also be reduced significantly.

The cycling network of Helsinki was expanded

The objective of the Bicycle Action Plan 2020–2025 is for Helsinki to be a year-round cycling city for all ages. The aim is also to increase the proportion of journeys taken by bicycle to at least 20 per cent by 2030. In 2023, the proportion of journeys taken by bicycle was 11 per cent, marking an increase of two percentage points from 2022.

The cycling network of Helsinki was expanded on routes such as Itäbaana and Pasilanbaana. The Itäbaana route was built in Herttoniemi, spanning roughly one kilometre from Hiihtomäentie to Valurinkatu. Pasilanbaana was expanded from Kalasatama to Pasila in conjunction with the construction of a tram line in Vallilanlaakso and Pikku Huopalahti. The bike lanes of Lauttasaarentie were also improved from Meripuistotie to the Lauttasaari bridge.

Of the roughly 140-kilometre target network in the city centre, a total of 69 kilometres were completed or under construction in 2023. Similarly, of the roughly 148-kilometre target for the Baana cycling network, roughly 32 kilometres were completed or under construction.

Helsinki expanded the pedestrian, leisure time and cycling areas of the city centre

As a trial, expansions reserved for pedestrian traffic and leisure time were built on Eteläesplanadi and Pohjoisesplanadi. A new two-way bike lane was built on Eteläesplanadi, while Pohjoisesplanadi was expanded with plenty of new space for leisure

time, into which local businesses extended their terraces and other business activities. The overhauled area continued to Erottajankatu, where the pavement was widened, benches were installed and flowers were planted. The driving lanes of Eteläesplanadi and Pohjoisesplanadi were narrowed down to one lane, and a new biking lane was built on Lönnrotinkatu. The trial on Eteläesplanadi and Pohjoisesplanadi will continue until the autumn of 2024.

Summer street areas were built on Kasarminkatu and the Design Museum Square. For example, terrace activities and plantings were again featured in front of the Design Museum.

The target number of electric buses was achieved ahead of schedule

Helsinki Region Transport (HSL) aims to cut local emissions and carbon dioxide emissions from public transport by more than 90 per cent (2010–2025). The goal is also for at least 30 per cent of HSL's buses (approximately 400 units) to run on electricity by 2025. This goal was achieved ahead of schedule, as over the course of 2023, HSL commissioned roughly 100 new electric buses, increasing their total number to 428. The electric buses accounted for roughly 34 per cent of the total kilometres driven by the bus fleet.

The number of passengers using public transport increased in 2023 from the previous year but is yet to return to the level preceding the COVID-19 pandemic. In 2023, the number of passengers increased by 13 per cent on the metro, 18 per cent on buses, six per cent on trams and seven per



cent on local trains from 2022 in the HSL area. However, HSL's passenger numbers in 2023 were roughly 13 per cent lower than in 2019.

The pricing for public transport was changed as of the beginning of 2023. This was prompted by a heavy increase in HSL's operational costs. The change caused the prices of AB and BC tickets to increase and the prices of ABCD tickets to decrease. Additionally, the ticket discount for students and seniors aged 70 and above was reduced to 40 per cent.

As in the previous years, city biking continued in Helsinki. The city bike season started on 1 April and continued until the end of October. As in 2022, the city bike system of Helsinki and Espoo had a total of 577 city bike stations, 347 of which (3,470 bikes) were inside the borders of Helsinki.

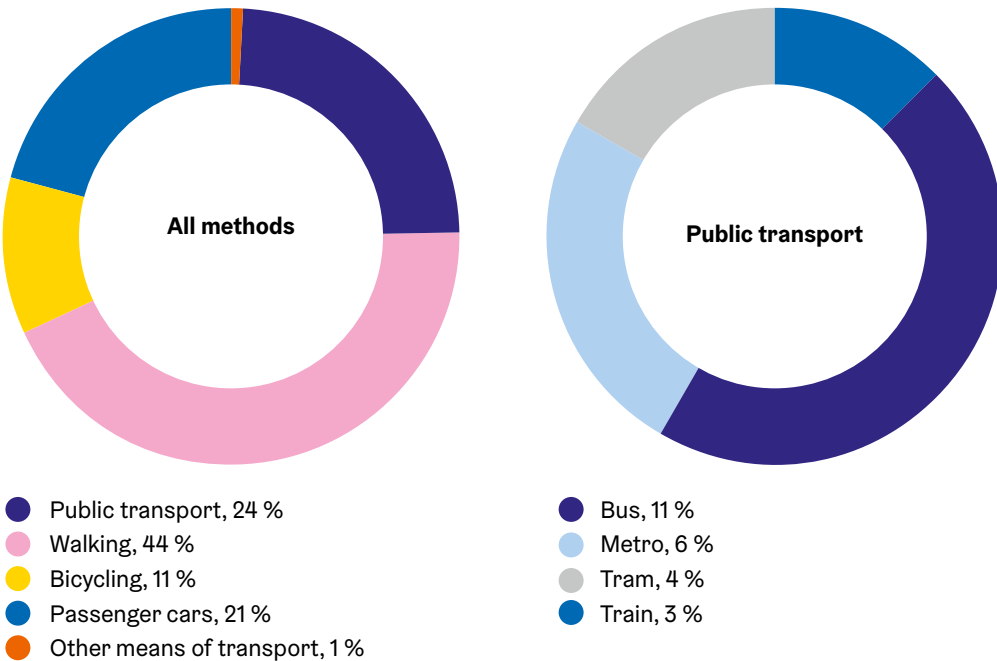
Roughly 2.2 million journeys were made on city bikes in Helsinki in 2023, marking an increase of roughly 100,000 journeys from 2022. The average distance of the journeys was 2.3 kilometres, and the average travel time was 18 minutes.

The Helsinki region again ranked fourth in the international BEST – Benchmarking in European Service of Public Transport survey. Higher rankings were achieved by Turku, Tampere and Geneva. The survey compared customer satisfaction ratings of the public transport of 11 European cities. 72 per cent of customers in the HSL area were satisfied with public transport in 2023.

The City's new MAL 2023 plan for land use, housing and traffic was approved in September 2023.

Distribution of modes of transport

Helsinki residents' primary mode of transport within the city, per cent of journeys in a day *



*percentages rounded to integers

Light rail line 15 began operating

Light rail transport operations began on the track between Itäkeskus in Helsinki and Keilaniemi in Espoo on Saturday 21 October 2023. The new 25-kilometre track brought trams to entirely new areas and provides transfer connections to both the metro and local trains.

The construction of the Crown Bridges tramway and the Kalasatama–Pasila tramway proceeded as planned in 2023. Trams will begin operating between Kalasatama and Pasila in the summer of 2024.

All of the new tramway connections being built in the Pasila area were completed in 2023, and all lines began operating on their own routes. The new two-way track connection on Asemapäällikönkatu enables lines 7 and 9 to operate more smoothly in Pasila, while Messukeskus will be served by tram line 2 going forward.

The renovation of Mannerheimintie began in March 2023, being the most significant street work project of the year. The work will continue until the end of 2025, causing changes in pedestrian, cycling, public transport and motor vehicle routes alike. All tram traffic between Ooppera and Lasipalatsi has been running via Runeberginkatu. Tram traffic has remained smooth on this route as well, despite the large number of lines operating on it.

The electric car charging network was expanded

The number of electric cars continued to increase in 2023. At the end of the year, 14,728 fully electric cars and 21,863 rechargeable hybrids were in traffic use, coming to a total of more than 36,500 rechargeable passenger cars. Rechargeable cars accounted for approximately 16.7 per cent of all cars in operation in Helsinki. The percentage was 11.4 in 2022 and 3.4 in 2020. The proportion of fully electric cars among all passenger cars in traffic use in 2023 was 6.7 per cent. The percentage was 4.0 in 2022 and 1.0 in 2020.

At the end of 2023, the public areas of Helsinki featured roughly 245 charging stations for electric cars, some 140 of which were built in more than 50 different locations in 2023. Additionally, the city features charging stations maintained by commercial operators in locations such as shopping centres and parking garages, as well as private charging stations owned by operators such as housing companies and businesses. In addition to the aforementioned, 16 new charging points for taxis were built in the city (eight stations, one of which was still being built at the turn of the year).

