CITY OF HELSINKI

ENVIRONMENTAL REPORT 2004 | SUMMARY

CONTENTS

City of Helsinki, Environmental Report 2004, Summary

INTRODUCTION 2

DEPUTY MAYOR'S OVERVIEW. 3

THE CITY OF HELSINKI'S ENVIRONMENTAL MANAGEMENT. 4

THE CITY'S MAIN ENVIRONMENTAL ACTIONS AND IMPACTS 5

THE ECONOMIC SIGNIFICANCE OF ENVIRONMENTAL MATTERS. 10

JUHANI SEPPOVAARA

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 37 departments 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 material provided by the departments is presented in its entirety on the Internet.

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. For example, the city is responsible for 5% of Finland's carbon dioxide emissions. The Viikinmäki wastewater treatment plant is responsible for the purification of wastewater produced by 750,000 residents.

The 2004 Environmental Report is the city's 5th published environmental report. These are dealt with annually by the City Council.

Deputy Mayor's Overview


PERTTI NISONEN

In terms of environmental protection work, 2004 produced good results. The most significant achievement was to reduce the nitrogen load to the Gulf of Finland from the Viikinmäki wastewater treatment plant to less than half of last year's level. The background to this reduction, an investment over many years to remove nitrogen efficiently, demonstrates what long-term environmental work can achieve. At the same time, to others in the Baltic region who are creating an environmental load, it also provides an example of the activity that is needed to save this valuable marine area. The state of the Gulf of Finland naturally depends on many other factors, but each improvement is significant.

Another significant reduction in emissions has been in energy production, where carbon dioxide emissions have decreased by around 10% over the previous year. However, CO_2 emissions are still 20% higher than in 1990, the so-called Kyoto year.

More attention needs to be paid in the future to the diverse loading from different sources, and to the background consumption alongside these spot emissions to air and water. We are faced with this shift in emphasis in environmental policy in all sectors that impact on the environment.

The environmental objectives relating to the city's consumption of energy and materials have therefore been set in the Helsinki's Ecological Sustainability Programme adopted in spring 2005. The most important common environmental protection objectives and measures for the administrative departments for the next few years have been put together in this programme. I hope that the implementation is taken seriously within the departments, so that in terms of environmental protection, the capital city would be an actor befitting its position, in terms of overall protection and not just in individual areas.

The report now under consideration provides an indication in the overall shaping of the environmental impact of the city's departments. Included in this report for the first time are the sustainability indicators jointly agreed by Finland's six largest cities. These provide the possibility for even more reliable comparison between the cities. The report puts forward some new key figures that provide food for thought. For example, each day the average Helsinki resident makes on average 1.15 journeys by public transport, which is a very good figure at least for a Finnish city. For its part, the fact that each year each city employee uses an average of 3,270 sheets of paper, around 16 kg, says a lot about the city's administrative work.

The Internet version of the Environmental Report presents, as before, many practices for promoting environmental protection, which each city employee can also consider in terms of their own work. One encouraging example is the Youth Department management group's paper-free work, which saves money as well as the environment, and also increases the effectiveness of the management group.

Another example worth mentioning is the Ala-Malmi comprehensive school's environmental agents' "intense campaign" aimed at the Education Department. This campaign made evident the major development needs for sorting waste. The Ala-Malmi comprehensive school also distinguished itself elsewhere in terms of environmental protection, as it received YTV (Helsinki Metropolitan Area Council) 2004 Saver of Natural Resources award for making their own waste management more efficient. The school reduced its total waste by 20% during one year, which can be seen in clear savings both in waste management and in procurement costs.

Last year Helsinki also received other recognition for its environmental protection work. In the national Energy Saving Week, Motiva Oy gave an honourable mention to Stadin Negawatti (the City's Negawatts), i.e. the travelling energy saving market organised by Helsinki Energy, Helsinki City Transport, the Environment Centre and the Metropolitan Region Recycling Centre. The City's Negawatts updated its established operating model by taking the event to where people are on the move. For its part, Helsinki City Transport's tickets by mobile phone gained first place in the Prime Minister's competition for best practices.

Connected with the growing amount of vehicular traffic, air pollution and noise, and their management, are among the most significant future challenges for Helsinki's environmental protection work. Increasing the share of public transport and pedestrian and cycle traffic is an important measure in this respect.

In spite of the many good examples, the report's key figures show that the need for practical operating models in environmental protection is greater than before. Indeed, the city has resolved to strengthen the readiness of its departments and institutes to improve their eco-efficiency by means of extensive training in environmental management.

