



## City of Helsinki

## Environmental Report 2013

[www.hel.fi/ymparistoraportti](http://www.hel.fi/ymparistoraportti)





Matti Tiri / City of Helsinki Media Bank

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## Helsinki in key figures

- At the end of 2013, the population of Helsinki was 613,114 (+1.4% from 2012).
- The city covers an area of 716 km<sup>2</sup> (214 km<sup>2</sup> of land, 501 km<sup>2</sup> of sea waters and 1 km<sup>2</sup> of inland waters).
- Helsinki produces about 5% of all Finnish carbon dioxide emissions.
- The Viikinmäki wastewater treatment plant (HSY) takes care of cleaning the wastewaters produced by approximately 800,000 people.
- At the end of 2013, the city employed 40,139 people.
- In 2013, the city's operating costs were 4,673 million euro (+2.4% from 2012).

The City of Helsinki is a significant operator in the field of environmental protection, but its activities also have notable environmental impacts. The Environmental Report of the City of Helsinki is a joint report by the city departments, describing the realisation of the city's environmental objectives and the effects of the city's operations on the environment. The Environmental Report is complemented by the background report of the Environmental Report, as well as other material produced by the administrative branches. All the materials can be found (in Finnish) at [www.hel.fi/ymparistoraportti](http://www.hel.fi/ymparistoraportti).

The city's environmental policy and strategy programme set goals for the various sectors of environmental protection. The environmental policy can be found in its entirety at [www.hel.fi/ymparistopolitiikka](http://www.hel.fi/ymparistopolitiikka), but the central objectives are also presented in this report at the beginning of each section.

All of the 29 city departments and six public utility companies have produced information for the report compiled and edited by the Environment Centre. The City of Helsinki Group also includes 11 foundations and 72 subsidiary organisations, 67 of which submitted information for the Environmental Report.

The city's environmental reporting is coordinated by a working group appointed by the Mayor, with representatives from the departments and public utility companies that have the most influence regarding the management of environmental effects.

The members of the working group are: Päivi Kippo-Edlund (Chairperson), Markus Lukin (Deputy Chairperson), Johanna af Hällström (Secretary), Marianne Annanelli, Pia Halinen, Seppo Manner, Heidi Huvila, Pålvi Holopainen, Sonja Pekkola, Perttu Pohjonen, Eeva Heckwolf, Maija Sarpo, Rauno Tolonen, Ari Piispanen, Katarina Kurenlahti, Juha Uuksulainen, Helena Suomela, Susanna Saloranta and Riikka Jääskeläinen.

Last year saw many environmental protection trends develop in a positive direction in Helsinki. For example, the total greenhouse gas emissions continued to decrease, the passenger numbers on public transport increased from the previous year and the year's waste water treatment results were exceptionally good. Some of these developments have come about as a result of the city's own measures and active participation in environmental issues. For instance, the results of the efforts to promote public transport in accordance with the city strategy can be clearly seen in the indicators included in this report.

However, these positive developments would not have been possible without the combined efforts of the city's residents. The fact that electricity consumption has begun to decrease in recent years is a clear indicator that the environmental awareness of citizens has also manifested itself in actions. Helsinki's electricity consumption has been decreasing since 2009, as measured in both total consumption and consumption per capita. In this time, electricity consumption per capita has decreased by as much as 9%.

In both climate and water protection, partnerships with interest groups, such as industry and commerce and research institutions, are key. Last year, the importance of these partnerships was underlined particularly in the expansion of the Climate Partners network and the Baltic Sea Challenge. The revision of the Baltic Sea Challenge action plan was a major step by the city and the parties that have accepted the challenge in their combined efforts towards a cleaner Baltic Sea. The networks that the city has formed and actively maintains with interest groups provide excellent opportunities to share good practices, learn new operating models and build bridges between different operating cultures.

In the discourse surrounding environmental policy, one often hears the assertion that efforts should be focused on large and substantive issues, and that tinkering with the little things should be avoided. The people who promote such notions are often of the opinion that the emissions of Finland, let alone individual cities, hardly matter in the grand scheme of things since the fate of the world will be decided in China, Russia and so-called emerging markets. However, we should keep in mind that these countries are closely monitoring what kind of environmental protection is carried out in the developed west - and they will certainly not adopt stricter policies than western countries if they cannot afford them.

This is why the countries that are relatively well off, such as ours, have a great responsibility to the future of our world, a future that we can influence, for example, through the environmental policy that we carry out. Correspondingly, here in Helsinki, we cannot pretend that the large environmental decisions made by the city, such as traffic solutions or what kind of fuels are used in energy production, are the only ones that matter. After all, no single large solution can be carried out unless it has the approval of citizens who are also willing to adopt it in their everyday lives.

As such, communicating environmental issues will become increasingly important in the future. This communication cannot be left only to communication departments; the management of organisations must also do their part. Good communication is an essential part of all the city's activity.



Pekka Sauri / Helsingin kaupungin alieupseeri

However, the communication of environmental issues and climate issues in particular is not always easy since the environmental impacts of large investments, for example, may not concretise until the end of their lifecycle. In addition to direct environmental impacts, projects may, as a result of long and global subcontracting chains, also have significant indirect environmental impacts that hardly affect the everyday lives of the citizens of Helsinki.

The greatest decisions regarding the city's environmental policy over the coming years have to do with Helsingin Energia's development programme, making the city structure denser in accordance with the new master plan, and large traffic solutions, such as the fate of congestion charges. In addition, we must be mindful of the fact that accelerating climate change is already a reality, and that adaptation to it must be taken into account in the city's operations, and especially in the development of the city's infrastructure.

In order for Helsinki to remain an environmentally wise green economy city in accordance with the city strategy, the socio-economic impacts of these decisions must be thoroughly assessed. These assessments must also consider the social and ethical impacts of the decisions and the effects they will have on the everyday lives of the citizens of a sustainable Helsinki of the future.

**Pekka Sauri**  
*Deputy Mayor*

# Environmental management and partnerships

## A strategy programme complemented by an environmental policy

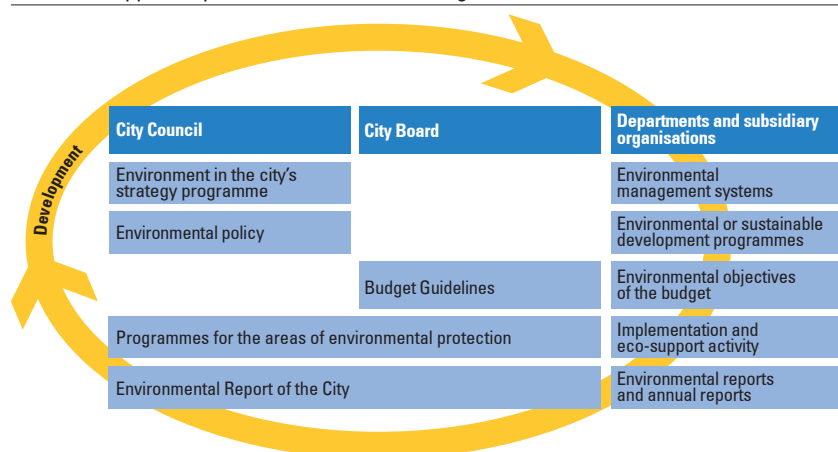
In accordance with ethical principles, Helsinki is an internationally proactive, developing and knowledgeable operator that takes global responsibility locally. This is achieved by, for example, promoting financial, social and environmentally considerate development and by taking responsibility for combating climate change. An ecological approach is one of the six values of the city. The environmental policy definitions included in the city's strategy programme have to do with green economy, climate change mitigation and adaptation, saving energy, energy and resource efficiency, the promotion of public transportation, the environmental aspects of procurement, and water and nature protection.

The environmental policy sets tangible and quantitative goals for the various sectors of environmental protection, for both the long term (2050) and the medium term (2020). This Environmental Report reports on the realisation of the environmental policy in 2013.

## Environmental management in administrative branches and subsidiaries

Environmental management has already been highly integrated into the operations of several administrative branches. The ISO 14001 environmental management system is currently used by the Port of Helsinki, Palmia and the power plants, heating plants and district heating operations of Helsingin Energia, while the Environment Centre and four libraries of the Helsinki City Library use the EcoCompass system. The Public Works Department, Stara, the City Library and a section of the Sports Department are currently in the process of building the EcoCompass system, whilst several other administrative branches are also planning to start building their environmental systems over the coming years. Helsingin En-

**Figure 1: The observance of environmental issues in Helsinki is governed by the strategy programme and the environmental policy approved by the City Council, as well as the budget guidelines approved by the City Board.** The city also has several programmes for a number of sectors in the field of environmental protection, all contributing to the environmental management of the city. The environmental programmes of the administrative branches support city-level environmental management.



ergia and the administration of the Education Department use the WWF Green Office system, and some schools and day care centres use the Green Flag system or have an environmental certificate issued by the OKKA Foundation. 18 administrative branches have their own environmental programmes, and environmental issues are linked to the bonus schemes of 12 administrative branches.

The city's budget for 2013 included 17 binding functional environmental objectives, of which 15 were fully met and one was partially met. The objectives that were met were related to the level of street dust, refuse collection and disposal from public areas, digging, the management of the surplus landmasses from the construction of streets and park areas, the replanting of avenues, promoting the diversity of urban nature, the development and monitoring of fishery, infill development, the share of public transportation, energy savings, as well as the reliability and customer satisfaction of rail traffic. The partially met objective was related to the customer satisfaction of tram and met-

ro traffic; this objective was not met in regards to metro traffic. The objective related to the share of public transport in cross-sectional traffic was not met.

The environmental work of subsidiary organisations has clearly developed over the past years. The ISO 14001 system is in use in three subsidiary organisations and the EcoCompass system is currently used or being built in 11 subsidiary organisations. Many subsidiary organisations are planning the implementation of an environmental system over the coming years.

## The power of cooperation

Environmental management in the City of Helsinki is often carried out through eco-supporters, since eco-support operations create an environmentally responsible operating culture, and bring the environmental strategies and objectives of the city into tangible actions. By the end of 2013, a total of 1,077 eco-supporters had been trained for the city's administrative branches and subsidiary organisations. During the year, eco-support activities were further developed and a partnership was established with the Association of Finnish Local and Regional Authorities for marketing eco-support activity to other municipalities. Currently, eco-support activity is carried out in accordance with the Helsinki model in 22 municipalities and in the Uusimaa Centre for Economic Development, Transport and the Environment.

