



City of Helsinki

Environmental Report 2012

www.hel.fi/ymparistoraportti



Antti Leppä / City of Helsinki Media Bank

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Helsinki in key figures

- At the end of 2012, the population of Helsinki was 604,380 (+2% from 2011).
- The city covers an area of 716 km² (214 km² of land, 1 km² of inland waters, and 501 km² sea waters).
- Helsinki produces about five percent of all Finnish carbon dioxide emissions.
- The Viikinmäki wastewater treatment plant takes care of cleaning the wastewaters produced by approximately 800,000 people.
- At the end of 2012, the city employed 41,021 people (+2% from 2011).
- In 2012, the operating costs for the city were 4,564 million euro (+5% from 2011).

The City of Helsinki is a significant operator in 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 how the environmental objectives of the city are reached and the effects of the city's operations on the environment. The background report of the Environmental Report, as well as the material produced by the city departments, complements the report. The materials are available online (www.hel.fi/ymparistoraportti).

The environmental policy of the city sets goals for the various sectors of environmental protection, for 2050 in the long term, and until approximately 2020 in the medium term. Only a part of these objectives are presented in the Environmental Report. The environmental policy is available online (www.hel.fi/ymparistopolitiikka).

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 Helsinki Group also includes 11 foundations and 71 subsidiary organisations. A total of 69 subsidiaries provided information for this year's environmental report. The report does not include environmental information from the foundations.

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 the environmental effects.

The group members are

Päivi Kippo-Edlund (chairperson), Anna Virolainen (secretary), Markus Lukin, Seppo Manner, Heidi Huvila, Senja Laakso, Eeva Somerkoski, Maija Sarpo, Rauno Tolonen, Aino Rantanen, Katarina Kurenlahti, Sami Määttä, Juha Uuksulainen, Anna Ruskovaara, Riikka Jääskeläinen, Marianne Annanulli, Pia Halinen, Päivi Holopainen, Perttu Pohjonen, Elina Tartia, Sari Hilden, and Susanna Saloranta.

In 2012, Helsinki made some significant new policy definitions for environmental protection. The environmental policy approved by the City Council in the autumn 2012 complements and specifies the city's earlier environmental objectives, and also sets guidelines for those areas of environmental protection that have previously lacked clear objectives.

The starting point for the environmental policy was to set quantitative long and medium-term objectives for controlling the most significant environmental impacts. The most essential and far-reaching of these is to achieve carbon-neutrality by 2050. The strategy programme approved in the spring 2013 also sets a tangible intermediate goal: reducing emissions by 30 percent by 2030. Other quantitative goals of the policy were set for improving air quality, noise abatement, waste management, and the environmental criteria for procurement, among others.

In terms of the realisation of the environmental policy, it is essential that the entire City of Helsinki Group is committed to fulfilling it. Even though the most significant individual decisions regarding the climate policy, for example, are made in the technical sector, at the same time, saving energy, reducing waste, and making traffic more sustainable require the participation of the entire staff. A more determined partnership approach with the business life and research institutions is also required for many objectives. The Climate Partners network is an excellent example. The Baltic Sea Challenge has created an efficient and active network of operators committed to water protection, which is a great example of the possibilities offered by partnerships.

In the autumn 2012, the City Council also approved a global responsibility strategy, which focuses on outlining the social dimension of global responsibility in immigration and procurement issues, for example. In addition, global responsibility successfully combines the ecological and social dimensions of sustainable development, which is displayed in the city's application to become a FairTrade Town, for example.

Environmental protection is international by nature, as negative environmental impacts do not stop at national borders. Therefore, it is essential to keep track of how environmental issues are developed and outlined elsewhere in Europe and around the world. My appointment in the International Council for Local Environmental Initiatives's (ICLEI) global and European boards last year serves this purpose well.

During the past years, the concepts of a green economy and resource efficiency have been discussed extensively within the international environmental discourse. This trend is very welcome, as it focuses on the interactive relationship of the economy and the environment. Environmental protection can still be seen as a burden



Elina Borhenus: Pekka Sauri mudokas (Portrait of Pekka Sauri). Helsinki Art Museum. Photo Marja Tuomela

on the economy. However, the resource-efficiency perspective demonstrates that economic and environmental objectives are very much alike in the long term.

Even in the short term, saving energy, the improvement of waste management and enhancing logistics could create significant savings for the city, in so far as the possibilities these actions offer are taken seriously. For example, the annual saving potential from the measures presented in the energy audits of the city properties would be 2.5 million euro, if all of the suggested measures were implemented.

The economic effects of climate change must also be anticipated. According to numerous studies, the costs of adapting to change can increase in the long term to billions, due to damages caused by floods, urban run-off problems or the uncontrolled increase of plant diseases, for instance. The health hazards caused by deteriorated air quality can also be financially very significant. Similarly, according to a survey commissioned by the City Planning Department, each kilometre travelled by bicycle will bring significant benefits to the social economy.

Environmental protection is not free for the city. In 2012, the environmental costs of the city were 212 euro per capita. The more the necessary actions are postponed, the more they will cost in the end. An active environmental and climate policy is the cornerstone of the health, society, and economy of the city and the people who live there.

Pekka Sauri
Deputy Mayor

Environmental management in the City of Helsinki

Environmental management on the city level

On the city level, observance of environmental issues is governed by the strategy programme and the city 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.

According to the ethical principles of the city, Helsinki is a forerunner in global responsibility issues, which is expressed in its activities in environmental protection and combating climate change. An ecological approach is one of the six values of the city. The strategy programme for 2009–2012 includes several policy definitions on the protection of the Baltic Sea, actions to control climate change, saving energy, energy-efficiency, promoting public transport, the environmental aspects of procurement, and nature protection.

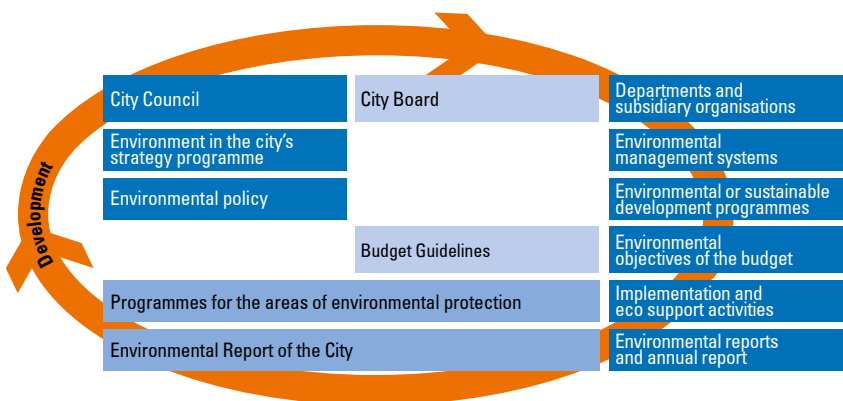
The environmental objectives set in the strategy programme were met reasonably well during the term of the programme. The strategy programme emphasised the protection of the Baltic Sea and the climate, the development of public transport, and the management of environmental issues in procurement. The majority of the environmental measures in the strategy programme were carried out successfully. However, only a few of the city departments laid out binding energy-saving plans, as required by the strategy.

In September, the Helsinki City Council approved the new environmental policy for the city. The environmental policy sets tangible quantitative goals for the various sectors of environmental protection, for 2050, and until approximately 2020. The sectors of environmental protection are climate protection, air protection, noise reduction, water protection, conservation of nature and soil, procurement, wastes and material-efficiency, environmental awareness and responsibility, environmental management, and partnerships. The implementation of the environmental policy will be monitored as part of the city's annual environmental reports.

Ambitious goals

In accordance with the environmental policy, by 2020, the public utility compa-

Figure 1: The following model of environmental management in the City of Helsinki illustrates the roles and tasks of the different parties, as well as the most important tools of environmental management in use.



nies must have a verified environmental management system in place and both the departments and the subsidiaries must, at least, comply with the principles of streamlined environmental management systems. Furthermore, environmental management will become a part of the bonus schemes and other reward systems used by departments and public utilities. For partnerships, the environmental policy requires the improvement of knowledge and the availability of the EcoCompass system, as well as the drafting of an environmental programme or plan for all of the major events that take place in the city.

