CITY OF HELSINKI

ENVIRONMENTAL REPORT 2006 | SUMMARY

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Environmental Report 2006

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Introduction

The City of Helsinki Environmental Report is a common report for the city's administrative departments. This report contains information from all of the city's 30 departments and 6 business corporations, and has been compiled by the Environment Centre. However, the environmental impacts of the city corporation's subsidiaries are not included in this report. The complete report and the material provided by the departments is presented in its entirety on the Internet (URL on cover).

The environmental reporting of the city is supervised and coordinated by the Environmental Reporting Group set up by the Mayor. All the most important departments in terms of the management of environmental impact are represented on this body.

The City of Helsinki places a significant burden on the environment and is an important actor in environmental protection. The city is responsible for 6 % of Finland's carbon dioxide emissions. The Viikinmäki wastewater treatment plant is responsible for the purification of wastewater produced by around 800,000 residents. ■

Deputy Mayor's Overview

PERTTI NISONEN

The climate was the main topic of discussion in 2006. The exceptional weather conditions in summer and later in the year were already giving rise to general concern about climate change. A comparison of the greenhouse gas emissions of the large Nordic cities published in September brought under discussion Helsinki's high emissions of energy production per resident in comparison to other cities. One month later the Stern report on the economic impact of climate change was a wake up call to those who assess the situation mainly from the economic perspective. A report by an international climate panel published later in winter gave rise to an extremely lively discussion in both national and international forums.

Reducing greenhouse gas emissions and adapting to climate change are the most significant environmental challenges that the City of Helsinki has so far faced. The climate strategy for the metropolitan area was prepared and plans were made to prepare for floods caused by exceptional weather conditions. The carbon dioxide emissions from the energy sold by Helsinki Energy increased by 15 % last year. In addition to emissions from production and consumption, an important perspective is that of energy efficiency. Helsinki's long-term efforts in energy saving drew attention from several quarters in 2006. The Ministry of Trade and Industry gave an award, for the second time, to Helsinki Energy for the active implementation of the energy saving agreement. Helsinki City PWD Construction, in turn, received an award on behalf of the Energie-Cités organisation for its creditworthy and valuable work for saving energy and for sustainable development.

The impact of the increasing amounts of traffic, particularly in terms of local air quality and noise, are a major environmental problem in Helsinki.

Helsinki has a transport policy that favours public transport. The Jokeri bus route that started up in 2006 improves the transverse public transport service. The decision of Espoo City Council to build the western metro route was positive news for the Helsinki public transport system. Helsinki residents are also satisfied with their city's public transport system, according to the BEST comparison of European public transport. Passengers' overall satisfaction with public transport in Helsinki was the highest of all the cities. The most satisfied with it were those that use it most.

Public transport still faces a major challenge, however. The number of internal Helsinki passengers continued to fall, despite the fact that the objectives set for public transport's share of the morning traffic were reached last year. During the last five years the number of public transport passengers has decreased by 5 %.

2006 was particularly complicated in terms of air quality. Spring was a long and difficult period for street dust, which was partly exacerbated by an aerosol particle episode at the same time and by the pollen season. Impurities were also spread as a result of a fire in VR's warehouses. Smoke from Russia's forest fires covered Helsinki in August. The limit values for thoracic particles were exceeded because of the nitrogen dioxide from traffic emissions and street dust. Partly as a consequence of this situation, the city has commenced preparation of a readiness plan and a long-term programme for reducing air impurities.

In addition to the extensive infrastructure solutions, many measures are adopted that have an impact on environmental matters. In procurement issues, for example, much progress was made last year, although there is still much to be done. The procurement centre has set environmental criteria in the competitions for tender for the procurement of such items as cleaning materials, cleaning equipment, and domestic appliances for the workplace. Last year the eco-procurement guide was prepared on the Heli Intranet to help the personnel involved in procurement.

The landscaping of the former Vuosaari dump and landfill site by the Helsinki City Public Works Department's Environmental Production branch won the Countdown competition in 2006. The solutions, which involved the natural landscaping of a landfill area, the reuse of waste soil, the introduction of domestic species, and the environmental education of children and young people convinced the judges in the Countdown 2010 competition organised by the World Conservation Union (IUCN) and the European Union. The aim of the competition was to seek out the most effective and inventive means to promote biodiversity.

By international standards, Helsinki has so far managed very well, thanks to such matters as progressive energy production, its water supply, and efficient public transport. We are currently in a period of transition in which past achievements are no longer sufficient to keep us at the top. To achieve the status of a world-class metropolis also calls for brand new innovations in environmental matters and the courage to embrace new solutions.

Pekka Sauri

The City of Helsinki's Environmental Management

Helsinki's objective is to act in an ecologically sustainable way, to ensure a pleasant and diverse environment with the city being aware of its global responsibility, and to purposefully strive to reduce its share of environmental loading. Helsinki will make the prevention of environmental damage more effective and repair damage already caused (extract from the City of Helsinki Environmental Policy, City Council, 30.3.2005).