The city actively engages in and constantly develops cooperation with interest groups. The city has, for example, tested new methods of participation. Some good examples of this include group construction and the growing bags of the environmental association Dodo ry in front of the Wholesale Market garden and Kalasatama. Cooperation with companies has also increased over recent years (for example, Climate Partners).

### Environmental policy 2020 Environmental management

- Public utilities will have implemented a certified environmental system
- City departments and subsidiaries will include environmental management in their operations in accordance with the principles of less formal environmental systems
- Environmental management will become a part of the bonus schemes and other reward systems used by departments and public utilities

### Environmental policy 2020 Partnerships

- The city will actively seek partnerships and network with companies and other interest groups in order to reach the objectives set out in its environmental policy while simultaneously supporting the implementation of the city's business strategy
- The EcoCompass system will become a well-known tool for improving environmental management among SMEs, and it will become available to all SMEs operating in the Helsinki metropolitan area
- The Baltic Sea Challenge has been delivered to 300 operators, who the city will encourage in order to implement high-quality operating plans that enhance the conservation of the Baltic Sea
- An environmental programme and plan will be drawn up for all major events organised in the city



## Emission targets within reach

A report on the measures for reaching the city's 2020 climate objectives and their cost effects was completed in spring 2014. At the same time, the city's emission paths were assessed up to 2050 (Figure 2). The conclusion is that by 2020, Helsinki's emissions will decrease by 24% without any additional measures by the city. However, the realisation of Helsingin Energia's development programme could reduce emissions by up to 40% by 2020, compared to 1990. The 18 additional measures chosen for the report will not produce rapid effects by 2020, but they are cost-effective and worth implementing. The best way to meet the objective of making the city carbon-neutral by 2050 is to implement both the additional measures and the development programme, after which the share of carbon dioxide to be compensated would be only 10%.

## Climate work assessed

In early 2013, a peer assessment was carried out between Helsinki, Turku and Lahti. The assessment reviewed the climate policies of the cities and the management of run-off waters as part of their adaptation to climate change. The assessment was part of the Climate-proof city – tools for

planning (ILKKA) project coordinated by the Environment Centre. The peer assessment revealed, among other things, that in Helsinki, measures are already widely being realised in different sectors and that Helsinki has better resources for implementing climate measures than the other cities. However, these measures are partly inconsistent with each other and there is no clear coordination responsibility. The assessment proposed the drafting of a roadmap for comprehensive mitigation and adaptation and called for the more effective involvement of interest groups.

## The greenhouse gas emissions of the metropolitan area have decreased by 21% from 1990

In 2013, the total greenhouse gas emissions produced by the citizens, services and industry of Helsinki were 3% lower than in 2012 and already 21% lower than in 1990. 46% of the greenhouse gas emissions were generated by district heating, 23% by traffic, 20% by consumer electricity consumption and 8% by oil and electric heating. The emissions of all key greenhouse gas generating sectors were reduced compared to the previous year. Figure 3 shows the impacts of different factors on emission reduction from 1990 onwards.



City of Helsinki Media Bank

**Table 1: The climate and energy objectives of the City of Helsinki, and their realisation in 2013.**

OBJECTIVE	REALISATION 2013
<b>Greenhouse gas emissions</b>	
Carbon-neutral Helsinki 2050	-21 %
Carbon dioxide emissions from the Helsinki region -30% (1990-2020)	
Emissions from energy production -20% (1990-2020)	-4 %
<b>Renewable energy</b>	
Renewable energy will account for at least 20% of the total energy production in the Helsinki region in 2020	7 %
Renewable energy sources in the electricity and heating production by Helsingin Energia will account for approximately 20% by 2020	7 %
<b>Energy-efficiency</b>	
The energy-efficiency in the Helsinki region has improved by 20 % (2005–2020, per capita)	10 %
Energy savings in the city's operations amount to 129 GWh (9%) (KETS 2005-2016)	86.34 GWh (66.9% of the objective) With the early actions (before 2008): 141 GWh (109% of the objective).
Residential buildings: 49.9 GWh (7%) 2010–2016	23.66 GWh (47.4% of the objective).
Energy savings by the city's city departments 2% (2010-2012)	total consumption -4.8%, specific consumption -2.4% (public service buildings)

### Environmental policy 2050

#### Climate protection

- Helsinki aims to become a carbon-neutral city by 2050. The realisation of this objective will be monitored through regular reports at set intervals, on the basis of which the operating plan can be amended as needed.
- Helsinki is a top-tier operator in energy-efficiency, climate change control and adaptation both nationally and internationally.

### Environmental policy 2020

#### Climate protection

- Greenhouse gas emissions (consumption-based) will have decreased by at least 20% by 2020 due to improved energy-efficiency and a switch to energy production with low lifecycle emissions (reference year 1999). The goal was raised to 30% in the strategy programme.
- Renewable energy will account for at least 20% of the total energy production in 2020.
- Energy-efficiency will have improved by at least 20% by 2020 (measured by energy consumption per capita, reference year 2005)

# Climate protection



Jukka-Pekka Mänttö / City of Helsinki Media Bank

**The website  
[www.stadinilmasto.fi](http://www.stadinilmasto.fi)  
provides up-to-date  
information about the  
climate measures of  
Helsinki.**

Several electric energy saving measures have been carried out in the Pirkkola Ball Hall premises between 2010 and 2012. Technical changes and system optimisation have been carried out at the site, but the actions of the staff have also been significant. During 2010–2012, the site's energy consumption decreased by an average of 5% annually. Since 2009, over 600,000 kWh of energy has been saved in Pirkkola. In total, this adds up to savings of 60,000 euro.

## Energy production emissions falling

In total, the carbon dioxide emissions resulting from energy production owned by Helsingin Energia were reduced by some 5% in 2013, and the specific emissions of energy production were at an all time low of 240 g CO<sub>2</sub>/kWh. This reduction was due to the high share of energy-efficient cogeneration in the production of district heating and warmer weather compared to the previous year, as a result of which the use of natural gas and coal was reduced in the production of district heating. In 2013, the share of renewable energy in Helsingin Energia's procurement of electricity, district heat, and district cooling increased to a new record high of 7%, thanks to the procurement of a new hydropower share.

## Electricity consumption in a historical decline

The total energy consumption of Helsinki was approximately 14,300 GWh in 2013, a reduction of 2% from the previous year. The total electricity consumption of the Helsinki metropolitan area has continued its decline for five years now, making this the longest decline in the city's history. Electricity consumption per capita has already decreased by as much as 9% from 2009. The reason behind this historical decline in energy consumption is the significant improvement of energy efficiency in, for example, lighting.

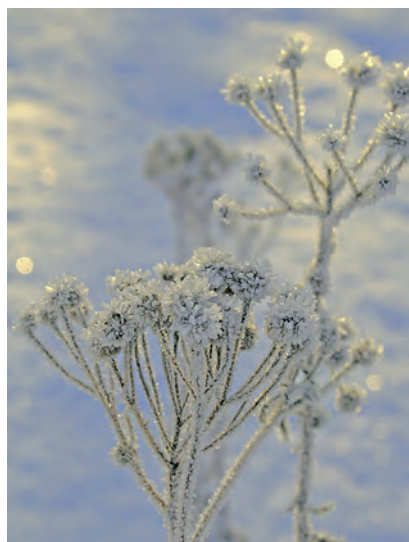
The consumption of district heating reduced by some 4.5% compared to the previous year due to warmer weather. Compared to 2005, the weather-adjusted total consumption of district heating has decreased by 3% and the per capita consumption of district heating by 10%.

The energy-efficiency of Helsinki's new residential buildings has significantly improved over the last four years, as a result of which the share of A-rated buildings has risen from 21% to 68%.

## City organisations accelerated their climate measures

The city's construction service Stara has decided to pursue carbon neutrality by as early as 2030, 20 years earlier than required by the city-wide objective. Stara also implemented the EcoCompass Environmental system, which supports and monitors the realisation of set environmental objectives. The Environment Centre already set the objective of becoming carbon neutral by 2015 a few years ago.