Environmental management of the city departments and subsidiaries in 2012

The environmental management and particularly the environmental programmes were successful in 2012. The ISO 14001 environmental management systems were used in the Port of Helsinki, Palmia, and the Helsingin Energia power plants, heating plants, and district heating operations. The Environment Centre and the four libraries in the Helsinki City Library implement the EcoCompass systems. The Green Office system, the Vihreä lippu eco-schools programme, and the environmental certificates granted by the Okka foundation were also used in some city departments. Various departments have already started or are planning to start building their environmental management system in the coming years. A total of 16 city departments deployed an environmental or sustainable development programme, while two new programmes were completed during 2012. In 2012, envi-

ronmental issues were linked to the bonus schemes of 15 city departments.

The budget for 2012 included 18 environmental objectives, of which 10 were fully met and two partially met. These included objectives related to the level of street dust, refuse collection and disposal from public areas, management of the surplus landmasses from the construction of streets and park areas, replanting of avenues, promoting the diversity of urban nature, development and monitoring of fishery, infill development, the share of public transport, energy savings, as well as the reliability and customer satisfaction in rail traffic. In addition to the budgetary objectives, the city departments and subsidiaries also have other binding objectives whose implementation is regularly monitored.

The environmental work and reporting by the subsidiary organisations have clearly developed over the past years. Helen Sähköverkko Oy and Helsingin Bussiliikenne Oy, among others, used the ISO 14001 environmental management systems. Urheiluhallit Oy deployed the EcoCompass system in 2012, and various other subsidiaries are planning to introduce an environmental management system. Many of the subsidiary organisations also monitor their consumption data and arrange environmental training for their staff.

Environmental management systems and programmes are often implemented with the help of Eco-supporters. By the end of 2012, a total of 1008 Eco-supporters were appointed and trained for the working communities of the city. The eco-support operations create an environmentally responsible operating culture, and do their part in bringing the environmental strategies and objectives of the city into tangible actions.

Aiming at a diverse and pleasant living environment

The objective of land use planning and zoning is to organise the building and using of land areas in a way as to create opportunities for a good living environment and to promote ecologically, financially, socially and culturally sustainable development. A pleasant and stimulating natural environment is an essential part of the wellbeing of the citizens.

According to the environmental policy, by 2020, the ecological functionality of the extensive network of parks will be secured, the established biomes and species will be preserved, and construction in areas designated as parks will be compensated in zoning and park planning, for example. In addition, the old landfill sites in the city will be restored and the natural characteristics and biological, chemical and physical functions of the soil in park areas will be preserved.

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

Sustainable city planning

Considering that the environment is a part of the daily planning work in land use planning. In 2012, 59 town plan proposals, 75 traffic plans, and the local master plans of Koivusaari, the western shore of Meri-Rastila, and Hernesaari, were completed.

The preparations for drafting the new master plan for Helsinki began in 2012, and the plan is set to be completed in 2016. 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. Many kinds of methods are utilised in drafting the master plan to

assess the impacts. New tools, such as the assessment and monitoring tool for land use planning (KARVI), the assessment tool for the eco-efficiency of land use planning (HEKO), and the assessment tool for eco-efficiency (KEKO), are used in the planning work.

Securing biodiversity

The nature in Helsinki is biodiverse. Some three percent of the land of the city and approximately one percent of the waterways of the city are protected by the Finnish Nature Conservation Act or are a part of the Natura areas. There are a total of 50 nature conservation areas in Helsinki, but most of these are quite small. Parks are significant as recreational areas for the residents, but also in alleviating air pollution issues and as absorbing areas for urban run-off waters.

A three-year biotope survey project was completed in 2012, aiming at mapping the biotopes in Helsinki. The results of the survey can be utilised in land use planning, as well as in planning nature management and preservation activities. In addition, the biodiversity inventory of forest nature, in accordance with the Forest Biodiversity Programme for Southern Finland (METSO), continued in 2012.

The draft for the city's policy on alien species was completed in 2012. The city has continued with the control of alien species. The second consecutive win-

ter with heavy snow has decreased the amount of wild rabbits caught, in comparison to 2009–2010. Also, the hunting of mink and raccoon dog was continued in the Viikki-Vanhankaupunginlahti bay and the Östersundom bird bay. The purpose of the hunting is to secure the nesting of wetland birds. Occurrences of harmful alien flora, such as *Rosa rugosa* and *Golpar*, have been removed from the city areas. Voluntary work plays a large role in combating alien species.

Restoration of contaminated soil

In 2012, contaminated soil was restored mainly in areas planned to be transformed into residential use, most significantly in Kalasatama and Jätkäsaari. Restoration of the soil in the southern part of the Töölönlahti area was also continued as a part of new construction projects along the railroad network. The area of the former Laajasalo oil harbour has now been almost entirely restored.

The contaminated soil is transported to be appropriately processed or disposed of. 230,000 tonnes of contaminated soil was transported to 14 different processing or disposal sites in 2012. Of these, 141,736 tonnes came from the city's projects. As much soil as possible will be reused at the landfill sites, as daily coating layers and closing the landfill, or in fillings at the construction sites close to the digging site.



Aiming at a carbon neutral Helsinki

The climate work in Helsinki is governed by the city's strategy programme, the environmental policy, and Helsingin Energia's development programme. In addition, the city has committed itself to various agreements and declarations, such as the city's energy-efficiency agreement (KETS). Usually, a separate programme has been drafted on the implementation of such agreements and declarations. Helsinki participates in the climate initiative of the mayors of six of the largest cities in Finland, in which 10 tangible initiatives to be promoted in the cities are agreed upon.

The objective of the environmental policy is to ensure that by 2020, consumption-based greenhouse gas emissions will be reduced by 30 percent, the share of renewable energy will be increased to 20 percent, and energy-efficiency will be improved by 20 percent.

Carbon dioxide emissions on the decrease

In 2012, the total emissions from Helsinki were three percent lower than in 2011 and as much as 18 percent lower than in 1990. Of the greenhouse gas emissions¹, 46 percent was generated by district heating, 22 percent by traffic, 21 percent by consumer electricity consumption and eight percent by oil and electric heating. With the exception of district heating, the emissions from all of the other sectors were reduced.

All in all, the carbon dioxide emissions from energy production increased by four percent in 2012, due to the cold weather which led to an increase in the use of natural gas and coal in the production of district heat. Compared with the previous year, the use of coal increased by seven percent and the use of natural gas by two percent. In 2012, the share of renewable energy in Helsingin Energia's procurement of electricity, district heating, and district cooling increased to six percent, due to the excellent conditions for the production of water power during the year.

Growth of energy consumption slowed down

In 2012, the total consumption of energy in Helsinki was approximately 14,700 GWh, which roughly equals the consumption of the previous year. Due to the cold weather, some five percent more district heat was sold than during the previous year. In comparison to 2005, the total energy consumption has remained at the same level, but the consumption per capita has decreased by seven percent. For the past five years, the electricity consumption of the entire city area has remained fairly equal. In 2012, it increased by one percent from 2011, but at the same time, the consumption per capita decreased by approximately one percent.

In 2012, 51 percent of the gross floor area in new buildings for which the Building Control Department issued building permits, met the requirements of energy-efficiency class A, while in 2009, the share was approximately five percent. This is seven percent more than during the previous year. For blocks of flats, the tightened construction regulations, as well as Helsinki's renewed terms of plot allocation for land conveyed for residential use, have contributed to this growth. Residential project developers in Helsinki have also been encouraged to save energy with the help of the so-called building supervision charge, whereby low-energy projects were entitled to a 20–30 percent discount from the permit rate in 2012.

Actions on the city-level

Helsingin Energia promoted the use of renewable energy by starting to test burn pellets alongside coal in 2012. Of properties owned by the City of Helsinki, renewable energy was produced for example at the Aurinkolahti and Latokartano schools, and at the Viikki Environment House, to a total of 110 MWh of energy generated in 2012. The Building Inspection supported the increase of renewable energy forms by excluding air source heat pumps and solar collectors from the obligation to apply for the planning permission for minor constructions (section 21 of the building code).

Figure 2: The development of greenhouse gas emissions corresponding to the consumption in Helsinki. The objective for the total emissions in 2020 is 30% less than in 1990. Preliminary information. Source: HSY.