The most important strategic policy for sustainable development is the Helsinki Action Plan for Sustainability ratified by the Helsinki City Council in 2002. The Helsinki Ecological Sustainability Programme 2005 - 2008 (HEKO) objectified the ecological scope of the sustainability plan. By the end of 2006, only a few of the programme's 54 measures had not yet been started. Almost half of the measures have been partially or totally implemented.

Other environmental management tools at the whole city level include joint guidelines for planning and budgeting approved by the City Board, environmental targets set in the budget, and environmental reporting.

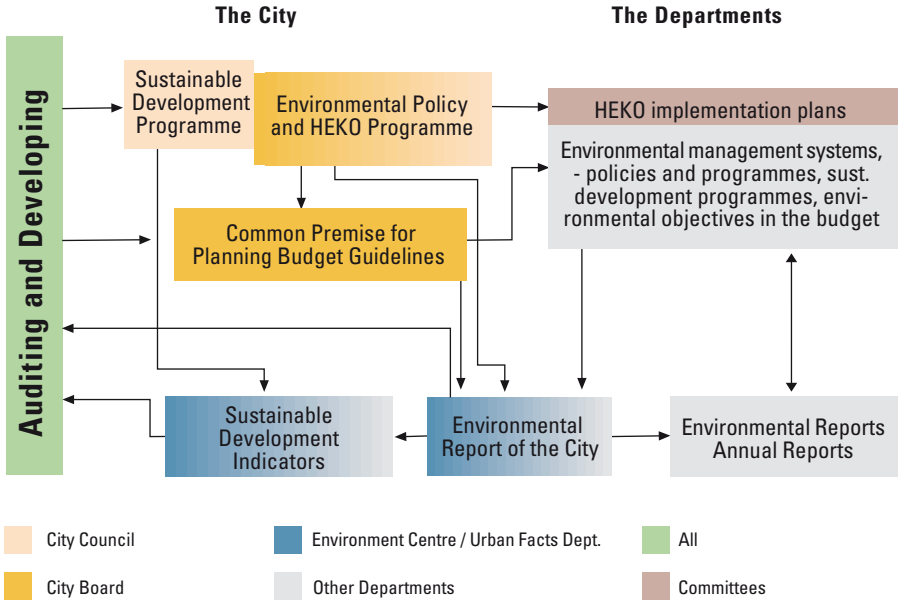
For several years now the Helsinki City Board has also called for the administrative departments to set functional targets concerning the environment. In 2006 there were fewer of these than in the previous year:

- The share of public transport in morning traffic in the centre to be >70 %. (City Planning and City Transport Departments)
- Grit used for the roads in winter to be removed from the main and feeder roads, and the main cycle and pedestrian paths by the end of April. (Public Works Department)
- Life cycle cost calculations to be prepared for all house building projects decided by the Council. (Public Works Department)
- Water purification targets for the overall loading to the sea: total phosphorous < 40 tons/year, total nitrogen <900 tons/year (Helsinki Water)

All of these targets were achieved.

2006 saw the start of one of the measures in the HEKO programme, the eco-support activity of city personnel. The city aims to create an eco-support network by appointing one eco-support person for every 100 employees in each working unit.

City of Helsinki environmental management



The City's main environmental actions and impacts

Energy use and greenhouse gases

Reducing greenhouse gas emissions and adapting to climate change are the most significant environmental challenges that the City of Helsinki has so far faced. The main causes of greenhouse gas emissions are energy production and traffic, which mainly use fossil fuels.

Of Helsinki's consumption-based greenhouse gas emissions, 44% comes from heating, 30% from the use of electricity and 20% from traffic. The Helsinki Ecological Sustainability Programme contains the objective of reducing greenhouse gas emissions to at least the 1990 level by 2010. In the calculations for emissions caused by energy production, only the equivalent portion of municipal local energy consumption is taken into account.

In 2006, consumption-based emissions increased from 2005, and were at the same level as in 1990. Emissions from the use of heating and electricity increased over the previous year.

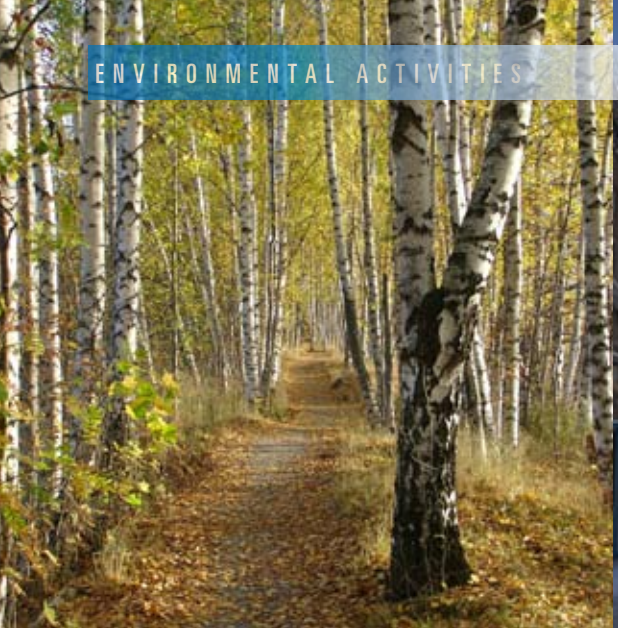
The aim of the Metropolitan Area Climate Strategy 2030, the draft of which is now being prepared, is to decrease greenhouse gas emissions in the metropolitan area by more than a third of the current level by 2030. This will call for significant measures from all sectors that have an impact on greenhouse gas emissions.