## Carbon neutral Environment Centre and Stara!

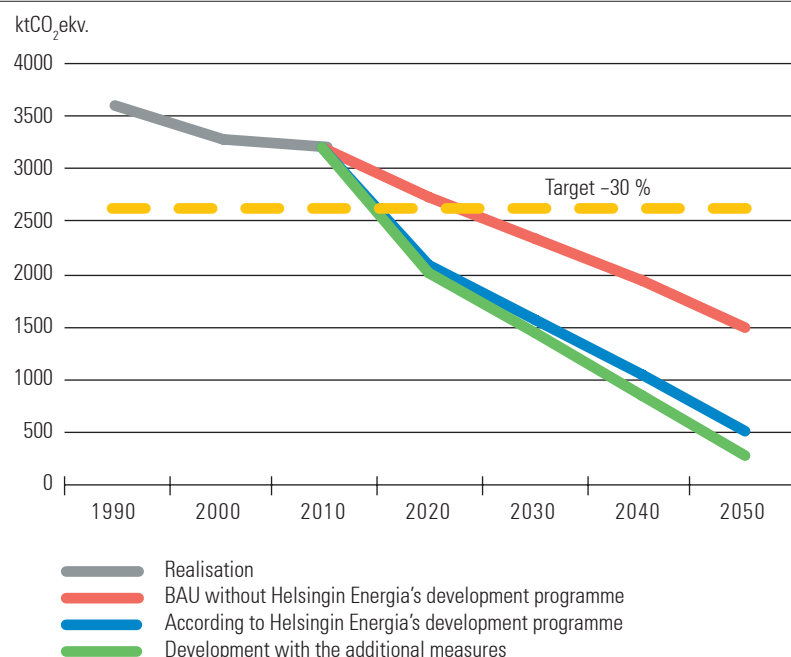


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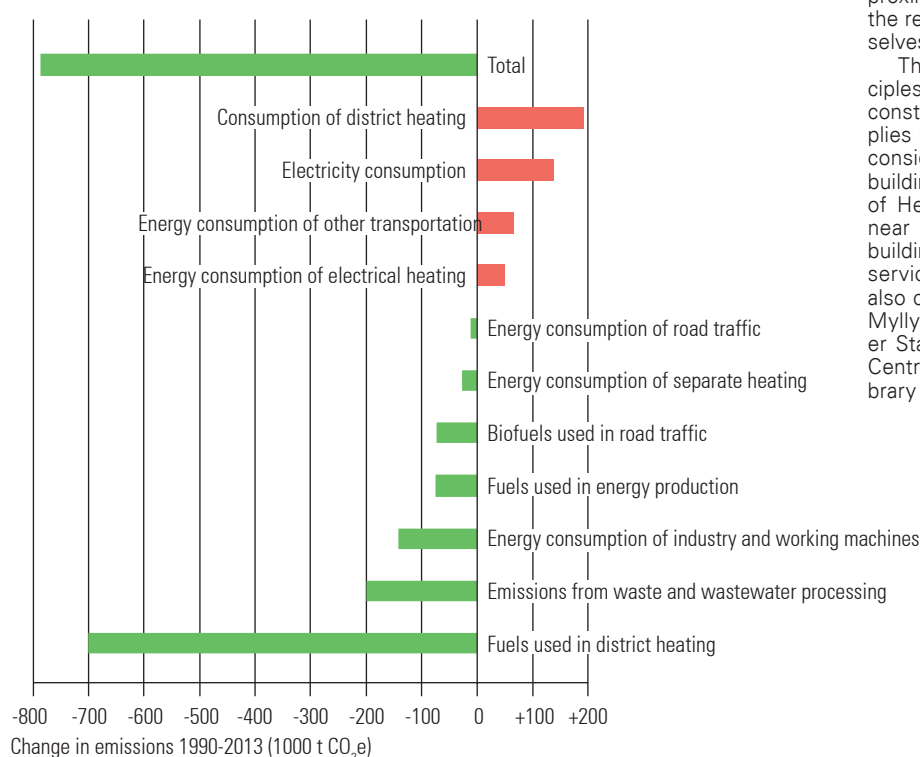


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**Figure 2. The emissions development of the metropolitan area by decade from 1990 to 2010, estimates for future development according to the BAU, and reduction potential with the implementation of the Helsingin Energia development programme and the 18 additional measures.** Source: Environment Centre



**Figure 3. Factors that have reduced and increased greenhouse gas emissions in Helsinki during the period of 1990–2013.** Source: Environment Centre



## Energy saving in many ways

The 50/50 project was launched in Helsinki during the 2013 national energy saving week, and its goal is to achieve at least 8% savings in schools compared to previous consumption levels. Energy consumption will be primarily reduced through increasing awareness and changing attitudes and consumption behaviour. Based on the 50/50 method, the schools will directly receive back half of the monetary savings they achieve during the energy saving project. The schools can freely decide on how to use these savings.

Palmia Catering has developed a good method for saving energy in its own operations: two lunch restaurants have given up the use of trays, salad plates or both and have thus reduced the need for washing dishes. In one of the restaurants, it was calculated that this new method resulted in a 15% reduction in energy consumption. The method also saves water and dish-washing liquid.

Properties owned by the city are systematically reviewed in order to discover cost-effective energy-saving opportunities. By the end of 2013, a property energy audit had been carried out at least once in 84% of the public city facilities (measured by cubic content). Most of the energy saving measures proposed by the audits were related to building maintenance or use, and approximately half of the measures have so far been carried out. If all the measures proposed in the energy audits carried out in properties owned by the city in 2013 (18 audits) were to be carried out, they would result in annual savings of approximately 460,000 euro, meaning that the required investments would pay themselves back in approximately three years.

The City of Helsinki observes the principles of low-energy building design in the construction of new buildings and also applies low-energy directives in renovations, considering the special features of each building. In 2013, the first draft of the City of Helsinki's general instructions for the near zero-energy building of new public buildings was completed. Five low-energy service building sites (renovations) were also completed: Day Care Centre Kumina, Myllypuro Comprehensive School, Lower Stage and Day Care Centre, Day Care Centres Nalle and Keula, the Roihuvuori Library and the Porolahti Dental Clinic.



# Air protection



Sampo Laakso / City of Helsinki Media Bank

## Traffic development

In the autumn of 2013, the amount of traffic within the Helsinki main street network was 1-3% lower than in 2012. However, traffic amounts have continued to increase in the long term. When adding up all the monitoring lines of the city, the amount of traffic in 2013 was 12% higher than 20 years ago. City border traffic has increased by more than a third in this time. The amount of traffic on the peninsula and in the inner city is expected to increase as new residential and workplace areas are constructed.

According to the Helsinki strategy programme 2013–2016, the city structure will be condensed along good public transport connections and sustainable mobility will be promoted. The Helsinki transportation development programme completed in 2013 concretises objectives related to traffic and transportation.

The new Helsinki Region Transport System Plan (HLJ) was jointly prepared by 14 municipalities, in close cooperation with the preparation of the Helsinki Region Land-use Plan (MASU). The HLJ 2015 draft is expected to be completed in 2014.

## Environmental policy 2050

### Air protection

- Traffic emissions will not degrade air quality (road traffic will be almost free of emissions)
- The number of days when the daily limit value for the amount of particulate matter ( $PM_{10}$ ) is exceeded will have at least halved compared to the current permissible level (35 days/year) to 18 days/year. Cases where the limit is clearly exceeded due to long-range transportation will be excluded.
- The transportation and use of renewable energy will not degrade air quality (biofuels, biomass and small-scale combustion).

## Environmental policy 2020

### Air protection

- The limit values for air quality will not be exceeded after 2015. The level of air impurities (including fine particles) will continue to decrease after this
- The target values and national reference values for air quality will not be exceeded

The development of city logistics began in Helsinki. The aim is to promote the operational preconditions of companies and, at the same time, reduce the negative environmental impact of distribution, collection and customer traffic. In accordance with the city's new parking policy, the pricing of parking will move towards the User pays principle. The price of parking within the inner city will be increased in stages. A parking benefit of 50% continued to be offered for low emission vehicles.

## Sustainable mobility promoted in the city's administrative branches

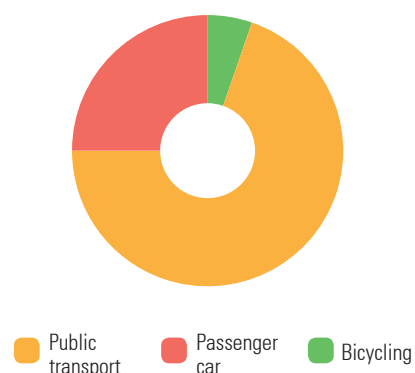
A total of 300 city employees took part in the economic driving course. Several administrative branches prepared mobility plans or incorporated mobility issues into their environmental plans.

Several administrative branches use the services of a car sharing company and almost the entire personnel of the city can make use of employer-subsidized commuter tickets and/or employment relationship tickets. The Port of Helsinki promotes bicycling among its staff by offering company bicycles to employees. Telecommuting is promoted in several units with the increase of telecommuting agreements and opportunities for teleconferencing.

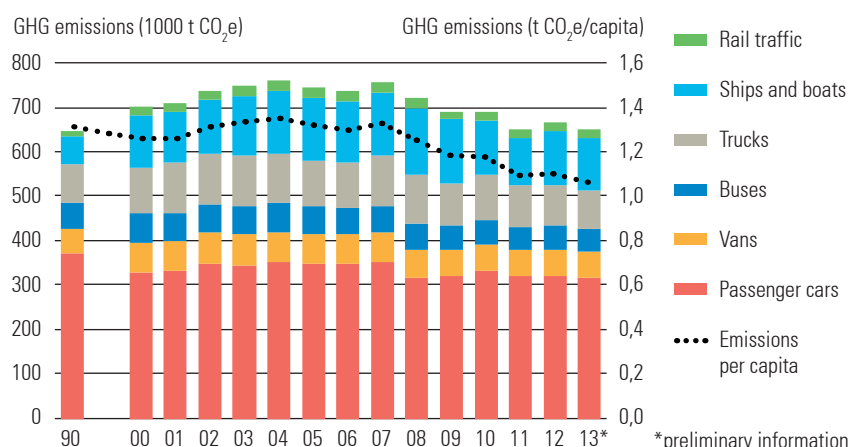
The city has adopted more low emission vehicles, requirements have been set regarding the initial sale year of delivery and worksite vehicles and some administrative branches have procured electric cars. Deliveries and drives have been reduced by combining deliveries, ordering larger batches of goods at a time, planning routes and monitoring the distances driven and fuel consumed. The assessment of the environmental impact of deliveries will continue, with the aim of reducing the negative environmental impact of the city's vehicles and delivery services.

Baana received an honorary mention in the European Prize for Urban Public Space competition, which had 274 projects competing from nearly 200 cities. The grounds for the honorary mention were Baana's ability to connect city districts and create new, non-commercial city space, which has been adopted by many different types of users. The development process, which was a cooperative effort between the city and citizens, as well as university students, was also praised.

**Figure 4. The distribution of the methods of transportation in Helsinki (cycling, public transport and passenger cars). Source: City Planning Department.** The measures enacted in order to increase bicycling have paid off: cycling in June-August increased by 6 - 21% between different monitoring lines from 2012. The report on the benefits and costs of bicycling, which was completed in January 2013, showed that the benefit-cost ratio of bicycling investments is almost as high as 8, meaning that one euro invested in bicycling yields benefits worth 8 euro. **For the first time in 50 years, travel by public transport is growing faster than travel by car in the Helsinki region!**

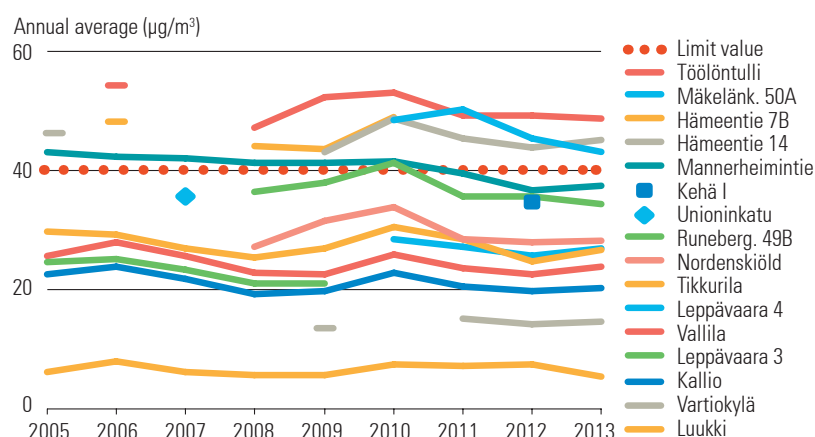


**Figure 5. CO<sub>2</sub> emissions of different modes of transportation in Helsinki in 1990 and 2000–2013. Transportation excluding flight traffic. Source: HSY**

