

CITY OF HELSINKI

ENVIRONMENTAL REPORT 2003 / SUMMARY



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CITY OF HELSINKI ENVIRONMENTAL REPORT 2003

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INTRODUCTION

This report is a common report of all Helsinki City departments. The Environment Centre has prepared the report for which all 37 departments have produced information. The subsidiaries partly owned by the city are not included in this report.

The environmental reporting of the city is supervised and co-ordinated by a working group which was set once again by the Mayor in the beginning of 2004. The environment Centre has guided departments in reporting and prepared the report on the basis of departments' reports. These reports are presented in their entirety on the internet (in Finnish).

The City of Helsinki is a central actor in many sectors of public industry (for instance harbour, transportation, energy production, water supply) from an environmental point of view. For example, the City produces about 6 % of Finland's carbon dioxide emissions (2002 information). The Viikinmäki wastewater treatment plant is responsible for purifying of wastewater produced by almost one million people—one fifth of Finland's population.

DEPUTY MAYOR'S OVERVIEW



The environmental reporting is part of a yearly communication about the City's environmental actions, their results and developments. It is aimed at city decision makers as well as inhabitants. Environmental reporting is also an important part of developing the environmental management system of the City of Helsinki.

This is the fourth Environmental Report of the City in its entirety, and the second that is visually designed according to a common City style with other yearly reports: the annual report, financial statement and the personnel report.

From the perspective of environmental protection the most remarkable project in 2003 was the planning of the programme for ecological sustainability for the City of Helsinki. It will concretize environmental matters of the city's common strategy for the sustainable development and the sustainable development action plan approved by the City Council in 2002.

In addition to more traditional topics like nature conservation, traffic questions and the reduction of greenhouse gases, newer topics, like eco-construction, eco-procurements and environmental education have been chosen as priorities of the programme which is being prepared. The planning of these themes offers new possibilities to save both the environment and funds, for example more sustainable building and avoiding unnecessary purchasing.

The systematic environmental protection of the City of Helsinki has also been noticed internationally. Helsinki won an honourable mention in the European Sustainable Cities Award 2003 competition of the sustainable development campaign of the EU and European cities. Special recognition was paid to the successful developing of public transport and district heating, preparing of sus-

tainability action plan as an interactive process, and inhabitant orientated sustainability work aimed at preventing marginalisation.

More positive attention was received recently, when the Pulmonary Association HELI gave Helsinki a national air protection award. According to HELI the city has logically developed public transportation and it is based on well working bus-, metro- and tram traffic. According to an European reference research the clients are satisfied, too. Only Barcelona's inhabitants are more satisfied with the public transport than in Helsinki.

The environmental work of the Public Works Department received much attention last year. In December the Minister of Trade and Industry awarded the Life Cycle Services Unit an 'Energia Tsemppari' Prize for its goal-directed, tough and committed work for energy efficiency. The compact disc 'Songs for the kids in the clean City' made for the 25th anniversary of Public Works Department won an honourable mention in the Environmental Competition of Estate and Building Forum. In addition the district cool system of Helsinki Energy was awarded as a best heating and air conditioning -act in 2003 for its' benefits to environment and energy economy.

Despite all these awards there is still a lot of work to be done to improve environmental protection. Many examples can be found in this report, if you look at greenhouse gases, air quality, traffic amounts or material flows as a whole. Environmental costs will be caused by these in the future, but investing in preventive environmental protection will bring savings, too.

Pekka Sauri

Deputy Mayor

ENVIRONMENTAL MANAGEMENT IN THE CITY OF HELSINKI

The environmental management of the City of Helsinki consists of instruments common for all departments and of departments' own environmental management systems. According to the City's environmental policy, environmental management should be a part of management of all city administrations. Integrating environmental management in financial and operational planning of departments is an essential tool in implementing the policy.