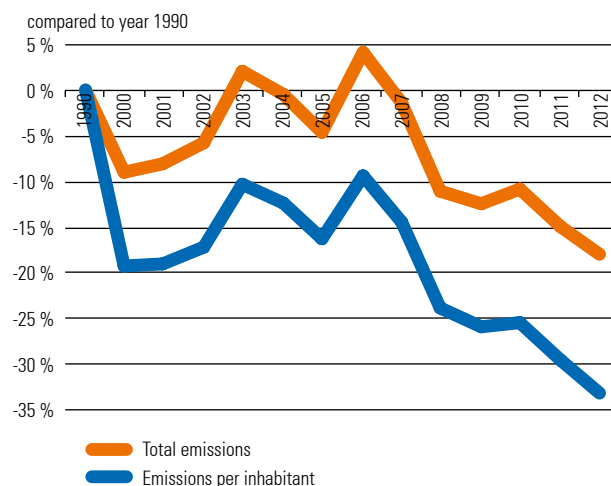


Table 1: The climate and energy objectives of the City of Helsinki, and their realisation in 2012.

| OBJECTIVE | REALISATION 2012 |
|--|--|
| Greenhouse gas emissions | |
| Carbon-neutral Helsinki 2050 | -18 % |
| Carbon dioxide emissions -30 % (1990-2020) | |
| Emissions from energy production - 20 % (1990-2020) | -3 % |
| Renewable energy | |
| Renewable energy will account for at least 20% of the total energy production in the Helsinki region in 2020 | 6 % |
| Renewable energy sources in the electricity and heating production by Helsingin Energia will account for approximately 20% by 2020 | 6 % |
| Energy-efficiency | |
| The energy-efficiency in the Helsinki region has improved by 20 % (2005–2020, per capita) | 7 % |
| Energy savings in the city's operations amount to 129 GWh (9%) (KETS 2005–2016) | 70,2 GWh (54% of the objective) |
| | With the early actions (before 2008): 125 GWh (97% of the objective) |
| Residential buildings: 49.9 GWh (7%) 2010–2016 | 22,1 GWh (44% of the objective) |
| Energy savings by the city's city departments 2% (2010–2012) | 2,4% (public service buildings) |

The city organisation includes several organisations that provide advice on climate and energy issues. The ASIAA! project that focuses on the climate actions of private citizens in their neighbourhoods is a good example of the energy advice cooperation in the Helsinki metropolitan region. The areas of Mellunmäki in Helsinki, Koivukylä in Vantaa, and Suurpelto in Espoo were selected as the advice areas for the project, which, funded by Motiva, was launched in August. The energy advice services of Helen and the other actors are presented in the section on environmental awareness and education.

The city had several partnership projects with the local business life, which helped to promote reaching the climate objectives of the city. In the Climate Partners network, founded in 2012, businesses and organisations signed a climate commitment in which they defined their climate objectives. In 2012, 36 organisations joined in. The streamlined environmental management system, EcoCompass, designed for SMEs and organisations, has become extremely popular. By the end of 2012, there were a total of 31 EcoCompass organisations audited by a third party.

Energy consumption in the city organisation

In 2012, the total energy consumption of the Helsinki Group was 1,719 GWh, which is six percent more than in 2011. The majority (91%) of the energy was used in properties. In 2012, the weather-adjusted specific heat consumption of city-owned buildings decreased by three percent from the previous year to 144.9 kWh/brm²/a. Between 1990 and 2012, the specific heat consumption of service buildings has decreased by 11 percent and of residential buildings, 24 percent.

The specific energy consumption of city properties was 61.3 kWh/brm²/a, which is five percent more than the previous year. During the period 1990 to 2012, the specific consumption of service buildings has increased by 21 percent and in residential buildings, by 14 percent. The increase in the specific energy consumption is based on the improved level of facilities in properties, an increased utilisation rate, and enhanced ventilation.

By the end of 2012, the monthly energy consumption monitoring covered some 90 percent of the public service properties of the city, which is a total of 520 sites. The ETSIVÄ project, started in 2010, strives to further improve and automate the reporting of the energy consumption data of the properties to the various involved parties.

Energy-efficiency actions in the city organisation

The advisory board on energy saving, ESNK, set by the City Board, has set, for the city departments, an objective of two percent energy savings annually, with which the city aims at reaching a nine percent energy saving by 2016, compared to the level of 2005. By the end of 2012, 16 departments had energy saving plans in place. Two of the departments (KSV and Stara) had also set a binding operational energy-saving objective in their budget.

The city properties are reviewed systematically in order to discover cost-effective energy-saving opportunities for buildings and operations. A property energy audit has been carried out at least once in 85 percent of the public city facilities (measured by cubic content). Energy audits are also carried out in service buildings in the monitoring and deployment phase, as necessary. In 2012, a total of 14 energy audits, as well as one deployment phase audit, were completed. Four targets are currently being audited. By the end of 2012, audits had been completed in 524 city service buildings.

The City of Helsinki is committed to observing the principles of low-energy building design in the construction of new buildings and to also applying low-energy directives in renovations, considering the special features of each building. The low-energy service building projects completed in 2012 included the Myllypuro healthcare centre and the Korttelitalo Kanava building. A total of five low-energy renovations were completed, and several projects were underway. The Public Works Department has looked into the possibilities of almost zero-energy buildings and started the drafting of the applicable guidelines.

Other energy-efficiency actions related to the city properties in 2012 included the EkoTeko project and the ENER-



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SIS project on an energy-efficient and reliable renovation concept. In the 21 properties selected for the EkoTeko project, the energy economy and conditions were monitored intensively, renovations were carried out, tools for the maintenance of the buildings were developed, and training for the maintenance staff was organised. In 2012, the EkoTeko operations were expanded to cover the all of the properties maintained by the Premises Centre and were established as normal practices. The national three-year ENERSIS project aims at creating a building concept which will ensure that the energy-saving requirements do not weaken the quality of indoor air in the buildings or their moisture performance. The pilot project in Helsinki was the Myllypuro primary school.

¹ Greenhouse gas emissions based on consumption in the Helsinki region.

The many objectives of water protection

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 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 all affect the water quality.

The city's environmental policies have set many medium-term objectives for the protection of the surface waters in Helsinki. According to the environmental policy, the waters surrounding Helsinki will be in good condition by 2020, in accordance with the EU Marine Strategy Framework Directive.

In addition to the environmental policy, the 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 the Helsinki operating plan in the Baltic Sea Challenge (2007).

Water consumption and treatment

A total of 93 million m³ of water was pumped to the water system within the HSY water treatment area. The water consumption per capita was 192 litres per day, which is seven litres less than in 2011.

In 2012, a total of 113.6 million m³ of waste water was delivered to the Viikinmäki sewage treatment plant for treatment, of which 84.3 million m³ came from Helsinki. The rainy year was also reflected in the amounts of waste water: the total amount of water increased by 11 percent from 2011. The Viikinmäki sewage treatment plant met all the permit criteria in 2012. Of the water led to Viikinmäki, 0.18% bypassed the usual cleaning process. However, all bypass water was treated through chemicalisation.

The annual treatment efficiency for phosphorus in Viikinmäki was 96%. For biological oxygen demand, the efficiency was 97%, and for nitrogen, 88%. The nutrient load led to the sea increased from 2011. In 2012, the phosphorus load from the Viikinmäki sewage treatment plant to the sea areas in front of Helsinki was 26,000 kg/a (+30% from the 2011 level), and the nitrogen load was 593,000 kg/a (+25% from the 2011 level). For eutrophication, the nitrogen load is more significant, because it is a minimum nutrient in the water systems in the Helsinki region.

The state of the water system

The amounts of phytoplankton algae in the outer and inner Helsinki archipelago during the summer of 2012 were normal. Only occasional surface occurrences of blue-green algae were noted, and there were fewer cases where blue-green algae were observed. Mostly mi-

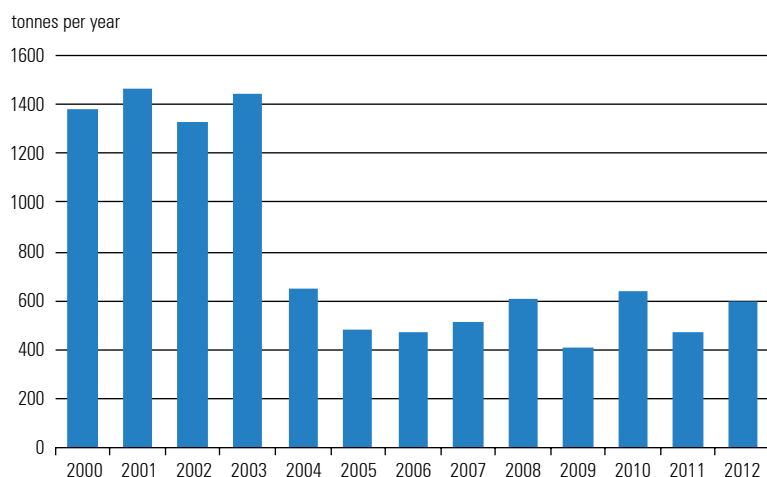
nor amounts of blue-green algae were noted in less than half of the beaches in Helsinki. No occurrences were found in the beaches along Vantaanjoki. The microbiological quality of the water on the beaches of Helsinki was mostly good, as it was the previous year.