Pekka Sauri

The City of Helsinki's Environmental Management

In accordance with the Helsinki Action Plan for Sustainability adopted by the City Council, the city's departments and institutions must include environmental management as an element of their management system. The utilities already implemented this decision many years ago, but the small departments in particular are just starting to adopt environmental management measures.

The city's organisations that have been certified in accordance with the ISO 14001 environmental management standard are Helsinki City Transport – Bus traffic (1998), the Port of Helsinki (2000), and Helsinki Energy's Salmisaari (2000), Vuosaari (2002) and Hanasaari (2003) power plants. Helsinki City Transport's Trams and Metro, Helsinki Water, the Housing Production Department, the Environment Centre and the Education Department's operating system for its technical and service educational institutions are in accordance with the ISO 14001 standard, but the systems have so far not started a process for certification.

At the end of the year Helsinki Energy's head office and four other office buildings, Helsinki City Transport's head office, and the Real Estate Services of social and health care had the right to use the Green Office environmental management certificate. Among the departments, the Youth Department and the Cultural Office have prepared their own sustainable development programmes.

The commitment to environmental matters as part of the activity and financial control was made more effective when the achievement of environmental targets was adopted as part of the performance pay system. The city departments that have done so are the Port of Helsinki, Helsinki Water, Helsinki Textile Services and the Environment Centre.

The Helsinki's Ecological Sustainability Programme (HEKO) that was completed in 2004 contains the city's main tools for environmental protection. The HEKO environmental programme consists of the environmental policy and six thematic strands adopted by the City Council in spring 2005.

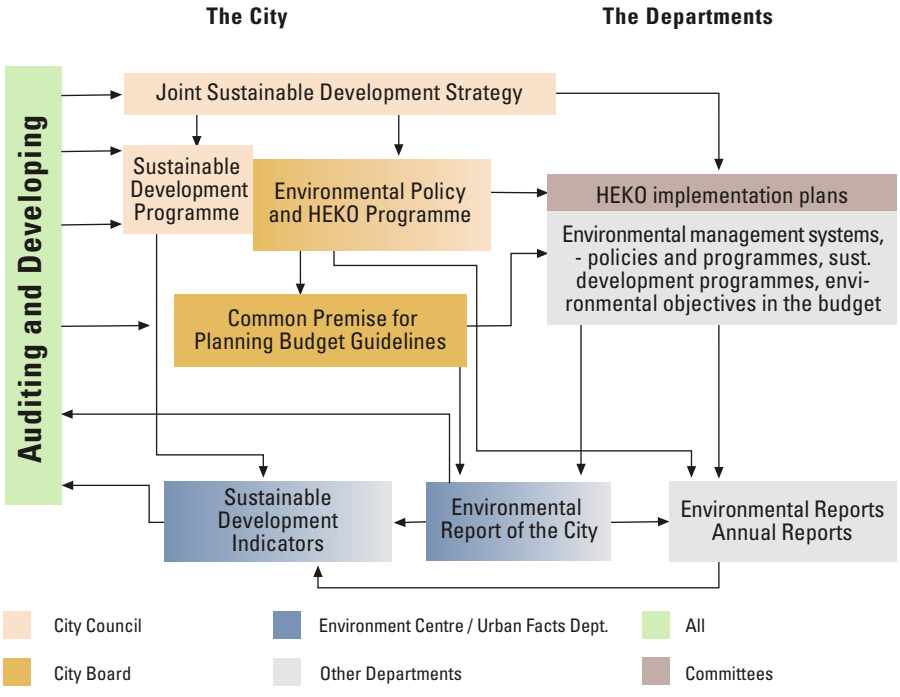
- Reduction of greenhouse gas emissions
- Biodiversity
- City structure and traffic
- Construction
- City procurements, and
- Environmental management and environmental education

The programme's 25 objectives have been concretised into 54 measures, which the city's departments are responsible for implementing.

Environmental management tools at the whole city level include a sustainability action programme adopted by the City Council, Common premise for planning and Budget guidelines approved by the City Board, environmental targets set in the budget, and environmental reporting.

The City of Helsinki has participated in the ECOmass project where an environmental programme will be developed for the World Athletics Championships in Helsinki in August 2005. The outcome of this project, coordinated by TKK Dipoli, will be an environmental programme as well as an eco-efficiency handbook for mass events, which can be adapted for the organizers of other major public events.

Environmental Management in the City of Helsinki



JYRKI KORHONEN

The City's main environmental actions and impacts

Energy use and greenhouse gases

Of Helsinki's consumption-based greenhouse gas emissions, 80% comes from energy consumption and 16% from traffic. According to initial calculations, the emissions for 2004 are around 3% lower than in 1990. In comparison with the previous year the emissions decreased by around 13%, mainly as a result of changes in Helsinki Energy's production, whereby the proportion of electricity produced from coal decreased greatly.