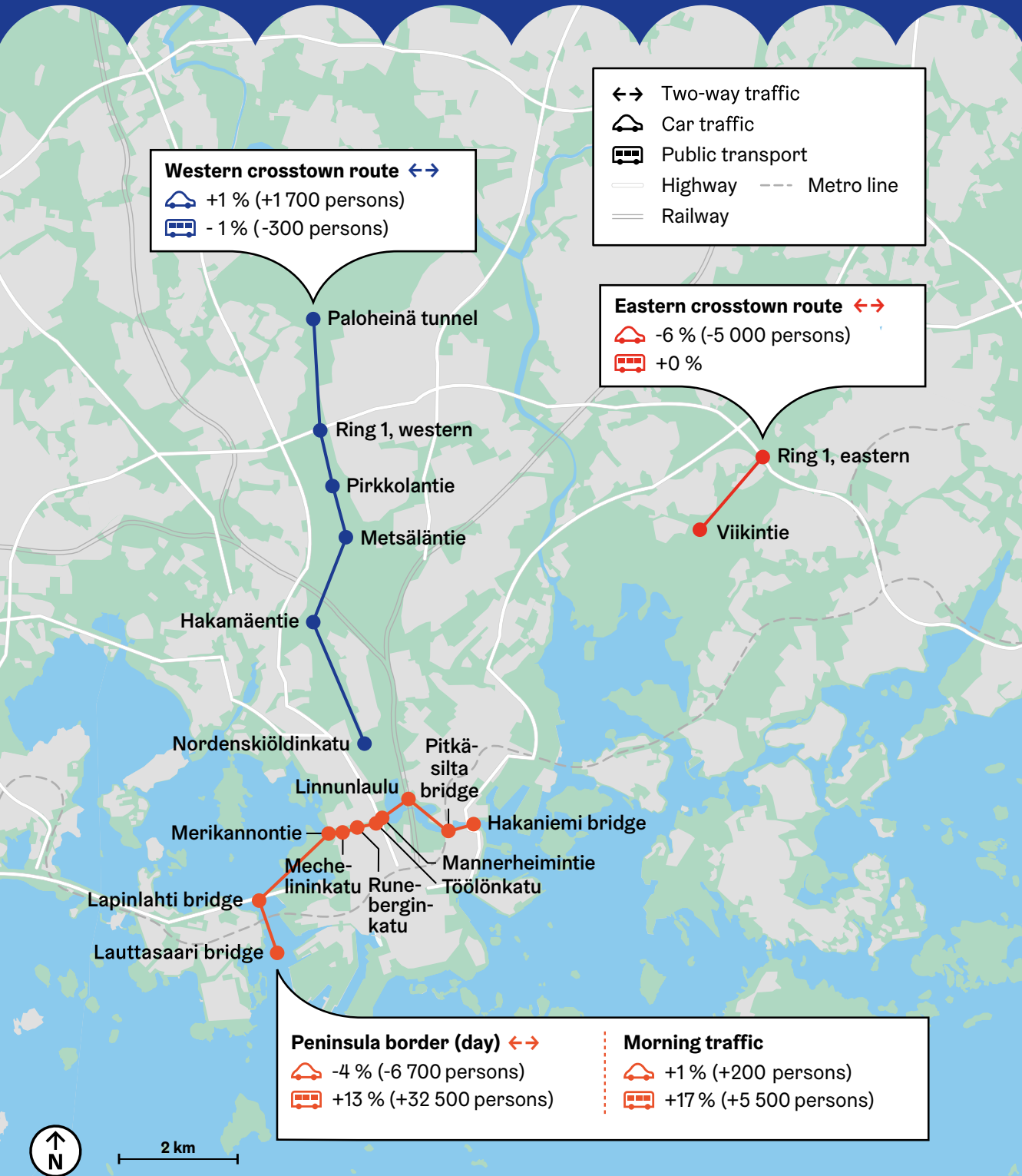
In 2023, the Carbon Neutral Helsinki 2030 Action Plan involved identifying effective measures for the transport sector and planning the impact assessment thereof.



Passenger numbers

Helsinki

Changes in the number of passengers using cars and public transport on Helsinki's calculation lines on an autumn weekday in 2022 compared to the previous year.



The density of passenger cars in traffic use decreased again

In 2023, there were 219,400 passenger cars in traffic use in Helsinki. There were 325 passenger cars per 1,000 residents in traffic use in the city in 2023, marking a 1.45 per cent decrease from the previous year. Since 2021, the population of Helsinki has increased clearly more than the number of passenger cars in traffic use, due to which the density of passenger cars in traffic use has also been declining. Potential reasons for the declining density of passenger cars include the letting up of the COVID-19 pandemic, as well as the strong increase in fuel prices and inflation since 2022. Compared to the previous year, the density of passenger cars in traffic use was 1.19 per cent lower.

On an average June weekday, the border of the Helsinki peninsula was crossed by 29,200 cyclists, which is 7.7 per cent more than in 2022.

Statistics on motor vehicle and passenger traffic numbers in 2023 were not yet available at the time of creating this report (June 2024). As an exception from the norm, map provided shows the passenger numbers of 2022 on three calculation lines. The amount of motor vehicle traffic (i.e. passenger cars, vans, lorries, trucks, buses and trams) in Helsinki in 2022 decreased from the 2021 numbers on all calculation lines, with the exception of the crosstown calculation line.

Changes in residents' transport needs and habits brought about by the COVID-19 pandemic, such as remote working becoming more common, continued to have a significant impact on the traffic numbers and mode of transport percentages in Helsinki in 2022. The traffic numbers were also affected by the indirect impacts of the war in Ukraine (e.g. increased fuel prices) and major worksites.



Eyes on the future

The population of Helsinki is growing and land use is becoming denser, making it increasingly important to control the harmful impacts of traffic. Effective measures are needed in the transport sector in order for Helsinki to be able to achieve its carbon neutrality and emissions reduction objectives for 2030. Examples of effective measures to reduce emissions include emission restriction zones and the abolishment of passenger car traffic generating climate emissions after the transition period. In addition to promoting low-emission transport, the mileage of vehicle traffic must be decreased. Key factors include land use planning, promoting sustainable modes of transport, pricing and increased services related to transport.

The City is preparing for an increasing amount of alternative fuel sources by means such as developing its distribution infrastructure. In the near future, the increase in the number of charging stations for electric cars will be expedited considerably to prevent the charging infrastructure from becoming an obstacle for the electrification of transport. In addition to the electrification of transport, other low-emission fuel sources, such as biomethane and pure hydrogen, must be taken into consideration in planning.

Helsinki will focus on developing tram traffic by planning and implementing light rail projects. In a tram network city, the urban structure grows denser particularly at tram traffic hubs.

The City Strategy highlights the importance of smart transport solutions for ensuring smooth everyday life. The urban landscape will feature increasing numbers of different electric means of transport, and logistics transports will be carried out by robots as well.



Air protection

The air quality in Helsinki has improved over the last few decades, and it is fairly good at an international level. However, street dust, exhaust fumes from traffic and small-scale wood burning continue to have adverse impacts on people's health and the pleasantness of the environment. The WHO's health-based guidelines published in 2021 are exceeded broadly.

Helsinki has been working towards better air quality for a long time now. The current City of Helsinki Air Protection Plan entered into force in 2017, and by the end of 2023, roughly 87 per cent of the 46 measures listed in the plan had been carried out. In 2023, the City prepared a new air protection and noise abatement plan for the period of 2024–2029. The new plan will be completed in the summer of 2024. It will feature roughly 40 measures to improve air quality and the soundscape.

Limit values to be tightened

The European Commission published its new Air Quality Directive proposal in the autumn of 2022. If the proposal is approved, the binding EU limit values for air pollutant concentrations will be significantly tightened in 2030. The directive is expected to be completed in 2024. The current limit values have not been exceeded in several years. It is possible that the new values, expected to be tighter than before, are exceeded in the future.

Exhaust emissions decreasing

Exhaust fume based traffic emissions have decreased clearly due to advancements in vehicle technology and the electrification of vehicles. This trend is expected to continue. Replacing the buses of Helsinki Region Transport (HSL) with lower-emission ones has played a key role in the improvement of air quality, particularly on busy street traffic routes.

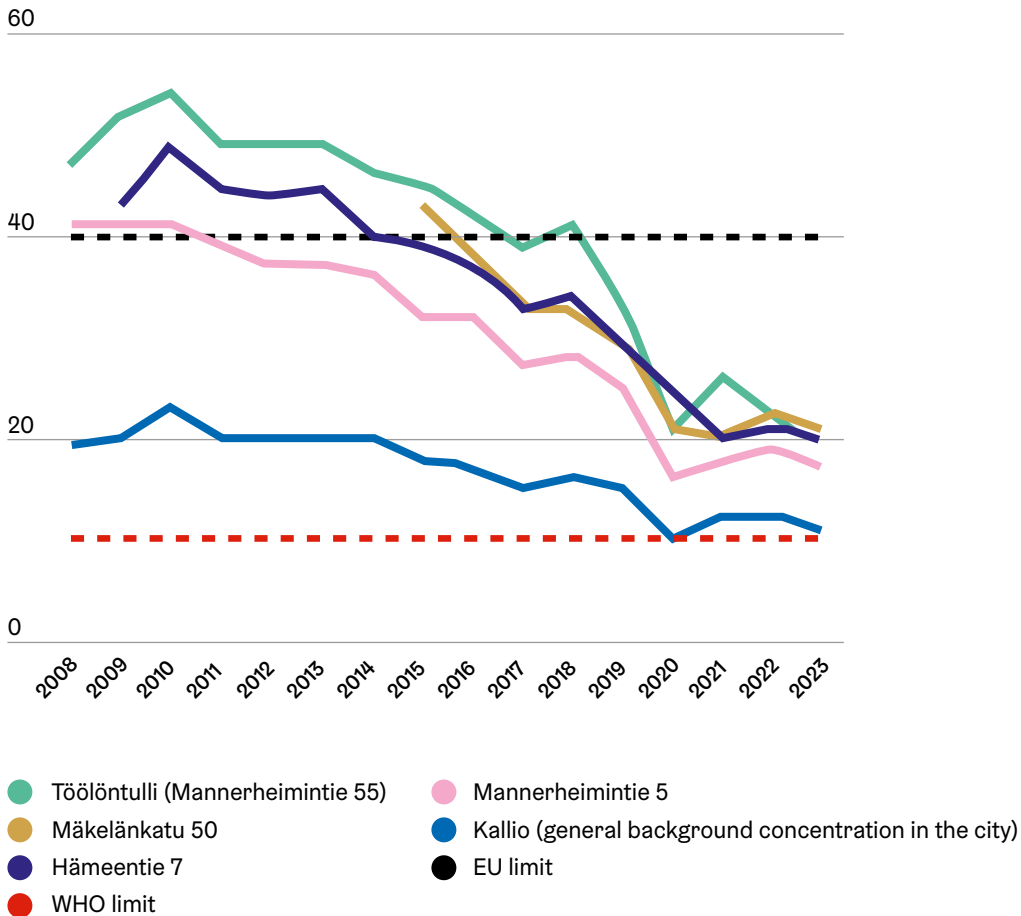
Street dust remains a challenge

In addition to direct exhaust emissions, traffic also produces street dust, i.e. inhalable particles. Very dusty days continue to occur, particularly in spring. Dustiness is significantly affected by the weather conditions in spring and street maintenance. In 2023, high air particle concentrations were measured as early as late January, but street dust levels were at their highest in March and April. Very dusty days also occurred in late autumn due to increased use of studded tyres.

For several years now, Helsinki has participated in research collaboration projects on the formation of street dust and measures to reduce it. The measures that have proven to be the most effective have been adopted in practical street maintenance. Research has shown that studded tyres cause a very considerable proportion of street dust by grinding on the pavement. Accordingly, the City has set an objective to significantly reduce the proportion of studded tyres among winter tyres. The benefits of friction tyres have been highlighted in a broad communication campaign in several autumns already. The City has been trying a ban on studded tyres in through traffic on Lönnrotinkatu since the autumn of 2022. The purpose of this trial is to monitor the impacts of the ban on aspects such as air quality and the proportions of studded tyres at large. The proportion of friction tyres has begun to increase in Helsinki in recent years.