According to the collective monitoring of the effects on water systems of the waste waters from the cities of Helsinki and Espoo, performed in 2012, the eutrophication of the areas monitored is no longer increasing, and the contents of soluble nutrients in the surface waters have partially decreased between the past two monitoring periods (1998–2004 and 2005–2011). However, a study performed in August 2012 showed that approximately 40% of the sea floor studied in the sea area in front of Helsinki was anoxic, and the internal nutrient load was significant.

Investments in protecting the Baltic Sea

In August 2012, 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. 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 190 organisations have already accepted the Baltic Sea Challenge.

Figure 3: The nitrogen load led to the sea from the Viikinmäki sewage treatment plant, 2000–2012. Source: Helsinki Water / HSY Water Management.



Aiming at resource-efficiency

The reform of the Waste Act, which took effect in May 2012, aims to affect the solutions to waste problems at a comprehensive level. The Act defines an order of priority for waste management, aiming to reduce the amount and hazards of waste.

The environmental policy of the city helps the city to achieve the objective levels defined in legislation within the set timeframe. The environmental policy sets a large number of challenging waste management objectives. By 2020, the amount of waste produced by the city organisation per employee will be decreased by 10 per cent, and the material recycling degree will be increased by 10 percentage units. The logistics of land masses required for construction, surplus landmass, and contaminated soil will also be organised in an economical and eco-efficient manner, and the amount of waste produced in Helsinki per capita will be reduced by 10 per cent.

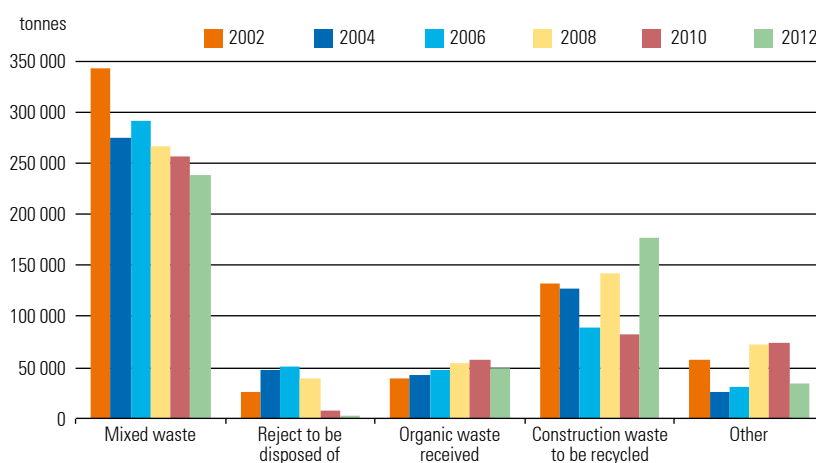
The greatest challenges are related to the collection and utilisation of information. The information on the amounts of waste is not available per city, as the reports cover the entire Helsinki metropolitan region. The property-specific waste amount information is estimated using a factor calculated from the amount of waste in the region. The Environment Centre and the Procurement Centre are looking into means for developing the waste reporting within the city organisation.

Waste management in the Helsinki city area

HSY Waste Management is responsible for the waste management and recyclable and hazardous waste collection for residential properties, public services, and private health and education services in the Helsinki metropolitan region, and issues the waste management regulations to control recycling. Companies and communities are responsible for their waste management. In addition to property-specific collection points, waste can be delivered to the Sortti stations, recycling depots, hazardous waste containers, and collection cars which circulate during the springtime. The number of visitors at the Sortti stations are increasing steadily.

Over six million tons of waste is created every year within the Helsinki metropolitan region. Of this, some 350,000

Figure 4: Waste received at the Ämmässuo waste treatment centre in 2003–2012 (excluding hazardous waste and soil materials). Source: HSY.



tons come from private households. In 2010, the amount of household waste per capita was 327 kilos. The amount of municipal solid waste from private households in the region has been increasing since 2004.

A significant amount of recyclable waste still ends up in the mixed waste containers in the private households and service sector in the Helsinki metropolitan region. The waste recycling rate of household waste in 2010 was 49%, and no significant improvements are visible within the past five years. However, the public service waste recycling rate has increased slightly, as in 2010, it was 82%.

The only landfill site for municipal waste in the Helsinki metropolitan region is located in the Ämmässuo waste treatment centre. There are even other operators in the field besides HSY, but the amounts of waste collected by them are not included in the municipal waste section of this report. In 2012, the Ämmässuo waste treatment centre received a total of 589,970 tons of waste and land (-7% from 2011). A waste incineration plant will be opened in Långmossebergen in Vantaa in 2014. All of the burnable waste from the waste recycling operations in the metropolitan region will be burned at this plant.

Waste management in the properties owned by the City of Helsinki in 2012

In 2012, the city departments produced approximately 31,000 tons of waste. The amount was the same as in

2011, but the recycling activity was lower. The recycling rate within the city organisation was 40%, which is 5.9 percentage units lower than in 2011. Waste costs have increased in the past years.

The Premises Centre, Education Department, and Palmia joined forces to find out the total waste amounts in schools. In 2012, Palmia also had many other procedures to cut down the amount of food wastage and organic waste.

Improved eco-efficiency of land mass management

The significance of the land mass economy in the operations of the city have been emphasised, as large area building projects have been launched. No places have been available to accept particularly surplus landmass of poor quality, meaning that the landmasses have been transported to several distant locations with low capacity. The Mayor has assigned a work group to develop the utilisation of surplus landmasses.

In 2012, approximately 0.2 million m³ of surplus land was delivered to recipients not owned by the city. In order to increase the utilisation of such land, the city has launched several projects in 2012, the most significant ones being the reshaping of the Vuosaari landfill site and the noise barriers at Lahdenväylä.

Traffic development

Many actions have been taken in Helsinki for the development of traffic systems. The Helsinki strategy programme for 2009–2012 states that in order to promote sustainable forms of traffic, the traffic system is developed through developing rail traffic, improving the service level of public transportation, and increasing possibilities for pedestrian and bicycle traffic. The transport system plan of Helsinki (HLJ 2011) is a long-term plan for regional traffic policies. Several research projects that carry out the plan were launched in 2012, as was the planning process for the HLJ 2015 plan.

In 2012, the number of public transportation trips per capita was 405, which is one percent more than the previous year. The number of passengers is increasing. The share of rail traffic² of the city-internal public transportation

on trips remained at 57 percent. The largest increase in the number of passengers (9.4%) took place in the regional route bus trips within Helsinki.

The amount of traffic in Helsinki decreased slightly. The amounts of traffic within the inner city were on average 1.7 percent lower than in 2011. Parking limitations and a fully functional public transportation have restrained the amount of personal cars in the inner city. The amounts of traffic within the inner city have been decreasing since 2006, while traffic along the borders of Helsinki has increased, the increase from 2011 being over one percent. Cross traffic decreased by approximately one percent from 2011, and the share of public transport as a transport mode remained at 18.9 percent.

In 2012, 280,904 passenger cars were registered in Helsinki, with 405 cars per 1,000 citizens. This ratio is still clear-

ly lower than the Finnish average. At the same time, the share of cars used in traffic, of all the cars registered in Helsinki, decreased by 2.1 percentage units, to 83.4 percent.

Helsinki aims to increase the share of cycling of all travelling to 15 percent by 2020. The share of cycling was 11 percent in 2012. The cycling project group, which was launched in 2010, finished its work in 2012, and its work was used as the basis for a plan towards the promotion of cycling. The improvement of cycling conditions has been started in the inner city area. In 2012, the Baana pedestrian and bicycle traffic route was opened, and the Pyöräkeskus bicyclist centre, open in the summertime, was opened in Kampi. A report on the advantages and costs of cycling was finished in 2012. Its results were used in the making of a plan for promoting cycling.