Preparing of the programme for ecological sustainability was a remarkable process in environmental management. A steering committee was established to prepare the programme, in which all major departments named their agents. There were also six theme groups under following headlines:

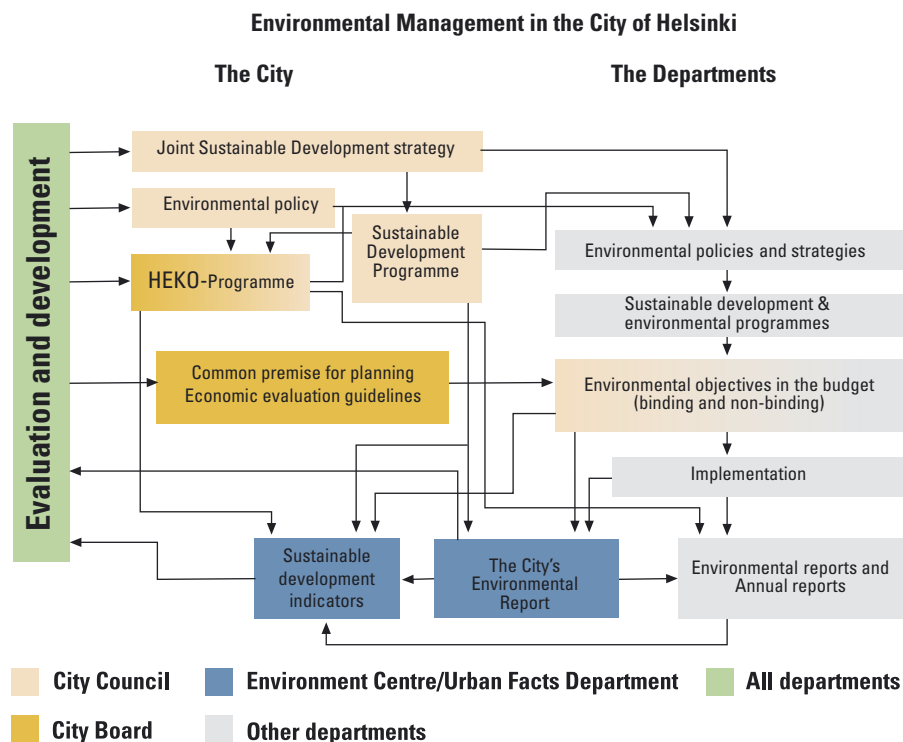
- Reduction of greenhouse gases
- Protection of nature biodiversity
- City infrastructure, traffic and movement
- Improving ecological sustainability in construction
- Integrating life-cycle -thinking in procurements
- Environmental education

The programme under preparation will implement and accelerate the sustainable development action plan adopted by City Council on the 12th June, 2002 in environmental matters. The draft programme includes 24 objectives and 76 measures.

The City Board has for many years obliged departments to set environmental objectives. In addition to strategies and programmes the environmental objectives set in the budget are thus among the most important tools in environmental management of the city. They concretize environmental policy into practises of departments.

There were 13 environmental targets set on the City Budget in 2003. All of these were reached except of the Helsinki Water's target concerning the nitrogen amount in purified wastewater.

An ISO 14001 standard environmental management certificate was awarded to Helsinki Energy's Hanasaari power plant in 2003. The environmental management systems of HKL- bus traffic, The Port of Helsinki and Helsinki Energy Plants in Salmisaari and Vuosaari have been certified earlier. The Real Estate Services of social and health care gained last year the right to use the Green Office certificate, which Helsinki Energy's Office buildings and HKL Head Office have already obtained.





KATTI ISTA

THE CITY'S KEY ENVIRONMENTAL OPERATIONS AND IMPACT

Helsinki Water's wastewater treatment plant in Viikinmäki had a purification efficiency of over 94 % on phosphorus and organic substances (BOD7) and 64 % on nitrogen. The binding budget objective in 2003 was < 50 tons/year for total phosphorus load and < 1,400 tons/year for total nitrogen load. The objective for phosphorus was met, while that for nitrogen was not. The total nitrogen load was 1,465 tons, which was 135 more than in 2002.

The biological polishing filtration, which was completed in the end of 2003, and the new wastewater treatment line, which was taken in use in spring 2004, will remarkably improve the purification process. The aim is that the nitrogen load will be almost half of last years levels, and the phosphorus load and organic substances will be reduced about 40 %. The total budget for the project is about 40 million euros.

The carbon dioxide emissions of Helsinki Energy increased by 22% from 2002 and they were 4.8 million tons. Specific carbon dioxide emissions were increased by 10 % and they were 330 g CO₂/ kWh. Compared to the 'Kyoto-year' 1990 Helsinki Energy's carbon dioxide emissions were 41% higher and specific carbon dioxide emissions 18 % lower.