Nitrogen dioxide (NO₂) concentrations in ambient air

Annual average nitrogen dioxide (NO₂) concentrations measured by HSY's monitoring stations and passive samplers, µg/m³.



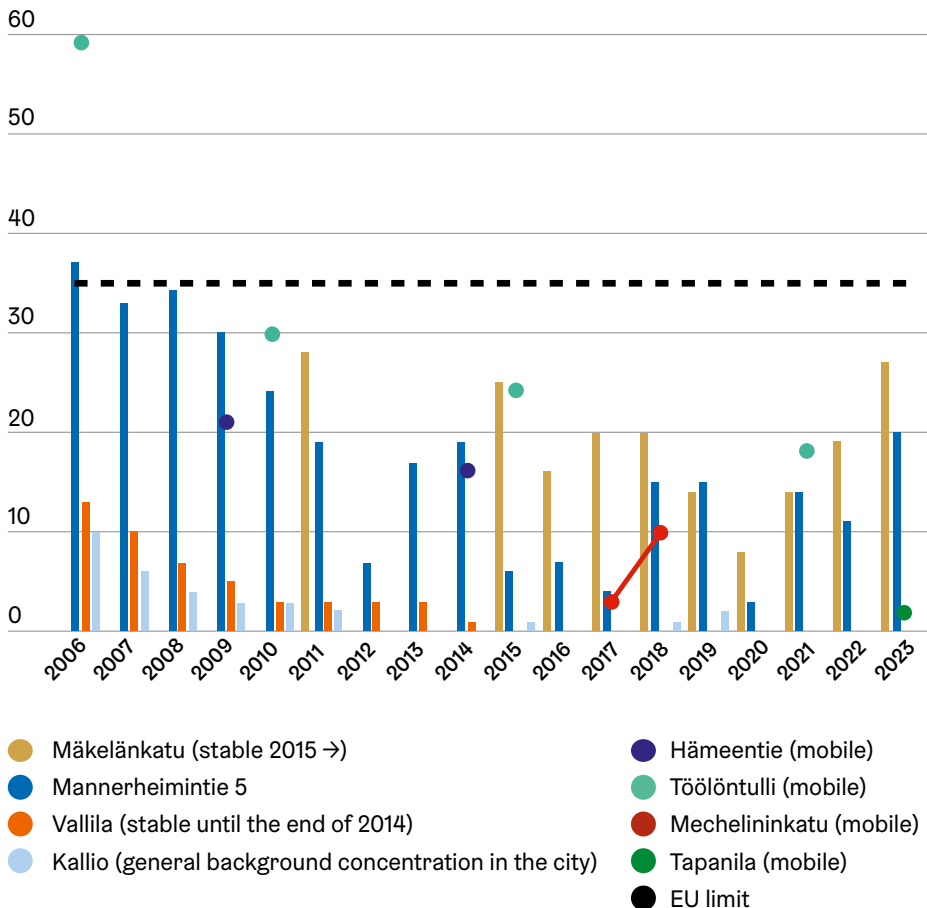
Wood burning causing adverse impacts on air quality in detached house areas

Small-scale wood burning in household fireplaces worsens air quality in detached house areas, particularly in evenings and at weekends in winter. Wood burning is not expected to decrease in the future. Helsinki

is campaigning for cleaner burning methods by communicating via social media and the City's info screens. In 2023, the City also participated in the KIUAS project to reduce sauna heater emissions, coordinated by the University of Eastern Finland.

Particulate matter (PM₁₀) concentrations in ambient air

The number of days when the limit value level (50 µg/m³) for particulate matter (PM₁₀) was exceeded in the air quality measurement stations in Helsinki. The limit value is exceeded if the number of days with PM₁₀ levels above 50 µg/m³ is more than 35/year.



Eyes on the future

The population of Helsinki is expected to continue to increase in the future, and the urban structure will also become denser at the same time. The densification of the urban structure will decrease traffic mileage, but it may lead to challenges in terms of air quality as the mixing and dilution of air pollution will also decrease. People live and spend time in a dense structure near emission sources as well.

Helsinki must already prepare in its operations for the tightening of the binding limit values set by the EU. Keeping the concentrations of street dust, i.e. inhalable particles, under the limit values will be particularly challenging. Reducing the amount of traffic-generated nitrogen dioxide and fireplace-generated small particles and benzo[a]pyrene requires efforts.

Programmes

[Helsinki Air Quality Plan 2017–2024 \(summary in English\) >>](#)

Noise abatement

The most significant source of noise in Helsinki is road traffic. Roughly 39 per cent of Helsinki residents live in areas in which the average daytime noise level of road traffic exceeds 55 dB. Six per cent of Helsinki residents are exposed to tram noise, one per cent to railway noise and slightly over one per cent to metro noise. Over the last decade, the number of residents exposed to road traffic noise has slightly increased due to new construction.

Measures to improve the soundscape

The City's work on improving the soundscape of Helsinki is steered by its Noise Abatement Action Plan, which is drawn up based on the noise mapping results for a five-year period. The preparation of a new operating plan for noise abatement began in 2023. This time, the plans for noise abatement and climate protection will be combined in an effort to achieve effectiveness and shared benefits. The plan will be completed in the summer of 2024.

When reducing harmful noise, it is essential to prevent it in advance. A healthy and pleasant living environment and sufficient noise abatement are ensured in Helsinki in land use and traffic planning. Efforts were made to reduce noise emissions from car traffic, e.g. by promoting the use of friction tyres and increasing camera surveillance of driving speeds. The proportion of friction tyres among all winter tyres has begun to increase in recent years.

The City continued its summer street trial in the city centre in 2023. Four street sections were transformed into verdant places of leisure in which pedestrians were catered to first and foremost. Noise barriers to improve the soundscape were also tried in the summer in two inner city locations. The objective of this trial was to find innovative solutions for creating quieter and more pleasant green pockets within the dense urban environment. The feedback received on the trial was positive.

Noise from tram traffic was reduced through measures such as installing new deep groove rail switches and honing and lubricating tracks. HSL's number of electric buses increased from the previous year by a hundred, with a total of 428 electric buses in operation in 2023. An onshore power connection for Vuosaari Harbour was completed in 2023. In addition to other emissions, the use of onshore power also reduces noise when vessels are moored at the harbour.

Harmful noise being prevented through planning and cooperation with authorities

The City's end time policy for outdoor concerts for 2023–2025 determines the allowable number of concerts ending after 22.00 and provides for their ending times. In 2023, a total of 24 events requiring a notification of noise were decided on and held in Helsinki. Of these, four were held in Suvilahti, three at Kansalaistori Square and in Töölönlahti Park, five at the Olympic Stadium and one in Kaisaniemi. In addition to the most common event venues, 11 events were held in other locations. A total of 125 noise notification decisions were issued in 2023.

In addition to traffic and outdoor events, harmful noise is caused by construction sites, some industrial plants, restaurants and the HVAC technology of buildings, for example. The Environmental Protection



Act provides for environmental permit, registration and notification obligations, the purpose of which is to prevent harmful noise generated from industrial plants and temporary functions. Furthermore, the environmental protection regulations of Helsinki set a notification obligation for all temporary functions causing harmful noise, as well as restrictions on nighttime noise.

The City of Helsinki's Environmental Monitoring and Supervision Unit received 158 contact requests regarding noise, and the customer service department of the Urban Environment Division received 126 pieces of feedback related to noise. In addition to the environmental protection authority, harmful noise prevention was supervised by health protection and building control authorities.

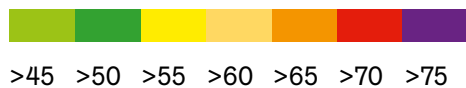
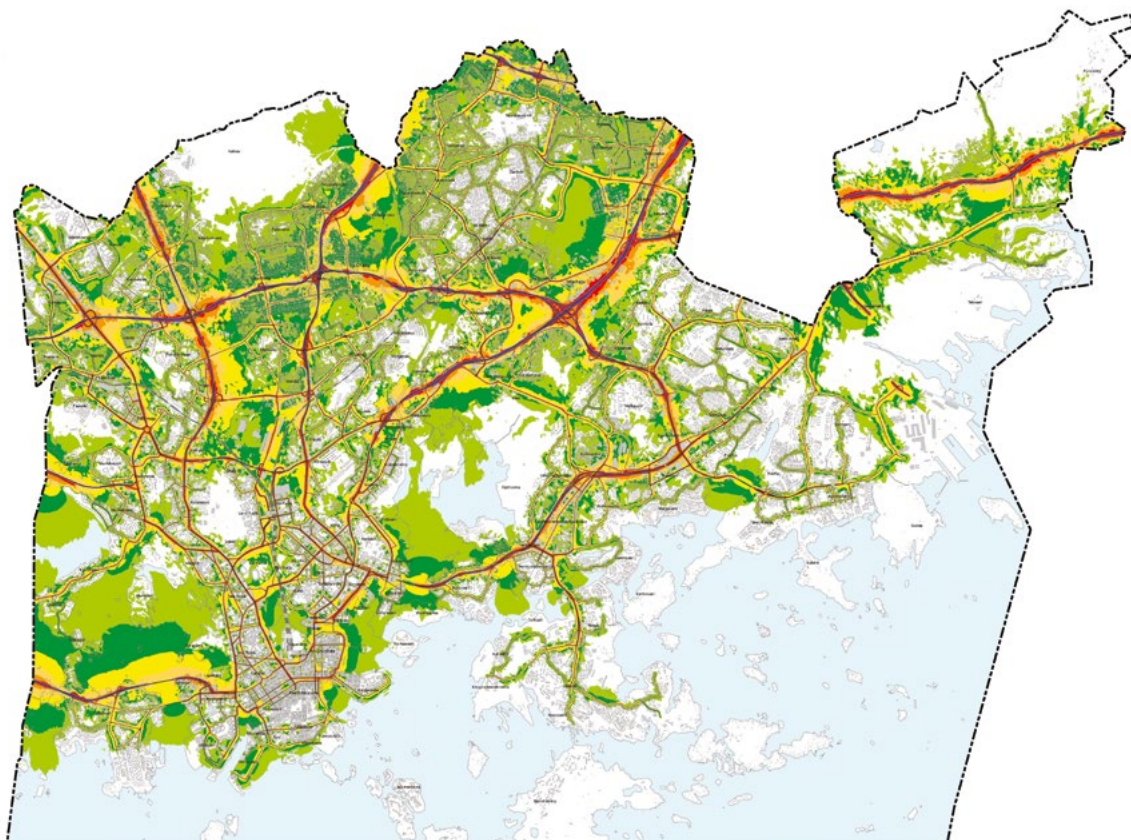


Eyes on the future

As the city grows denser, the significance of adequate noise abatement and a high-quality soundscape will increase even further. Areas and places with a peaceful and invigorating soundscape are important to residents. The large-scale electrification of traffic will reduce noise in areas with low driving speeds. The City's new air protection and noise abatement plan will be completed in the summer of 2024.