Effects of traffic on air quality

The effects of traffic on the environment present a significant challenge. The air quality action plans 2008–2016 for the City of Helsinki and the Helsinki metropolitan region aim to improve the air quality and to reach the related limit values.

In 2012, the hourly limit value for nitrogen dioxide was exceeded at the Mannerheimintie and Vallila monitoring stations. Due to the emissions from car traffic, the annual limit value has been exceeded in the busy street routes within the inner city. Decreasing the emissions is challenging, because the amount of traffic is predicted to increase as new residential areas are built within the inner city. Helsinki has been granted a continuation until 1 January 2015 towards reaching the EU's annual limit value for nitrogen dioxide. Many other European cities have also applied for a continuation.

The investments in controlling street dust over the past years have been successful. However, street dust continues to deteriorate air quality, and, particularly in the spring time, the air quality limit values have almost been reached in the busy street routes within the inner city. The limit value was exceeded 36 times at the movable monitoring stations on Kehä I in 2012, while the maximum per-

Figure 5. Passenger volumes by mode of transport in public transport within Helsinki in 2008–2012. Source: HRT.

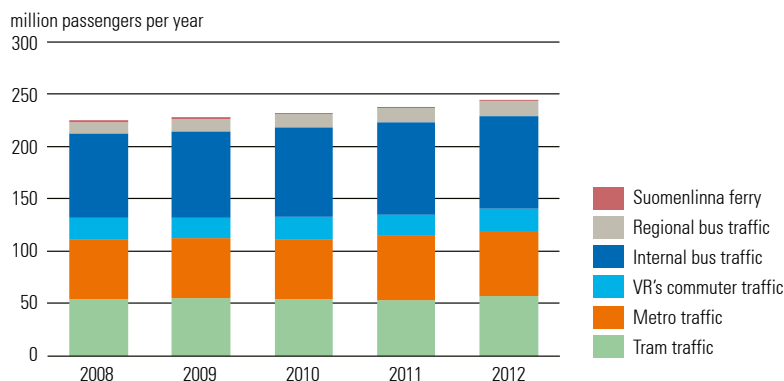
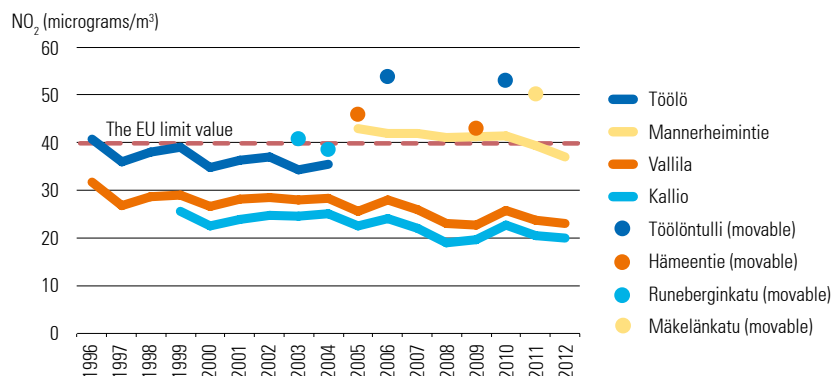


Figure 6. Annual averages of nitrogen dioxide (NO₂) in the Helsinki air quality monitoring stations since 1996. The EU limit value for annual average is 40 micrograms/m³. The EU limit value took final effect on 1.1.2010. Source: HSY



² Rail traffic includes tramline traffic, metro traffic, and VR's local traffic.

mitted number is 35. However, the station is not an official limit value monitoring station. The measurement primarily aimed at collecting information on the contents in the immediate vicinity of the road. The limit value was only exceeded 7 times at the permanent monitoring station on Mannerheimintie, which is significantly less than the maximum allowed.

Various measures

Many measures are available towards decreasing the amount of street dust. The cleaning of street dust during the spring has been made quicker and more efficient by the use of newer and more efficient equipment, for example. The four-year Redust project, carried out through Life+ funding from the EU, continued the development of good practices in 2012. The NASTA research programme (2011–2013) has studied the effects of the reduced use of studded tyres on air quality, health, and traffic safety.

As of 2012, the trams and the metro use electricity produced using Finnish hydropower. Therefore, the energy used in rail traffic no longer produces any carbon dioxide emissions at all.

An environmental zone is in use within the inner city. This means that tighter emission norms are applied to the competitive bidding processes for the bus traffic ordered by HSL and waste transportations ordered by HSY within the area, than for traffic outside the area. In 2012, two hybrid buses and 54 buses with a lighter structure than usual were introduced. Their fuel consumption and local emissions are approximately 25 percent lower than in other buses. The equipment introduced last autumn meet the Enhanced Environmentally Friendly Vehicle requirements. 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.

More effective noise prevention

Noise is one of the most significant environmental factors reducing the quality of the living environment and causing health hazards in Helsinki. Car traffic causes the most disturbing noise, but construction work, events, and food businesses can also cause noise. As the community structure has become increasingly tight, problems caused by the vibration of the traffic have also increased. In 2011, some 48 percent of the people in Helsinki were exposed to street and road traffic noise over 55 dB.

The city's environmental policy has defined mandatory objectives for 2020, among others.

- Exposure to noise will have been reduced, so that 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 (old residential areas; no new residents exposed to noise).
- The average noise levels of sites for the most noise-sensitive population groups, such as day care centres, play parks, schools, and the play and outdoor areas of retirement homes, fall below 60 dB during the day (old sites).

If the actions for noise prevention are not improved, the increasing passenger car traffic will increase the number of people exposed to noise. Noise prevention is not enough: solutions must be sought through the planning of land use. The noise reduction operating plan for the City of Helsinki, accepted in 2008, lists several actions that can be used to achieve the target levels.

The many sources of noise

According to the traffic noise report, drafted in accordance with the Environmental Noise Directive, the number of citizens within the Lden (day-evening-night equivalent level) of over 55 dB from road traffic in Helsinki was 55 282,060, while in 2007, it was 237,500. Factors that increase the noise level include the increased population in Helsinki, the changed traffic information, and the development of the calculation settings and modelling principles, which consistently show higher results.

The largest monitoring sites in 2012 included the blasting work at Kalasatama and the Western Metro, the construction site in Jätkäsaari, and the preconstruction operations at the Laajasalo area. The most challenging of



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the construction sites were sites where work had to be carried out during night time in the vicinity of residential buildings. In these cases, the most commonly used methods of noise prevention included informing the neighbours of the exact time of the night-time work, using noise suppression in the percussion hammer, and scheduling long-term night-time work into smaller sections.

Many kinds of events continued to be organised in Helsinki in 2012. The largest events took place in Kyläsaari, the Helsinki Exhibition & Convention Centre, and Suvilahti. Smaller outdoor events took place around the city on almost every weekend during the summer. The events complied with the defined noise levels, with only a few exceptions, but more concerts than normal ended significantly later than the allowed time.

Noise prevention actions in 2012

The construction of a noise barrier on the north side of Kehä I in Kivikko began in 2012 in cooperation with the Uusimaa Centre for Economic Development, Transport and the Environment. The construction of noise barriers on Tapaninkyläntie continued, in order to decrease the noise from the traffic. Pavings with smaller grains than usual, and, therefore quieter than usual, were used on several sites.

The revision of the noise prevention operating plan began in 2012. The report on the health impacts and obtrusiveness of environmental noise was published in the series of publications by the City of Helsinki Environment Centre.

The permit and notification processes aim to ensure in advance that the noise prevention level for operations that cause noise is sufficient. In 2012, the Environment Centre processed a total of 222 noise notifications, in accordance with the Environmental Protection Act. Approximately 140 notifications were related to construction, and some 80 to various events.

Aiming for eco-efficient procurements

Environmental factors are today increasingly considered in procurements, but are still considered difficult at times. Utilising environmental criteria in the procurement process requires versatile competence, because the experts must not only understand the procurement legislation, but also the environmental effects of the product throughout its life cycle.

The city's environmental policy defines that by 2015, environmental criteria must be used in 50% of all the procurement processes of the city, and by 2020, in 100%. In addition to the environmental policy, alignments related to the environmental responsibility of the city in procurements have been defined in the city's strategy programme for 2009–2012 and the energy policy definitions.

The Procurement Centre and Environment Centre will together promote eco-efficient procurements in the city organisation by offering training and information.