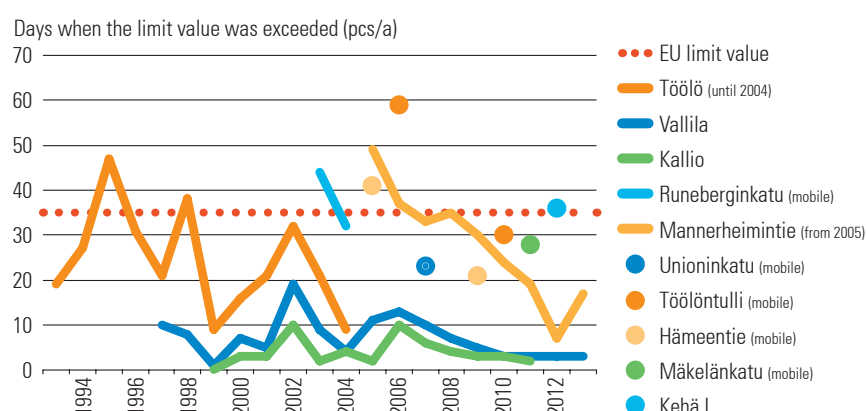




**Figure 6. Annual average nitrogen dioxide (NO<sub>2</sub>) concentrations measured by HSY's monitoring stations and passive samplers in 2005–2013. Source: HSY**



**Figure 7. The number of days when the limit value (50 microgrammes/m<sup>3</sup>) for particulate matter (PM<sub>10</sub>) was exceeded in the air quality measurement stations in Helsinki in 1993–2013. Source: HSY**



## Effects of traffic on air quality

In Helsinki, air quality is reduced most of all by emissions from car traffic, since these emissions are discharged close to breathing height. Traffic emissions are at their highest in busy areas during peak hours. These areas also typically have a large number of pedestrians, which increases exposure.

## Annual limit value for nitrogen dioxide continues to be exceeded

The annual limit value for nitrogen dioxide (40 µg/m<sup>3</sup>) was supposed to be reached by 1 January 2010, but it is still being exceeded in the city centre's traffic street routes due to emissions from traffic and the increasing share of diesel vehicles. At the Mannerheimintie monitoring station, the nitrogen dioxide limit value has not been exceeded since 2010. However, there are several traffic street routes in the inner city

where the air quality is lower than around the Mannerheimintie monitoring station, and passive sampler measurements carried out by HSY indicate that the limit value is still being exceeded in several busy street traffic routes. In 2013, the annual concentrations measured in these busy street traffic routes varied between 43 and 49 µg/m<sup>3</sup> (annual limit value 40 µg/m<sup>3</sup>). The concentrations have not been significantly reduced in recent years (Figure 6).

Helsinki has been granted a continuation until 1st January 2015 towards reaching the EU's annual limit value for nitrogen dioxide. However, the new residential areas being built in the city centre will cause pressure to increase traffic in the inner city, where the amount of traffic has remained constant for some three decades. If the amount of traffic increases as forecast, it is likely that the limit value for nitrogen dioxide will be exceeded again in 2015. Measures for reaching the annual limit value as soon as possible are currently being considered in cooperation with HSY and HSL.

The Helsinki region was deemed the best public

transport city in the world for the fourth year running in the international BEST survey.

According to the survey, 77% of the respondents were satisfied with the region's public transport services.

## Street dust concentrations successfully reduced

Efforts to combat street dust in recent years have paid off: street dust concentrations have not exceeded the limit value in the monitoring stations detailed below since 2006. However, in 2012 the limit value was exceeded at the Kehä I monitoring station, where the number of times the limit value was exceeded was 36. The maximum number allowed is 35 (Figure 7). It should be noted, however, that this measurement station was not an official limit value monitoring station. Instead, the measurements taken by the station were supposed to collect information on what kind of concentrations are found in the immediate vicinity of the road.

Despite reductions, street dust continues to deteriorate air quality, and, particularly in the spring time, the air quality limit values have almost been exceeded in the busy street routes within the inner city. In 2013, the development of practices for combating street dust continued as part of the Redust project, which is funded by the EU's Life+ financial instrument. Sanitation and dust suppression practices that studies have shown to be effective in reducing street dust have been actively implemented. The NASTA research programme (2011–2013) studied the effects of the reduced use of studded tyres on air quality, health, and traffic safety, among other factors.

An environmental zone is in use within the inner city. This means that tighter emission norms are applied to the tendering processes for the bus traffic ordered by HSL and waste transportations ordered by HSY within the area (Euro 3 for buses and Euro 5 for refuse lorries), than for traffic outside the area. Since March 2013, all landfill and biowaste trucks operating in the environmental zone adhere to the Euro 5 standard. 70% of HSL's bus traffic is already carried out with buses that adhere to the Euro 3 or newer standards. In 2013, HSL introduced 126 new EEV buses and four Euro 6 buses. HSL's new environmental bonus model allows for a flexible and cost-efficient compensation for the actions taken by the transport providers to decrease carbon dioxide emissions and hazardous local emissions.

# Indicators

## Indicators monitored in the environmental report

Indicator	Objective	av. 2008-2012	2013	Trend	6-pack
<b>ENERGY AND THE CLIMATE</b>					
Greenhouse gas emissions corresponding to the consumption in Helsinki	-30% from the 1990 level by 2020 (strategy programme 2013-2016)	3,132.8 t CO <sub>2</sub> e	2,849 t CO <sub>2</sub> e (-21% from 1990)	-9 %	
Greenhouse gas emissions corresponding to the consumption in Helsinki per capita	4.3 t CO <sub>2</sub> e per capita by 2030 (the climate strategy of the metropolitan area)	5.32 t CO <sub>2</sub> e/cap/a	4.7 t CO <sub>2</sub> e/cap/a	-12 %	6-pack
Energy production greenhouse gas emissions	-30% from the 1990 level by 2020 (strategy programme 2013-2016)	3,447,000 t CO <sub>2</sub> e	3,261,000 t CO <sub>2</sub> e (-4% from 1990)	-5 %	
Energy consumption of the community per capita	energy efficiency will have improved by at least 20% by 2020	25,026.8 kWh/cap/a	23,397 kWh/cap/a	-7 %	6-pack
The share of renewable energy of the electricity, district heating and cooling acquisitions by Helsingin Energia	at least 20% in 2020	5.8 %	7.0 %	20 %	
The specific consumption of electricity in buildings owned by the city	-9% by 2016 (municipal energy-efficiency agreement)	63.1 kWh/m <sup>2</sup>	61.4 kWh/m <sup>2</sup>	-3 %	6-pack
The specific consumption of heating in buildings owned by the city	-9% by 2016 (municipal energy-efficiency agreement)	150.2 kWh/m <sup>2</sup>	139.1 kWh/m <sup>2</sup>	-7 %	6-pack
Energy savings in the city's operations	129 GWh (9%) (municipal energy-efficiency agreement 2005-2016)	-14.2 GWh/a	4.8 GWh/a	-66%	
Energy savings in residential buildings	49.9 GWh (7%) (VAETS 2010-2016)	-8.3 GWh/a	0.0 GWh/a	-100 %	
Energy savings in the city's administrative branches (public service buildings)	4% in 2013 (reference year 2010, municipal energy-efficiency agreement)	-1.3%	-4.8%	269 %	
The share of district heating of the new buildings	the share of district heating will increase (energy policies of Helsinki)	90.7 %	90.9 %	0,2 %	
Specific consumption of heating in new residential buildings that use district heating	The near zero-energy building requirement by the EU in 2020 (the criteria to be defined in 2015)	29.2 kWh/m <sup>3</sup>	27.0 kWh/m <sup>3</sup>	-8 %	
The share of new residential building permits granted that have an energy class of A	Requirement for energy class A in the city's terms for surrendering plots (Real Estate Committee decision 2011)	30.5 %	64.0 %	110 %	
<b>TRAFFIC AND AIR QUALITY</b>					
The distribution of the methods of transportation in Helsinki (walking + cycling + public transport)	The share of walking, cycling and public transport will be increased by one percentage point per year, four percentage points during the council period) (strategy programme 2013-2016)	73.8 %	76.7 %	4 %	6-pack
Motorisation	Sustainable mobility will be promoted (strategy programme 2013-2016), parking will promote an ecologically sustainable and pleasant city structure and mobility (Helsinki's parking policy)	394,6 the number of passenger cars/1000 residents (348 in traffic use)	405 the number of passenger cars/1000 residents (337 in traffic use)	3 %	6-pack
Number of public transportation trips	Sustainable mobility will be promoted by increasing the share of public transport (strategy programme 2013-2016)	396 trips/resident/a	397 trips/resident/a	0,3 %	6-pack
Carbon dioxide emissions of road traffic in Helsinki	-20% 2030 (climate strategy for the metropolitan area 2030)	590,800 t CO <sub>2</sub>	507,800 t CO <sub>2</sub>	-14 %	
Carbon dioxide emissions of passenger cars registered for the first time in Helsinki	New passenger cars registered within the EU will reach the objective for average emissions (130 g CO <sub>2</sub> /km) between 2012 and 2015 (EU regulation)	149.6 g CO <sub>2</sub> /km	132.4 g CO <sub>2</sub> /km	-12 %	
The share of people using public transport when travelling towards the city centre in the mornings	>73% in 2013 (binding operational objective of the Helsinki City Planning Department)	72.3 %	73.6 %	2 %	
Share of public transport in cross-sectional traffic	>21% in 2013 (binding operational objective of the Helsinki City Planning Department)	18.7 %	19.7 %	5 %	
Share of cycling as a transport mode	15% by 2020 (the Brussels Convention 2009)	9.1 %	11.0 %	21 %	
Annual average nitrogen dioxide concentration (Mannerheimintie monitoring station)	40 microgrammes/m <sup>3</sup> in 2015 (EU directive)	40 microgrammes/m <sup>3</sup>	37 microgrammes/m <sup>3</sup>	-8 %	6-pack
Number of days when the limit value level of particulate matter was exceeded in Helsinki (Mannerheimintie monitoring station)	max 35 days per year in 2010 (EU directive)	23 pcs/a	17 pcs/a	-26 %	6-pack