Day-time average noise level (dB)



Map: City of Helsinki Traffic Noise Mapping 2022



Procurements

The total volume of the City of Helsinki's procurements in 2023 was 4.95 billion euros, making Helsinki Finland's largest public procurer. In accordance with its Procurement Strategy, the City is committed to promoting responsibility and acting as a pioneer in environmental responsibility. Procurements are a key way to implement the City's strategy and most important action plans.

On average, the environmental criteria were used in around 70 per cent of the procurements of the City's divisions and enterprises that exceeded the threshold value in 2023 when examined as individual procurements and in 76 per cent when examined in euros. These figures have increased clearly from previous years, indicating on the one hand that the matter has become more significant and know-how has increased, and on the other hand that the procurement units' monitoring of the use of the criteria has improved. There are differences between procurement units in terms of using the criteria: for example, 100 per cent of Palvelukeskus Helsinki's procurements and nearly 100 per cent of Stara's procurements in 2023 included environmental criteria when examined in euros. For the Culture and Leisure Division, the Urban Environment Division and the City Executive Office, this figure was roughly 90 per cent. By contrast, operators such as the Social Services, Health Care and Rescue Services Division emphasised social responsibility more than environmental responsibility in many service procurements.

The most commonly used criteria were those related to reducing the environmental impacts of vehicles and machinery and those related to reducing harmful substances. Criteria related to recyclability, material efficiency and circular economy, as well as the environmental management system, were also highlighted in the responses. The responses show the impact of the Green Deals for emission-free worksites and reducing harmful substances.

Based on the procurement notices made via the Hilma public procurement notice channel in 2023, 40 per cent (30% in 2022) of the procurements of the City's divisions and enterprises promoted low-carbon operations, 27 per cent (21%) promoted circular economy and 10 per cent (8%) supported biodiversity.

Green Deals for procurements making progress

For the most part, Helsinki has made progress as scheduled in terms of the Green Deal for emission-free worksites. 238 of the infrastructure contracts of the Urban Environment Division, 25 of the contracts of the Facility Service, 18 of the contracts of Housing Production and four contracts related to the maintenance of public areas have met the criteria of the Green Deal. These contracts include ones carried out by both private service providers and Helsinki City Construction Services Stara.

In the infrastructure contracts of the Urban Environment Division, the main fuel used in machinery and heavy transport equipment is renewable HVO diesel, and since 2021, the machinery has used renewable HVO fuel oil. With regard to electric machinery, contractors have had challenges due to lacking equipment.

Even though the proportion of low-emission machinery has increased significantly, the focus has remained on increasing the use of renewable HVO diesel instead of switching to electricity. The Green Deal target of 20 per cent of machinery and transports within the worksite using elect-

ricity, biogas or nitrogen by the end of 2025 may be difficult to achieve.

The impact of the Green Deal for emission-free worksites on the worksites of major urban tramway projects will increase as different projects adopt the requirements. In 2023, the Kalasatama–Pasila project saved roughly 2,000 tonnes of greenhouse gas emissions by using renewable fuel. Of the million litres of fuel used, 98 per cent was fossil-free. The calculated emissions savings came to roughly 90 per cent. The maintenance department of Metropolitan Area Transport Ltd also increased its use of renewable fuel. In 2023, 96 per cent of the distillate fuel oil and 19 per cent of the diesel used was renewable.

Procurements in the early childhood education and care sector utilised the procurement criteria of the Green Deal to reduce harmful substances in the procurement of cleaning equipment and in the procurement of cleaning and site manager services. Criteria for furniture were also completed in 2023. The aim of these criteria is to minimise the amount of harmful substances used in daycare environments through procurement processes and thus reduce the total chemical exposure of children.

Palvelukeskus Helsinki began regular responsibility reviews

In 2022, Palvelukeskus Helsinki began carrying out regular responsibility reviews with its contracted suppliers. These reviews are now a fixed part of all of the enterprise's procurement and agreement monitoring operations. A total of 16 reviews focusing purely on responsibility were carried out in 2023. These reviews involve going through the criteria of the responsibility appendix and ensuring that the contracted supplier adheres to them.

Successes in improving the environmental responsibility of procurements

The national Public Procurement Advisory Unit (JHNY) awarded the title of the most skilful procurement of the year to

Helsinki City Construction Services Stara for its procurement of asphalt pavement work projects, which takes environmental perspectives into account effectively as a procurement criterion. The procurement process involved active dialogue with the contractors involved regarding environmental responsibility requirements. The tendering process also successfully took into account Helsinki's current City Strategy and Procurement Strategy, as well as other responsibility objectives, such as the City's carbon neutrality objective. The procurement agreements made based on the tendering process also require the contractor to receive all asphalt removed from the worksites and be allowed to use it as a recycled material within the limits allowed by asphalt norms. A significant amount of removed asphalt ended up being reused through this process.

In 2023, DigiHelsinki Oy tendered out life-cycle services for the City's ICT equipment. The procurement process took circular economy perspectives into account better than before by setting requirements for aspects such as the durability and reusability of the equipment. Tenderers were also required to have an environmental plan that indicated how the tenderer aimed to extend the service life of the equipment, promote its responsible reuse and reduce any harmful substances used in the equipment and the production chain.

In the autumn of 2023, the Urban Environment Division tendered out framework arrangements pertaining to the urban furnishings of public areas in the urban environment for 2023–2027. A separate circular economy product basket was created for the tendering process, featuring minimum criteria for aspects such as the duration of product warranties, the proportions of recycled materials used in the products, and harmful substances. Two contracted suppliers were selected for the products in the circular economy basket. Tenderers could also score points for aspects such as having an eco-label or a certified environmental management system.

The monitoring and reporting of procurements is in a flux

In 2023, the City Executive Office launched a project on a roadmap for knowledge-based management of procurements, which involved establishing background information for the potential procurement of an information system for procurement management or resource planning. The results of the project were completed towards the end of the year, and in early 2024, the procurement steering group made the decision to begin determining what functions the procurement management information system must feature. If carried out, the project will provide new tools for monitoring and reporting responsible procurements at the City level.

The carbon footprint of procurements was assessed as part of consumption-based emission calculations

In 2023, the joint Kulma project of several municipalities involved surveying the carbon footprint of Helsinki residents' consumption behaviour, now for the second time. In these calculations, the greenhouse gas emissions caused by residents' consumption were divided into five sectors: energy consumption, construction, mobility, food, and goods and services. The City also piloted a more detailed calculation process, in which the emissions caused by the City organisation's procurements were assessed as part of the 'goods and services' sector based on the City's purchase invoices.

Based on the calculations, 64 per cent of Helsinki's procurement emissions come from the 'other procurements' sub-category of consumer goods. Examples of other significant emission sources include ICT services, cleaning, property management and maintenance services, and other services. The survey indicates that further information is needed regarding the emissions caused by the City's procurements and their formation, and the calculation method itself is also in need of further development.

New projects expanded know-how regarding harmful substances, plastics and electric machinery

In 2023, the City launched several projects that focus on environmental issues that are somewhat new to Helsinki. NonHazCity 3 (2023–2025) is an Interreg-funded EU project, the objective of which is to reduce the occurrence of harmful substances in construction materials through means of procurement processes, by increasing awareness of harmful substances present in materials, and by steering material selections towards alternatives that are less harmful to the environment and health.

The Varhaiskasvatuksen tuotehankinnat ja kemikaalit (VARKE, 'Product Procurements and Chemicals in Early Childhood Education and Care') project of the Finnish Safety and Chemicals Agency (TUKES) and the Finnish Environment Institute (SYKE) surveyed what kinds of procurement practices Helsinki and other municipalities have in place in construction-related product procurement processes and how their procurement practices take into account the requirements set for products by EU chemical legislation. The project involved examining both construction materials and the product and service procurements of the early childhood education and care sector, i.e. daycare centres and schools.

The Life-funded PlastLIFE (2023–2026) project and the Interreg-funded BaltiPlast (2023–2025) project aim at reducing plastic, with procurement processes serving as one method. More information about the projects is provided in the chapters on construction and water protection of this report.

In 2023, a decision was received on the City's pilot project on electric machinery and charging solutions (2024–2025), funded in part by Business Finland. The objective of the project is to gain experiences with using large electric machinery at construction sites, and to open up the market for fully electric machinery in the heavy construction machinery segment.