The reason for the rise of CO₂ measured in tons and reduction of specific emissions is that energy production has essentially increased from 1990 while the produced energy is much cleaner than before. The emissions were as their lowest in 2000, when there were ample hydroelectric power available in the Nordic markets. Thereafter the emissions have increased, because the increasing production, but also because of increasing use of coal as a fuel.

In 2003 contaminated soil was cleaned up on 61 sites. Harbours of Jätkäsaari and Sörnäinen, Toukolanranta and north side of Arabianranta, new harbour and working place area in Vuosaari, Iso Huopalahti landfill and Viikinmäki rifle-range were the most important areas where soil was investigated and purified. About 12,500 m³ of mostly oil contaminated soil was handled in Viikki, and about 61,700 m³ of soil contaminated mostly by different metals was handled in Kyläsaari.

The noise abatement survey for street network of Helsinki was published in 2003. It completes the noise abatement programmes for main roads and railway traffic which were published in 2000 and 2001. The survey proposes noise barriers or property directed measures, such as improving the soundproofing of windows for the most problematic noise areas. In down town area this means in practise changing the windows, which would cost about 20 million euros according to the survey.

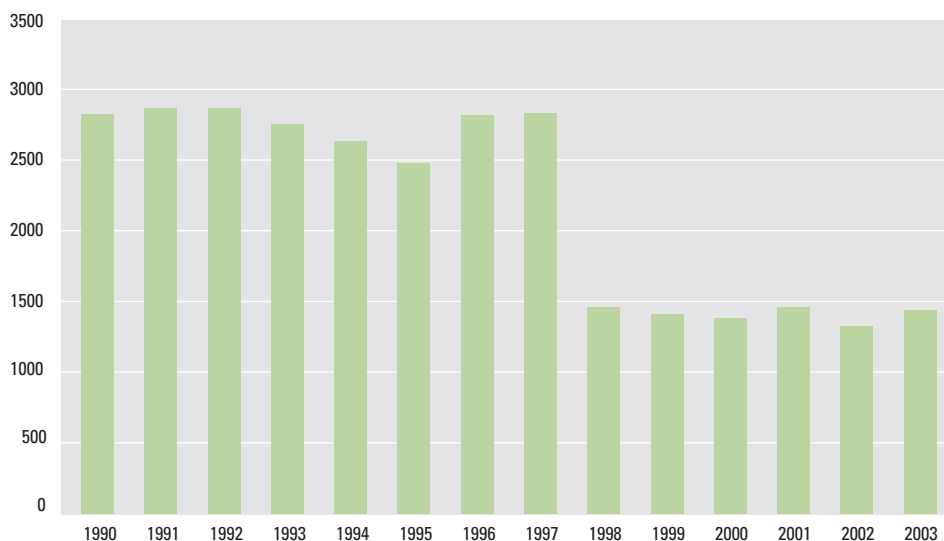
The City renewed the Energy Saving Agreement made with the Ministry of Trade and Industry in December 2003. The new agreement is called Energy and Climate Agreement, and it includes objectives and measures in addition to energy saving the development for the use of renewable energy sources in city organisations. The Agreement is to the end of 2005, and it includes objectives for the specific heat and electricity consumption, follow-up and energy inspections in city owned buildings.

The City of Helsinki together with seven Finnish cities took part in the network of eco-procurement. The aim of the network is to discuss the potential to take environmental aspects into account in different phases of public procurement. In 2003 all in all 56 environmentally labelled products were available in the assortment of the Supplies Department of the City of Helsinki.

The Environment Centre made a survey concerning waste prevention in city departments. The survey focused on departments' waste flows using data produced for environmental reporting as its source of information. The most remarkable results of the study were the weaknesses found in the book-keeping systems and monitoring of the waste amounts.

The share of public transport on the city border reduced by one percent from 2002. The reduction was biggest in the city's internal bus traffic, where there were 19 % less travellers than in 2002. According to a survey made by HKL the most important reasons for this were rising prices, reductions of HKL traffic lines and change-over to rail traffic, private car use and regional bus lines. The share of tram and train traffic of all public transport on the contrary increased by 1.3 %.

