

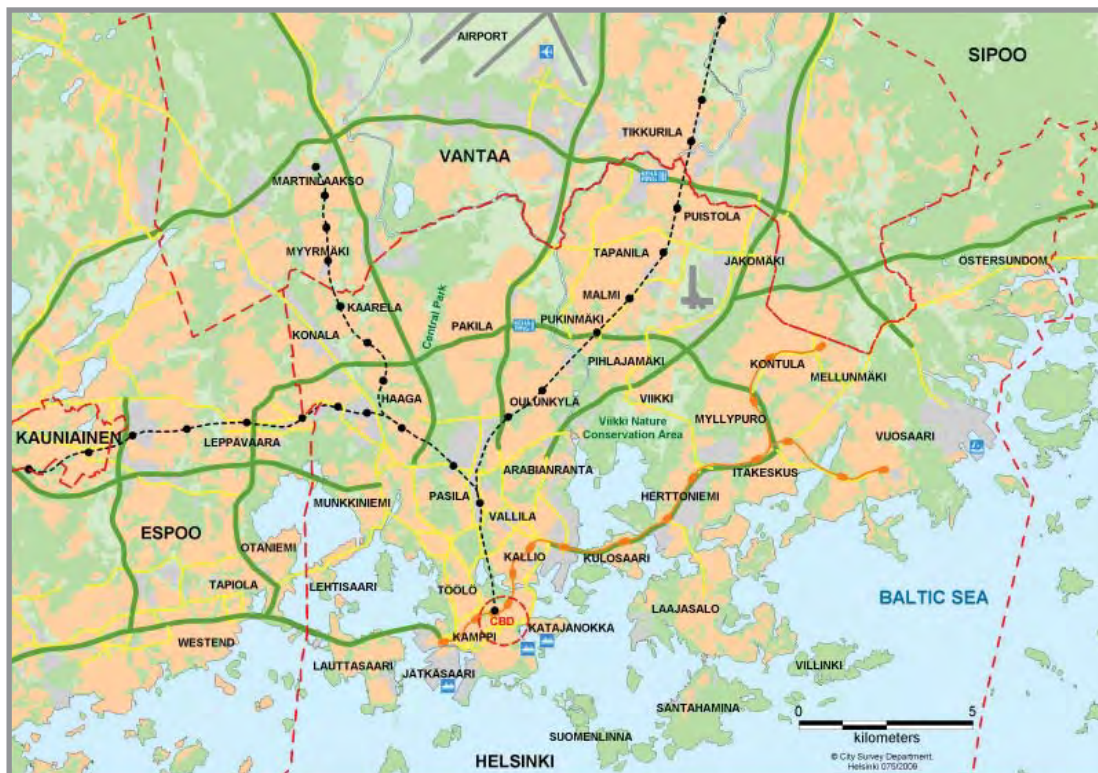


City of Helsinki



# Environmental Sustainability Issues and Challenges in Helsinki 2010

# General map of Helsinki and its surroundings



Helsinki May 2010

Cover: City of Helsinki Picture Bank / Mika Lappalainen

Editors: Kari Silfverberg, Petteri Huuska, Markus Lukin

Lay-out: Marjo Kosonen

Photos: Niklas Sjöblom / taivasalla.net,

City of Helsinki Picture Bank / Markku Juntunen, Kati Ista, Jouko Vatanen,

Arto Viikari, Anneli Hongisto, Eero Haapanen, Skyfoto and Comma Image Oy

Environment Centre's Picture Bank / Matti Miinalainen

Print: Kopio Niini Oy 5/2010

# Contents

<b>General map of Helsinki and surroundings</b>	2
<b>Introduction</b>	4
Helsinki – basic facts	4
<b>The challenge of sustainability and climate policy</b>	6
<b>Sustainable development strategies and programmes</b>	8
City Council Strategy Programme 2009–2012	8
Environmental Protection programmes	8
Helsinki’s Sustainability Strategy and Action Plan 2002–2010	9
The Environmental Management System of Helsinki in 2010	10
Environmental management at city organizations	11
Environmental Management support for Small and Medium-sized Enterprises (SMEs)	12
Climate and energy programmes	13
<b>Achievements as well as present and future challenges</b>	15
Creating an energy efficient compact urban structure	15
Combined production of heat and electricity saves the environment	16
Energy efficient buildings	17
Efficient public transport and low emission buses	19
Reducing urban noise	21
Systematic efforts to improve air quality	23
Reliable water supply and efficient wastewater treatment	24
The state of coastal waters and the Baltic Sea	26
Urban nature, archipelago and green areas	27
Waste management	30
Greening the Procurement	32
Enhancing environmental education and awareness-raising	33
Strengthening social cohesion and citizen participation	33
<b>International cooperation for sustainable development</b>	35
International green city assessments and comparisons	37
<b>Increasing eco-efficiency – a key challenge</b>	38
Other sustainability challenges for Helsinki	39

# Introduction

## Helsinki – basic facts

Helsinki, the capital city of Finland, is located at the Gulf of Finland coast of the Baltic Sea at latitude 60 degrees north. The local climate is influenced by both maritime and continental climatic patterns.

The landscape of this coastal region is a mosaic of mixed coniferous and deciduous forest, steep granite hills, small lakes and farmland developed on former sea-bottom plains. Many landforms in the region are a product of the Ice Age, which ended about 12,000 years ago.

### Geography and environment

	Helsinki	Helsinki Region
Total area (km <sup>2</sup> )	715	5,518
Sea (km <sup>2</sup> )	503	1,678
Land (km <sup>2</sup> )	213	3,840
Shoreline (mainland + bigger islands, km)	220	

### Population density

Inhabitants	583,350	1,320,220
Inhabitants per square km land	2,733	344

### Nature

Islands	315
Number of vascular plants	1,064
Number of nesting bird species	164

### Climate

Mean temperature (2000-2009/1900-1999)	+ 6.5 °C/+ 5.2 °C
Maximum temperature (1844-2009)	+ 31.6 °C (Jul 1945)
Minimum temperature (1844-2009)	- 35.0 °C (Dec 1876)
Average annual precipitation (2000-2009)	655 mm

Source: Facts about Helsinki 2009 (City of Helsinki Urban Facts), Finnish Meteorological Institute.



The most important cities in the region apart from Helsinki are Espoo and Vantaa. These urban centres provide about 600,000 jobs and produce about one-third of Finland's GDP.

Despite rapid urban growth, there is still much urban nature as well as many large recreational and green areas in the region. With regard to population, employment and production, this is one of the fastest-growing metropolitan areas in Europe.

Like most European capitals, the economic structure in Helsinki is based on the service sector. A total of 86% of work places are in this sector. The most important service sector branches are the social and health sector, retail sector, IT sector and research activities.

The City of Helsinki is also Finland's biggest employer. There are almost 40,000 employees working in 37 departments and business units of the municipality. The biggest staff categories are school teachers and health services personnel.





## **The challenge of sustainability and climate policy**

The principle of sustainable development (SD) was recognised as a guiding principle in municipal governance in Helsinki and the metropolitan area following the 1992 Rio Conference on Environment and Development (UNCED).

Helsinki participated during the years 1992–93 in a national campaign to strengthen local sustainability and signed the Aalborg Charter (Charter of European Cities and Towns towards Sustainability) in 1995. Thus Helsinki also joined the European Sustainable Cities Campaign and adopted the task to formulate a comprehensive sustainability action plan – a ‘Local Agenda 21 (LA21)’ programme. Helsinki’s neighbour cities, Espoo and Vantaa, also signed the Aalborg Charter in 1995. Until 2010, almost 2000 European cities, towns and local governments have signed the charter. In June 2002, the City Council approved Helsinki’s Sustainability Action Plan, and Helsinki thus became the first European capital with a comprehensive SD action plan.

Some earlier efforts to develop a sustainable urban infrastructure were already initiated before the sustainability concept emerged into public awareness. These initiatives have included developing Helsinki’s district heating network and co-generation of heat and electricity, which

ensures a high energy efficiency of the city's energy supply. During the period of fast urban growth and economic structural change in the 1960s and 1970s, Helsinki made efforts to control urban sprawl and develop liveable new neighbourhoods with dynamic service centres located along major rail transport corridors. Since that period, an important urban planning principle has also been to preserve a sufficiently large and functional network of green areas and ecological corridors throughout the metropolitan area. Today, about 40 per cent of Helsinki's land area is parks and green areas.

The threat of global climate change and emergence of European and national climate policies have in recent years introduced a significant new challenge to Helsinki's overall planning and policy formulation. Helsinki Metropolitan Area Council approved a regional climate strategy in December 2007 which defines specific targets and guidelines for various municipal functions, including energy production and use, regional land use and transport system development, building construction and maintenance, waste management, recreational services, education and awareness raising, etc.