Emissions through energy consumption have increased slightly compared to 1990, but there has been considerable variation from year to year. Factors that affect the amount of emissions include the Nordic electricity market (mainly the hydroelectricity situation) and the coldness of the winter. Greenhouse gas emissions from traffic increased up to 2002, after which the growth has reversed. Emissions from waste management have decreased considerably, due in particular to increased efficiency in methane recovery from landfill sites.

The greenhouse gas emissions calculated per resident are lower than the 1990 emissions for each year under calculation. In 2004, Helsinki emissions were 16% less than in 1990. The most significant reason for the decrease in emissions has been the change in Helsinki Energy's production structure, leading towards fewer emissions – mainly by the increased use of natural gas.

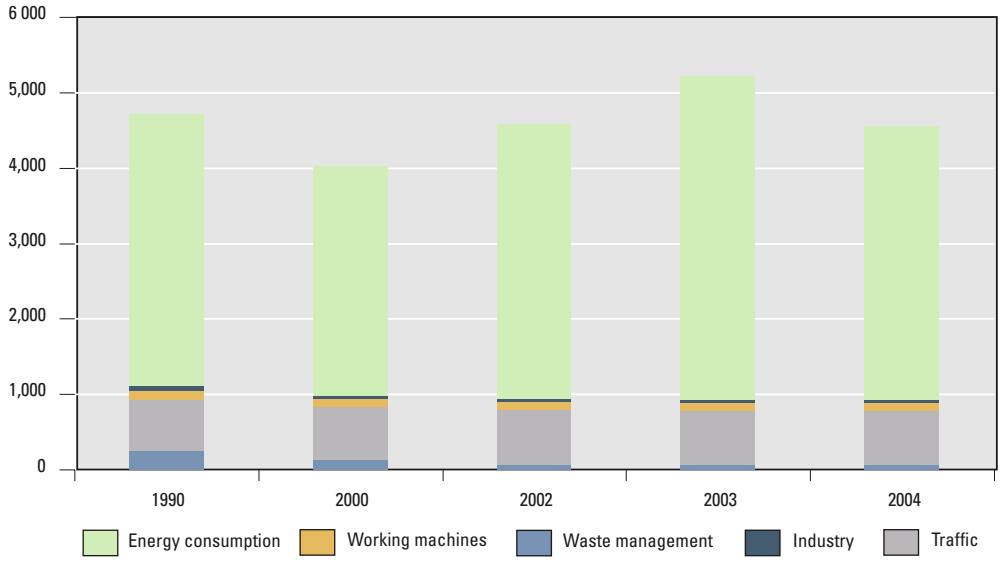
Most of Helsinki Energy's production is based on the eco-efficient co-generation of electricity and heat, whereby the power stations can utilize 90% of the energy from the fuel. In 2004, 274 new locations were connected to district heating, of which 166 were new constructions. District heating covered around 93% of Helsinki's heating requirements for 2004.

The Public Works Department monitors the energy consumption of the city's own premises. The energy and climate agreements entered into with the Ministry of Trade and Industry are being implemented at least for specific consumption of heat, which has decreased by around 4% compared with the 2001 level. For its part, the specific consumption of electricity decreased by around 0.1 kWh/m^3 compared with the previous year. By the end of 2004 energy inspections had been carried out in 425 buildings, which represents around 67% of the public service buildings owned by the city. The average savings potential in the buildings inspected were 14% for heat energy and 9% for electricity energy. An investment of 2.9 million euros in energy saving measures would achieve savings of around 2.1 million euros per year.

Wastewater and the sea area

The nitrogen load to the sea from Helsinki Water's Viikinmäki wastewater treatment plant decreased to less than half the previous year's level as a result of investments completed in 2004. The 70% rate

Consumption based carbon dioxide emissions of Helsinki (kt CO_2-eq)



of nitrogen removal set by the licensing authorities required biological polishing filtration and the additional construction of a new purification line at the plant. The enlargement work took around four years and the project costs amounted to a total of 37.8 million euros.