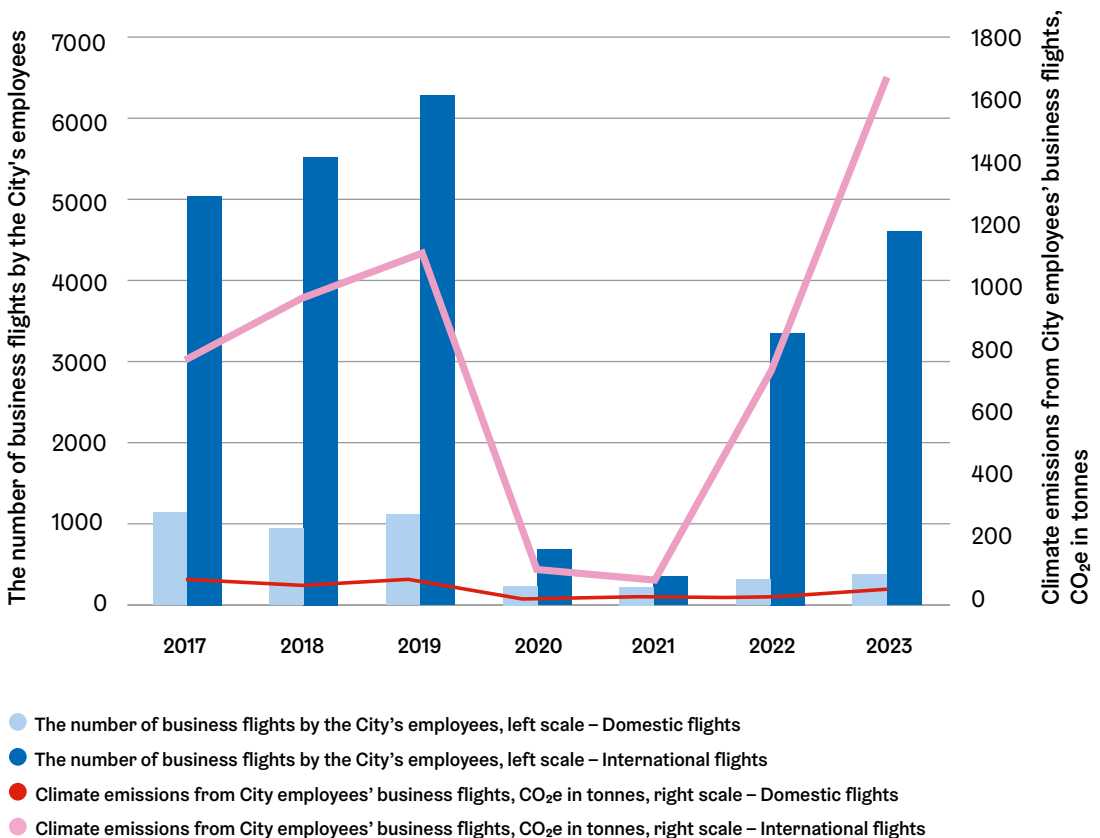
The City's partners in the project are Helsinki City Construction Services Stara, the City of Imatra, the City of Kotka and the City of Lappeenranta.

The Life-funded Towards Carbon-neutral Municipalities and Regions (Canemure) project (2018–2024) continued its work to promote climate-wise procurements.

The City staff's air travel increased from the previous year. Climate emissions from business travel doubled. The strong increase

in air travel was caused by factors such as an update to the emission factors used in the calculation process and a change in the calculation method itself. The City's travel instructions state that the carbon neutrality and low-emission perspectives need to be taken into account in all business trips.

Kaupungin työntekijöiden lentomatkat





Eyes on the future

The operations of the network-based KEINO Competence Centre for Sustainable and Innovative Public Procurement will cease in the spring of 2024. The closing of KEINO will have a substantial impact on the national responsible procurement promotion resources, and it will also reduce the amount of external support available to the City of Helsinki. The City Executive Office's project on knowledge-based management of procurements will improve the situation of monitoring and reporting responsible procurements at the City level. In 2024, Helsinki will survey its nature footprint together with several other Finnish cities. A decision will be made on assessing and monitoring the nature footprint in more detail by procurement category. In connection with the Baltic Sea Challenge, Helsinki will begin to survey methods for influencing the water responsibility of its procurements.

Programmes and strategies

[Procurement Strategy >>](#)

Circular economy

In the summer of 2023, the City Board approved updating the City's roadmap for circular and sharing economy into an action plan. The focal areas of the action plan are construction, procurements, and environmental awareness and sustainable consumption. Circular economy objectives have been set for each focal area until 2035. To achieve these objectives, the action plan features a total of 23 measures, the progress of which will be monitored in the public Kiertotalousvahti ('Circular Economy Watch') service. The City of Helsinki's Litter Control Action Plan for 2022–2025 also aims at promoting aspects such as circular economy by reducing littering and the amount of litter in the city. The action plan features a total of 17 measures, of which 24 per cent were carried out by the end of 2023.

Construction and demolition projects decreased

Construction consumes large amounts of natural resources and energy, causing significant environmental impacts. As such, it is essential to aim to preserve and maintain the existing building stock instead of new construction. The graph provided shows the volumes of new construction projects and demolished buildings in Helsinki in 2020–2023 in cubic metres of floor area. The average age of buildings demolished in Helsinki in 2020–2023 varied between 55.5 and 61.9 years. The statistics omit buildings marked as temporary. In 2023, both demolition and construction projects decreased clearly from the previous years.

The reuse of building parts was developed at pilot sites

The lifecycle project of Helsinki Vocational College and Adult Institute's Roihupelto campus involved reusing sand-lime bricks recovered from a building demolished on the plot in the construction of a wall of the technical room of a new building. At Kaarelanraitti School, a building was constructed in the yard from wood elements recovered from a demolished school building. In the tendering process for the Suutarila multi-purpose building lifecycle project, service providers had an opportunity to score quality points for their tender by reusing building

products from the building to be demolished. In the autumn of 2023, the City collaborated with its circular economy cluster to provide tenderers with workshops at which they had an opportunity to ask circular economy experts questions about reuse. All tenderers seized this opportunity, and the workshops received positive feedback.

Having begun in 2022, the Closing Loops circular economy competition for students ended in the spring of 2023, with an entry entitled Lippa selected as the winner. The competition was for a storage building, and the plan is to primarily use reused building products to construct the building. The planning process started in the autumn of 2023.

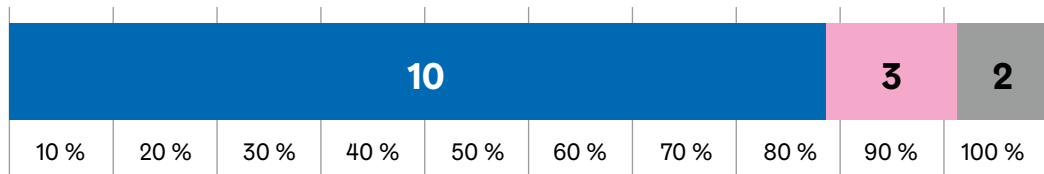
Housing Production modified the Facility Service's demolition instructions to support circular economy to suit its own projects. The instructions' requirements regarding the planning of demolition projects were used in one tendering process of the planning group in 2023. In 2023, the Facility Service continued its pilot in the Vartiokylä daycare centre and school demolition project, in which the selling of movables, fixed furnishings and equipment left in the buildings to be demolished, as well as some building products, utilised an external circular economy operator.

Oodi
kiertotaloudelle

Polkupyörän
korjausvinkit
Uusix

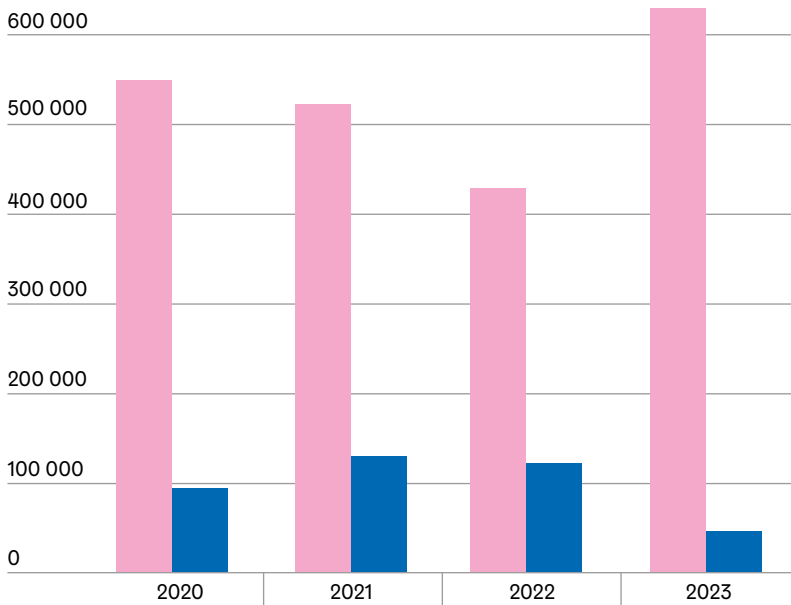
Helsinki

The status of the actions included in City of Helsinki's Action Plan for the Circular and Sharing Economy as of 25 March 2024



- On time - Implementation phase
- On time - Planning phase
- Not started

Buildings demolished and new buildings completed in 2020–2023



- Demolished buildings (k-m2)
- Completed buildings (k-m2)

Restoration of contaminated soil and reuse of earth and rock materials

The most significant cleaning projects managed by the City in 2023 were the renovation of the Røykkä Hospital area and the renovation projects carried out in the Kalasatama–Pasila and Crown Bridges tramway alliance projects. In addition to these major projects, several individual small sites were inspected and restored in 2023. All in all, soil was restored at 35 different sites.

In 2023, a total of 110,000 tonnes of contaminated soil was transferred from the City's restoration sites to be processed or disposed of, which is approximately 49 per cent less than in the previous year. The costs generated by the restoration of contaminated areas and landfill sites decreased from the previous year, coming to roughly 11.5 million euros.

Former landfill sites in Helsinki are restored pursuant to environmental protection legislation. The City has begun to plan the restoration of the Iso-Huopalahti landfill site. The construction and surface structures of the Vuosaarenhuippu landfill area utilised a total of 800,000 m³ of surplus soil, large natural stones, rock waste, and demolished concrete and bricks from infrastructure construction. The landscaping of Vuosaarenhuippu received an honourable mention in the national Municipal Engineering Achievement competition in the spring of 2023.

In 2023, a total of 790,000 tonnes of excavated earth and rock materials were used in the construction of public areas. 730,000 tonnes of rock waste and 20,000 tonnes of excavated soil generated in construction projects were utilised in sea fill projects. This reuse enabled the City to save roughly 5.7 million euros and 0.6 million litres of fuel and avoid 1,999 tonnes of CO₂ emissions. Due to a lack of sites for reusing the excavated earth materials, 160,000 tonnes of the materials were delivered to external recipients.