New energy policy guidelines were approved by the City Council in January 2008. The targets were defined in accordance with the climate policy of the European Union: 20 per cent reduction of greenhouse gas emissions and increase of the share of renewable energy sources to 20 per cent by 2020. Helsinki's municipally-owned energy utility, Helsingin Energia, published a long-term development programme in February 2010, which defines means to fulfill the climate and renewable energy goals set by the City Council for year 2020. This Helen 2020+ development programme also discloses some possible paths and investment demands to advance towards carbon neutral energy production by 2050, possibly as soon as 2030.

Helsinki has achieved some important milestones in the process of sustainable development, but strong efforts are still required before the common criteria of ecological, social and economic sustainability are sufficiently fulfilled. Overall environmental and sustainability targets cannot be achieved only through the efforts of the municipal and regional administrations. The challenge of sustainability requires commitment and active participation by all concerned actors and interest groups, including individual citizens, neighbourhood associations and other civic and voluntary organisations as well as businesses, professional bodies and educational institutions, etc.

The following chapters include selected descriptions of Helsinki's main sustainability achievements and challenges from the early 1990s until 2010 – and also plans and strategies for the future.

# **Sustainable development strategies and programmes**

## **City Council Strategy Programme 2009–2012**

In April 2009, the City Council adopted a new Strategy Programme for the City of Helsinki. According to the Ethical Principles of the Strategy, “Helsinki is a forerunner in global responsibility issues. This will be expressed in actions to reduce Helsinki’s climate impacts as well as in environmental protection and procurement policies.”

The strategy sets the city’s targets and the most important actions to manage the climate challenge of Helsinki. These actions are focused on improving public transport, making energy production and consumption patterns more efficient and climate-friendly, renovating city-owned and private buildings, and developing the city structure into a more compact one.

The strategy also sets targets for Helsinki to improve the state of the Baltic Sea and to integrate environmental aspects into the procurements of the city. The City Council also decided that because the Strategy does not cover all environmental issues, the environment policy of the city must be updated in 2010.

## **Environmental Protection programmes**

The City of Helsinki has 20 years of tradition in drafting and implementing environmental programmes. All in all, the city has produced four environmental programmes.

The first environmental programme of the city was adopted in 1990. Since then, the programmes have been updated and re-organised for every City Council period. The latest programme was called Helsinki Ecological Sustainability Programme (HEKO) and it was part of the implementation of the Sustainability Action Plan 2002–2010. This programme included the environmental policy of the city as well as the targets and actions in six subject areas (climate, traffic and land use, nature, building sector, procurement, and environmental awareness and management).

Since the ending of HEKO-programme period in 2008, the city has focused on its environmental management work in a way that is a little different than in the past two decades. Nowadays, the focus is more on “sectoral environment programmes” and on developing the environmental management in the city departments.



## Helsinki's Sustainability Strategy and Action Plan 2002–2010

Helsinki's participatory Local Agenda 21 (LA21) process started with a City Council decision in March 1997. The council decided that Helsinki will formulate a comprehensive sustainability strategy and action plan in accordance with the principles of the Aalborg Charter and in close cooperation with citizens and interest groups. Five main targets for the planning process were defined in the council decision. In September 1997, the council adopted an overall sustainability strategy.

The LA21 process culminated in June 2002, when the City Council unanimously adopted Helsinki's Sustainability Action Plan, making Helsinki the first capital city in Europe to have completed a full-scale participatory SD action-planning process. The plan has a broad scope and contains strategic goals and guidelines for the enhancement of ecological, economic, social and cultural sustainability in Helsinki during the period 2002–2010. It also contains 70 concrete measures to be included in the sectoral development programmes and action plans of various departments of the municipality.

The overall targets of the SD action plan are:

- 1) Reducing greenhouse gas emissions
- 2) Protecting and fostering biodiversity
- 3) Strengthening the city's competitiveness and commercial and industrial structure in order to safeguard stable economic development
- 4) Inclusion of life-cycle thinking in the city's physical planning, purchasing practices and construction
- 5) Increasing interaction and citizens' participation, and strengthening partnership
- 6) Preventing exclusion and social segregation
- 7) Fostering cultural diversity and the built-up environment

The preparation of the action plan was a long-term participatory process which involved every department of the city administration as well as citizens, neighbourhood associations, local LA21 working groups, professional associations, voluntary organisations, educational institutions, enterprises and commercial institutions, governmental organisations, religious and cultural institutions, etc. Over 4,000 citizens took an active part in the planning process. Important stages of the work included four open LA21 conferences, thematic seminars and workshops, specific task groups and two official commenting rounds.

About 160 small-scale local sustainability projects were implemented during the LA21 process by residents and NGO's with economic support from the municipality. The process also included the drafting of Helsinki's Core Indicators for Sustainability. The first SD indicator report was published in 2000 and an updated version in 2006.

A comprehensive mid-term review of the implementation of the SD Action Plan was presented to the City Council in March 2007. Implementation is also monitored with the help of Helsinki's annual environmental reports. A final LA21 review and assessment will be presented to the City Council in 2011. The need for new guidance and management tools for sustainability enhancement after 2010 is now under consideration in the concerned municipal departments.

## The Environmental Management System of Helsinki in 2010

The City of Helsinki has set the goal of including environmental management as an integral part of the entire city government. This goal has been implemented in several ways.

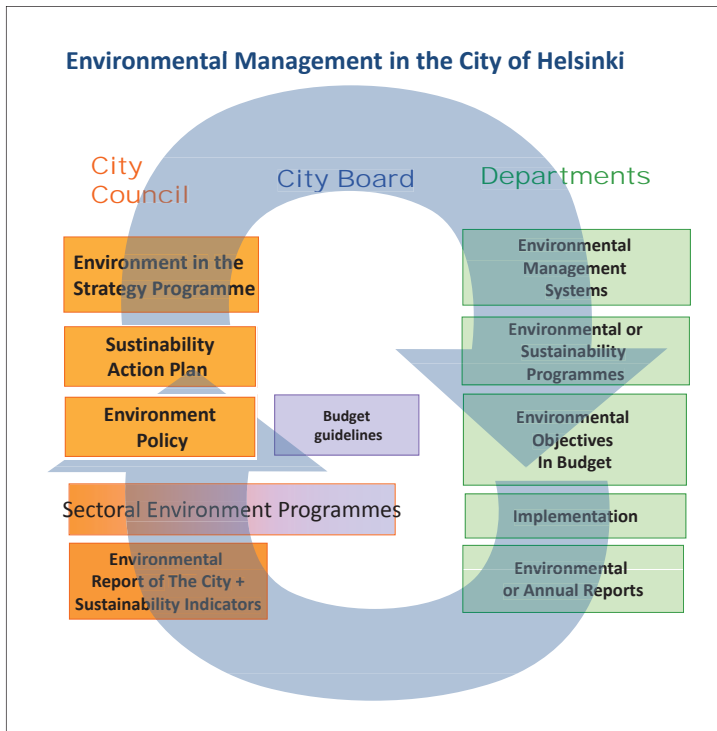
In addition to the Sustainability Action Plan and the new Strategy Programme of Helsinki, there are a few other instruments at the city level to develop environmental management. The most important of these are environment policy, binding environmental objectives in the municipal budget and environmental reporting on the city.

In recent years, Helsinki has set environmental targets in many sectoral environment programmes or strategies. These include:

<b>Programme</b>	<b>Target year</b>
Climate Strategy (metropolitan area)	2030
Energy Policy	2020
Energy Efficiency Programme	2016
Air Protection Action Plan	2016
Noise Reduction Plan	2020
Biodiversity Action Plan	2017
Nature Management Policy	
Programme for Nature Protection Areas	2017
Eco-Construction Programme	2016
Storm Water Drainage Strategy	2013
Flood Management Strategy	2014

The 2009 budget included nine binding environmental objectives, five of which were realised. The objectives concerned the share of public transportation both towards the city centre and transverse traffic between city districts, concentration levels of street dust, life cycle estimates for construction projects, and the nitrogen and phosphorus nutrient load of processed sewage.

Environmental reporting has been an important part of Helsinki's environmental management for ten years. The annual environmental report includes a description of the city's most relevant environmental impacts and the departments' efforts to reduce their environmental loads as well as environmental accounting of the departments. In addition to the environmental report, the city published a more comprehensive report of Sustainability Indicators in 2000 and an updated version in 2006.



Environmental Management in the City of Helsinki.

Helsinki's annual environmental reports are complemented by environmental reviews, which present detailed data about the state of the environment, collected from the city's environmental statistics databases. Environmental reviews are published with four years intervals.