**Greenhouse gas emissions  
corresponding to  
the consumption in Helsinki  
decreased by 9 %**

**Nitrogen emissions  
to the sea from the Viikinmäki  
waste water treatment plant  
decreased by 18 %**



Indicator	Objective	av. 2008-2012	2013	Trend	6-pack
<b>NOISE</b>					
Constructing noise barriers to protect current land use	The new noise barriers presented in the operating plan (noise reduction operating plan)	1,808 m/a	560 m/a	-69 %	
Usage of anti-noise coating	Increasing the use of anti-noise coating (noise reduction operating plan)	15,375 m <sup>2</sup>	29,400 m <sup>2</sup>	91 %	
<b>WATERS</b>					
Nitrogen emissions to the sea from the Viikinmäki waste water treatment plant (t/a)	Helsinki's own nutrient load on water systems will have decreased	24.4 t/a	20.0 t/a	-18 %	6-pack
Phosphorus emissions to the sea from the Viikinmäki waste water treatment plant (t/a)	Helsinki's own nutrient load on water systems will have decreased	542.8 t/a	345.0 t/a	-36 %	6-pack
Number of trained oil spill response personnel	the city has a sufficient number of trained people for beach clean-up operations; city personnel will be trained for oil spill response operations (Baltic Sea Challenge action plan 2014-2018)	-	800 persons		
Number of combined sewer network overflows	The number of times the combined sewer network overflows will have been reduced by 20% from the current level	250,306 m <sup>3</sup>	170,622 m <sup>3</sup>	-32 %	
<b>NATURE</b>					
Share of nature reserves of total area	The diverse wildlife of Helsinki will remain a harmonious part of the city structure in the long term	2.9 %	3.2 %	10 %	6-pack
<b>RESOURCE-EFFICIENCY</b>					
Share of environmental criteria in the centralised acquisitions of the City of Helsinki (Procurement Centre)	50% in 2015, 100% in 2020	31.5 %	44 %	40 %	6-pack
Amount of communal waste produced in the Helsinki metropolitan area per capita	the amount of communal waste produced in the metropolitan area per capita will be reduced by 10% by 2020	317 kg/person/a	315 kg/person/a (2012)	-1 %	
<b>ENVIRONMENTAL AWARENESS AND RESPONSIBILITY</b>					
The share of citizens who have taken part in the environmental education events and climate and energy guidance provided by the city	the environmental awareness of city personnel and citizens will be improved	27.1 %	37.3 %	38 %	6-pack
Number of eco-supporters in the city organisation	every work community will have a dedicated eco-supporter	1,094 eco-supporters (2012)	1,137 eco-supporters	4 %	6-pack
<b>ENVIRONMENTAL MANAGEMENT AND PARTNERSHIPS</b>					
The share of administrative branches (out of all administrative branches) that carry out environmental management at least in accordance with the criteria for streamlined environmental systems	city departments and subsidiaries will include environmental management in their operations in accordance with the principles of streamlined environmental systems	20% (2012)	26 %	30 %	
Number of administrative branches (of administrative branches that use bonus schemes) where environmental management is part of the bonus scheme (only includes administrative branches that use a bonus scheme)	environmental management will become a part of the bonus schemes used by city departments and municipal enterprises	54% (2012)	44 %	-19 %	
The combined number of audited EcoCompass and Climate Partners companies and organisations that have accepted the Baltic Sea Challenge	People's awareness and the availability of the Ecocompass system among SMEs will be improved; the city will actively seek partnerships and network with companies and other interest groups; the Baltic Sea Challenge will have been accepted by 300 operators	257 pcs (2012)	305 pcs	19 %	

The yellow-blue highlighted indicators are from the City of Helsinki Environmental policy.

6-pack: Joint indicators for Helsinki, Espoo, Vantaa, Turku, Tampere and Oulu.

**There are more than 300 audited EcoCompass- and Climate Partners companies and organizations that have accepted the Baltic Sea Challenge!"**

# Noise reduction

## More effective noise reduction needed

Road traffic is the most significant cause of disturbing noise in Helsinki. Almost 40% of the residents of Helsinki live in areas where the noise level caused by road traffic exceeds the limit value of 55 dB during the day. Environmental noise in the city is also caused by industrial facilities, power plants, harbours, temporary construction and renovation work and public events.

Exposure to traffic noise has not been reduced in recent years, even though the implementation of the action plan has been moderately successful. The revised noise control action plan presents 26 measures for carrying out noise control and reducing the noise levels caused by traffic. These measures have to do with, for example, land use planning and traffic planning, the increased utilisation of anti-noise coatings for roads, the promotion of quieter modes of transport and quieter vehicles and utility machinery, the construction of noise barriers, improving the sound insulation of buildings and the development of quiet areas.

In 2013, the Environment Centre commissioned a report on the means of reducing the noise and air quality impact of traffic and started to draft a guide on the self-directed noise control of residential properties in cooperation with the other municipalities of the Helsinki metropolitan area.

Noise barriers were built along Tapaninkyläntie and along Kehä I in Kivikko, and anti-noise coatings were used in five sites. The Public Works Department and the Environment Centre are currently investigating the effects of anti-noise coatings and their deterioration on environmental noise levels. In order to enforce speed limits, which also have an effect on traffic noise, a new fixed measuring point was set up in the city centre.



Sini-Piiri Saario / Helsingin kaupungin arkkitehtitoimisto

The revision of the City of Helsinki noise control action plan was completed in 2013. The plan is based on the 2008 noise prevention action plan and the noise assessment carried out in 2012.

**Table 2. Noise notification on temporary activities causing noise and vibration in accordance with the Environmental Protection Act processed by the Environment Centre in 2010–2013.** The reporting only covers a part of the functions that cause noise, but the noise impacts of all temporary functions that generate noise are regulated with the City of Helsinki's environmental protection regulations.

	2010	2011	2012	2013
construction event	60 %	66 %	67 %	67 %
reports TOTAL	242	204	222	204

### Environmental policy 2050 Noise reduction

- The reference values for environmental noise will not be exceeded. People will not be exposed to excessive noise that has a negative effect on health, especially noise caused by traffic, over long periods of time.

### Environmental policy 2020 Noise reduction

- Exposure to noise will have been reduced so that, by 2020, the number of people living in areas where the average level of noise exceeds 55 dB during the day is at least 20% lower than in 2003 (existing residential areas; no new residents exposed to noise).
- Exposure to excessive noise, in particular, will have been reduced so that, by 2020, there are no residents who are exposed to average noise levels exceeding 70 dB during the day and 65 dB at night (existing residential areas).
- The average noise levels of sites for the most noise-sensitive population groups, such as day care centres, play parks, schools and play and outdoor areas of retirement homes, fall below 60 dB during the day (existing sites).



Matti Tim / City of Helsinki Media Bank

### Environmental policy 2050

#### Water protection

- Helsinki's own nutrient load on water systems will have further decreased, and the utilisation of nutrients will have improved
- The combined sewer network overflows will have decreased to half compared to the current level
- Oil spill prevention measures will prevent oil from reaching inhabited shorelines under most conditions

### Environmental policy 2020

#### Protection of the Baltic Sea

- Helsinki's surrounding waters will be in good condition by 2020 in accordance with the EU Marine Strategy Framework Directive
- The good condition of Helsinki's coastal water bodies will be achieved by 2027 in accordance with the water management plan

### Environmental policy 2020

#### Protection of Helsinki's surface waters

- A centralised water management system will have been built on the main recreational islands of Helsinki
- The combined sewer network overflows will have been reduced by 20% from the current level



## The diverse waterways of Helsinki

The water areas in Helsinki include extensive sea areas, as well as the freshwater areas in the Vantaanjoki river, various streams, ditches, ponds, and springs. The water quality of the city is affected by the impurities in drainage water, nutrients brought by scattered loading, cleaned wastewater led to the outer archipelago, human activities, the muddy waters flowing from Vantaanjoki, and the state of the Gulf of Finland. In addition to the environmental policy, water protection in Helsinki is regulated by the urban run-off water strategy for the City of Helsinki (2008), the City of Helsinki small-water programme (2007), and Helsinki's updated action plan for the Baltic Sea Challenge (2013).

## An excellent year for waste water treatment

In 2013, a total of 96.3 million m<sup>3</sup> of waste water was delivered to the Viikinmäki sewage treatment plant for treatment, of which 71.7 million m<sup>3</sup> came from Helsinki. The amount of waste water treated declined by 15% compared to the previous year. This was partly due to the low amount of rain during the year. The Viikinmäki sewage treatment plant met all the permit criteria in 2013. Of the water led to Viikinmäki, 0.19% bypassed the usual cleaning process.

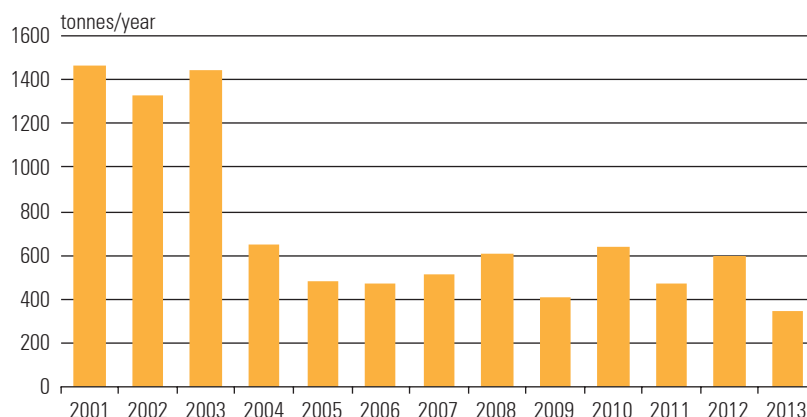
The annual treatment efficiency for phosphorus in Viikinmäki was 96.8%. For biological oxygen demand, the efficiency was 97.3%, and for nitrogen, 92.4%. In 2013, the phosphorus load from the Viikinmäki sewage treatment plant to the sea areas in front of Helsinki was 20,000 kg/a (-23% from the 2012 level), and the nitrogen load was 345,000 kg/a (-42% from the 2012 level) (Figure 8). For eutrophication, the nitrogen load is more significant, because it is a minimum nutrient<sup>1</sup> in the waterways in the Helsinki region.