Long-term energy saving work has been carried out in the City of Helsinki's real estate. By the end of 2006, energy reviews had already been undertaken and reports submitted in respect of 480 buildings. Around 55 % of the recommended energy saving measures have been implemented. By the end of 2006, monthly consumption monitoring covered nearly 90% of the city's public service properties. Heating consumption for the buildings has decreased by 4.4% over the last five years. However, the consumption of electricity has continued the increase that commenced at the end of the 1990s.

Last year, Helsinki City PWD Construction adopted the Display energy and emissions display sign, which informs the users of the building about its energy efficiency. The display sign, which has been supplied to all the city's public buildings, provides information about the building's environmental loading on a scale from A to G, in the same way as for domestic appliances. The purpose of the sign is to encourage people to use energy sparingly.

Wastewater

The wastewater for purification contains a great deal of phosphorous and nitrogen nutrients which, if led to the sea, would cause a great deal of eutrophication. The targets set for wastewater purification have been successfully achieved in Helsinki. Over a ten-year period, the amount of phosphorous entering the



sea has fallen by a third, and the organic loading is less than half.

The benefits of the new treatment line and the biological filtration unit that were completed in 2004 at the Viikinmäki wastewater treatment facility have rapidly become evident. In 2006, the purification results for both phosphorous and nitrogen were, as in the previous year, very good. 89 % of the nitrogen, and 97 % of the phosphorous and organic compounds were removed from the wastewater.

2006 saw the completion of a sewage system for ships. This enables all passenger ships in the harbour to pump their wastewater into the city's sewage network. These harbour sewage pipes are mainly used by the regular passenger ferries, and increasingly by international cruise liners.

Land use and construction

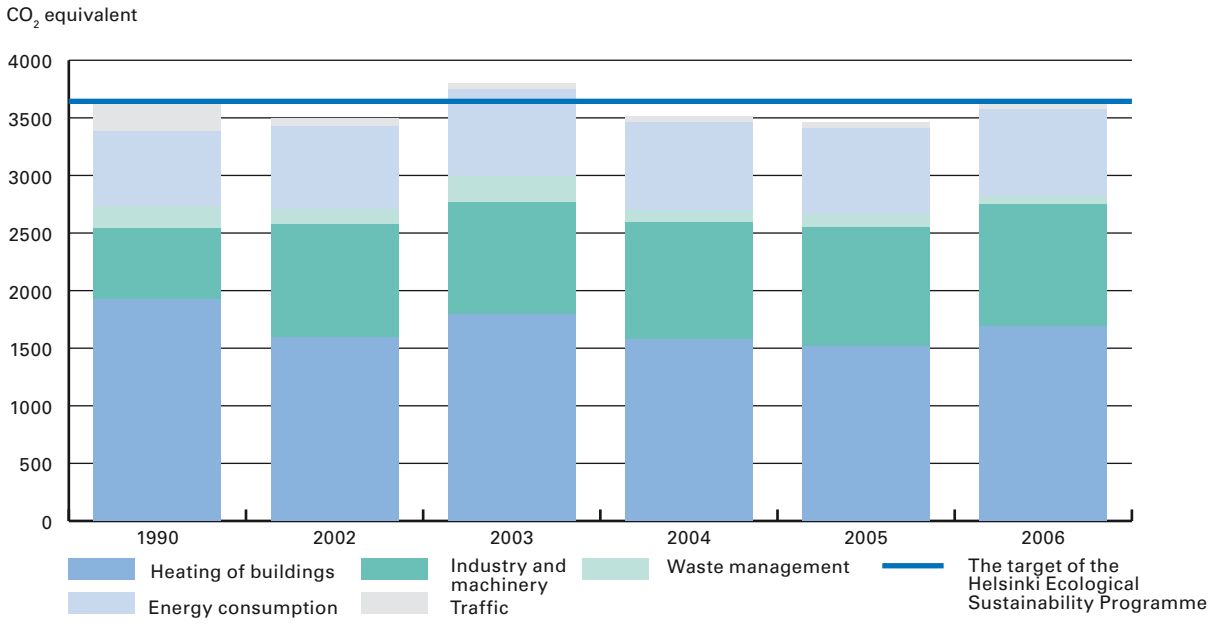
The aim of city planning is to organise land use and construction so that they provide the preconditions for a good living environment and for promoting ecological, financial, social and cultural sustainable development. The aim of the Helsinki Master Plan is to improve the eco-efficiency of the urban structure.