Many operators

Procurements are made in all city departments within the city. However, the tendering responsibility for some products is centred to one operator. This report concentrates on the procurements in joint procurement units. The Procurement Centre, Stara, Helsingin Bussiliikenne Oy, Helsingin Energia, and the hospital pharmacy are the joint procurement units of the city organisation. The scope of the Procurement Centre is the widest of these.

The procurement process is often complicated, with several phases and operators. The need for procurement often does not take place where the procurement itself will. Paper consumption is a good example of the complexity. The Procurement Centre is responsible for the joint tendering process of paper products. During the tendering, the Centre will ensure that the copying paper used is as environmentally friendly as possible, among other things. However, the procurement decision and paper consumption take place at the department level. The moment when an employee decides to print is the most significant factor in paper consumption.

In 2012, paper consumption in the city organisation began to increase for the first time since 2006. In 2012, the paper consumption per employee was 2,584 sheets, which is nine percent higher than in 2011, but 30 percent lower than in 2006.

Eco-efficient procurements in 2012

Tendering processes are seen to consider environmental aspects if they are included in the mandatory requirements or in the comparison criteria for the tenders. The city does not yet have an expansive monitoring system for the numbers of environmental criteria used in the procurement processes.

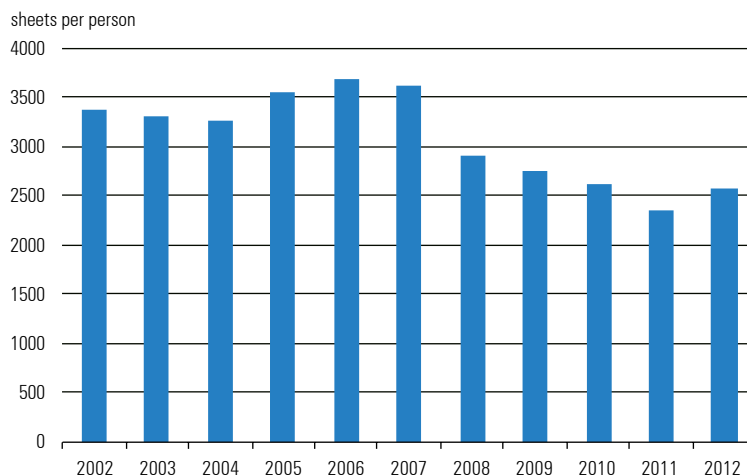
During 2012, the Procurement Centre organised 45 joint procurement tendering processes, for an approximate to-

tal worth of 164.6 million euro. Considering the monetary value, sustainable development criteria were used in 36 percent of the joint procurement processes, or in 37 percent of the number of joint procurements. In addition, almost all city departments order products from the Procurement Centre logistics centre, which offers several products that are biodegradable, eco-labelled or meet the requirements of the label, or made by using recycled materials.

The product and service procurement processes for Helsingin Energia contained environmental criteria in 80 percent of the number of procurements, and in 90 percent of the monetary value of the procurements. Helen considers environmental issues in the various phases of the procurement process whenever possible, considering the nature of the market and the procurement. In addition, it aims to consider the entire life cycle of the products and services.

In 2012, Helsingin Bussiliikenne Oy had seven significant tendering processes and procurement agreements, with a total value of some 16 million euro. Environmental criteria were used in approximately 63 percent of the monetary value and 57 percent of the number of procurements. New buses were the most significant single procurements, when considering the monetary value. The life-cycle costs, of which fuel costs take up a significant share, are always considered in the procurements of vehicles. Low fuel consumption saves money and decreases emissions.

Figure 7. Paper consumption per city employee from 2002 to 2012.
Source: the Procurement Center.



A pioneer in environmental education

Environmental awareness and responsibility work is carried out in many city departments, and they all have their clearly defined roles and assignments.

The objectives defined in the environmental policy include making Helsinki a trend-setter in environmental education by 2020, having a trained Eco-supporter for every working community, and making environmental choices easy for the citizens through a service supply that supports sustainable living.

Versatile environmental education

The Helsinki Zoo offers environmental education operations for the general public, as well as for schools and day care services. The Cats' Night event drew over 10,000 visitors, and the Easter Island event approximately 6,500. Almost 900 students attended the nature schools. In addition, various theme weeks, summer camps, a conference for school children, and international ice and sand sculpture competitions were organised at the Helsinki Zoo.

The Harakka Island nature centre offers environmental education services for the general public, as well as targeted for day care services and educational institutions. 5,193 of the visitors in Harakka participated in various information and education events. Over 1,600 people participated in the nature schools. Harakka also organised 65 island adventures and 11 environmental education courses for teachers and day care personnel.

Oy Helsinki Gardenia Ab organised several nature schools, nature hobby days, nature-related course activities, and other events around the theme of nature. The nature schools were free of charge for the schools and the demand for the events was larger than what could be offered. Gardenia also organised nature trips and other related events on order by the City of Helsinki Environment Centre and Public Works Department.

A total of 211 spring cleaning events were organised, with a total of 27,628 volunteers participating. At the end of 2012, there were a total of 458 Park Volunteers. The Park Volunteer operations were one of the Helsinki World Design Capital projects of the Public Works Department. 16 park walks were organised around Helsinki, drawing a total of 1,245 participants.

Increased climate and energy guidance services

In 2012, the energy saving guidance offered by Helsingin Energia reached a total of almost 170,000 people, 42,000 more than in 2011. The year also saw the launch of the revision of Helen's energy guidance, which created a new energy-related exhibition at the Sähkötalo building in Kampi, among other things.

Ilmastoinfo offers the citizens and other operators instructions and guidance for a lower-emission life style. The cities of Helsinki, Espoo, Vantaa, and Kauniainen, together with Helsingin Energia, HSY, and HSL, are the forces behind Ilmastoinfo. Ilmastoinfo organised the second Energiatiedotus event, this time in connection with the Recycling Factory event. Ilmastoinfo's Ilmasto-sanomat newspaper was published together with the Metro newspaper in spring and autumn. Since the beginning of 2013, Ilmastoinfo has been part of HSY.



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The Public Works Department organised many kinds of climate and energy guidance operations during the year. Materials related to the "Energiaa toka-luokkalaissille" (Energy for second-graders) campaign for students of primary schools were distributed to over 1,100 pupils. Special books on energy production were distributed to a total of 4,000 students and 40 schools.

Table 2. The number of participants in the City of Helsinki environmental education and climate and energy guidance, 2009–2012.

| | 2009 | 2010 | 2011 | 2012 |
|--|----------------|----------------|----------------|----------------|
| Environmental education | 66 495 | 59 820 | 91 679 | 72 169 |
| The Harakka Island nature centre (Environment Centre) | 3 718 | 5 023 | 7 916 | 9 734 |
| Spring cleaning events (Public Works Department) | 21 000 | 23 500 | 30 530 | 27 628 |
| The Helsinki Zoo | 22 539 | 14 053 | 34 754 | 22 152 |
| Others | 19 238 | 17 244 | 18 479 | 12 655 |
| Climate and energy guidance services | 116 607 | 113 616 | 135 501 | 174 982 |
| "Energy for second-graders" and others (Public Works Dep.) | 1 300 | 800 | 1 380 | 1 184 |
| Ilmastoinfo | 0 | 0 | 8 725 | 6 750 |
| Helsingin Energia | | | | |
| Total | 115 307 | 112 816 | 125 396 | 167 048 |
| Face to face | 6 389 | 9 486 | 9 002 | 8 901 |
| Telephone | 40 073 | 41 099 | 43 685 | 42 922 |
| E-mail | 851 | 899 | 1 051 | 3 045 |
| Electricity usage monitor lending | 1 652 | 1 706 | 2 061 | 2 980 |
| Internet (energy centre + energy advisor) | 66 342 | 59 626 | 69 597 | 109 200 |
| TOTAL | 183 102 | 173 436 | 227 180 | 247 151 |

Aiming to reduce risks

The climate change and the oil damages in the Baltic Sea affect everyone in Helsinki, at least indirectly, because the city uses significant sums of money every year to reduce the related risks. As the climate changes, extreme phenomena may increase, and the climate may become more difficult to predict. 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.

One of the objectives defined in the environmental policy is to integrate the adaptation to climate change to the operations of all of the city departments by 2020, in order to minimise risks, and to communicate the effects and means of preparation to the citizens and companies in the area. Other objectives include improving the efficiency of Helsinki's oil prevention on the amount and extent of oil that reaches inhabited shores in most natural conditions, and ensuring that the oil prevention assistance provided to the archipelago is significantly efficient.