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



The budgetary target value for 2003 is 1,400 t/a

The objective of HKL bus traffic is to reduce the consumption of citydiesel per 100 km driven by 1 % per year. In 2003 the consumption reduced by about 2.7 %, so the objective was clearly met. The energy consumption of tram traffic was reduced by 3 %. One reason for this was the economic driving education given to drivers.

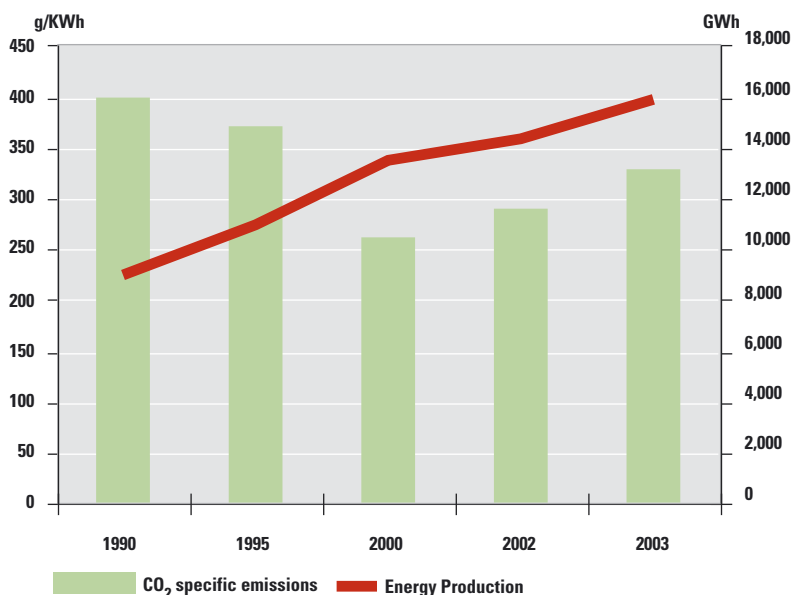
The Vuosaari Harbour is one essential project in Helsinki land use planning. The planned order of construction was bound to change in the summer of 2003 because high tri-butyl-tin contents were found near the dock pool. The Port of Helsinki studied different options to solve this problem, and dredging inside the shelter structure and stabilisation in the future harbour structure in Niinilahti was found to be the best solution.

The completed version of follow-up programme of vegetation and the first results of avifauna follow-up of

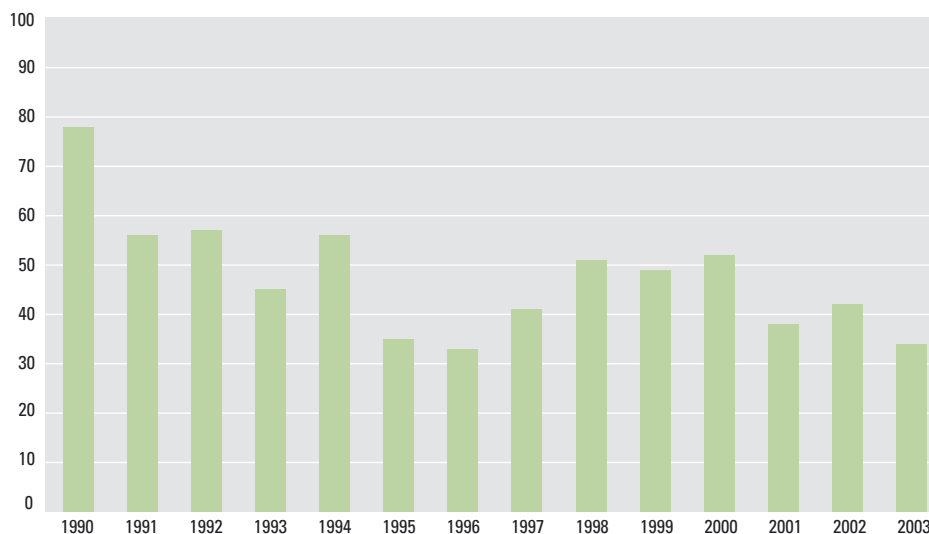
the harbour project were published in 2003. The water and fishing monitoring programme were adopted by the Uudenmaa Environment Centre.