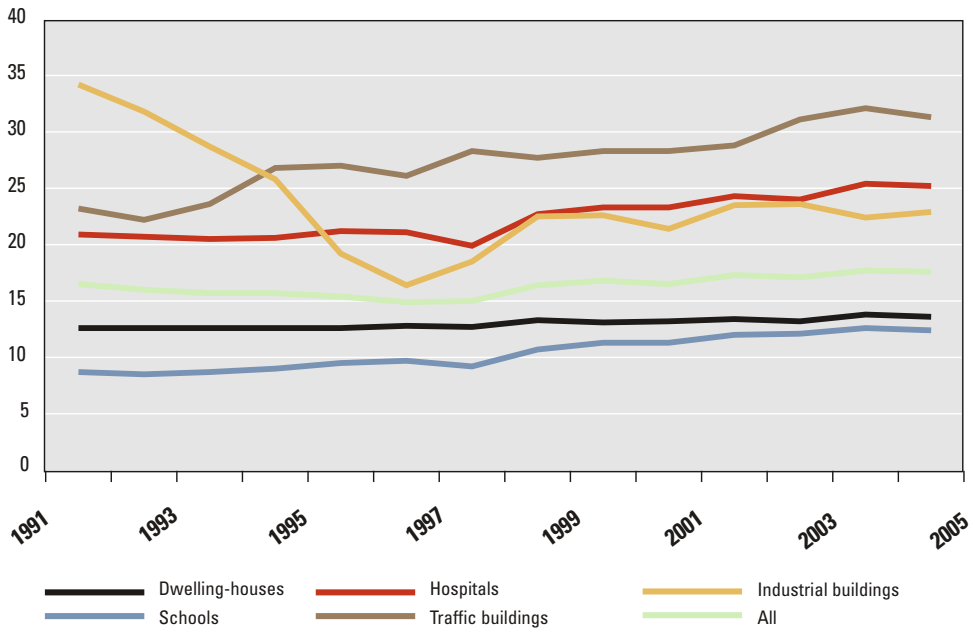
With the improved nitrogen removal the Viikinmäki purification plant was removed from the list of the worst loaders of the Baltic Sea. With regards to the removal of organic substances (BOD_7) and phosphorous the average purification efficiency over the year was more than 95%, and the nitrogen removal rate was 83%.

In the last week of July 2004 there was an exceptional amount of rain in the Vantaanjoki river basin area. The heavy rain and the flooding of the Vantaanjoki river overloaded the sewer network and the wastewater treatment plants. The floodwaters spread over a fairly narrow area to the western inner islands off Helsinki and to some of the outer islands. The hygienic quality of the water worsened and the nutrient contents increased temporarily in Vanhankaupunkiselkä area and in its immediate vicinity. The nutrients in the floodwater in the sea area were mixed with a large body of water, which is why the flood did not have any longer term impact on the situation in the sea area.

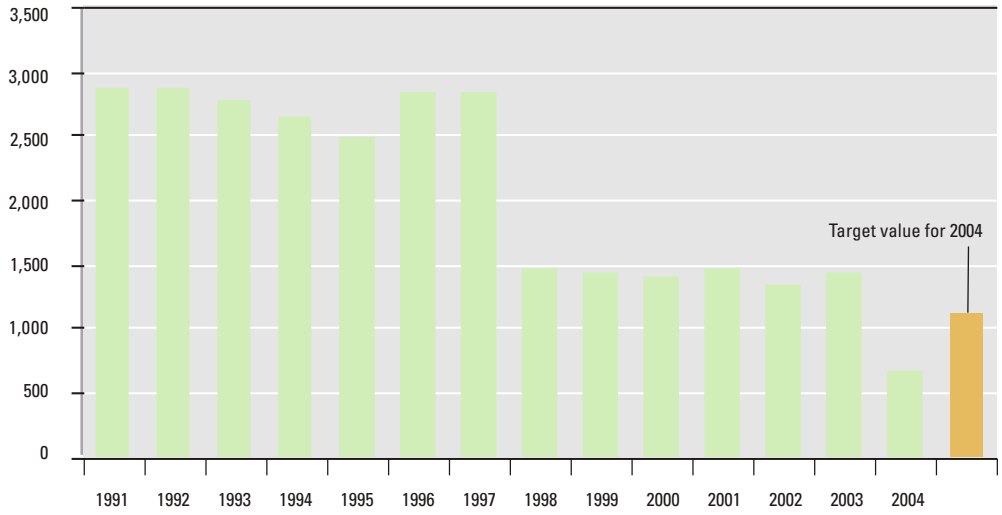
The TBT (tributyl tin) problem that became evident in conjunction with the Vuosaari harbour construction work was investigated in 2004. The quality of the sediment was studied at around 100 observation points in the water area of the harbour and the surrounding area. Studies were also carried out on demersal species, water plants and fish. The studies show that fish taken from Helsinki waters can be eaten in spite of the organic tin compounds.