The operations for adapting to climate change have been distributed to several city departments, and many different operating plans promote the adaptation operations. The urban run-off water and flood strategies for the City of Helsinki, as well as the LUMO programme and the objectives of nature management also include actions for adapting to the climate change. In 2012, a proposition was made to establish a city-internal climate working group for continuing the development of the adaptation methods.

Actions in 2012

Adaptation to climate change was promoted as part of the everyday operations, for example, through maintaining the vitality and good condition of recreational areas. The city also had several development projects.

In 2012, several flood protection operations were performed, such as renovating the floodbank in Savela, increasing

the height of the floodbank in Kaitalahti, and building flood protection in Marjaniemi. The drafting of flood protection plans has been started. The planning of the improvements of the existing Savela and Kaitalahti flood protection structures, for example, began in 2012.

The Climate-proof city EU project (Ilmastonkestävä kaupunki, ILKKA), coordinated by the Environment Centre, was launched in September. The project aims to create planning tools and instructions for considering climate change in the city planning work. The project pilots the Green Factor tool, for example, and aims to find the best possible adaptation operations (e.g. the management of urban run-off water).

Oil prevention training in case of disasters

Fewer oil-related accidents took place in 2012 in the Helsinki region than the previous year. The total number of oil-related accidents was 357 (-17% from 2011), of which 38 were in waterways (+73% from 2011), 8 in important ground water areas (-53% from 2011), and 311 in other areas (-21% from 2011).

The development of the oil prevention preparedness and sea rescue operations of the City of Helsinki was continued in 2012. The oil prevention truck was introduced. Six motor pumps were purchased for the prevention of flood damage.

The City of Helsinki participated in several oil prevention drills, one of which was a disaster drill organised by the Gulf of Finland coast guard. The drill focused on testing the management abilities, support actions, and alarm organisations. The scenario was the collision of two merchant vessels in the Gulf of Finland, and the management of the consequent events.

The most significant operative exercise was the Balex Delta 2012 oil prevention exercise, organised in accordance with the Baltic Marine Environment Protection Commission (HELCOM), in which several city departments participated. The exercise simulated a realistic large-scale vessel oil accident in the Gulf of Finland.



The environmental costs for the City of Helsinki (including depreciations and HSY's shares³) increased by 6 percent to a total of 220 million euro in 2012. Of this amount, the costs of the internal operations of the City of Helsinki made up 128 million euro. The share of HSY Water Management was 53 million euro, and the share of the Waste Management 38 million. The environmental costs caused by the operations of the city made up 2.8 percent of the total operating costs of the city, equaling 212 euro per capita. The city's environmental costs increased by 7 percent from the previous year, which is particularly explained by the increased emissions trading costs and other environmental costs by Helsingin Energia (16.9 million euro). The city's largest expense items were environmentally-based taxes on electricity and fuel, and the costs from refuse collection and disposal, waste management, and climate protection.

The environmental investments of Helsinki in 2012, including HSY's shares, added up to 72 million euro (-11% from 2011), of which the investments of HSY Water Management were 45 million and those of Waste Management almost 7 million. The environmental investments of the City of Helsinki in 2012 added up to 20 million euro, which is some 3 percent of the total capital expenditure. The city's environmental investments of the city decreased by 39 percent from the previous year, due to the lower climate protection (-79% from 2011) and contaminated land restoration (-14% from 2011) investments.

Including HSY's share, the environmental income for the City of Helsinki in 2012 added up to 123 million euro, of which HSY's water sales and basic fee income was 62 million euro, and waste transportation and treatment fees 53 million. The internal environmental income for the City of Helsinki added up to some 8 million euro, which made up 0.5 percent of the total operating income of the city. The greatest sources of income for the city were the proceeds from the ticket sales of the Helsinki Zoo, vessel waste charges, and scrap metal sales.

The total value of environmental responsibilities in the financial statements on 1 January 2012 was EUR 23,1 million. The responsibilities concerned the demolition of the Hanasaari A power plant, provision for the treatment of contaminated soil and aftercare of landfills.

³ The figures are calculated, according to the principle that Helsinki's share of HSY's cash flows is 50 percent, and the Vantaa and Espoo shares are both 25 percent.

Table 2. City of Helsinki environmental financial figures 2011 and 2012 (1000 €).

| | excl. HSY | | calculated share with HSY | |
|--|----------------|----------------|---------------------------|----------------|
| | 2011 | 2012 | 2011 | 2012 |
| Environmental income | 7 502 | 8 098 | 109 692 | 123 215 |
| Air protection | 767 | 956 | 767 | 956 |
| Climate protection | 643 | 1 155 | 643 | 1 155 |
| Water protection | 188 | 278 | 51 303 | 62 589 |
| Waste management | 1 092 | 1 734 | 52 167 | 54 541 |
| Soil protection | 330 | 370 | 330 | 370 |
| Nature protection | 77 | 0 | 77 | 0 |
| Environmental administration | 1 018 | 602 | 1 018 | 602 |
| Environmental management | 262 | 134 | 262 | 134 |
| Environmental training and education | 2 952 | 2 869 | 2 952 | 2 869 |
| Actions that improve eco-efficiency | 173 | 0 | 173 | 0 |
| Environmental costs | 120 039 | 128 087 | 211 427 | 220 513 |
| Air protection | 11 517 | 12 619 | 12 410 | 13 105 |
| Climate protection | 16 096 | 26 465 | 16 561 | 27 397 |
| Water protection | 3 738 | 3 192 | 56 088 | 56 318 |
| Waste management | 25 686 | 24 240 | 63 366 | 62 121 |
| Soil protection | 3 351 | 4 228 | 3 351 | 4 228 |
| Noise reduction | 246 | 224 | 246 | 224 |
| Nature protection | 3 841 | 4 391 | 3 841 | 4 391 |
| Environmentally based taxes | 41 328 | 30 930 | 41 328 | 30 930 |
| Authority assignments related to environmental protection | 4 300 | 4 313 | 4 300 | 4 313 |
| Environmental management | 5 403 | 5 145 | 5 403 | 5 145 |
| Environmental training and education | 4 327 | 3 733 | 4 327 | 3 733 |
| Environmentally friendly and ecologically sustainable transportation | 0 | 8 502 | 0 | 8 502 |
| Actions that improve eco-efficiency | 205 | 104 | 205 | 104 |
| Environmental investments | 33 267 | 20 340 | 80 957 | 72 220 |
| Air protection | 1 272 | 992 | 1 307 | 1 021 |
| Climate protection | 8 226 | 1 740 | 8 293 | 1 796 |
| Water protection | 2 318 | 394 | 40 844 | 45 360 |
| Waste management | 1 259 | 2 072 | 10 322 | 8 902 |
| Soil protection | 12 469 | 10 722 | 12 469 | 10 722 |
| Noise reduction | 87 | 918 | 87 | 918 |
| Nature protection | 1 821 | 0 | 1 821 | 0 |
| Other | 5 815 | 3 501 | 5 815 | 3 501 |

Figure 8. Environmental investments in 2012. Source: Environment Center.

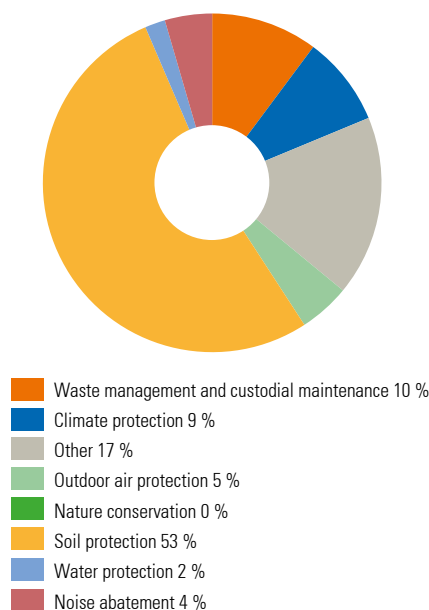
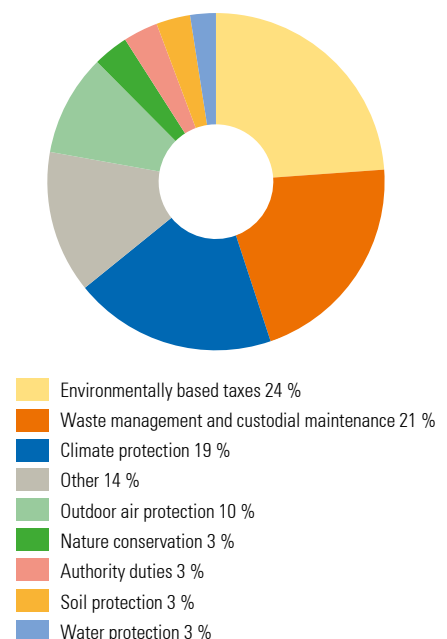


Figure 9. Environmental costs of the City of Helsinki in 2012. Source: Environment Center.