In 2021–2023, the City established an operating model for reusing leftover pavement materials from construction sites, as well as recycled substrates created as in-house production. In 2023, the City reused a total of 2,435 m³ of kerbstones and 840 m³ of paving stones and square stones. A total of 10,415 m³ of recycled substrates were delivered to reuse sites. One vital aspect of circular economy is the City's own recycling fields that are used to store and process masses generated in construction projects. The City is using seven recycling fields with an environmental permit, located in Hernesaari (two fields), Jätkäsaari, Nihti, Kyläsaari, Vuosaari and Kivikko.

The Kalasatama–Pasila tramway project utilised recycled gritting sand as a substrate for track vegetation, as well as recycled paving stones where available. For example, the renovation of six tram stops involved reusing 94 per cent of all stones used. This enabled the City to save more than 56 tonnes of CO₂e compared to procuring new stones. The large stones collected and stored during the excavation work of the project were placed in planting areas to achieve an interesting and more diverse look. Over the course of the year, the Kalasatama–Pasila tramway project managed to recycle all recyclable materials from the project. The recycling rate of materials excavated and demolished at the worksite was nearly 83 per cent.

The contaminated soil transported for treatment or final disposal from the City's restoration sites, as well as the costs incurred by the City from the restoration of contaminated soil and landfills in 2020–2023

	2020	2021	2022	2023
Soil, tonnes	298,800	100,100	216,320	110,000
Costs, €	24,221,000	15,785,000	15,037,000	11,500,000

Strategic raw materials were explored in procurements

In late 2023, the City commissioned a survey on the strategic raw materials contained in its procurement groups. Strategic raw materials play a key role in terms of aspects such as the green and digital transitions, and there are risks related to their availability and security of supply. The City's vehicles, vehicle charging infrastructure, solar panels, heat pumps, ICT equipment procurements (phones, tablets and computers) and robotics were selected to be covered by the survey. The survey yielded recommendations regarding how Helsinki can promote sustainable use and circular economy of strategic raw materials in its procurements.

Sustainable modes of operation were expedited through projects and communication

In 2023, Palvelukeskus Helsinki launched its Hävikkilähettiläs ('Food Waste Ambassador') concept, in which a worker of the company visits daycare centres to tell the staff and the children about food waste measures. Additionally, a total of 70 schools adopted an operating model in which the school cafeteria receives an automatic message about the number of absences reported by pupils' parents via Wilma in the morning. This facilitates last-minute adjustments to the amount of food prepared, reducing the amount of food waste generated at serving lines.

The City of Helsinki is involved in the Food Waste Ecosystem project launched in 2023

and coordinated by the City of Vantaa. The objective of the project is to create a shared network for the Helsinki Metropolitan Area with the aim of reducing food waste and improving the utilisation of surplus food.

The Education Division is taking part in the ÄLYÄ project coordinated by Haa-ga-Helia University of Applied Sciences, the aim of which is to find smart tools for promoting the reuse of furnishings. In 2023, the City also intensified the reuse of furnishings through a new storage facility and storage management system. Roughly 30 per cent of the furnishings used in the Education Division's construction or renovation projects consist of furnishings that have been previously used in the division.

In the Culture and Leisure Division, the City's libraries promote circular and sharing economy by providing borrowable materials, as well as facilities and equipment for shared use. The libraries loan various items, such as musical instruments, exercise and outdoor game equipment, tools, and energy and decibel meters. 30% of the libraries' item loans consist of one-day loans, i.e. game controllers or laptop computers used in the library.

In early 2023, Helsinki carried out a joint communication campaign about the circular economy services of the Helsinki Region Service Map with the Cities of Espoo, Vantaa and Kauniainen. The City published a bulletin and a news article about the subject and highlighted it on its social media channels.

Learn about direct circular economy measures via Kiertotalousvahti.



Eyes on the future

The City of Helsinki has taken part in the preparation process for the national Green Deal for circular economy coordinated by the Ministry of the Environment. The final Green Deal commitment will be published in early 2024, after which the City will process the matter in its different divisions and decide on whether it will take part in the commitment.

On 5 February 2024, the City Manager issued a decision on founding a steering group to promote the reuse of the City's furnishings. The group is tasked with duties such as creating a proposal for a City-wide steering and operating model for the reuse of furnishings. The group will start its operations in April 2024 and continue them until the autumn of 2025.

Programmes

[The City of Helsinki's Action Plan for the Circular and Sharing Economy >>](#)

[Litter Control Action Plan 2022–2025 >>](#)

Environmental awareness and education

Early childhood education and care and schools form the foundation for a sustainably growing city such as Helsinki, as the basis for good life is created during a person's formative years. In addition to the City's services for children and young people, its services for adults show its ambitious climate and environmental objectives. In accordance with its City Strategy, Helsinki facilitates environmentally friendlier everyday choices for its residents.

Sustainable future included in education and teaching

The Education Division continued supporting a sustainable development study path. In 2023, the Kettu – Kestävä tulevaisuus varhaiskasvatuksessa ('Sustainable Future in Early Childhood Education') model was developed further to make it suitable for basic education. The resulting model, entitled Koulu-Kettu, is intended to support sustainability education in first and second grade and will be applied as of 2024. Helsinki Vocational College and Adult Institute continued making significant investments in sustainable development. In 2023, the students of Helsinki Vocational College and Adult Institute completed a record-breaking amount of elective sustainable development studies. The Finnish Adult Education Centre provided a wide selection of courses and lectures that encouraged residents to combat climate change. Residents were provided with handicraft courses that encourage recycling, vegetarian food courses and lectures on climate change.

The Environmental Services unit continued its environmental education work concerning traffic. In 2023, the Ilmari – Climate-smart Traveller project was granted a state subsidy for mobility management. The

project involved providing fifth and sixth graders of the comprehensive schools of Helsinki with practical workshops focusing on the climate and environmental impacts of traffic, particularly those related to air quality and noise. The workshops utilised portable MegaSense air quality sensors to illustrate air quality impacts. During the project, participants brainstormed and realised a learning game entitled Ilman-suojelijat ('Air Protectors') for the Seppo game platform. The game was utilised at the autumn workshops, and it will be freely available to schools after the project period. The project reached more than 1,100 pupils through school visits. It also reached residents of different ages through events.

The City also continued its Kulkuri – kestävän liikkumisen lähettiläs ('Sustainable Mobility Ambassador') environmental education work. The work involved visits to four schools in May, during which roughly two hundred second graders took a bicycle skill course and a smart traveller orienteering course.

Lessons and materials to support environmental education

Helsinki Region Environmental Services (HSY) provided daycare centres and edu-

cational institutions with free-of-charge lessons and materials to support environmental education all year round. The education provided included indoor, outdoor and remote teaching. The lessons were implemented by HSY's cooperation partner, Environmental School Polku of Helsinki Metropolitan Area Reuse Centre.

In 2023, a total of 7,822 children and young people in Helsinki attended the environmental education lessons provided by HSY. A total of 475 hours of advisory lessons were provided. Among children aged 5–6, the most popular lessons were the Rojupöhö puppet theatre show, the 'Running tap water' outdoor adventure and the 'Let's conserve nature!' outdoor play session on circular economy. The lessons also supported the implementation of the Kettu model. The most popular lesson in the educational institutions was the Rojupöhö puppet theatre show, which focuses on reducing consumption. The next most popular lessons were the 'Recycling hour' and 'Let's study local water.'

In 2023, HSY's Twin School Programme involved three twin schools from Helsinki in the spring semester. The schools selected to the free-of-charge programme have access to an environmental educator assigned to them, teaching materials and a twin school programme that is adapted to their needs.

The City's services promoted environmental awareness among residents of all ages

Once again, Helsinki residents participated actively in taking care of the tidiness of the environment. In 2023, residents, residents' associations and schools organised a total of 189 environmental cleaning sessions, in which more than 30,000 volunteers participated. The City's Park Pal activities attracted nearly 500 volunteers to pick up litter across Helsinki.

The number of environment-themed books borrowed from libraries' 'eco-shelves' increased to 4,141 from 3,000 in the previous year. A challenge entitled Library

Encourages Activism was launched in the spring. The challenge encourages people to engage in environmental activities by means of an activist diploma. The City's libraries also held several events in cooperation with environmental associations. Helsinki City Library developed the Kettu model for a sustainable future into a light independent visit concept suitable for day-care centre groups. Kettu orienteering was highlighted at every City Library location, with the exception of Central Library Oodi.

In 2023, Stoa Cultural Centre invited East Helsinki residents of different ages to delve into themes of a sustainable future through art-based environmental education, gallery activities and community art. Local forests served as outdoor classrooms and venues for nature immersion for babies, wintertime forest adventures for preschoolers, nature art courses for school pupils, environmental empathy workshops for young people, and performative relaxation sessions for adults alike. Libraries carried out the Forest Visiting letter exchange programme at service houses, involving elderly people and children in daycare encountering each other under a forest theme. In 2023, Stoa's environment-themed courses and workshops were attended by 3,500 people, performances by 1,600 people and exhibitions by 11,700 people.

Youth Services' environmental and climate education activities were attended by nearly 36,000 young people

Of the young people taking part in the activities, the largest age group was ages 10–12 (31.7%), followed by ages 13–15 (30.4%). Of all the environmental activities provided, activities produced by young people comprised a total of 21 per cent.

Early in the year, the management of Youth Services approved the department's environmental programme for 2023–2025. The objectives of the programme are connected to the Helsinki City Strategy, the work methods listed in the general plan for

youth work, and feedback received from young people. For the first time, school camp activities led by the Environmental Youth Work Unit were provided on the Bengtsår camping island as a service package. The year also saw the completion of a hiking and camping activity project funded with COVID-19 recovery funds.

The sorting of waste generated at youth centres took a major leap forward as work to remedy the deficiencies of waste shelters began. The work to develop the ecologicality of the facilities and take responsibility into account in daily activities and procurements will continue in 2024. In the autumn, Youth Services also published a staff tutorial video focusing on environmental activities, and measures of the environmental programme were integrated into binding budget objectives. A master's thesis focusing on supporting young people's activism from the perspectives of youth workers and young activists was also completed.

Harakka Nature Centre attracted visitors to learn about the archipelago nature

Harakka Nature Centre was opened to the public in early May. A total of 41 nature study days and 56 environment study days were organised for school pupils during the 2023 operating period. Island adventure trips for daycare children were organised for 80 groups. In total, 3,374 children and young people with their teachers participated in the nature school and island adventures.