The Helsinki urban structure is undergoing great changes. The Component Master Plans for the large areas of Jätkäsaari, Kalasatama and Keski-Pasila, rising near the downtown area, are completed, and construction of the areas will commence when the new Vuosaari harbour is taken into use. The Helsinki cityscape is changing.

In 2006, the City Planning Department completed a study on taking climate change into account in city planning, and a preliminary study on taking sustainable development into account in city planning. The sustainable development issue is continued with the aim to draw up practical guidelines for the planners.

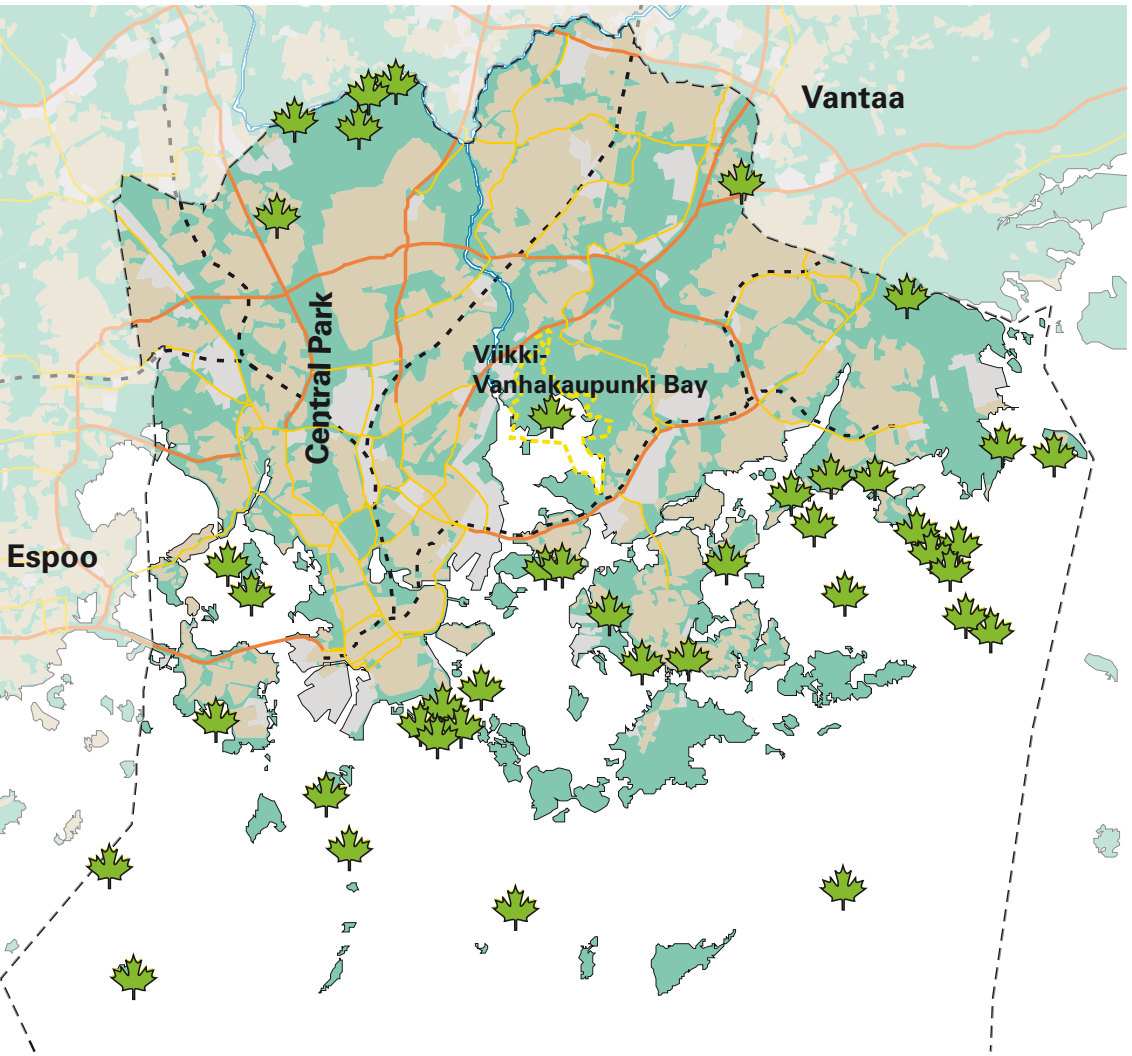
The number of nature conservation areas in the Helsinki area last year remained the same.