However, studies carried out at Jätkäsaari and the West Harbour show that the TBT contents in

Specific electricity consumption of city owned estates (kWh/m^3)



Nitrogen Load from the Viikinmäki Treatment Plant (t/a)



the sediment are high, i.e. over the safety limit, in which case dredging in the said area would call for either additional studies or further measures.

Construction, land use, waste

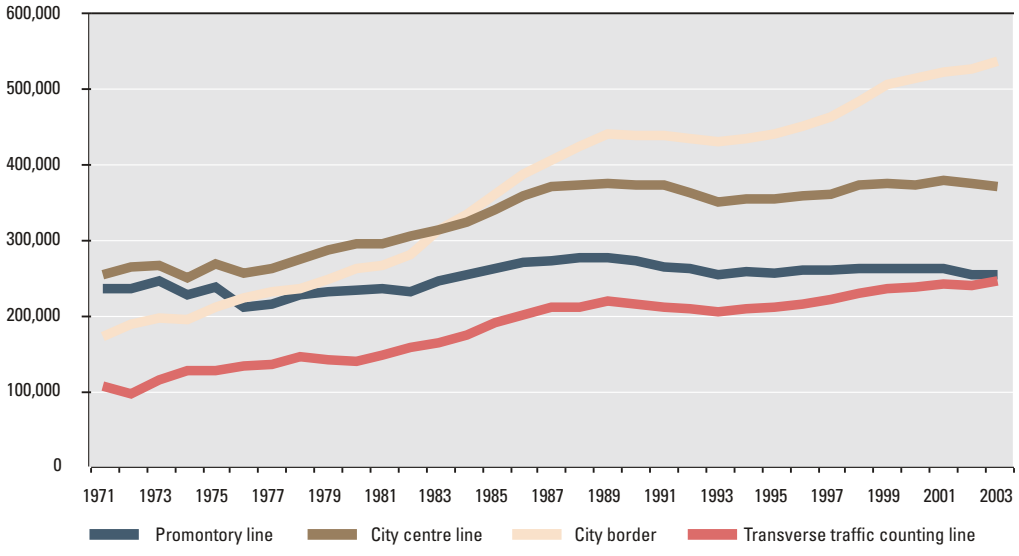
Collaboration between the Public Works Department, Helsinki Energy and the Environment Centre clarified the amounts of natural resources available in 2004 for road building, and for the constructional maintenance and upkeep of these roads. This so-called Materials and the Euro study was the first project to assess the investment of natural resources connected with the city's activities.

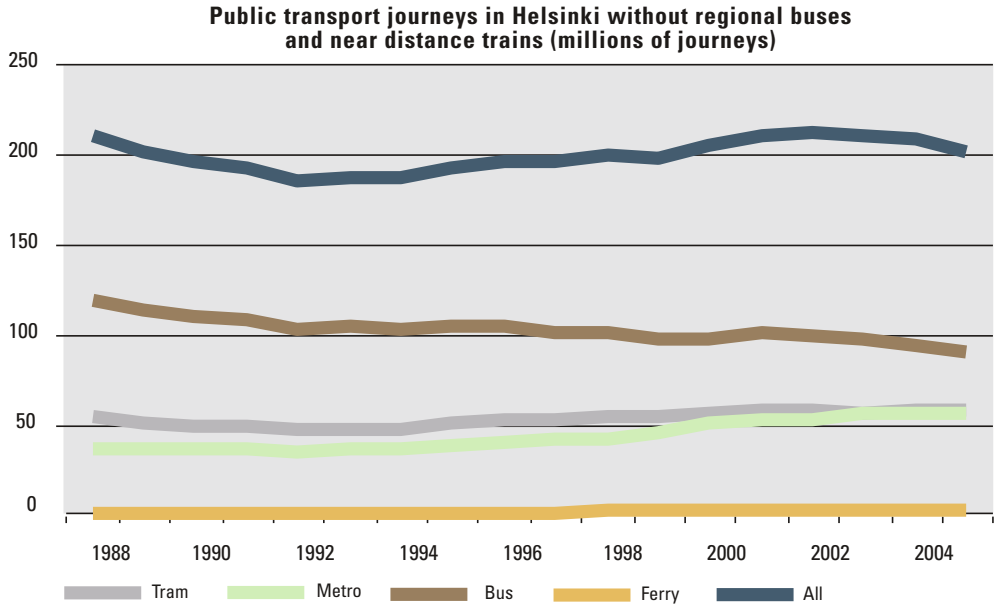
The study showed that the natural resource investment for road building is already significantly affected at the planning stage, as the eco-efficiency of construction depends on the geology of the area under planning and the volumes that need to be shifted. Non-renewable natural resources are used up to the greatest extent in rock cutting and the sorting of surplus material. The by-products of energy production could be utilized more than at present for replacing non-renewable resources in the construction of roads and streets.