A total of 52 young people attended the Baltic Sea Camp and archipelago nature camps. A total of 58 people participated in the six environmental education courses held. On Helsinki Day, Harakka Island was used as the venue for an open nature and art event, which was visited by more than 900 people. A fish day for the whole family was attended by 180 people. 633 weekend visitors attended guided tours held by the Nature Centre.

Korkeasaari Zoo encouraged new-generation environmentalists

Korkeasaari Zoo's nature school activities continued in 2023 as contact teaching, with the exception of one remote programme. A total of 44 classes participated in nature school days. A participatory school pupil conference focusing on the snowy owl and Arctic nature was held remotely in April for upper stage comprehensive school pupils and general upper secondary school students. On Baltic Sea Day in August, Korkeasaari Zoo held an event for school pupils together with the Baltic Sea Action Group, Sealife and Keep the Archipelago Tidy Association. 550 pupils participated in Baltic Sea Day. The zoo's animal and nature themed summer camps for primary school aged children had become so popular that only 18 per cent of all applicants could be admitted. In 2023, Korkeasaari Zoo was visited by a total of 28,874 school pupils and 9,545 children in early childhood education in their respective groups.

The City's website overhaul and events promoted responsible nature activities and nature awareness

The different City divisions' contents related to nature, parks and outdoor activities were compiled onto one theme website as part of the City's website overhaul. The 'Outdoor activities, parks and nature destinations' website supports the City's sustainability and nature conservation objectives, helps residents find nature destinations and their services, and steers people towards enjoying activities in nature responsibly.

In early April, the City began providing its residents with guided nature hikes and park walks. A total of 27 nature hikes were held, attended by 1,052 people. A total of 570 people attended park walks, eight of which were held. Seven island adventures for families were held on Harakka Island at summer weekends, with a total of 662 people participating.



Ilmastoinfo provided energy advice and training

Increased energy prices kept residents highly interested in the energy-themed training courses and events provided by HSY's Ilmastoinfo ('Climate Info') service. Nearly 600 Helsinki residents attended these training courses. Ilmastoinfo held four housing company energy expert training courses, with 54 new energy experts passing the exam. Ilmastoinfo also responded to 72 energy-related advisory discussions and provided energy advice at six regional resident events. During Energy Saving Week, Ilmastoinfo's animated energy saving tips were displayed on the outdoor screen

of Helsinki Ice Hall and the screens of HSL's public transport vehicles. HSL's screens also displayed materials about adjusting to heat waves during the summer.

Two new courses were produced for the Ilmastoinfo.hsy.fi website: one focusing on electric car charging stations for housing companies and the other on solar energy communities in housing companies. A total of roughly 1,000 people participated in webinars held by Ilmastoinfo. These webinars delved into solar power in housing companies, the charging of electric cars in housing companies, and communication tools for housing company boards. Residents living in detached houses were also provided with information about renewable heat and easy energy saving measures.

Websites

[Learn about the City's nature destinations, outdoor activity opportunities and parks on the new theme website >>](#)

[Ilmastoinfo's online courses \(in Finnish\) >>](#)

Environmental risks

Climate change has been identified as one of the most significant risk areas in Helsinki Group's assessment of significant risks. Due to climate change, various extreme weather phenomena and exceptional situations will increase and create a variety of risks. For example, stormwater floods caused by torrential rains, heat waves, drought, sudden rises in the sea level caused by storms, slipperiness, changes in winter conditions, and the eutrophication of the Baltic Sea pose a significant threat to the people, buildings and infrastructure of Helsinki. There also continues to be a great risk of an oil spill in the Baltic Sea. From the City's perspective, other significant environmental risks include different fires, oil and chemical spills, soil and water contamination, deterioration of air quality, and diminishing biodiversity.

The City assesses significant risks once every council term, the last time being in 2022. However, risk monitoring and management are being constantly carried out. The risk of climate crisis mitigation and adaptation measures failing is being managed through climate change adaptation measures, particularly through risk-based preparations for extreme weather phenomena. The City is preparing for intensifying and increasing torrential rains. Planning work on preparing for heat waves and the intensification of the urban heat island phenomenon began in the autumn of 2023. More information on weather and climate risks is provided in the 'Adapting to climate change' chapter of this report.

Roughly half of the City's divisions and enterprises have determined their most significant climate risks and other environmental risks, at least to some extent. These risks are managed through a wide variety of means. The Social Services, Health Care and Rescue Services Division mitigates climate risks through adaptation measures, e.g. by resolutely reducing heat hazards in its locations and maintaining preparedness and contingency plans. The Urban Environment Division has identified climate and environmental risks as part of broader risk management and determined processes for risk management. Key risks were identified as part of the division's overall clima-

te change adaptation plan. Helsinki City Construction Services Stara has drawn up instructions for dealing with potential environmental damage. The company's environmental documentation for worksites ensures that environmental risks and other perspectives are taken into account at worksites. Extreme weather phenomena, such as storm damage and snowstorms, are also being prepared for by taking into account the sufficiency of staff resources through developing the staff's multi-expertise and mobility within the organisation.

The risk of oil spills has increased

As one of the busiest sea traffic areas in the world, the Baltic Sea is always in danger of oil spills. The war in Ukraine and the EU's economic sanctions imposed on Russia because of the war have caused major changes in oil traffic on the Baltic Sea. The risk of oil spills has increased, calling for a good level of preparedness for potential environmental damage. The Rescue Department of the City of Helsinki is well-prepared for environmental accidents at sea and in the archipelago. The Rescue Department's oil spill prevention and response plan for 2021–2025 aims to introduce stability into oil spill preparation and uphold conditions where the Rescue Department remains prepared for all situations where oil spill prevention and response is necessary.

Oil spills in Helsinki in 2019–2023

Oil spills in Helsinki	2019	2020	2021	2022	2023
In water bodies	52	25	38	43	42
In important groundwater basins	2	11	11	8	3
In other areas	329	325	316	264	232
Total	383	361	365	315	277



Environmental economy

Environmental economy includes the income, costs and investments primarily arising from environmental protection reasons. The information is presented for the parent organisation, meaning the City's divisions, enterprises and departments.

The environmental costs, including depreciations, added up to a total of 96.4 million euros (+21.3% from 2022). Growth occurred particularly in the classes of climate protection and climate and environmentally friendly transport. The environmental costs made up 1.8 per cent of the City's total operating costs, equalling 143 euros per capita. The City's largest expense items were the costs of areal sanitation and waste management (23.5%), and the promotion of climate and environmentally friendly transport (23%).

The environmental investments added up to 107.6 million euros, which was 12.6 per cent of the total capital expenditure of the City and 159 euros per capita. In 2023, the City's environmental investments increased by 3.5 per cent from the previous year. The

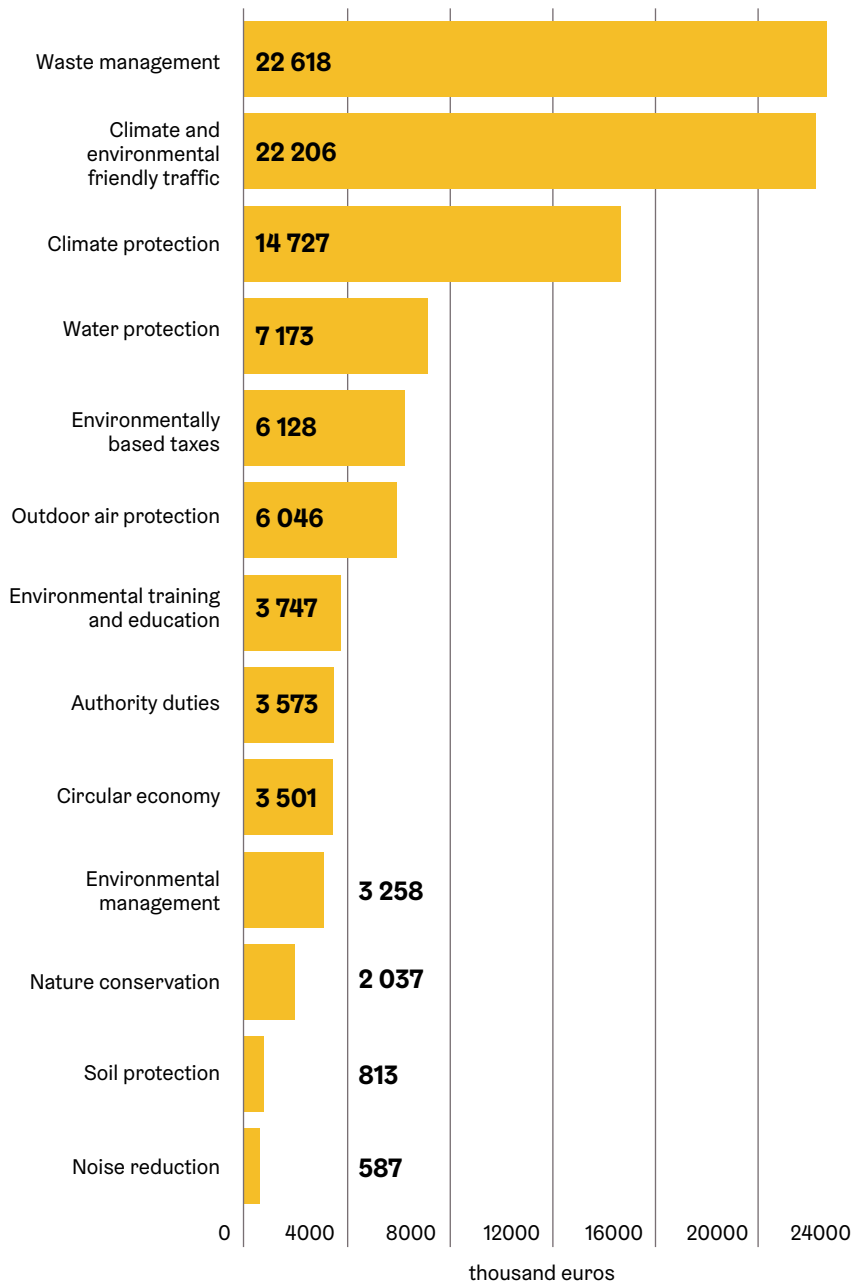
greatest investments were related to climate and environmentally friendly transport (74.7%) and the restoration of contaminated soil (10.4%).