Consumption-based greenhouse gas emissions



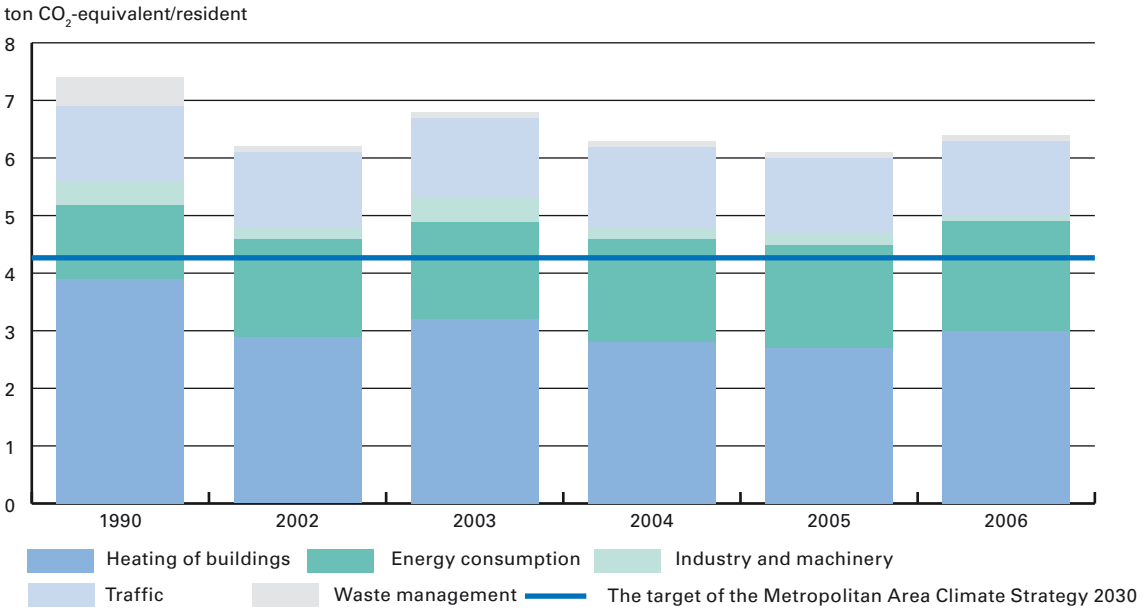
Advance data for 2005 and 2006.

Nature conservation areas in Helsinki



Nature conservation area
Green area
Residential area
Industrial area

Consumption-based greenhouse gas emissions per resident



Advance data for 2005 and 2006.

Nature conservation areas and areas reserved for nature conservation account for 1.5 % of the land area in Helsinki, and 0.7 % of the whole municipal area.

The guidelines for Helsinki's ecological construction were prepared in the Helsinki Ecological Sustainability Programme (HEKO). According to the programme, the city will, among other measures, draw up a programme for sustainable construction, develop life cycle thinking in building planning and construction, and organise training in eco-efficiency in construction for professionals. The start of the eco-construction programme continued in 2006.

In recent times attention has been paid to the idea that a building must be designed for long-term and altering use, as it will affect its environment during its entire useful life. The Building Production Office was involved in the development project Models for Life Cycle Planning of Buildings for the Management of Real Estate Maintenance.

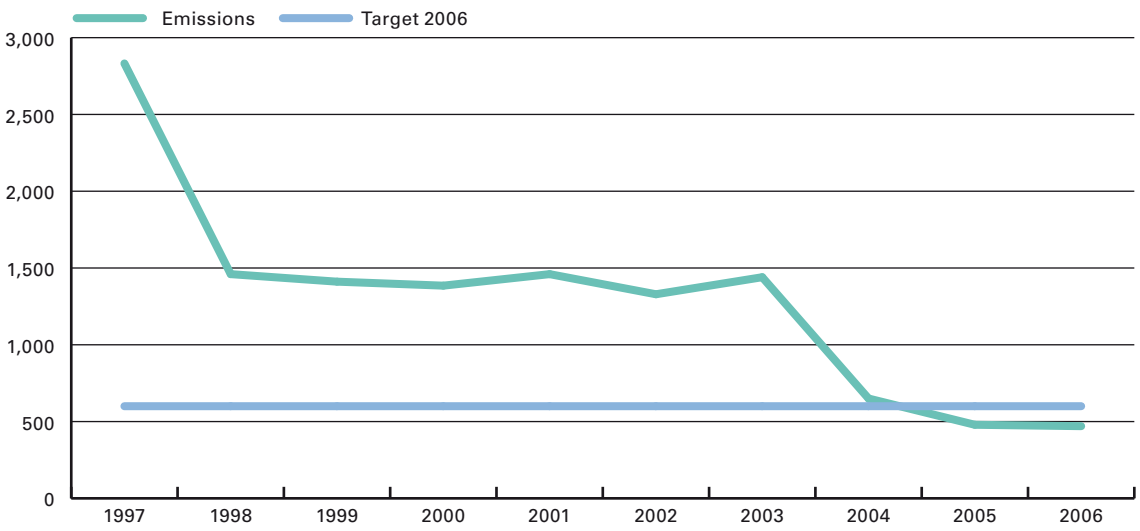
The Public Works Department's obligatory budget objective was to make Life Cycle Cost analyses for all projects in excess of EUR 5 million and for projects for which the calculation could be regarded as useful in selecting, for example, certain building components. The calculations were performed for three buildings.