## Environmental management at city organizations

Environmental management varies from one department to another. There are ISO 14001-standardised environmental management systems in operation at the Port of Helsinki and in the Helsinki Energy power plants, heating plants and district heating systems, and in Helsinki Bus Traffic Company. In addition, there are non-certified environmental management systems in four departments and active sustainable development or environment programmes in eight departments. Four departments are currently developing their own environmental programmes.

The Environment Centre actively supports the departments' environmental management practices. The most important tools of this work are annual seminars, workshops and discussions with the management groups of those departments which need support in developing their environmental management.



Within the affiliate organizations of the city, systematic environmental management was executed by only a small number of enterprises. However, a larger number of organisations actively collected environmental information. On the other hand, significant resources have not been allocated so far for developing environmental management in the affiliate organizations, as the focus has been on the development of city departments.

### **Environmental Management support for Small and Medium-sized Enterprises (SMEs)**



The three-year EcoCompass project (2008–2011) encompasses the entire Helsinki metropolitan area. It aims to improve the environmental management of small and medium-sized enterprises (SMEs) in the area to achieve competitive advantage and save both environment and money. The project offers tailor-made environmental counselling for SMEs, supporting the development of a less formal environmental management system. Pilot enterprises for the project are being selected from the travel and printing fields as well as from the City of Helsinki Wholesale Market area. The first enterprises have already been successfully audited and have received the EcoCompass Certificate.

During the project, an operating model for voluntary environmental cooperation between the cities and the SMEs is created. It also includes business advisors, who play a significant role in terms of reaching new companies and informing existing companies. The EcoCompass project works in close cooperation with the economic and enterprise services by training the business advisors to include environmental issues in their advisory work.

EcoCompass is funded by the European Regional Development Fund (ERDF) and the Centre for Economic Development, Transport and the Environment. The key cooperation partners include municipalities of Helsinki, Vantaa, Espoo and Kauniainen; Helsinki Region Environmental Services Authority; Helsinki Region Chamber of Commerce and the Regional Organization of Enterprises in Helsinki.

The EcoCompass environmental management system is part of the Nordic Environmental Network and has been developed to meet its demanding criteria.

## **Climate and energy programmes**

Mitigation of climate change has become a top priority of Helsinki in the field of sustainable development. According to the City Council Strategy Programme 2009–2012 Helsinki aims to be a leading actor in mitigation of climate change. The city also profiles as a climate friendly city and as a forerunner in energy efficiency.

In January 2008, the City Council of Helsinki adopted ambitious goals to reduce the city's total CO<sub>2</sub> emissions by 20 per cent by 2020, based on the 1990 level. The city also adopted the goal to increase the amount of renewable energy from 5% in 2007 to 20% by 2020 in the city's energy supply (heat and electricity production). The City will also make energy-saving an important principle in all planning and common practices.

In 2009, the city adopted a Covenant of Mayors initiative to reduce the city's greenhouse gas emissions by more than 20 per cent by 2020 and to improve the energy efficiency of the city by 20 per cent by 2020. Helsinki is preparing a sustainable energy action plan (SEAP) to fulfil the commitment.

In 2010 Helsinki signed EUROCITIES Green Digital Charter. The aim is to decrease the ICT direct carbon footprint by 30% by 2020 and deploy five large-scale ICT pilots before 2015.

In December 2007, Helsinki signed an energy conservation agreement with the Ministry of Trade and Industry, which aims to reduce energy use by 9% between 2008–2016 in city-owned buildings.

A comprehensive climate strategy for the Helsinki metropolitan area was prepared during 2005-2007 and approved by the City Board of Helsinki in December 2007. The overall goal is to reduce the CO<sub>2</sub>-emissions/per capita in the whole Metropolitan Area by one-third by 2030, based on the 1990 level. The strategy was prepared together by the municipalities of Helsinki, Espoo, Vantaa, Kauniainen and the Helsinki Region Environmental Services Authority HSY.

Helsingin Energia carried out an extensive investigation and preparation project, "Helen 2020+, the development programme towards carbon-neutral future" in 2010. The development programme consists of concrete investment and action proposals for achieving the climate policy targets by 2020, as set by the City Council. The development programme also deals with the post-2020 period, including possible measures to take the city towards a carbon-neutral future until 2050. The development programme could reduce greenhouse gas emissions from energy production by up to 98% by 2030. In practise the implementation of the programme will depend on the price and availability of renewable fuels, the government's tax policy and the technological development in the field.

Improving the ecological sustainability of construction activities plays an important role in Helsinki. This work is carried out within the city's EkoRak programme. The first part of the programme covered the ecological construction of city-owned service buildings and was completed in 2009. The second part is in progress in 2010 and focuses on ecological infrastructure construction. The third part of the programme will be aimed for residential buildings.

Helsinki, together with the other cities in the metropolitan area and HSY, is preparing a climate change adaptation strategy for the metropolitan area, The strategy will be completed in 2011. Helsinki already has a storm water strategy and a flood strategy.



## **Achievements as well as present and future challenges**

### **Creating an energy efficient compact urban structure**

A compact urban structure and efficient public transport system are today considered to be key sustainability criteria for cities. The overall city structure influences both directly and indirectly the community's functionality, health, enjoyment and various factors in ecological sustainability such as the consumption of energy and natural resources, the amount of greenhouse gas emissions and the state of biodiversity.

A guiding principle in Helsinki's physical planning has already for many decades been to achieve a compact urban structure in such a way that the network of green areas remains sufficiently large and functional. This principle is also included in Helsinki's current Master Plan 2003. A major objective of the City Council's strategy programme for 2009–2012 is to mitigate climate change with a compact city structure relying on a functional rail transport network. The municipalities of the Helsinki metropolitan region are now starting to prepare a combined master plan for the whole region with a target of preventing urban sprawl.

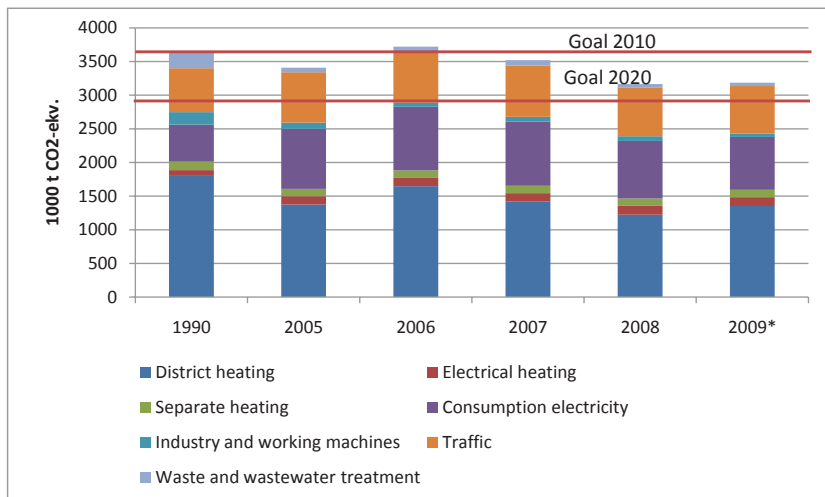
Compaction and infill construction are primarily focused on under-utilised and brownfield areas where land use is changed to housing and services. A large part of the city's current harbour,

industrial and storage areas in the inner city are being changed to new housing, office and service areas and seaside parks. This land use change became possible when Helsinki's new cargo port in Vuosaari suburban district was opened in 2008. All new residential areas will be functionally connected with the rail transport network. The network of bicycle lanes is being extended in all neighbourhoods.

A new challenge for Helsinki is to develop eco-efficient housing units in the eastern Östersundom district, which was included in the city of Helsinki in 2009. This will also provide new possibilities to develop the utilisation of solar and geothermal energy. Östersundom new neighbourhood will be connected to the rail transport system.

### Combined production of heat and electricity saves the environment

Helsinki's efforts to reduce greenhouse gas emissions are becoming more effective. The Helsinki-owned energy company, Helsingin Energia, which causes about 4/5 of the city's GHG emissions, has recently produced a long-term development plan to reduce its emissions as settled. This GHG-reduction plan includes large offshore wind power plants in the Baltic Sea, using wood-based biomass on a large scale to replace coal and studying the possibilities for carbon capture and storage technologies.



Helsinki's greenhouse gas emissions corresponding to consumption, 1990–2009. The target of Helsinki's sustainability action plan is for 2010 emissions to be at the 1990 level. The 2020 target is from the City of Helsinki's energy policy guidelines.