In recent years a lot of resources have been used for nature protection in the preparation of management and use plans for nature protection areas. In 2004 a management and use plan for the three Haltiala nature protection areas was completed, and a new plan for Vanhankaupunginlahti area under the Life Nature project was also completed.

In 2004, the total amount of waste received at YTV's Ämmässuo waste treatment centre decreased for the fourth year running, this time by around 54,000 tons. However, recent years' figures don't tell the whole truth about the region's waste flow. The total amount of waste has not necessarily decreased, but the treatment of it has gone else-

Traffic amounts by counting points (vehicles/day)





where instead of Ämmässuo.

Contaminated soil was cleaned up on a total of 35 sites in 2004. The areas were usually cleaned by digging out the contaminated soil and taking it elsewhere for appropriate treatment. A total of 199,100 tons of contaminated soil was moved for treatment or final placement. The operating costs for investigation and remediation of the city's contaminated soil in 2004 totalled 3.9 million euros, and investments were 10.8 million euros.

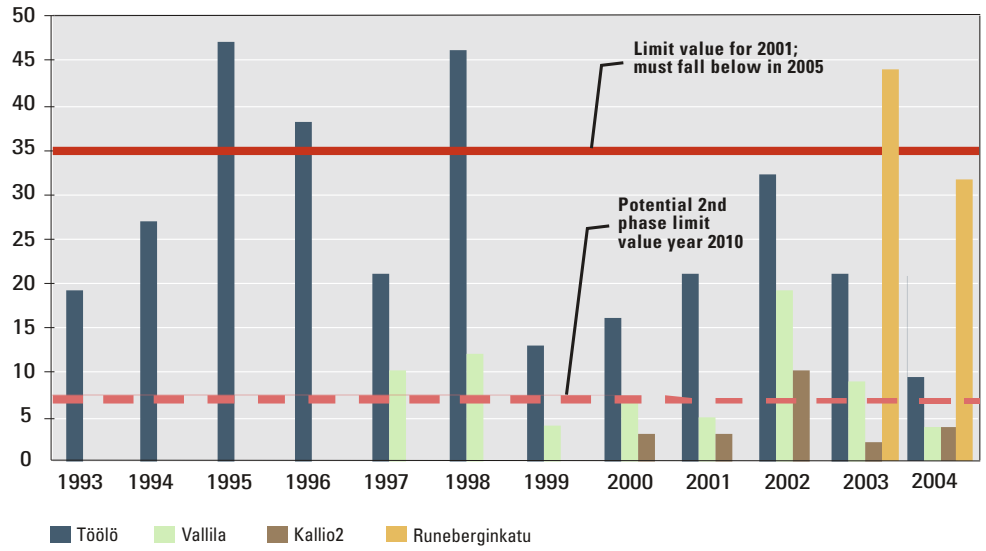
Traffic, air quality and noise

In 2004 there was on average one percent more traffic on the Helsinki main road network than during the previous year. Traffic increased by about one percent at the city centre border and at the city limits. However, the amounts of traffic at the city headland border and transverse traffic were around the same level as the previous year.

The proportion of public transport in morning traffic at the city headland border was 70%, almost a percentage point less than the previous year. The biggest decline has been in Helsinki's internal bus transport, with over seven million fewer journeys being made compared with 2002. Several factors have influenced the reduction in passengers, such as the tightening of the city's economic situation, and cuts in tariff support for Helsinki City Transport. Ticket prices have had to be increased and cuts made in public transport services.

Exceeding the guide values for particles suspended in the air and for nitrogen dioxide in air in areas where traffic is heavy has been an annual problem. However, in 2004 the daily limit values for so-called inhaled particles (PM_{10}) were not exceeded at any of the measurement stations. The limit values are exceeded if during the course of one year there are 35 such days when the average particle content exceeds 50 µg/m³. At the Runeberginkatu measuring station there were 32 such days in 2004. During the year under review, the updating of the City of Helsinki's readiness plan was completed. This concerns the measures for situations when the nitrogen dioxide content of air is

Days exceeding the 24 hour guideline value for inhaled particles (PM_{10}) in Helsinki



considerably higher than normal as a result of traffic.

Noise barriers were built in 2004 on Niinisaarentie to Vuosaari, Ring Road 1 to Ala-Malmi, Ring Road 3 at Suutarila and alongside the main railway line to Oulunkylä. Improvements to the Ring Road 1 noise barriers in Länsi Pakila were started in 2004. Too few noise barriers have been built in terms of the need. The main reason for this is a lack of funds. During the year under review the revision of the noise barrier programme for the main thoroughfares in the metropolitan region commenced.