Contaminated soil in Helsinki was cleaned up on a total of 48 sites in 2006. A total of 304,000 tons of contaminated soil was dug up in Helsinki, of which 58 % was moved for treatment or final placement. The biggest areas for the remediation of contaminated soil included Arabianranta and the Viikinmäki shooting range. Site-specific risk analyses have increasingly been carried out on sites when assessing the need for soil cleaning and the treatment methods. This enables an area to be cleaned in such a way that minimises the overall detrimental environmental impacts caused by the remediation work. In some areas, soil contaminated by metals was left underneath a layer of insulation.

Traffic, air quality and noise

The impacts caused by the increasing amount of traffic, particularly in terms of local air quality and noise, are a major environmental problem in Helsinki.

Wastewater nitrogen emissions to the sea from Helsinki Water (tons/year)



The amount of cars and journeys in Helsinki has continuously increased. Since 1993, traffic has virtually increased without a break on Helsinki's main road network, on average by 1 % per year. This growth has been accentuated for a long time from beyond the downtown area. In 2006 the amount of traffic crossing the city border grew by approximately 1% over the previous year, while traffic crossing the centre border remained at the same level.

Helsinki adopts a traffic policy that favours public transport. The aim is to increase the share of public transport by the end of 2008 by 1.3 % over the 2004 level at the city border, and by 1.7 % over the 2004 level for transverse traffic.

The Jokeri bus route that started up in 2006 improves the transverse public transport service. The decision of Espoo City Council to build the western metro route was positive news for Helsinki, which favours rail transport. The metro will improve the service level for east-west public transport between Espoo and Helsinki.

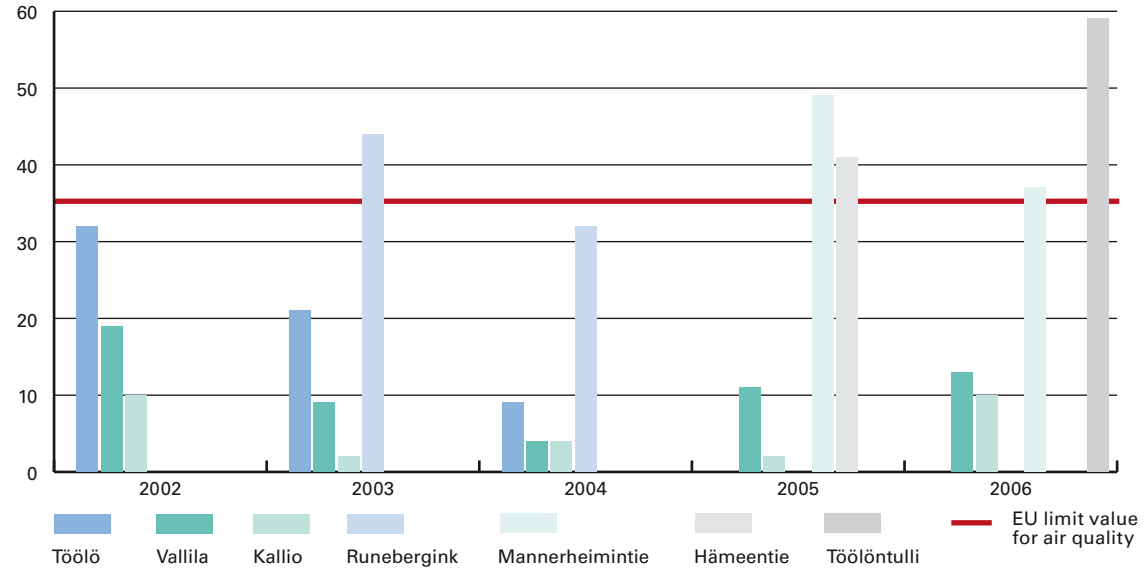
The number of public transport passengers in Helsinki's internal traffic decreased. In 2006, 189.5 million public transport journeys were made, which is 1.5 % less than in 2005. The target set for the share of public transport in morning traffic was achieved.

In terms of air quality, 2006 was particularly problematical. Spring was a long and difficult period for street dust, which was partly exacerbated by an aerosol particle episode at the same time and by the pollen season. Impurities were also spread as a result of a fire in VR's warehouses. Smoke from Russia's forest fires covered Helsinki in August.

The annual limit value for nitrogen dioxide was exceeded at the YTV Mannerheimintie and Töölön Tulli measuring stations. This was mainly caused by traffic emissions. Because of the street dust, the limit value for thoracic particles was exceeded at the YTV Mannerheimintie and Töölön Tulli measuring stations.