One of Helsinki's most significant strengths with regard to sustainable development is the city's district heating system and co-generation of electricity, heating and cooling. These have been developed systematically since the 1950s. Helsingin Energia has become a leading actor in combined energy production technology and has been regularly awarded for this, most recently in 2008 by the European Parliament. The introduction of district heating has considerably improved the air quality in Helsinki, since separate smokestacks on individual buildings and housing blocks have disappeared and pollution control at all municipal energy plants has been considerably improved since the 1970s.

Helsinki's greenhouse gas emissions corresponding to consumption, 1990–2009. The target of Helsinki's sustainability action plan is for 2010 emissions to be at the 1990 level. The 2020 target is from the City of Helsinki's energy policy guidelines.

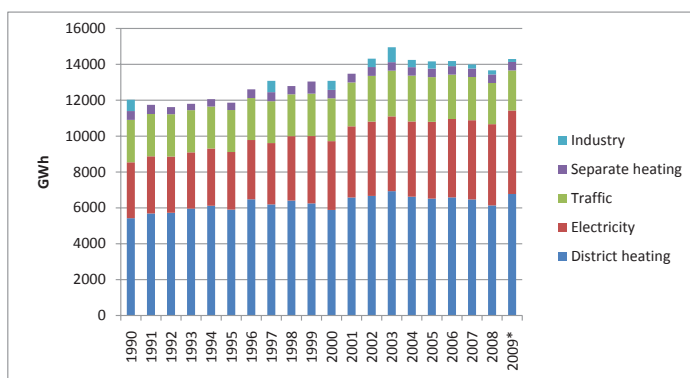
District heating serves about 93% of the heating need in the city. Energy efficiency is very high, about 90% of fuel energy. The main fuel used today in energy production in Helsinki is natural gas, whose share has been increasing instead of coal. The share of renewable energy in district heating is only about 3%, but increase in this share has been planned. The specific emissions of energy production (heat, power and cooling) of Helsingin Energia were 260 g CO<sub>2</sub>/kWh in 2009 compared with the European average of electricity production 476 g CO<sub>2</sub>-ekv/kWh.

Quite a new issue in the improvement of Helsinki's energy efficiency is the development of district cooling during the warm months of the year. This reduces energy wasting and electricity consumption in cooling of buildings during the warm season. Helsinki's first heat pump plant was completed in 2006. The plant transfers heat from processed wastewater and district cooling return water to district heating and also produces district cooling. The new heat pump plant significantly reduces Helsinki's carbon dioxide emissions in cooling, as 80% of district cooling energy is renewable.

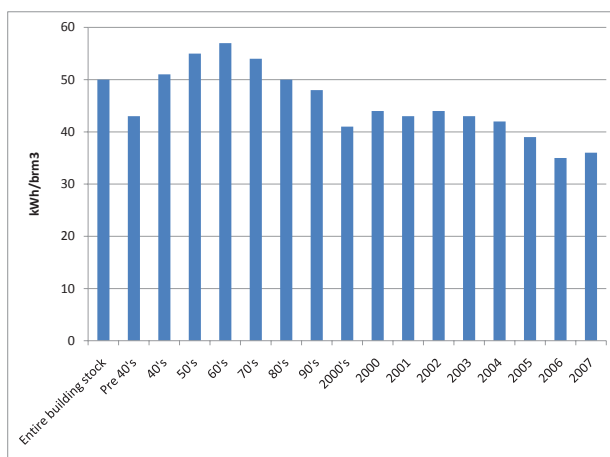
## **Energy efficient buildings**

Helsinki is aiming towards low-energy construction in both new construction and the renovation of buildings. Building regulations are planned to be tightened for city-owned plots (almost all new plots) to A-class in dwelling houses (100 kWh/m<sup>2</sup> for heating, cooling and electricity in blocks of flats), which is similar to low-energy standards in Finland.

An energy-efficient renovation programme has been implemented for the city-owned blocks of flats. For city-owned service buildings, low-energy renovation is being piloted and energy-efficient renovation instructions have been assigned. Residential buildings in Finland can get



Final use of energy in Helsinki 1990-2009. The energy use by industry is not available for every year before 2001. Source: HSY and Helsingin Energia.



Weather-adjusted specific heating consumption of the district-heated residential building stock in Helsinki by decade – situation in 2009.

10–20% financial support for energy efficient renovation or for transferring the heating system of buildings into district heating or renewable energy.

The first residential area with low-energy building codes, demand for renewable energy and for timber construction (carbon sink) has been planned for the Honkasuo district. For the new large residential planning area called Östersundom, low energy construction is being studied as well as the possibilities of using solar energy and local biomass to provide a major part of the required energy.

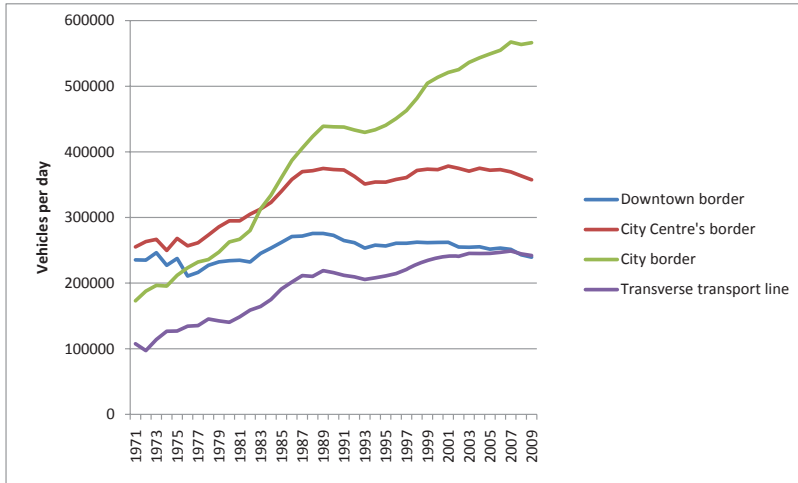


Helsingin Energia is providing its customers a real-time electricity monitoring option. The installation of 'smart' meters in every household will be completed by 2013. The first 150,000 households are able to get their hourly electricity consumption from the Internet in 2010. Helsingin Energia is already showing the electricity, district heating and cooling energy consumption of the city in real time. It is also visualising the energy consumption on the Internet and outdoors round the centre of Helsinki. Helsinki is also developing a monitoring service for the neighbourhoods of Helsinki with regard to their energy use, water consumption, waste and traffic volume. This data is used for sustainable urban planning and increasing the motivation for energy saving.

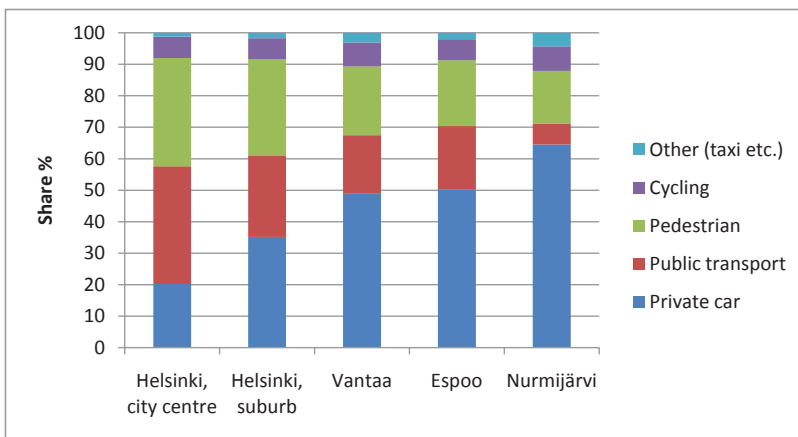
## **Efficient public transport and low emission buses**

Helsinki has had the advantage of having pursued a policy of favouring public transport – especially rail-borne traffic – since the 1970s. This has resulted in the region's transport system working quite well. Since the year 2000 the traffic in the city centre has decreased, whereas the traffic at the city borders and transverse routes has been increasing by 1–2% per year.

The share of transport modes in Helsinki is such that about 30% of all trips are made by car, 32% by public transportation, 29% on foot and 7% by bicycle. In the centre of Helsinki, only 20% of all trips are made by car. The city strategy programme is committed to increase the share of sustainable transport modes by 3 percentage points by 2012.



Traffic trends recorded along the monitoring lines in Helsinki 1971-2009. Source: City of Helsinki.



Modes of transport in the daily travel in the Helsinki region, 2008. Source: HSY Litu 2008.

New residential areas downtown are being planned to take advantage of public transport services. There are large ongoing railway projects, metro to the City of Espoo, metro/light rail to the new residential area of Östersundom, railway to the Helsinki Airport and new light rails to the Kruunuvuorenranta residential area. A congestion fee study was carried out in 2008–2009 and follow-up studies are ongoing in 2010. In competitive tendering for bus services in the Helsinki metropolitan area, preference is given to environmentally friendly buses.