## The state of the waterways

The overall occurrence of algae in the outer and inner Helsinki archipelago during the summer of 2013 was normal. Surface occurrences of blue-green algae were only occasionally noted in Helsinki's sea areas. Strong deep water upwelling was observed in Helsinki's sea areas in midsummer. This resulted in cooler than normal surface water temperatures in July. At beaches, blue-green algae was observed relatively early in the season, but the amounts of blue-green algae remained low for the most part. No occurrences were reported in the beaches along Vantaanjoki.

According to the collective monitoring of the effects on water systems of the waste waters from the cities of Helsinki

**Figure 8. Nitrogen load channelled to the sea from the Viikinmäki treatment plant in 2001–2013.** Source: HSY



ki and Espoo, performed in 2012, the eutrophication of waste water discharge areas does not significantly differ from the eutrophication of the Länsi-Tonttu reference area. However, studies showed that approximately 40% of the sea floor studied in the sea area in front of Helsinki was anoxic, and the internal nutrient load in the area was deemed significant.

Helsinki's springs were mapped in 2011–2012 as part of a joint project carried out by the Public Works Department and the Environment Centre. The project defined the type, size, location, water flow and water quality of each spring, among other factors. Observations were also made regarding the state and the surroundings of the springs, and renovation proposals were presented for some of the springs.

## Investments in protecting the Baltic Sea

In August 2013, a research expedition was carried out on the research vessel Muikku to study the condition of the sea floor in the waters surrounding Helsinki and the share of the internal nutrient load. The expedition was part of the Baltic Sea Challenge project and complemented the results of a similar expedition carried out during the previous year. Through the Baltic Sea Challenge, the cities of Helsinki and Turku committed in 2007 to new, tangible, and voluntary operations and load reductions for the good of the coastal waters and the entire Baltic Sea. Over 200 organisations have already accepted the Baltic Sea Challenge. Helsinki's Baltic Sea Challenge Action Plan for 2014–2018 was updated in 2013 and the Citywater project, which promotes the spread of the Baltic Sea Challenge in the Baltic countries, was initiated. The project will also carry out new run-off water investments in Helsinki, Turku and Tallinn in 2013–2015.



Matti Mäkeläinen / City of Helsinki Media Bank

**A total of 90 million m<sup>3</sup> of water was pumped into the water system within the HSY water treatment area in 2013. The water consumption per capita in Helsinki was 190 litres per day, which was two litres less than in 2012.**

<sup>1</sup> Minimum nutrient refers to the main nutrient (nitrogen or phosphorus), whose presence in the water regulates algae growth. The ratio of the required main nutrients depends on the species of algae and its speed of growth.

# Conservation of nature and soil

## Securing biodiversity

Helsinki's nature management complies with City Board-approved objectives of nature management and the LUMO programme (City of Helsinki Nature Biodiversity Programme 2008–2017), as well as the Plan for Nature Management, approved by the Public Works Committee. The land use planning and housing programme for 2008–2017 is a central tool for guiding the development of housing construction in the city. These programmes concretize the environmental policy objectives.

In 2013, new maintenance and usage plans were completed for the Kallahdenharju and Kallahden rantaniitty nature reserves. The annual monitoring of the ecological state of the avifauna of Vanhankau-punginlahti continued. This long-term monitoring data will provide a good basis for the revision of the area's maintenance and usage plan, which will begin in 2014.

The realisation of the LUMO programme progressed well. As part of the programme, the biotope mapping of Helsinki continued, in connection with information was also gathered on the occurrence of harmful alien flora. The results of the survey can be utilised in, for example, zoning, as well as in planning nature management and preservation activities.

The stocktaking of the sites valuable to the biodiversity of the forests owned by the city was completed, excluding islands. A total of 1,180 hectares of areas were found that met the site selection criteria of the METSO programme. The majority of the sites found were heathland forests with plenty of decaying wood. The most valuable of the METSO sites found

**The stocktaking  
of the sites valuable  
to the biodiversity  
of the forests owned  
by the city  
was completed.**

are unitary areas that play an important role in maintaining biodiversity and serve as source areas from which species can spread to smaller areas.

The goal of the Public Works Department is to expand the range of plant and tree species in Helsinki to better meet changing climate conditions, and to monitor the success of introduced species. The Public Works Department also coordinates efforts to combat invasive alien species and updated the list of invasive alien species in the Helsinki Urban Plant Life Guide. These species may not be planted in Helsinki at all or planting them close to nature reserves and/or water systems should be avoided (for example, the lupin). During the year, the Public Works Department also organised two communal work efforts to combat the Himalayan balsam (*Impatiens glandulifera*) and citizens were given advice on how to combat invasive alien plant species.



## Sustainable city planning

In 2013, city planning centred around the preparation of the new Master Plan and component master plans. The impacts of the project on the environment, the terms set by the environmental factors on land use, as well as the project's relationship to the city structure, cityscape, and transport system are examined during the preparation of the Master Plan. The component master plans for Hernesaari and Meri-Rastila were completed in 2013, while work on the component master plans of the eastern part of Pohjois-Haaga, Kivinkka and Vartiosaari is still ongoing. The preparation of Helsinki, Vantaa and Sipoo's joint master plan for the Östersundom area also continued.

### Environmental policy 2050

#### Nature

- The urban biodiversity of Helsinki and its special characteristics will have remained as part of the consolidated city structure

### Environmental policy 2020

#### Nature

- The functionality of the extensive ecological network will be ensured as part of the regional whole
- Established biotopes and species will be preserved through management and restoration if necessary
- The natural structural characteristics of forests and swamps will be preserved
- The biodiversity of cultural landscapes will be preserved through renovations and long-term care.
- Construction in areas designated as green areas will be compensated in land use and green area planning by, for example, improving the functionality and ecological quality of green areas, restoring natural sites or by creating new local green area environments

### Environmental policy 2050

#### Soil

- Contaminated soil in the city will be restored at the latest during construction works in such a way that the soil will no longer pose a threat to health or the environment

### Environmental policy 2020

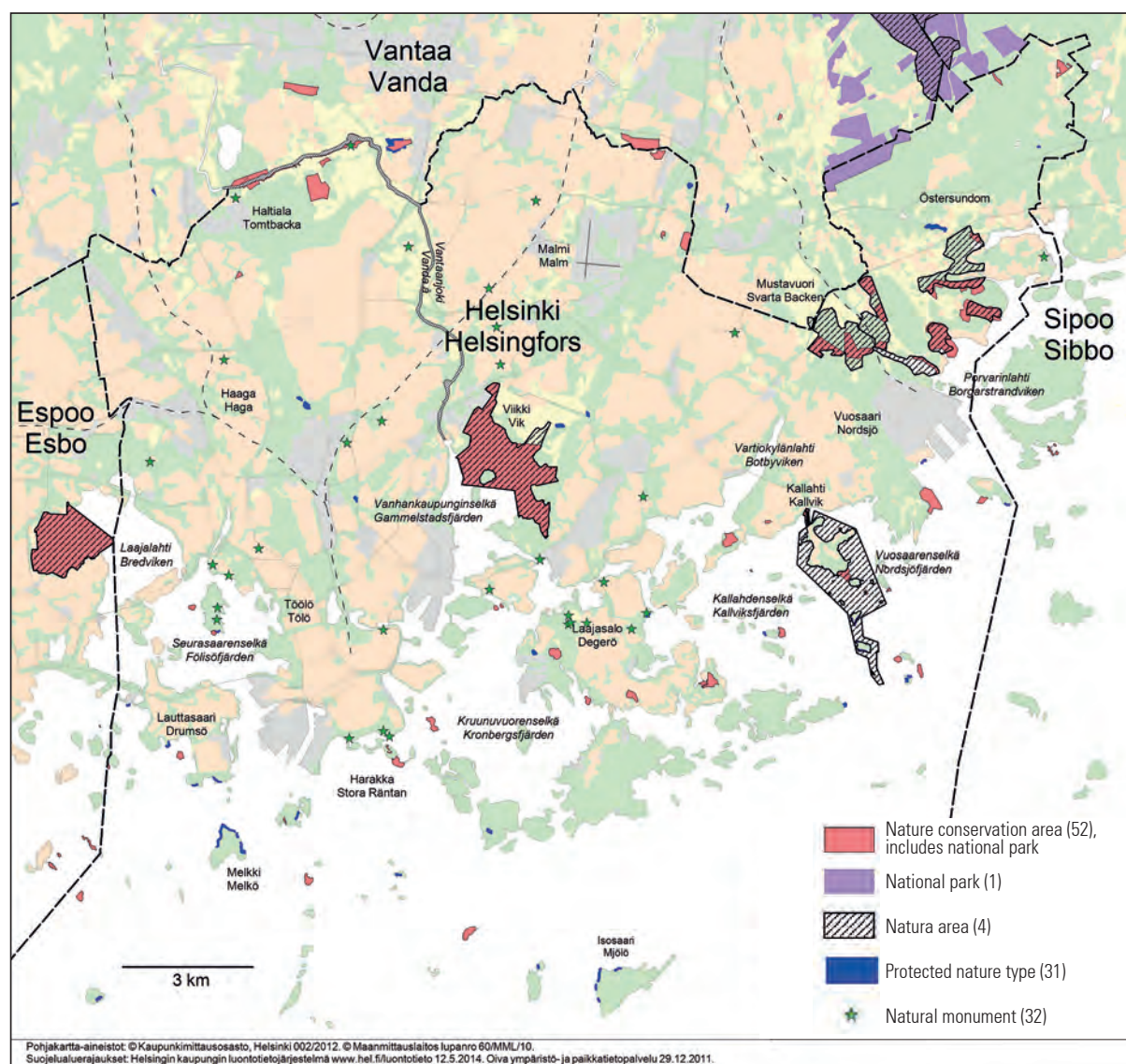
#### Soil

- Old landfill sites in the city will be restored
- The natural characteristics and functions (biological, chemical and physical) of park soil will be preserved
- The preservation of significant geological sites will be secured



# Conservation of nature and soil

**The nature in Helsinki is biodiverse.** 3.2% of the city's land area and 1.2% of the water areas are protected under the Nature Conservation Act or designated as Natura areas. There are a total of 52 nature reserves in Helsinki.



The work on the new master plan is born from the need to match traffic and land use together even more closely than before. Rail traffic, adaptation to climate change, and energy issues play key roles. The new master plan will have a significant impact on the city and its residents. In order to assess these impacts, various methods, such as the assessment and monitoring tool for land use planning (KARVI), and the assessment tool for the eco-efficiency of land use planning (HEKO, KEKO), are used in the planning work.