Around 100,000 Helsinki residents are subject to traffic noise that exceeds 55 dB. It is estimated that by 2020, the growing amount of traffic will increase the number of residents subject to street and road noise by approximately 25,000, unless new noise reduction actions are implemented. The pressure to plan housing in

Cases of exceeding the daily limit value (50 µg/m³) for thoracic particles (PM_{10}). (Source:YTV)



Number of passengers on public transport in Helsinki (excluding regional buses and local trains).

Environmental economy indictors 2006 (1000 e)				Change-%
Environmental income	total		**70,111**	+25
Air protection		9,743		+179
Water conservation		54,654		+8
Waste management		2,895		–11
Nature conservation		3		
Other measures				
Environmental administration		539		+102
Environmental training and education		1,586		+18
Activity to improve eco-efficiency		334		+134
Cleaning of public areas		357		+103
Proportion of the city's operational income		4.7 %		
Euros/resident		124		
Environmental costs	total		**95,355**	+8
Air protection		14,755		+99
Water conservation		28,162		+5
Waste management		6,614		+10
Soil conservation		1,659		–18
Noise prevention		413		+22
Nature conservation		2,236		+24
Other measures				
Environmental administration		4,066		+3
Environmental training and education		1,322		+11
Activity to improve eco-efficiency		652		–61
Environmental management		1,670		–41
Cleaning of public areas		7,135		+10
Environmental taxes and charges		26,671		–5
Proportion of the city's operational costs		2.8 %		
Euros/resident		169		
Environmental investments	total		**25,472**	–37
Air protection		909		–30
Water conservation		4,825		–76
Waste management		671		–41
Soil conservation		13,452		+29
Noise prevention		2,152		–37
Nature conservation		409		
Other measures				
Activity to improve eco-efficiency		3,035		–24
Cleaning of public areas		19		
Proportion of the city's capital expenditure		4.5 %		
Euros/resident		45		

noise areas as a result of the aim to compact the urban structure also poses a challenge in terms of noise reduction.

In spring 2006, the government made a decision in principle on noise reduction. Under this policy, a significant decrease in environmental noise levels and in the number of residents subject to noise must be achieved by 2020. The responsibility for noise reduction lies with those who cause noise and the authorities – particularly the traffic authorities and the municipalities.

Other environmental activities

As a result of the exceptional floods of 2004 and 2005, and the risks caused by climate change, the Helsinki working group for floods has mapped out the areas at risk. During 2006, a topological map of the city's shore areas was made specifically for the flood risks.

The city aims to systematically improve the way the environmental perspective is taken into account in procurements, using the targets and actions of the city's ecological sustainability programme. In 2006, environmental criteria were set for cleaning products, cleaning equipment, and domestic appliances for procurements that come within the scope of the Procurement Centre's competitions for tender.

One aim of the city's ecological sustainability programme is to reduce the 2002 level of paper consumption by 10 % by the end of 2008. However, paper consumption per person continued the growth of the previous year. Paper consumption was 18.4 kg per employee, an increase in paper consumption of around 3 %. ■

The economic significance of environmental matters

The aggregate environmental income reported by the city's departments in 2006 was MEUR 70, representing 4.7 % of the city's overall operational income. Environmental income grew by 25 % over the previous year. The biggest source of income was, as in the previous year, the wastewater charges, and the second largest source of income was from the sale of greenhouse gas emission permits.