Helsinki has succeeded very well in the international comparisons of public transportation. In recent years, Helsinki has always been one of the top three cities with regard to residents' satisfaction with overall public transport services. In the latest survey in 2009, Helsinki was only defeated by Vienna among 23 European major cities. The test was carried out by ÖAMTC, the Austrian automobile and motorcycle touring club, in collaboration with other 15 motoring clubs.

Various electronic and communications services are making travelling easier. With the help of the Helmi system, which is based on satellite positioning, traffic signal priority is given to trams and buses and passengers receive real-time information about arrivals. Through the traffic exceptions service, passengers can also get information about exceptional traffic situations sent to their mobile phones or computers.

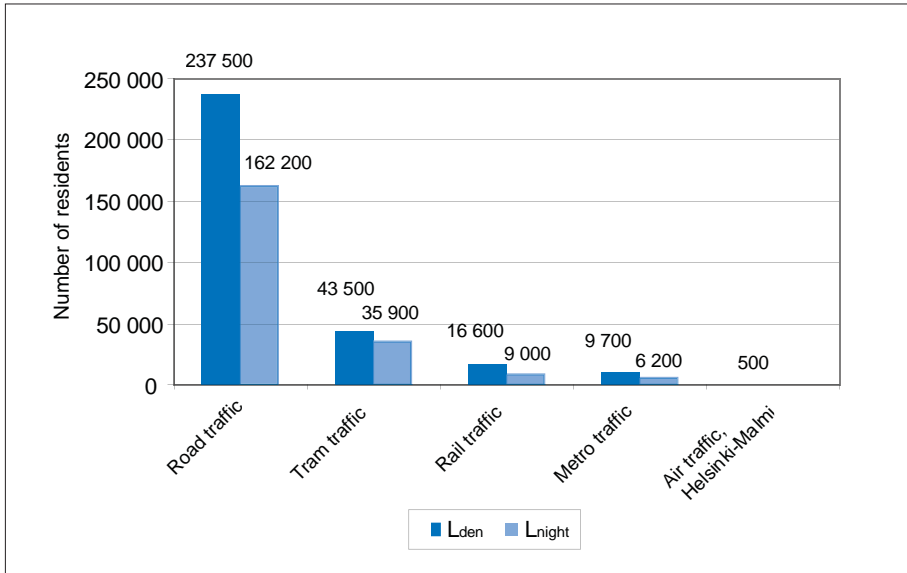
The route planner for public transport has become one of the best-known Finnish websites ([www.reittiopas.fi](http://www.reittiopas.fi)). The route planner can also be used for seeking pedestrian and cycle routes in the Helsinki region. Helsinki has committed to doubling the share of cyclists to 15% by 2020, and new cycle paths are planned and built. Pedestrian streets are also being extended in the city centre. Transport system plans have been prepared for the Helsinki region since the 1990s by the Helsinki Region Environmental Services Authority (HSY, previously YTV) and updated with a four-year planning cycle. The latest Helsinki Region Transport System Plan (HLJ 2011) produces a new vision and strategy for developing the transport system for the region in 2011. The main goals of the plan are to slow down climate change, support the sustainable transport system and promote a compact urban structure and sufficient housing production.



## Reducing urban noise

The greatest noise problems in Helsinki are caused by road traffic. It is estimated that by 2020, the number of residents exposed to road traffic noise will increase by about 27% unless new noise barriers or other noise abatement measures are implemented. The main reasons for this growth are the increasing amount of traffic, the expansion of noise areas, and construction within noise areas. In addition to traffic, other causes of noise include harbours, factories and industrial plants, as well as construction work and public events.

Helsinki has prepared a noise action plan in accordance with the Directive on Environmental Noise (2002/49/EC). The City Board approved the action plan in November 2008. The action plan of the long-term goals for noise abatement presents up until the year 2020. Noise abatement measures are to be targeted initially at residential areas where average daytime noise level exceeds 65 dB and at areas where the numbers of those exposed are high. Apart from residential areas, special attention is focused on reducing noise levels in areas where there are recreational areas or so called sensitive receptors, such as educational and care institutions. The aim is also to preserve quiet areas.



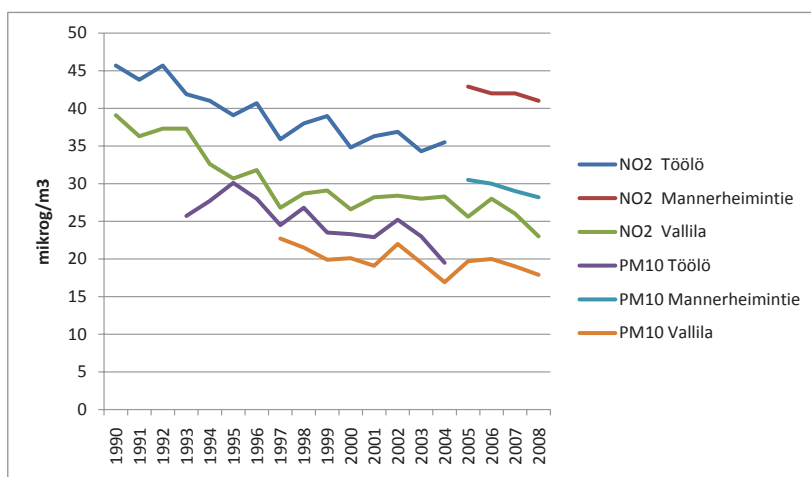
The number of Helsinki residents exposed to noise values of Lden above 55 dB and Lnight above 50 dB according to the noise mapping carried out in 2007 in accordance with the Directive on Environmental Noise. The population of the city of Helsinki was 560,905 in 2006.

Helsinki’s action plan contains 28 measures for 2008-2012, which deal with land use and traffic planning, reducing noise emissions, preventing the spread of noise, and protecting noise-sensitive areas. An assessment was made in 2009 of the sites where the use of low-noise pavement is possible, and the city plans to increase their use. The same measures often reduce both noise and air pollutants, e.g. reducing the use of studded tyres, which is being investigated. A survey of the outdoor noise and air quality situation in sensitive receptors which are located near busy roads and streets was made in 2009. Measures and recommendations to reduce exposure to noise and poor air quality were listed in the survey.

## Systematic efforts to improve air quality

In recent decades, emissions to the air from buildings, energy production and industry have decreased, and air quality has improved significantly through this. The current air quality problems are caused by traffic emissions and the street dust driven into the air by traffic, as well as by the long-range transport of particles coming into the area. Small-scale wood burning in single-family housing areas occasionally causes local air quality problems.

Air quality in Helsinki is, generally speaking, fairly good by international standards. However, the limit value for nitrogen dioxide (NO<sub>2</sub>) is exceeded in the street canyons of the city centre due to traffic emissions. Efforts to combat street dust have been effective and the limit value



The annual average concentrations of NO<sub>2</sub> and PM<sub>10</sub> in Helsinki city ambient air between 1990–2008. The air quality monitoring station of the city centre was moved in 2005 from Töölö to Mannerheimintie Road in the central business district of the city. Vallila Monitoring Station is located in a busy street.

for respirable particles (PM<sub>10</sub>) was last exceeded in 2005 and 2006. The concentrations of other pollutants are well below the limit and guideline values.

Helsinki has prepared an air protection action plan for 2008–2016, which consists of long-term measures to lower the level of air pollutants. The City Board approved the action plan on 19 May 2008. The plan includes measures designed to reduce levels of NO<sub>2</sub> and PM<sub>10</sub>, which have exceeded limit values. It also focuses on fine particles (PM<sub>2.5</sub>) because of the associated health risks. A corresponding air protection action plan has been prepared for the whole Helsinki metropolitan area. Helsinki's action plan contains 43 measures, which focus on land use planning and transport, street dust, fine particles, research and communication. Helsinki is preparing e.g. to build an environmental zone concerning city buses and waste removal vans and to introduce incentives to low-emission vehicles, such as reduced parking fees in the city centre.