Construction of the second site of the new residential district in Kalasatama, which was commissioned by the Helsinki Housing Production Department and has no parking spaces, was completed in 2013. Similar residential building projects, where the number of parking spaces is reduced and the use and costs of the parking spaces are tied to specific flats, are also underway in Jätkäsaari. In addition, the construction of a supplementary building site, where solar power will be utilised to heat domestic water, began in Vallila in 2013.

## Restoration of contaminated soil

The most significant contaminated soil restoration sites in 2013 were Jätkäsaari, Kalasatama and Töölönlahti. The contaminated soil formed in Jätkäsaari, excluding hazardous waste, will be moved to the Hyväntoivonpuisto utilisation sites. An environmental permit for a new, larger utilisation site was granted in 2013. An amendment to the environmental permit for the restoration of the Vuosaari landfill was also granted in 2013. This amendment makes it possible to utilise 500,000 m<sup>3</sup> of surplus landmass in the shaping and surface structures of the area.

# Procurement, waste and material efficiency



City of Helsinki Media Bank

## Environmental criteria in procurement

The city's environmental policy sets ambitious goals in regards to the city's procurement processes. These goals have to do with the procurement of all administrative branches, not just centralised procurement.

In October 2013, the Environment Centre and the Procurement Centre launched the environmental network for procurements. The aim of the network is to help the city's administrative branches reach the objectives included in the city's environmental policy. The network held two meetings in 2013, during which it further defined the ways in which environmental criteria and methods of procurements are monitored and discussed good practices

**Table 3. The share of environmental criteria in the centralised procurements of the city.**

	share in euro	share in number
Procurement Centre	58%	44%
Stara	73%	20%
Helsingin Energia	information not available	57%
Helsingin Bussiliikenne Oy	no tendering processes	no tendering processes
hospital pharmacy	0%	0%

**44 % of the total value of joint procurement tendering processes considered environmental criteria.**

related to the environmental issues of procurement. So far, only a few administrative branches have been able to assess the share of environmental criteria in their own procurements. The network also incorporated the operations of the energy saving advisory board's procurement team, since the objectives of these groups were considered rather convergent.

In 2013, the Procurement Centre organised 34 joint procurement tendering processes. The total worth of the contracts established based on these tendering processes was 105.3 million euro. The total value of joint procurement tendering processes that considered environmental criteria was 60.7 million euro, accounting for 57.6% of the tendering processes (36% in 2012). Quantitatively, 15 of the 34 tendering processes, or 44%, considered environmental criteria (37% in 2012).

Procurements are made in all of the city's administrative branches, but in the case of certain products, the responsibility for tendering processes has been centralised to joint procurement units. The units are the Procurement Centre, Stara, Helsingin Energia, the hospital pharmacy and Helsingin Bussiliikenne Oy.

Tendering processes are seen to consider environmental aspects if they are included in the mandatory requirements or in the selection criteria for the tenders.

The environmental criteria considered in joint procurement processes include for example the requirements of the eco-label, overall economy, versatility, energy consumption and fuel consumption.

Environmental friendliness and low life-cycle costs played an important part in the design and procurement of the new Transtech Artic tram commissioned by HKL. The tram is durable, light, and requires little maintenance, which lowers material consumption. Since the tram features a regenerative braking system, thanks to which the energy released in braking is used for heating, the heating energy consumption of the tram is reduced by 75%. The tram also has a flexible structure that reduces friction and results in lower energy consumption. The tram can also output braking energy back into the network. The first two trams will be put to passenger use in early 2014 and the following 38 trams will be delivered in 2016–2018.

## Environmental policy 2050 Procurement, waste and material efficiency

- The material and ecological efficiency of the city's departments will have significantly improved, and these factors will be considered in all investments, procurements and notable projects

## Environmental policy 2020 Procurement

- 50% of the city's procurement processes will include environmental criteria by 2015
- 100% of the city's procurement processes will include environmental criteria by 2020
- Environmental criteria can be either absolute requirements or selection criteria.
- All city departments and subsidiaries will be trained to make sustainable procurements

## Environmental policy 2020 Waste

- The amount of communal waste produced by the city organisation will stabilise to the 2013 level, and the amount of waste per employee will have decreased by 10% by 2020
- The material utilisation rate of the communal waste produced by the city will have increased by 10 percentage points by 2020
- The amount of communal waste produced within the city will stabilise to the 2013 level, and the amount of waste per resident will have decreased by 10% by 2020
- The logistics of land masses required for construction, surplus landmass and contaminated soil will be organised in an economical and eco-efficient manner

**Environmental friendliness and low lifecycle costs played an important part in the design and procurement of the new Transtech Artic tram commissioned by HKL.**



## Aiming for material efficiency

The city's environmental policy sets a large number of challenging waste management objectives. The greatest challenges are related to the collection and utilisation of data. Currently, there is no data available on the amounts of waste generated per city, as the reports cover the entire Helsinki metropolitan area. Property-specific waste amounts are estimated using a factor calculated from the amount of waste generated in the entire region. An internal Helsinki waste management network was also established to develop waste reporting and monitor the realisation of waste management objectives.

## Waste management in the Helsinki metropolitan area

The waste management of the residential properties and public administration in Helsinki and the rest of the metropolitan area is the responsibility of HSY Waste Management, which also handles the collection of recyclable and hazardous waste and sets waste management regulations related to waste sorting, for example. Companies, industrial facilities and production facilities operating in Helsinki are responsible for their own waste management. In addition to property-specific collection points, waste can be delivered to the Sortti stations, recycling depots and collection cars, which circulate during the springtime.

Approximately 5-6 million tonnes of waste is generated every year in the Helsinki metropolitan area. Of this, some 350,000 tonnes come from private households. In 2012, the region's residents generated an average of 315 kilos of waste per capita.

The only landfill site for municipal waste in the Helsinki metropolitan area is located at the Ämmässuo waste treatment centre. There are also other operators in the field besides HSY, but the amounts of waste collected by them are not included in this report. In 2014, a new waste to power plant will begin operations in Långmossebergen in Vantaa. The plant will utilise all the mixed waste left over from source separation in the Helsinki metropolitan area. In 2013, the Ämmässuo waste treatment centre received a total of 499,441 tonnes of waste and soil (-15% compared to 2012).



City of Helsinki/Maria Bank

## Good results from waste monitoring

Monitoring related to the amount and sorting of waste was carried out in schools in cooperation with the Real Estate Department's Premises Centre, Palmia and the Education Department. The project was part of the ERDF-funded Material-efficient waste management project organised by HSY. According to the results, the amount of waste generated has declined; in 2011, the comprehensive schools of Helsinki generated 33.9 kg of waste per capita, while in 2013, the figure was 29.8 kg per capita.

**The mass saving  
resulting from  
more efficient utilization  
of surplus landmasses have  
totalled approximately  
7 million euro  
in 2012-2013.**

## Improved material efficiency of land mass management

The significance of the land mass economy in the operations of the city has been emphasised in recent years with the launch of large area building projects. The Mayor has appointed a working group to draw up a development plan for the utilisation of uncontaminated excavated landmasses in order to improve the management of surplus landmasses generated in construction. The programme is set to be completed in 2014.

Several projects that aim to utilise surplus landmasses were initiated in 2013, the most significant of which were the shaping of the Vuosaari landfill and the Lahdenväylä noise barriers. The mass saving resulting from more efficient utilisation of surplus landmasses have totalled approximately 7 million euro in 2012-2013. Last year, some 10,000 tonnes of surplus landmass was delivered from the city's construction sites to recipients outside of the city, while in 2012, the corresponding figure was approximately 200,000 tonnes.

# Environmental awareness and responsibility

## Environmental education reached citizens

Environmental education in Helsinki is provided by the Environment Centre, the Public Works Department, the Youth Department, the Helsinki Zoo, the Helsinki Metropolitan Area Reuse Centre and Oy Helsinki-Gardenia Ab on order. Adult education institutes also organise a wealth of courses related to the environment. Events organised during the year included nature schools, nature trips, island adventures, themed weeks, environmental courses and a conference for school children, as well as public events related to the environment, spring cleaning events and park walks.

The most popular trips were Full moon's toads at island of Harakka, The spring excursion to bird island of Harakka, The pond and the haunted houses of Kruunuvuori, The nature of Annala and Kellomäki, and The trees and birds of the Malmi cemetery. The public event Villivihanneksia ja mehiläistenhoitoa ("Wild vegetables and beekeeping") also interested citizens. Park walks celebrated their 10th anniversary and the most popular one was the Helsinki Day walk, where the statues in the city centre come alive. The most popular events, based on the number of participants, were the Helsinki Zoo's Night of the Cats and Easter Island events (over 20,000 visitors). Citizens were also very active in the May Day champagne bottle

**Table 4. The number of participants in the City of Helsinki environmental education and climate and energy guidance, 2011–2013.**

	2011	2012	2013
<b>Environmental education</b>	<b>96,422</b>	<b>78,287</b>	<b>83,199</b>
The Harakka Island nature centre (Environment Centre)	6,040	5,193	4,937
Spring cleaning events (Public Works Department)	30,530	27,628	23,700
Youth Department	2,689	3,675	5,710
Helsingin Energia	1,736	1,373	1,565
Helsinki Zoo	30,045	17,644	22,300
Helsinki Metropolitan Area Reuse Centre	14,724	11,495	13,582
Others (Oy Gardenia-Helsinki Ab, park walks and Park Pals (Public Works Department), and Blue Uncle (HSL))	10,658	11,279	11,405
<b>Climate and energy guidance services</b>	<b>133,765</b>	<b>174,146</b>	<b>145,540</b>
"Energiaa tokaluokkaisille" and others (Public Works Department)	1,380	1,184	1,733
Helsingin Energia	123,660	165,675	139,911
Climateinfo	8,725	6,750	2,096
ASIAA project	0	537	1,800
<b>TOTAL</b>	<b>230,187</b>	<b>252,433</b>	<b>228,739</b>

collection campaign in Kaivopuisto, with 30,000 bottles collected for recycling. Close to 24,000 citizens also took part in the spring cleaning bee.

## Climate and energy guidance services

The climate and energy guidance services of Helsinki reached a total of 147,000 citizens in 2013, 24% of the population of Helsinki.