INDICATORS MONITORED IN THE ENVIRONMENTAL REPORT

| Indicator | Objective | avg. 2007- 2011 | 2012 | Change from previous years ¹ | Realisation, if objectives exist for 2012 |
|---|--|-----------------------|------------|---|---|
| ENERGY AND THE CLIMATE | | | | | |
| Greenhouse gas emissions corresponding to the consumption in Helsinki (1000 t CO ₂ -ekv.) | -30% from the 1990 level by 2020 (City of Helsinki strategy programme 2013–2016, Environmental policy) (2,531 t CO ₂ -e.) | 3224 | 2970 | -8 % | |
| Greenhouse gas emissions corresponding to the consumption in Helsinki per capita (t CO ₂ -e/pers/a) | 4.3 t CO ₂ -e per capita by 2030 (the climate strategy of the Helsinki metropolitan area) | 5,5 | 4,9 | -11 % | |
| Energy consumption of the community per capita (kWh/pers/a) | Energy-efficiency has improved by 20% by 2020 (Environmental policy) | 25 781 | 24 262 | -6 % | |
| Energy consumption of the community per capita (kWh/pers/a) | The electricity consumption per capita has decreased (City of Helsinki strategy programme 2009–2012) | 7 716 | 7 481 | -3 % | |
| The share of renewable energy of the electricity, district heating and cooling acquisitions by Helsingin Energia (%) | The share of renewable energy to 20% by 2020 (City of Helsinki energy policies, Environmental policy) | 5 | 6 | 24 % | |
| Annual savings of energy in city-owned public service and residential buildings (GWh/a) | 9% decrease (129 GWh) by 2016, from the 2005 level (municipal energy-efficiency agreement, KETS) | 13 | 17 | 31 % | |
| Annual savings of energy in city-owned residential buildings (GWh/a) | 7 % decrease (49.9 GWh) by 2016, from the 2010 level (the Property and Building Sector Energy Efficiency Agreement, VAETS) | 8,9 | 4,2 | -47 % | |
| The share of district heating of the new buildings (%) | Increasing the share of district heating (City of Helsinki energy policies) | 90 | 93 | 3 % | |
| The share of new residential building permits granted by the City of Helsinki Building Regulation Department with energy-efficiency class A (%) | Improving the energy-efficiency of new buildings (including a requirement for energy class A in the city's terms for surrendering plots, Real Estate Committee decision 2011) | 23 | 64 | 174 % | |
| Specific consumption of heating in new residential buildings that use district heating (kWh/m ²) | The near zero-energy building requirement by the EU in 2020 (the criteria to be defined in 2015) | 31 | 21 | -31 % | |
| TRAFFIC, AIR QUALITY, AND NOISE | | | | | |
| The distribution of the methods of transportation in Helsinki (walking + cycling + public transport) (%) | 3% increase in the share of walking, cycling, and public transport by 2012 (City of Helsinki strategy programme 2009–2012) | 73,5 | 75,0 | 2 % | |
| Motorisation (number of passenger cars used in traffic per 1,000 persons) | The transportation system is developed to promote sustainable forms of transportation (City of Helsinki strategy programme 2009–2012) | 352 | 342 | -3 % | |
| Number of public transportation trips (trips/person/a) | The share of public transport as a transport mode is increased (City of Helsinki strategy programme 2009–2012) | 392 | 405 | 3 % | |
| Carbon dioxide emissions of road traffic in Helsinki (1,000 t CO ₂) | -16% by 2020 (national climate strategy) | 538 | 520 | -3 % | |
| Carbon dioxide emissions of passenger cars registered for the first time in Helsinki (g CO ₂ /km) | New passenger cars registered within the EU will reach the objective for average emissions (130 g CO ₂ /km) between 2012 and 2015 (EU regulation) | 168 | 140 | -16 % | |
| The share of people using public transport when travelling towards the city centre in the mornings (%) | >73% in 2012 (binding operational objective of the Helsinki City Planning Committee 2012) | 71,7 | 73,6 | 3 % | |
| Share of public transport in cross-sectional traffic (%) | 21% in 2012 (binding operational objective of the Helsinki City Planning Committee 2012) | 18,1 | 18,9 | 4 % | |
| Share of cycling as a transport mode (%) | Doubled by 2015 (Doubling bicycling programme, City Council 2003) | 8 | 11 | 38 % | |
| Annual average of nitrogen oxide (the Töölöntulli monitoring station) (micrograms/m ³) | Air quality limit values (40 micrograms/m ³) not exceeded after 2015 (Environmental policy) | 50 | 49 | -2 % | |
| Number of days when the limit value level of particulate matter was exceeded in Helsinki (the Mannerheimintie monitoring station) (pcs/a) | Air quality limit values (max. 35 days per year) not exceeded after 2015 (Environmental policy) | 28 | 7 | -75 % | |
| Constructing noise barriers to protect current land use (m/a) | Number of citizens exposed to noise in noisy areas 20% lower than the 2003 level by 2020 (Environmental policy) | 2001 | 0 | -100 % | |
| Usage of antinoise coating (m/a) | Number of citizens exposed to noise in noisy areas 20% lower than the 2003 level by 2020 (Environmental policy) | 1 477 | 1 410 | -5 % | |
| NATURE & WATER | | | | | |
| Nitrogen emissions to the sea from the Viikinmäki sewage treatment plant (t/a) | A good state of the marine environment in Helsinki by 2020 (Environmental policy) | 526 | 593 | 13 % | |
| Phosphorus emissions to the sea from the Viikinmäki sewage treatment plant (t/a) | A good state of the marine environment in Helsinki by 2020 (Environmental policy) | 23 | 26 | 12 % | |
| Share of the nature conservation areas of the land area (%) | The diverse wildlife of Helsinki will remain a harmonious part of the city structure in the long term (Environmental policy) | 2,0 | 2,2 | 10 % | |
| RESOURCE-EFFICIENCY | | | | | |
| Share of the environmental criteria in the centralised acquisitions of the City of Helsinki (%) (including the information from the Procurement Centre) | 50% by 2015 (Environmental policy) | 29 | 37 | 30 % | |
| Amount of communal waste produced by the city organisation, per employee (t/a) | 10% reduction in the amount of communal waste per employee in the city organisation from the 2013 level by 2020 (Environmental policy) | 729 | 754 | 3 % | |
| The material utilisation rate of the communal waste produced by the city organisation (%) | The material utilisation rate of the communal waste produced by the city organisation +10 percentage units from the 2013 level by 2020 (Environmental policy) | 35 | 39 | 13 % | |
| Amount of communal waste in the Helsinki metropolitan region per capita (kg/pers/a) | 10% reduction in the amount of communal waste produced by the city from the 2013 level by 2020 (Environmental policy) | 343 | 340 (2010) | -1 % | |
| ENVIRONMENTAL AWARENESS & RESPONSIBILITY | | | | | |
| Participation in environmental education organised by the city (% of the citizens) | Increasing the environmental awareness of citizens and city employees (Environmental policy) | 12 | 12 | -4 % | |
| Annual number of eco-supporters in the city organisation (people/a) | Every work community will have a dedicated eco-supporter by 2020 (Environmental policy) | 1 048 | 1 139 | 9 % | |
| ENVIRONMENTAL MANAGEMENT & PARTNERSHIPS | | | | | |
| Share of administrative branches whose environmental management complies with at least the light environmental management system criteria (%) | By 2020, the administrative branches must be using an environmental system that at least complies with the light environmental management system criteria (Environmental policy) | 8,3 | 14,3 | 72 % | |
| Total number of audited EcoCompass companies, Climate Partner companies, and organisations that have accepted the Baltic Sea Challenge (pcs/a) | The city will actively seek partnerships in order to reach the objectives set out in its environmental policy by 2020 (Environmental policy) | 156 | 257 | 65 % | |

¹ The past year in relation to the average for the previous five years.

The highlighted entries are joint indicators of six cities (Helsinki, Espoo, Vantaa, Turku, Tampere, Oulu)

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