Short-term measures to improve air quality have been presented in the city's readiness plan. The plan contains operating models for three different types of episodes with a sudden increase in air pollutant levels. These situations can arise due to an increase of nitrogen dioxide concentrations as a consequence of traffic emissions, a rise in street dust concentrations, or high amounts of fine particles or smoke due to long-range transportation or from a large terrain or building fire. The City Board approved the readiness plan on 24 September 2007. In 2010 the readiness plan is being extended to cover the entire Helsinki metropolitan area. The new plan is based on the Helsinki plan with the addition of an operating model for ozone episodes. The plan includes a separate communication plan aimed at providing the public with air quality information and recommendations on how to reduce emissions and avoiding exposure. A separate plan will



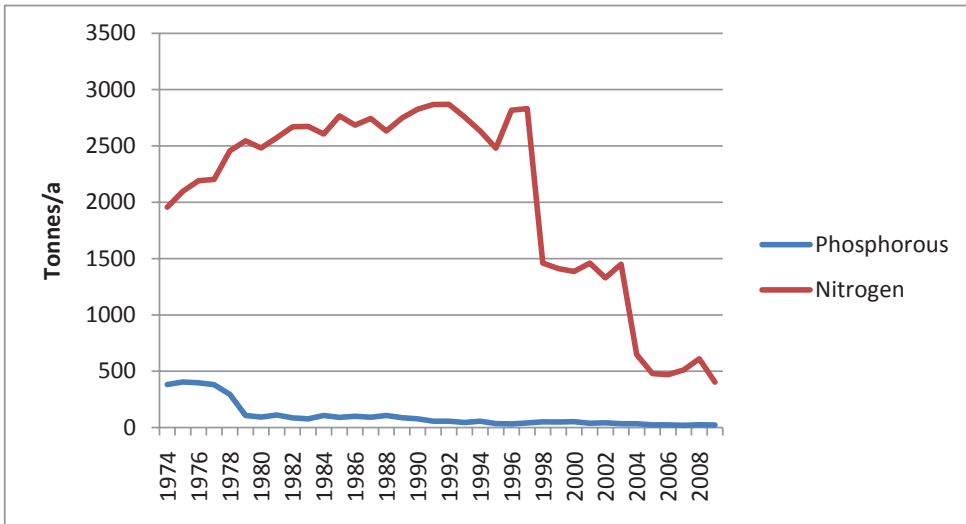
be prepared concerning transport management in situations when the use of private cars is restricted and public transport is made free of charge due to very high concentrations of nitrogen dioxide.

## Reliable water supply and efficient wastewater treatment

Helsinki and nearby municipalities have a reliable supply of clean raw water from Lake Päijänne in southern Finland. The water is supplied by a 120 km long rock tunnel, which became operational in 1982. The quality of Helsinki's drinking water has improved considerably since the 1980s, due to good raw water quality and efficient treatment processes, e.g. ozonisation and active-coal filtration. Some international tests have given Helsinki's tap water a better quality assessment than many commercial bottled water brands on sale in Europe.

Water consumption in Helsinki has decreased steadily since the 1980's. The total consumption in 2008 was 203 l/inhabitant and household consumption reached 158 l/inhabitant.

Helsinki has systematically invested in wastewater treatment. All wastewater from Helsinki and some nearby areas has been purified since 1994 in an efficient central treatment plant built underground in the granite bedrock in Viikinmäki. The plant's location in the bedrock saves the



Nutrient loads of the Helsinki wastewater treatment plant to the Baltic Sea 1974-2009. Source: HSY

land area for other functions and provides a constant temperature for the plant's biological processes throughout the year. The treatment process includes mechanical, chemical and biological phases. Currently, it removes 91% of oxygen-consuming materials and phosphorus and 89% of nitrogen from the wastewater.

Total emissions causing eutrophication and oxygen depletion of coastal waters have decreased steadily since the 1980s. Today annual emissions/inhabitant are about 30 kg phosphorous, 0.6 kg nitrogen and 0.8 kg BOD7. The OCP index ( $100 \times P + 18 \times N + 1 \times BOD7$  / inhabitant / year), is today 15, which is significantly lower than in other large coastal cities in the Baltic Sea region. Emissions of heavy metals (cadmium, copper, lead and mercury) from Helsinki to coastal waters have also decreased significantly during recent years. However, a new concern for sewage treatment is caused by increasing amounts of medical substances, such as antibiotics and hormones in processed wastewaters. The treated wastewaters are conducted from Viikinmäki through a tunnel 8 km south to the open sea.

Energy needed in the treatment process is generated by anaerobic decomposition of nutrients, which produces heat and biogas. Heat energy from the purified wastewater is utilised for the generation of district heating and cooling. Remaining sludge from the treatment process is further processed to soil improvement products in a composting plant in Sipoo.

A future challenge for water management in Helsinki is to decrease dispersed discharges of harmful substances to coastal waters through the stormwater drainage system. In 2007 the City Board approved a new stormwater management strategy.

## **The state of coastal waters and the Baltic Sea**

Eutrophication in the coastal waters of Helsinki region has declined due to improved wastewater treatment and the replacement of older smaller plants with the more efficient central treatment plants in Helsinki and Espoo. However, the overall state of the Baltic Sea and the Gulf of Finland is still deteriorating, though harmful emissions from large cities and pulp and paper industries have decreased.

The reasons for the still continuing eutrophication of the Baltic Sea are internal loading from phosphorous-containing sediments, which have been deposited on the sea bottom during long periods, continuing high nutrient emissions from farmlands in all Baltic Sea coastal states, emissions from fish-farming plants and from ships and air-borne emissions from land traffic, energy production and industries. The Baltic Sea is a rather shallow brackish-water basin, and is therefore vulnerable to the loading of nutrients and toxins from its large catchment area and from



sea transport. Visible signs of eutrophication in the Baltic Sea are heavy algal blooms, which occur every summer over large sea areas.

International cooperation for the protection of the Baltic Sea is becoming ever more important, and public awareness is increasing among citizens of the Baltic Sea countries. Since the 1990s, the City of Helsinki has participated in international cooperation projects, which have improved waste water treatment in the cities of Tallinn and St. Petersburg. In 2007, Helsinki and the city of Turku launched a campaign called the Baltic Sea Challenge, which activates municipalities and other public sector actors, businesses, educational and research institutions, NGO's, civic organisations and citizens to draft action plans and implement specific projects and actions for the protection and rehabilitation of the Baltic Sea. Already more than 170 various actors have accepted the challenge ([www.balticseachallenge.net](http://www.balticseachallenge.net)).

## **Urban nature, archipelago and green areas**

Helsinki is a coastal city with an archipelago and sea area covering over 500 square km. This diverse coastal zone includes some 320 islands. About half of them are owned by the municipality. The archipelago is at a fairly natural state, for example 80 % of plant species are native. Elsewhere in the city the share of native species has been estimated to be about 40%.

Over 70% of Helsinki's more than 220 km long shoreline is presently accessible to inhabitants for recreational use. This shoreline includes seaside parks, beaches, marinas, fishing spots,

and natural shores with smooth granite rocks and wetlands. In the summer, the inhabitants of Helsinki can go walking, camping, boating, swimming, fishing, bird-watching and canoeing at the seashore and islands. In the winter, they can go walking, skiing, skating or fishing on the ice and even take a dip in an ice pool. However, the time of the year when the sea is ice-covered is becoming shorter due to global warming.

Although Helsinki is the most densely populated part of Finland, it still has large green areas and diverse urban nature. Currently, more than 40% of Helsinki's land area is green space and urban nature (parks, forests, meadows, wetlands, rocky outcrops and recreational areas). The amount of green space per inhabitant is about 150 m<sup>2</sup>. Green space within the city area increased in January 2010 when part of the municipality of Sipoo was incorporated into Helsinki. The total number of seaside parks has recently increased as a result of former large harbour and industrial areas in the inner city being changed into residential areas. A guiding planning principle has since decades been to reserve seashore areas mainly for public recreational use.

Helsinki's most important green belt is its Central Park, which begins downtown at Töölönlahti bay and the Olympic stadium and stretches over 10 kilometres to the north in a continuous park and forest zone. Forests in Helsinki are mainly mixed forests of the northern boreal type, with pine, spruce, birch, rowan, aspen, alder and willow trees. The oldest forests are in the northern part of Helsinki, where they have not been touched for over half a century. Helsinki's forest and woodland areas also provide habitats for wildlife – including elk, roe deer, rabbit, fox, badger, raccoon dog, squirrel, hedgehog and numerous bird species.

Helsinki has 47 protected nature areas covering a total of 620 hectares. Most of them are small, less than one hectare. The aim of the reserves is to safeguard biodiversity and the natural





heritage. They are also important for research and education as well as for visitors. 25 protected sites are specific birdlife reserves.

Viikki-Vanhankaupunginlahti bird wetland, Helsinki's most important nature reserve, is located almost at the geographical centre of Helsinki and covers over 316 hectares. The wetland is an important nesting area for water birds and is part of the Natura 2000 network of the European Union. It is also listed in the international Ramsar Convention on Wetlands. Helsinki has a total of three Natura 2000 areas.