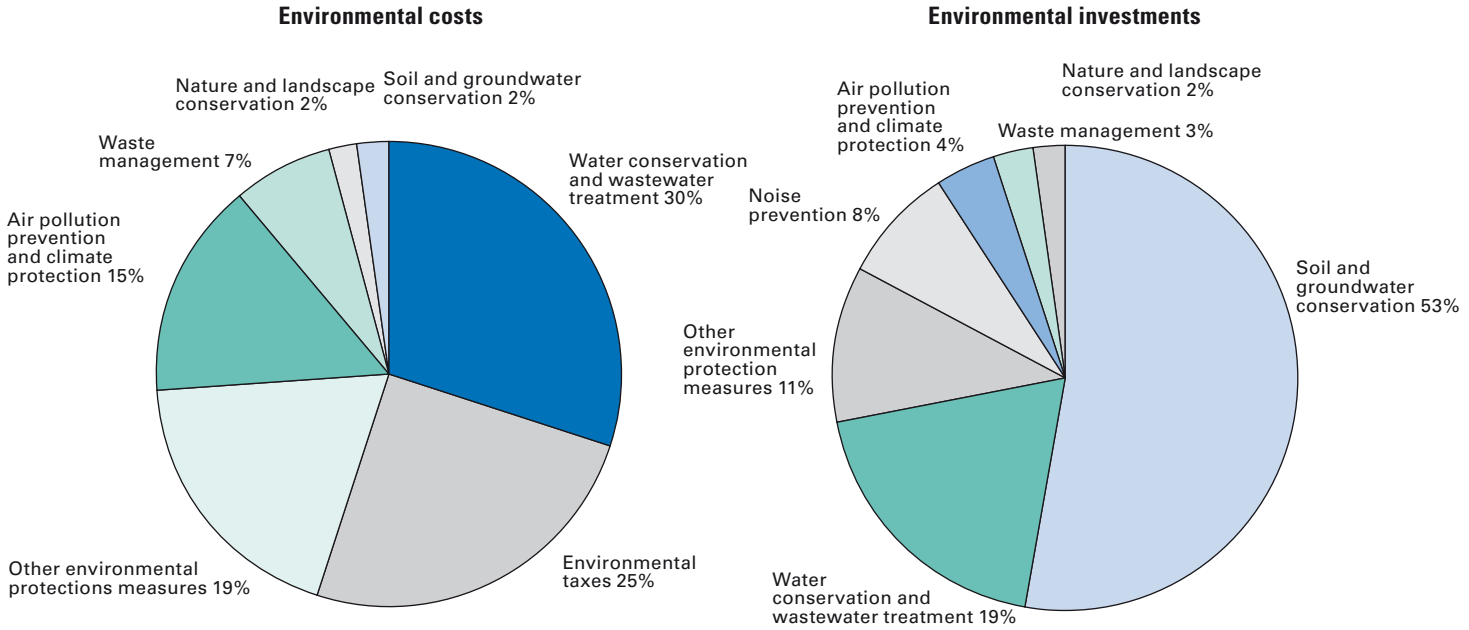
The City of Helsinki's aggregate environmental costs (including emissions) for 2006 were MEUR 95, which is 2.8 % of the city's entire operational costs. The largest sectors of costs were environmentally-based fuel taxes and electricity taxes, and wastewater treatment costs.

The environmental investments of the City of Helsinki in 2006 amounted to MEUR 25.4, which was 4.5 % of all the city's capital investments.

The investments were MEUR 15 less than the previous year, as there were no major investments in 2006. However, the city has allocated a reserve for the demolition of the Hanasaari-A power station. Of the MEUR 127 total cost estimate for the Hanasaari demolition work, environmental costs account for MEUR 8.1.

The greenhouse gas emissions trading income and expenditure for Helsinki Energy have this year been included in the environmental financial statements for the first time. ■

Breakdown of environmental operating costs and investments, 2006



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Keywords: environmental reporting, environmental management, environmental economy

Layout: Tommi Luhtanen, Green Beast Ltd.

Photographs: City of Helsinki, Future Image Bank, Pekka Helos
Publication year: 2007
Print run: 1,300
Printers: Frenckellin kirjapaino Oy
ISSN: 1796-475X
ISBN: 978-952-473-912-2

The Helsinki sustainable development indicators (joint indicators for the six cities[1])

Indicator	2005	2006
Greenhouse gas emissions, tons/resident/year[2]	6.2	6.5
Share of buildings and dwellings built in the city plan area	100 %	100 %
Accessible green areas, proportion of Helsinki residents living max. 300 m distance from green area.	-	98.71 %
Proportion of nature protection areas and reserves of the land area	-	1.5 %
Proportion of nature protection areas and reserves of the total surface area	-	0.7 %
Community electricity consumption, kWh/resident/year	7,919	8,028
Community water consumption, l/resident/year	254	256
Heating needs covered by district heating	93 %	91 %
Specific consumption of heat in city owned buildings, kWh/m^3	44.0	43.7
Specific consumption of electricity in city owned buildings, kWh/m^3	17.8	18.3
Community air quality, PM_{10} exceedig the daily limit values (35 allowed)	49 – Mannerheimintie	59 - Töölöntulli
Community air quality, bad and very bad day according to the index, % of hours	1.2 Mannerheimintie	1.4 Mannerheimintie
Community wastewater load, phosphorus, g/resident/day	0.1	0.09
Community wastewater load, nitrogen, g/resident/day	1.7	1.7
Community wastewater load, BOD_7, g/resident/day	2.2	2.5
Amount of community waste for final placement (Ämmässuo), kg/resident/year	372	356
Amount of waste utilized, biowaste kg/resident/year	45	48
Number of cars/1,000 as	365	373
Number of public transport journeys/resident/day	1.08	1.07
Cycle path network, m/resident	2.0	2.0
Copy paper consumption in City departments, A4-sheets/employee/year	3,560	3,681
Share of environmental criteria in centralised purchasing (invitations to tender, Supplies Department)	37 %	7.6 %
Green flag schools and kindergartens	16	15
Participation in environmental education arranged by the city, proportion of Helsinki residents	4.0 %	6.8 %

[1]Helsinki, Espoo, Vantaa, Tampere, Turku, Oulu
[2]Due to the change in calculation method comparable only with the cities of Espoo and Vantaa.