The internal environmental income added up to EUR 3.5 million (-10.2% from 2022). The environmental income accounted for 0.3 per cent of the total operating income of the City, amounting to five euros per resident. The most significant income was generated from vehicle transfer fees in connection with street cleaning (45.3%) and circular economy (20.9%).

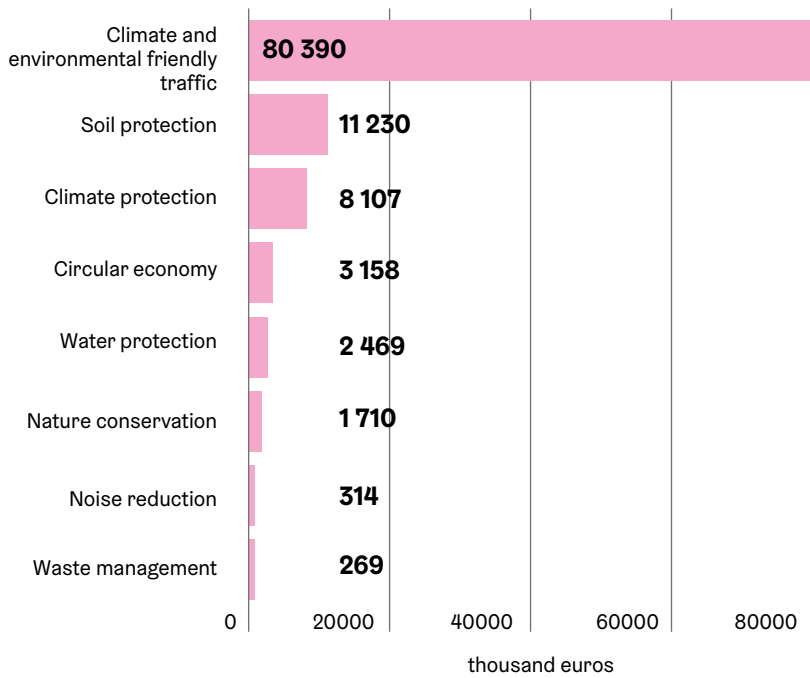
The value of environmental liabilities in the financial statements on 31 December 2022 was 22.6 million euros in total. The liabilities concerned preparing for the restoration of old landfills and decontaminating soil.



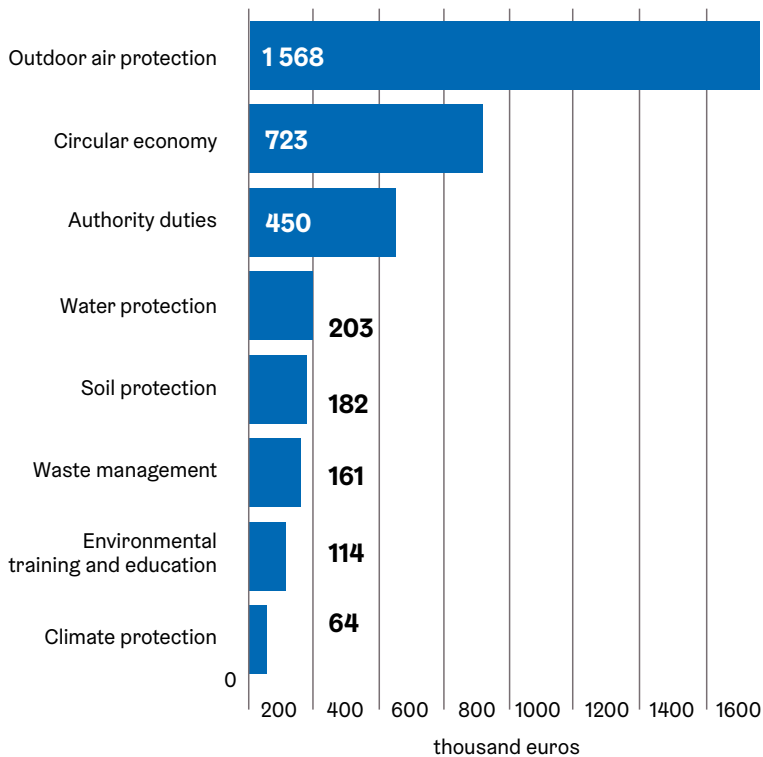
Environmental costs



Environmental investments



Environmental income



Environmental indicators

The tables below show the environmental indicators for monitoring various areas.

Indicators for environmental management and partnerships

Indicator	2022	2023	Definition
Proportion of divisions, public enterprises and subsidiary communities where environmental management is at least at the level of the lighter environmental management systems (proportion of all).	56 %	53 %	The indicator has deteriorated

Indicators for climate change mitigation

Indicator	2022	2023	Definition
Greenhouse gas emissions in the Helsinki area (kt CO ₂ e and change compared to 1990)	2,637 kt CO ₂ -ekv., -26 %	1,947 kt CO ₂ -ekv., -45 %	The indicator has improved
Greenhouse gas emissions per capita in the Helsinki area (t CO ₂ e and change compared to 1990)	4 t CO ₂ -ekv., -45 %	2.9 t CO ₂ -ekv., -60 %	The indicator has improved
Energy consumption per capita in the Helsinki area	20,645 kWh	19,871 kWh	The indicator has improved
Energy savings in the City's own operations (public buildings, vehicles, street lights), GWh and savings in proportion to target (KETS 2017–2025)	29.0 GWh, 47 % of the target	38.5 GWh, 63 % of the target	No changes in the indicator's development
Energy savings of City-owned residential buildings, GWh and savings in proportion to target (VAETS 2017–2025)	28.4 GWh, 51 % of the target	39.1 GWh, 70 % of the target	No changes in the indicator's development

Indicators for transport

Indicator	2022	2023	Definition
Proportion of sustainable modes of transport (walking, cycling, public transport, others)	81 %	80 %	The indicator has deteriorated
Greenhouse gas emissions in Helsinki traffic (kt CO ₂ e and change compared to 1990)	553 kt CO ₂ -ekv., -19 %	528 kt CO ₂ -ekv., -23 %	The indicator has improved
Proportion of electric and gas cars of the passenger car population	10,1 %	13,9 %	The indicator has improved

Indicators for air protection

Indicator	2022	2023	Definition
The annual average nitrogen dioxide concentration at the Mannerheimintie measurement station (limit value of 40 µg/m ³ , as specified in the EU directive)	18.9 µg/m ³	17.0 µg/m ³	The indicator has improved
The annual average nitrogen dioxide concentration at the Mäkelänkatu measurement station (limit value of 40 µg/m ³ , as specified in the EU directive)	22,0 µg/m ³	21,0 µg/m ³	The indicator has improved
Number of days when the limit value level of particulate matter was exceeded at the Mannerheimintie measurement station in Helsinki (EU directive: max. 35 days per year)	11 pcs/a	20 pcs/a	The indicator has deteriorated
Number of days when the limit value level of particulate matter was exceeded at the Mäkelänkatu measurement station in Helsinki (EU directive: max. 35 days per year)	19 pcs/a	27 pcs/a	The indicator has deteriorated
Annual average amount of inhalable particles (PM ₁₀) at the Kallio measurement station	9.4 µg/m ³	9.07 µg/m ³	The indicator has improved
Annual average of fine particles (PM _{2.5}) at the Kallio measurement station	5.1 µg/m ³	4.89 µg/m ³	The indicator has improved

Indicators for noise abatement

Indicator	2022	2023	Definition
Number of residents exposed to road traffic noise (over 55 dB LAeq7-22) based on the noise survey made every five years	256,541 (2022)	-	

Indicators for water protection

Indicator	2022	2023	Definition
Nitrogen emissions to the sea from Viikinmäki Wastewater Treatment Plant (t/a)	605 t/a	707 t/a	The indicator has deteriorated
Phosphorus emissions to the sea from Viikinmäki Wastewater Treatment Plant (t/a)	22 t/a	26 t/a	The indicator has deteriorated
Proportion of Helsinki's coastal waters in good condition	0 %	0 %	No changes in the indicator's development
Proportion of Helsinki's groundwater basins in good condition	80 %	80 %	No changes in the indicator's development

Indicators for nature protection and soil

Indicator	2022	2023	Definition
Share of nature reserves of total land area	4,0 %	4,4 %	The indicator has improved
Change in the number and area of nature reserves (from previous year)	+4 pcs ja +42.1 ha	+5 pcs ja +73.4 ha	The indicator has improved
Total land area of water-permeable areas in Helsinki (available every second year)	64 %	-	The indicator will next be calculated in 2024.
The area of forests and wooded areas or their relative proportion of all land areas (available every second year)	42 %	-	The indicator is calculated every second year, the next time being in 2024.
Change in the number of natural areas (compared to previous year)	The total area of nature areas in 2022 was 8,399 ha (39% of the city's land area).	(not available)	Data on the amount of nature areas in 2022 produced comparably for the first time.
Change in the number of bumblebee specimens	-61 % (from 2021)	+41 % (from 2022)	The indicator has improved. (It must be noted that annual fluctuations in insect populations are normal, and a distinct trend can only be observed in the long term.)
Change in the number of European honeybee specimens	-28 % (from 2021)	-2 % (from 2022)	No substantial change in the development of the indicator.

Indicators for procurements

Indicator	2022	2023	Definition
Proportion of environmental criteria of the City of Helsinki acquisitions	52 %	70 %	The indicator has improved

Indicators for environmental awareness

Indicator	2022	2023	Definition
Number of new eco-supporters who completed basic training (persons/a)	53 persons	62 persons	The indicator has improved
Proportion of environmentally certified Helsinki educational institutions, schools and daycare centres of all	8 %	7 %	The indicator has deteriorated

Indicators for circular economy

Indicator	2022	2023	Definition
Amount of soil masses utilised (t/a)	659,751 t	790,000 t	The indicator has improved
Number of employees who participated in circular economy training (persons/a)	202 persons	175 persons	The indicator has deteriorated

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