The island fortress of Suomenlinna is a popular recreational area and historical site as well as residential area. It was included on UNESCO's World Heritage List in 1991 as a unique example of the European military architecture from the 18th and 19th centuries. Over the years, Suomenlinna has become one of the most biodiverse areas in Finland with regard to flora. It has over 400 species of plants, including more than 100 cultivated plants. It is also an excellent place to watch the mass migration of water birds and waders northward at the end of May.

Outside its boundaries, the City of Helsinki owns about 6,700 hectares of recreational nature areas. The most important wilderness area in Helsinki region is Nuuksio National Park, which is located less than 30 km northwest from Helsinki's inner city. Nuuksio is a spectacular nature reserve of about 40 km<sup>2</sup>, located in a forest-covered upland with about 60 lakes and ponds. The national park is home to 70 endangered or specially monitored species of animals, plants and fungi. Elk, roe deer and white-tailed deer are common in Nuuksio, but also bear, wolf and lynx have been occasionally observed. Many of the lakes in Nuuksio are clean forest lakes, which provide good opportunities for swimming, fishing and canoeing. In the wintertime, Nuuksio is a popular area for cross-country skiing.

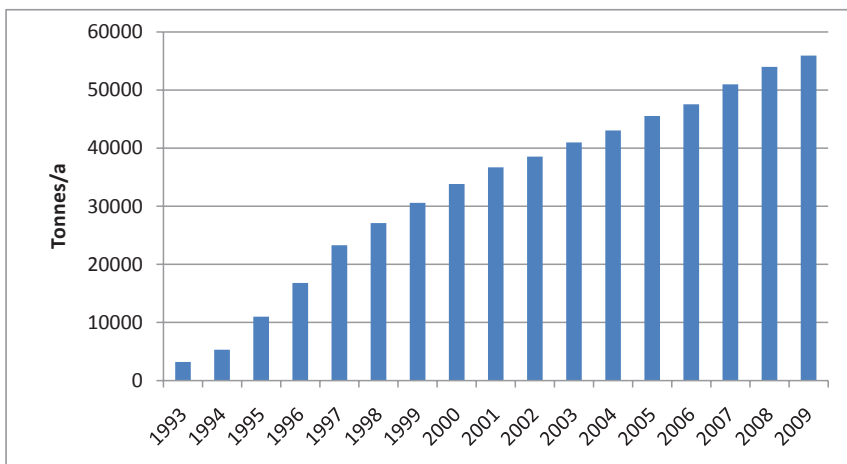
## Waste management

Helsinki Region Environmental Services Authority (HSY) is responsible for arranging the waste management and transport for residential buildings and the properties of the public administration throughout the metropolitan area. There are several recyclable wastes that are collected. These include organic waste, paper, carton, cardboard, metal, glass, wood and hazardous wastes.

The top priority in the waste management sector is waste prevention. HSY has had a waste prevention strategy from year 2002.

The Ämmässuo waste treatment centre in Espoo receives unsorted waste and separately collected organic waste from over a million inhabitants and 50,000 firms in the Helsinki metropolitan area. HSY also provides advice to citizens, firms and other organisations on preventing, sorting and recycling waste.

The average inhabitant in the Helsinki metropolitan area produces annually about 300 kilos of household waste. About 55% of household waste is recycled or reused. Compost made from organic waste is used in landscaping. Biogas is also collected from old landfills and waste treatment plants. HSY is planning to increase the efficiency of organic waste management by constructing a biogas digester to extract biogas from the collected organic waste before the composting process.



Collection of organic waste from households and industries In Helsinki area, tonnes.



According to a survey by HSY, domestic recycling has generally become more popular. Over 90% of the residents state that they recycle paper, nearly 80% recycle cardboard and approximately 70% recycle glass waste on a regular basis. Domestic recycling has been a steadily increasing trend during the first decade of the new millennium.

HSY is currently building a gas power plant which will use biogas collected from the Ämmässuo landfill. The first phase of the plant will be ready in 2010 and its output capacity of the plant will be 15 MW of electricity.

There is going to be a new phase in the waste policy of the Metropolitan area. HSY has decided to introduce a new incineration plant in 2014. The plant will be built by one of the local energy production companies (Vantaa Energy) in the Långmossebergen area in Vantaa. An environmental impact assessment of the project was made before the final decision on building the plant and the granting of the environmental permit.

In recent years, Finland has begun applying the principle of producer responsibility in waste management. This obliges the producer or importer to organise waste management for their products. The principle already applies to waste from electrical and electronic appliances, used tyres, paper products, end-of-life vehicles, batteries and to some extent packages and packaging waste.



## Greening the Procurement

The City of Helsinki has incorporated environmental thinking in its procurements in many ways. Various environmental criteria have been set in many product groups like bus traffic, office equipment, paper, cars, detergents, and cleaning services. The city has set both compulsory demands and so-called tender selection criteria. The city has also focused on educating the procurers of the city departments. One example of this is an eco-procurement guide that has been introduced both to help buyers in selecting environmentally friendly products and to help those involved in the tendering processes.

The city of Helsinki intends to enlarge the integration of environmental aspects into all procurements. The aim is to go through all the product groups in order to make environmentally sound choices possible. There will also be discussions with all departments about their possibilities to support this work, because departments procure certain products and services independently. Special attention will be paid to the possibilities of reducing the carbon footprint of the city's procurement.



## **Enhancing environmental education and awareness-raising**

Efforts to raise environmental awareness of Helsinki's inhabitants have been implemented since the 1980s. They include operating nature schools, organising environmental campaigns and seminars, arranging nature walks in the neighbourhoods and enhancing environmental education in schools and nurseries. Today Helsinki operates or supports altogether five nature/environment schools. The most popular is the Harakka island nature centre and school, which is operated by the Environment Centre. School classes are provided one-day programmes in the nature schools. A specific focus is the protection of the Baltic Sea.

Helsinki's eco-support activity is an operations model and concrete tool for promoting environmental awareness in municipal workplaces. The model is based on tasks and objectives formulated in the city's sustainability action plan. The purpose of the activity is to improve environmental management, eco-efficiency and environmental awareness in all workplaces of the city administration. Environmental responsibility is encouraged by appointing and training eco-supporters in work communities. The programme began in 2006, and in 2010 there were more than 600 eco-supporters guiding and motivating their colleagues to work for the good of the environment. Through eco-support activity, the willingness and the capability of the employees to perform competent actions for the environment are translated into tangible activities. New everyday practices save money and natural resources.

Every school in Helsinki has drafted its own environmental programme. Some schools have joined the more advanced Green Flag programme, which is connected to the international Eco-schools activity. Focused environmental education and awareness raising services are also provided by Helsingin Energia, the Public Works Department, Helsinki Region Environmental Services (former YTV), the regional recycling centre, the national Motiva agency, which enhances energy saving and eco-efficiency as well as environmental NGO's, such as WWF, Finlands Nature Protection Association, the Youth Nature League and the Finnish Association for Environmental Education.

## **Strengthening social cohesion and citizen participation**

Helsinki's strategy to prevent social exclusion and segregation has a focus on employment as a basic tool against social exclusion. Special attention is paid to preventing social exclusion among children and young people and to creating networks within the city administration with regard to the fight against social exclusion and segregation.



In housing construction in Helsinki, the aim is to avoid creating an unbalanced population structure and a build-up of social problems. To achieve a mix in the population structure of new housing developments, sites are allocated to various types of development. In large-scale development areas, the proportion of rental flats built with state-subsidized loans may not exceed 40% of the area's total housing stock. Different types of tenure and forms of financing are mixed together in the same block. New residential areas with both owner-occupied and rented housing are built along good public transport routes, particularly underground and railway lines.

The City of Helsinki is the biggest land owner in the city area. The municipality also leases land for housing purposes for owner-occupied housing with indexed housing unit resale prices. The available housing space increased steadily from the 1960s to the 1990s, but has not increased in recent years due to the high costs of housing. Average living space per inhabitant is currently 34 m<sup>2</sup>.

In resource allocation, neighbourhoods which are clearly threatened by social exclusion are favoured. For example, the Education Department has applied the principle of positive discrimination to favour schools in deprived neighbourhoods. The Young People's Voice Project was developed in the 1990s to promote participation. The goal is to give children and young people good experiences in participating in decision-making so that the effects will also be visible in their living environment. Schools play a key role in the project, since they reach all children and young people. The goal is to involve all Helsinki's schools and vocational schools in the project.