Energy and climate guidance in Helsinki is primarily provided by Helsingin Energia, the Public Works Department, the Environment Centre, Climateinfo and HSL. Energy and climate guidance is provided on-site, during events and via the phone and the Internet.

Helsingin Energia's new Energy Gallery exhibition was opened in Sähköälytalo in Kamppi in 2013. Helsingin Energia also developed energy guidance together with young people. Helsingin Energia's guidance services were fairly actively used by citizens (by some 140,000 citizens).

The Public Works Department's Energiaa tokaluokkaisille ("Energy to second-graders") campaign once again provided schools with a comprehensive information package to be distributed to over 1,700 pupils and teachers.

Climateinfo organised the Energiatiedädas event for the third time this year and also spread information about the climate, for example, on Car Free Day on 22nd September and through various campaigns, such as the 30 seconds is enough water saving campaign for swimming halls and the Food or waste campaign for lunch restaurants.

HSL's Uncle Blue operations spread information about sustainable mobility to schoolchildren. The concept was revised in 2013 and from now on, HSL's Mobility coach will visit day care centres, schools, events, the Children's Traffic Town and the Traffic Patrol in Helsinki.

**In 2013, events related to environmental education drew almost 82,000 visitors, which is 13.3% of the population of Helsinki.**

### Environmental policy 2050 Environmental awareness and responsibility

- The environmental awareness of the employees and residents of the City of Helsinki will rank among the top three cities of Europe
- Residents and city employees will be committed to the objectives of the city's environmental policy

### Environmental policy 2020 Environmental awareness and responsibility

- Helsinki will be a pioneer in environmental education
- Every work community will have a dedicated eco-supporter
- The city's range of services will support the sustainable lifestyle of the city's residents and make environmental choices easy
- City employees are aware of environmentally responsible practices and take them into account in their work
- The good environmental awareness of decision-makers will lead to environmentally responsible decision-making





## Risks increasing

As the climate changes, extreme weather phenomena will increase, and the climate may become more difficult to predict. The past years have shown many examples of extreme weather conditions around the world, of which the most notable have been drought and intense storms. The risk of oil damage is high in the Baltic Sea, which is one of the most vulnerable, yet highly trafficked sea areas in the world.

The operations for adapting to climate change have been distributed to several administrative branches, and many different operating plans promote the adaptation operations. The urban run-off water and flood strategies of the City of Helsinki, as well as the LUMO programme and the objectives of nature management also include actions for adapting to climate change.

## Actions in 2013

Adaptation to climate change was promoted as part of everyday operations, for example, through maintaining the vitality and good condition of recreational areas. The city also carried out several development projects. 2013 saw the completion of the report on the prevention of harmful run-off water effects in the metropolitan area, which showed that run-off water overflow is primarily caused by the exceedance of the sewage capacity of problem sites, the damming effect of the lower sewer network and the shape of the terrain at the site. Heavy rains in the spring in particular lead to run-off water overflows and the intensity of rain seems to play a significant role in the occurrence of run-off water overflow. The run-off water and flooding working groups will continue their work until the end of 2014.

The Climate-proof city EU project (Ilmastonkestävä kaupunki, ILKKA), coordinated by the Environment Centre, aims to create planning tools and instructions for considering climate change in the city planning work. The project will pilot the

**The Baltic Sea is  
one of the most  
vulnerable, yet highly  
trafficked sea areas  
in the world.**

Green Factor tool, calculate carbon sinks, investigate the best possible adaptation measures (e.g. the management of urban run-off water) and aim to find ways to protect against the urban heat island phenomenon.

## Oil prevention training in case of disasters

A total of 365 oil-related accidents took place in the Helsinki region in 2013, of which 51 took place in waterways, 11 in important ground water areas and 303 in other areas. The number of accidents did not change significantly compared to the previous year.

The Rescue Department took part in the Baltic Sea Maritime Incident Response Survey, which investigates the national preparedness of the Baltic Sea states as well as Iceland and Norway for marine accidents that demand a multisectoral response from the authorities.

The development of the City of Helsinki's preparedness for oil spills and sea rescue operations continued and a new storage tent with a capacity of over 600 m<sup>2</sup> was procured for the Santahamina oil spill response depot for storing oil spill response equipment.

The oil spill prevention training of other administrative branches also continued. The staff of almost all of the Rescue Department's sea rescue stations received training on the handling of new and effective containment boom equipment. A significant addition of staff and equipment related to the logistics of oily waste was planned and trained for Stara. The funding for oil spill prevention training from the Finnish Oil Pollution Compensation Fund was doubled for 2013–2017.



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## Environmental policy 2020

### Adaptation to climate change

- Adaptation to climate change will be integrated into the operations of all city departments in order to minimise risks. The effects of climate change and the measures that can be taken to prepare for it will be communicated to municipal residents and companies.

## Environmental policy 2020

### Oil spill prevention

- The effects of Helsinki's own oil spill prevention measures on the amounts and extent of oil reaching inhabited shorelines will be significant under most natural conditions. The oil spill prevention aid offered by Helsinki in the archipelagos of the Baltic Sea will be considerably effective
- Oil spill prevention measures will prevent oil from spreading, and oil collection from water surfaces and shore protection are effective. The city will have enough trained personnel for shore cleaning measures.

**Heavy rains in the  
spring in particular  
lead to run-off water  
overflows.**

# Environmental economy

The environmental costs of Helsinki, including amortizations and the costs<sup>2</sup> of HSY, added up to a total of 236 million euro in 2013 (+7% from 2012). The share of HSY Water Management was 50 million euro, and the share of HSY's Waste Management was 48 million euro. The environmental costs of the city organisation made up 136 million euro (+6% from 2012). The environmental costs caused by the operations of the city made up 2.9% of the total operating costs of the city, equalling 222 euro per capita (214 euro in 2012). The city's largest expense items were environmentally-based taxes on electricity and fuel (25%), sanitation and waste management (19.3%), and climate protection (19.1%). The increase of the city's own environmental costs compared to the previous year can be explained by the rise of environmental taxes, the increase of activities that improve eco-efficiency and the improved reporting of these activities.

The environmental investments of Helsinki, including HSY's shares, added up to 92 million euro (+29% from 2012), of which the investments of HSY Water Management were 61 million and those of HSY's Waste Management were 8.5 million euro. The environmental investments made by the City of Helsinki in 2013 added up to 22 million euro, which is some 3.5% of the total capital expenditure of the city. The city's environmental investments grew by 16% from the previous year. The growth can be explained by climate investments (4.7 million euro) in particular, which were nearly tripled from the previous year.

The environmental income of Helsinki, including HSY's shares, added up to a total of 135 million euro (+10% from 2012). HSY's water sales and basic fee income was 64 million euro, and HSY's waste transportation and treatment fees totalled 62 million euro. The environmental income for the City of Helsinki added up to some 9.5 million euro, making up 0.5% of the total operating income of the city. The greatest sources of environmental income for the city were the proceeds from the ticket sales of the Helsinki Zoo, vessel waste charges, and scrap metal sales.

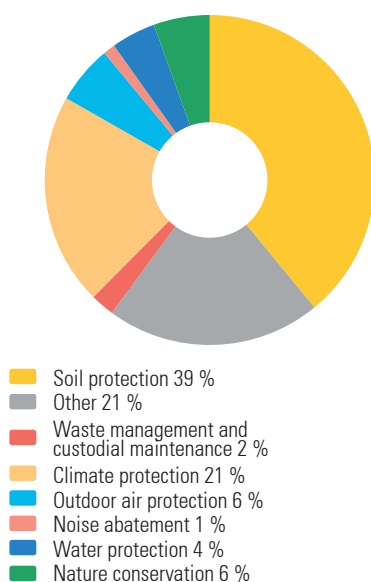
The value of mandatory provisions and environmental responsibilities in the financial statements on 31st December 2013 was 41.8 million euro. These responsibilities were related to the demolition of the Hanasaari A power plant, preparation for the processing of contaminated soil and the after-treatment of landfill sites.

<sup>2</sup>The City of Helsinki's computational share of the cash flows resulting from the environmental services and operations of the Helsinki Region Environmental Services Authority (HSY).

**Table 5. The city's environmental income, costs and investments in 2012 and 2013 (EUR 1,000)**

	excl. HSY		with HSY	
	2 012	2 013	2 012	2 013
<b>Environmental income</b>	<b>8 098</b>	<b>9 468</b>	<b>123 215</b>	<b>135 051</b>
Air protection	956	979	956	979
Climate protection	1 155	664	1 155	664
Water protection	278	215	62 589	64 288
Waste management	1 734	1 037	54 541	62 547
Soil protection	370	287	370	287
Nature protection	0	26	0	26
Environmental administration	602	2 802	602	2 802
Environmental management	134	4	134	4
Environmental training and education	2 869	3 335	2 869	3 335
Actions that improve eco-efficiency	0	119	0	119
<b>Environmental costs</b>	<b>128 087</b>	<b>136 224</b>	<b>220 513</b>	<b>236 172</b>
Air protection	12 619	12 857	13 105	13 512
Climate protection	26 465	25 993	27 397	27 331
Water protection	3 192	4 880	56 318	54 774
Waste management	24 240	26 290	62 121	74 351
Soil protection	4 228	1 500	4 228	1 500
Noise reduction	224	256	224	256
Nature protection	4 391	4 177	4 391	4 177
Environmentally based taxes	30 930	34 102	30 930	34 102
Authority assignments related to environmental protection	4 313	4 617	4 313	4 617
Environmental management	5 145	3 225	5 145	3 225
Environmental training and education	3 733	3 800	3 733	3 800
Environmentally friendly and ecologically sustainable transportation	8 502	7 543	8 502	7 543
Actions that improve eco-efficiency	104	6 984	104	6 984
<b>Environmental investments</b>	<b>20 340</b>	<b>22 451</b>	<b>72 220</b>	<b>91 857</b>
Air protection	992	1 286	1 021	1 323
Climate protection	1 740	4 670	1 796	4 746
Water protection	394	977	45 360	61 785
Waste management	2 072	527	8 902	9 012
Soil protection	10 722	8 768	10 722	8 768
Noise reduction	918	264	918	264
Nature protection	0	1 234	0	1 234
Other	3 501	4 725	3 501	4 725

**Figure 9. Environmental investments of the City of Helsinki in 2013.**  
Source: Environment Centre



**Figure 10. Environmental costs of the City of Helsinki in 2013.**  
Source: Environment Centre