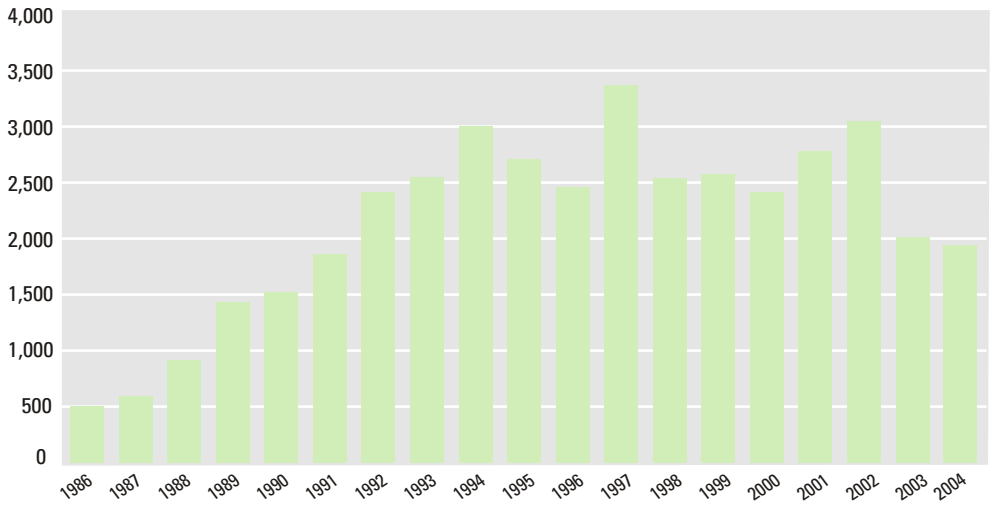
Other environmental activities

Paper consumption per person in the city's departments is one key indicator for the eco-efficiency of consumption. According to the Supplies Department's statistics, paper consumption per employee has decreased by around 4.8% in two years. In 2004 the average paper consumption was 3,270 sheets per employee.

In 2004, a total of 23,800 Helsinki residents, around 4.3% of the residents, took part in the environmental education events arranged by the city. A total of 328 nature school days were held in Harakka, Gardenia and the Young People's Nature House. The Environment Centre and Gardenia arranged 35 excursions to nearby Helsinki nature areas, and 1,921 Helsinki residents took part in these. The number of trips decreased by eight compared with the previous year, but the number participating in each excursion increased slightly. The city was involved in several cooperative environmental education projects, including the Energy Saving Week and the International Car Free Day.

In January 2005 the City Board approved an oil accident prevention plan for the Helsinki rescue operations area. The plan includes instructions, plans for training and practice, maps for the use of the oil accident prevention organization, as well as a study of the costs for implementing the plan.

Participation in city organised guided nature excursions



The economic significance of environmental matters

The aggregate environmental income reported by the city's departments in 2004 was 54.7 million euros, representing 4.1% of the city's overall operational income (1,323 million euros). The biggest source of income was the wastewater charges, which was 90.5% of all external environmental income.

The City of Helsinki's aggregate environmental costs for 2004, according to figures provided by the departments, were 95.7 million euros, which is 2.8% of the city's entire operational costs (3,372 million euros). The largest sectors of costs were wastewater treatment and environmental taxes, of which by far the largest single amount was the energy tax on fuel used by Helsinki Energy.

The environmental investments of the City of Helsinki in 2004, according to the figures provided by the city's departments, amounted to 43.2 million euros, which was 8.7% of all the city's capital investments (469 million euros). The largest investments in 2004 were connected with wastewater purification and sewerage (41%), the cleaning up of contaminated soil (24%), and noise prevention (8%).

As a result of the work of the six cities sustainable development reporting working group, the calculation principles for the environmental economy have changed from the earlier practice used by Helsinki. The biggest change in content concerns the costs and investments for inside air, which are now outside the scope of environmental costs. Because of this change, comparison with the key indicators for previous years is not shown in this report.