The following processes and developments represent important steps in Helsinki's efforts to enhance citizen participation and partnership in recent years:

- Helsinki's Local Agenda 21 process and the preparation of the Sustainability Action Plan from 1998 to 2002 was a large-scale participatory planning process.
- The preparation of Helsinki's new master plan for land-use and transportation during 1999–2003 included numerous open thematic and neighbourhood-level workshops and seminars as well as two large-scale public commenting rounds.
- A thorough participatory process was also conducted during the preparation of Helsinki's Green Area Programme for 1998–2008.
- In the 1990s, the Youth Department developed new procedures to activate young citizens to participate in municipal planning and decision-making. This included the Young People's Voice Project.
- New possibilities to enhance public consultation, discussion and participation have been opened through communication through the Internet. The City Office Information Department in addition to the City Planning Department, Environment Centre, Public Works Department, City Library, Youth Department and many other municipal organisations have recently established networks for public communication and discussion on the Internet.
- During the years 2004–2007, Helsinki participated in a national project to develop new methods and approaches to citizen participation and partnership in municipalities.

## **International cooperation for sustainable development**

The City of Helsinki has been involved in international cooperation for sustainability since 1990, when the city joined ICLEI, the International Council for Local Environmental Initiatives (now Local Governments for Sustainability) as one of the organisation's founding members. The following have been important activities and achievements in Helsinki's international cooperation:

- In 1995, Helsinki became a member of the Eurocities network, and has since participated actively in the activities of the Environment Forum of Eurocities. In 1995, Helsinki also signed the Aalborg Charter and thus joined the European Sustainable Cities Campaign. Since the 1990s, Helsinki has participated in various city cooperation projects initiated by the Eurocities network.

These include, e.g. ECIP, LITMUS, TISSUE and Urban Matrix projects which focused on developing urban sustainability indicators as well as sustainability assessment and benchmarking methods. In 2010 Helsinki is the coordinating city for the Greening the Local Economy Working Group of Eurocities.

- The Union of Baltic Cities (UBC) has been another forum for cooperation on environmental issues. Cooperation within the Baltic Sea region has also included small-scale city-twinning projects with the cities of Tallinn, Riga and St. Petersburg since the early 1990s. These projects have focused on various environmental themes, such as environmental strategies and management, air quality monitoring, solid waste management, wastewater treatment, sustainability indicators, transport planning and environmental awareness-raising. The projects have been funded by the Finnish Ministry of the Environment and/or European Union funds.
- A cooperation forum for the the environmental administrations of seven larger Nordic cities (Copenhagen, Gothenburg, Helsinki, Malmö, Oslo, Reykjavik and Stockholm) was already established in the 1970's. This cooperation has included sharing of experience and the annual meetings of the environmental and health committees in addition to departments of the member cities. During the years 2002–2007, the network was involved in developing joint environmental indicators and environmental performance assessment criteria for the cities.
- The cities of Helsinki and Turku launched in 2007 the Baltic Sea Challenge campaign, which has been joined by numerous municipalities, educational and research institutions, businesses and NGO's.
- In 2008–2009, Helsinki and Rotterdam implemented a joint peer review exercise of their environmental management and performance. The topics of the review process were sustainable traffic, air quality, noise, climate and energy policy, water supply and sewerage, soil conditions and leadership in environmental affairs.
- In 2009 Helsinki joined the BaltCICA project, which aims at preparing impact assessments and improving climate change adaption strategies and methods for cities and municipalities of the Baltic Sea region.
- Helsinki's international environmental cooperation has also included partner cities outside Europe. In 1999–2000, Helsinki and the Japanese city of Sendai implemented joint environmental seminars and workshops. During the years 2004–2007, Helsinki participated in a twinning project on environmental and urban management with municipalities of the state of Perak in Malaysia. The project was financed by the Asia Urbs programme of the European Union. Other European partners in the project were Ancona, Cornwall and Glasgow.



## **International green city assessments and comparisons**

In 2003 Helsinki was awarded a certificate of distinction in the European Sustainable Cities Award competition, which was organised by the European Sustainable Cities Campaign.

In recent years, Helsinki has participated in various comparisons between European cities concerning sustainability, climate policy, eco-efficiency and environmental management and performance. The latest such comparison was the European Green City Index Project, which compared 30 larger European cities considering eight themes: CO<sub>2</sub> emissions, energy use and production, eco-efficiency of building stock, transport system, water supply and use, land use, waste management, air quality and environmental administration. The project was implemented by Siemens Corporation and the Economist Intelligence Unit.

In the overall performance comparison, Helsinki was placed as seventh city after Copenhagen, Stockholm, Oslo, Vienna, Amsterdam and Zurich. Good performance for Helsinki was evaluated for its environmental administration, air quality, waste management and the eco-efficiency of the building stock. Lesser scores were given for CO<sub>2</sub> emissions, energy and water use.

Helsinki has also participated in the European Green Capital Award competition and was placed on twelfth place for years 2010 and 2011.



## Increasing eco-efficiency – a key challenge

High-standard technology, efficiency and regional cooperation are the cornerstones of environmental protection work in Helsinki, such as water protection and waste management. Considerable investments are also made in nature conservation and the management of urban nature and green areas.

The goals and plans to reduce greenhouse gas emissions are ambitious, but the implementation of plans in practice still represents a major challenge for Helsinki. The implementation of plans should have a considerable effect on both energy production, supply and consumption, industrial activities, the traffic system, city planning and construction, waste management, social services and education etc. A comprehensive sustainable energy action plan and Helen 2020+ development programme for sustainable energy production are presently being formulated.

Increasing the use of renewable energy sources, also in decentralised energy production, is another significant challenge. The share of renewable energy sources in energy production in Helsinki is still very low. Helsingin Energia has major goals for wind power production increase, but these also depend on the success of the planning process, investment subsidies and the

feed-in tariff policy of the Finnish government. A great challenge is also posed by the increased use of biofuels in energy production, including the transport challenge, which must be solved through the gasification of wood/digestion of biowaste material to a natural gas pipeline, or by using biochar or pellets in energy production.

Hydropower is generated on a small scale, and heat from waste water utilised using heat pump technology. The possibilities of utilizing wind power, solar energy, geothermal energy from the ground and seawater, biofuels and recycled fuel materials are not yet fully developed.

### **Other sustainability challenges for Helsinki:**

- reducing traffic volumes as well as traffic noise and emissions
- protecting the Baltic Sea and decreasing harmful discharges to coastal waters
- reducing street dust resulting from the sanding of streets in the winter
- reducing the volume of waste and further improving recycling and reuse of materials
- the need to maintain a well-planned and functional urban structure
- significant growth in the need to clean up contaminated land
- preservation of ecosystem services and biodiversity in a growing city
- preventing introduction of potentially invasive alien species
- adaptation to climate change
- reducing the use of non-renewable natural resources
- need to decrease overall chemicalisation of the environment

From a global viewpoint, particularly with regard to the use of natural resources, Helsinki faces a multitude of challenges. If everyone in the world were to consume as much as the average person in Helsinki, we would need more than two planets' worth of ecologically productive land or natural resources. Helsinki's goal is to reduce the overall environmental loading and the consumption of natural resources and to bring it within the limits of global sustainability. Helsinki will continue to work systematically to enhance environmental protection and sustainable development, without forgetting our responsibility to tackle global environmental problems as well.



## CONTACT INFO

City of Helsinki Environment Centre  
P.O.Box 500  
00099 City of Helsinki, Finland  
Street Address: Helsinginkatu 24  
Phone: +358-9-310 13000 (customer service)  
Fax +359-9-310 31 613  
Website: [www.hel.fi/ymk](http://www.hel.fi/ymk)

Pekka Kansanen, Director General  
Phone: +358-9-310 32000  
E-mail: [pekka.kansanen@hel.fi](mailto:pekka.kansanen@hel.fi)

Päivi Kippo-Edlund, Head of Environmental  
Protection and Research  
Phone: +358-9-310 31540  
E-mail: [paivi.kippo-edlund@hel.fi](mailto:paivi.kippo-edlund@hel.fi)

Markus Lukin, Senior Environmental Planner  
Phone: +358-9-310 31606  
E-mail: [markus.lukin@hel.fi](mailto:markus.lukin@hel.fi)

## Useful websites:

City of Helsinki: [www.hel.fi](http://www.hel.fi)  
Environment Centre: [www.hel.fi/ymk](http://www.hel.fi/ymk)  
Helsinki Urban Facts: [www.hel.fi/tietokeskus](http://www.hel.fi/tietokeskus)  
City Planning Department: [www.hel.fi/ksv](http://www.hel.fi/ksv)  
Public Works Department: [www.hel.fi/hkr](http://www.hel.fi/hkr)  
Helsinki Energy: [www.helsinginenergia.fi](http://www.helsinginenergia.fi)

HSY Helsinki Region Environmental  
Services Authority: [www.hsy.fi](http://www.hsy.fi)

Helsinki Environmental Statistics:  
[www.helsinginymparistotilasto.fi](http://www.helsinginymparistotilasto.fi)