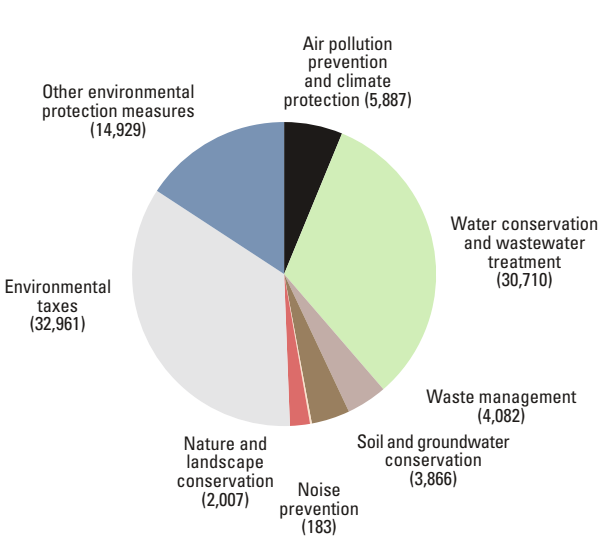
THE HELSINKI SUSTAINABLE DEVELOPMENT INDICATORS (JOINT INDICATORS FOR THE SIX CITIES)

Indicator	2004		2003
Greenhouse gas emissions, tons/resident/year		8.1	9.3
Share of buildings and dwellings built in the city plan area		100 %	100 %
Proportion of nature protection areas and reservations of the land area		3.7 %	3.7 %
Proportion of nature protection areas and reservations of the total surface area		0.9 %	0.9 %
Accessibility of services, proportion of Helsinki residents	less than 300 m	less than 700 m	no value
Green area	98 %	100 %	no value
Kindergarten	71 %	97 %	no value
Public transport stop	92 %	98 %	no value
Primary school	34 %	87 %	no value
Grocery/Food Market	58 %	90 %	no value
Community electricity consumption, kWh/resident/year		-	7,700
Community water consumption, l/resident/year		209	214
Heating needs covered by district heating		93 %	93 %
Specific consumption of heat in city-owned buildings kWh/m^3		44.8	45.9
Specific consumption of electricity in city-owned buildings kWh/m^3		17.6	17.7
Community air quality, PM_{10} exceeding the daily limit values		0	9
Community air quality, bad and very bad days according to the index		5	14
Community wastewater load, phosphorous, g/resident/day		0.1	0.1
Community wastewater load, nitrogen, g/resident/day		2.4	5.3
Community wastewater load, BOD_7, g/resident/day		3.6	2.4
Amount of community waste for final placement (Ämmässuo landfill), kg/resident/year		353	410
Amount of waste utilized, biowaste, kg/resident/year		43	41
Number of cars/1,000 residents		356	346
Number of public transport journeys/resident/day		1.15	1.14
Cycle path network, m/resident		1.79	1.75
Copy paper consumption in City departments, A4 sheets/employee/year		3,270	3,300
Green flag schools and kindergartens		21	20
Participation in environmental education arranged by the city, proportion of Helsinki residents		4.3 %	no value

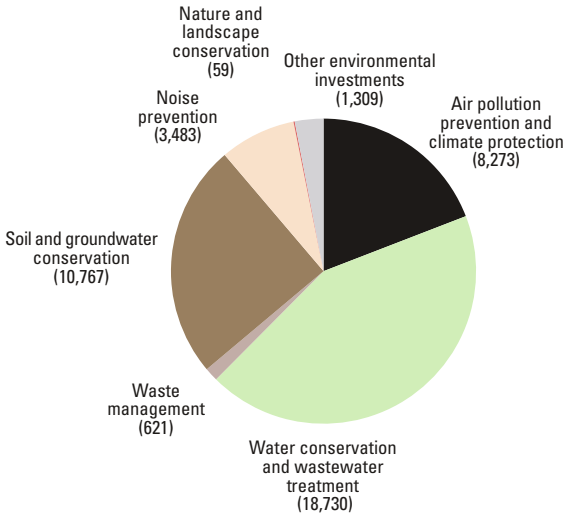

MATTI TIRRI

Distribution of Environmental Operation Costs and Environmental Investments in 2004

Environmental Operation Costs



Environmental Investments



	Environmental income (1,000s €)	Environmental costs (1,000s €)	Environmental investment (1,000s €)
Air pollution prevention and climate protection	194	5,887	8,273
Water conservation and wastewater treatment	49,488	30,710	18,730
Waste management	2,907	4,082	621
Soil and groundwater conservation	40	3,866	10,767
Noise prevention	0	183	3,483
Nature and landscape conservation	10	2,007	59
Other environmental protection measures			
Environmental administration	103	3,606	0
Environmental training and education	1,939	1,234	0
Activity to improve eco-efficiency	0	1,362	1,309
Environmental management	0	3,977	0
Cleaning of public areas	0	4,750	0
Environmental taxes and charges	-	32,961	-
Total (1,000s €)	54,681	95,696	43,242
In relation to the city's operational income, costs and capital investments	4.1%	2.8%	8.7%
Total € /resident	**98**	**171**	**77**

City of Helsinki

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