A new nature conservation area of 92 hectares was established in the Helsinki City owned area in Sipoo. The area belongs to the Mustavuori and Östersundom Natura area, and it is nationally valuable especially as a shelter area for water birds.

The Eco-Efficient House project started by the Housing Production Department was completed in autumn 2003. The project studied cost-effective planning solutions, which guarantee healthy indoor air in residences. Flexibility to change building structures and use of renewable resources were in turn studied in 'The Flexible Wood Houses' project, which was started in Vuosaari's Omenmäki last year.

Helsinki Energy's CO₂ specific emissions (g/kWh) and the overall energy supplied (GWh)

Phosphorus load from the Viikinmäki treatment plant (t/a)



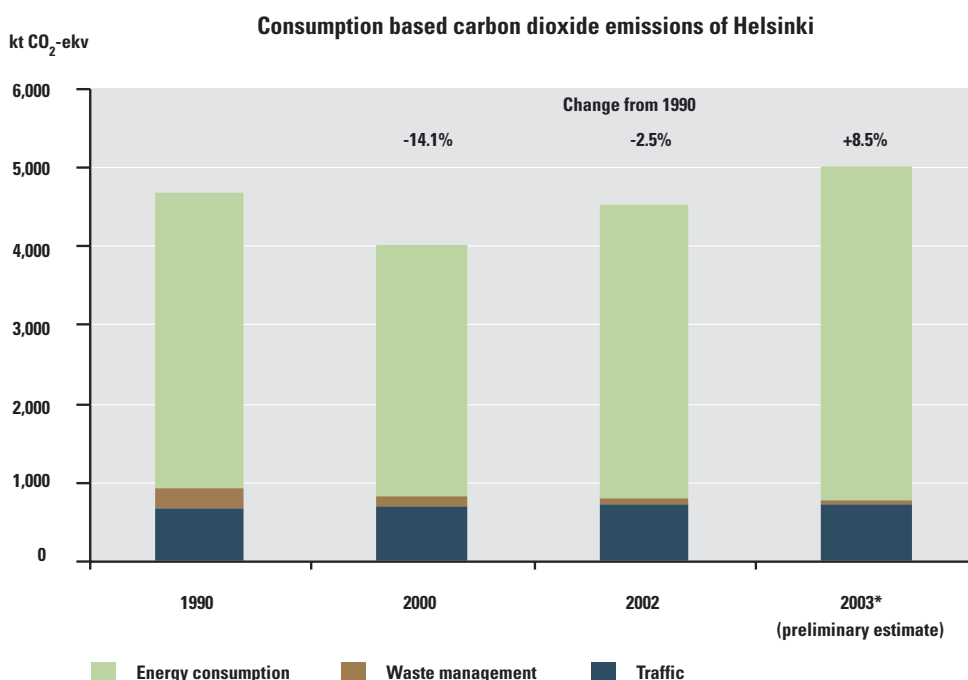
The budgetary target value for 2003 is 50 t/a

A protection plan for Helsinki ground water areas was done by the City of Helsinki and the Uudenmaa Environment Centre in 2003. In the plan the most important risks in the ground water areas are mapped and seven measures to activate protection of ground waters are proposed. The measures include preparing of instructions for construction in public areas and integrating ground water protecting criteria in clauses of transferring plots of land.

The Harakka Island and Viikki's Gardenia are central places for environmental education in Helsinki. There were arranged 206 nature school days in these nature centres in 2003, while the total visitor amount was about 38,000. The Environment Centre and Gardenia arranged 50 guided and open nature excursions near Helsinki. Over 2,000 persons took part in these excursions, which is about 1,000 less than the year before. One rea-

son for the reduction was the reduction of the number of excursions.

In addition many other departments arrange environmental education. For instance Helsinki Energy gives energy saving information and different energy saving services for their clients. About 7,200 young people took part in the environmental club activities arranged by the Youth Department. The aim of the Archipelago Information for Ship Travellers Project is to inspire the three million ship passengers to see the worth of the Baltic Sea. The project built 'Sea in me' exhibitions in the terminals of both Helsinki and Tallinn, which describes the fast changing and unique nature of the Gulf of Finland.



THE INDICATORS OF THE STATE OF THE ENVIRONMENT

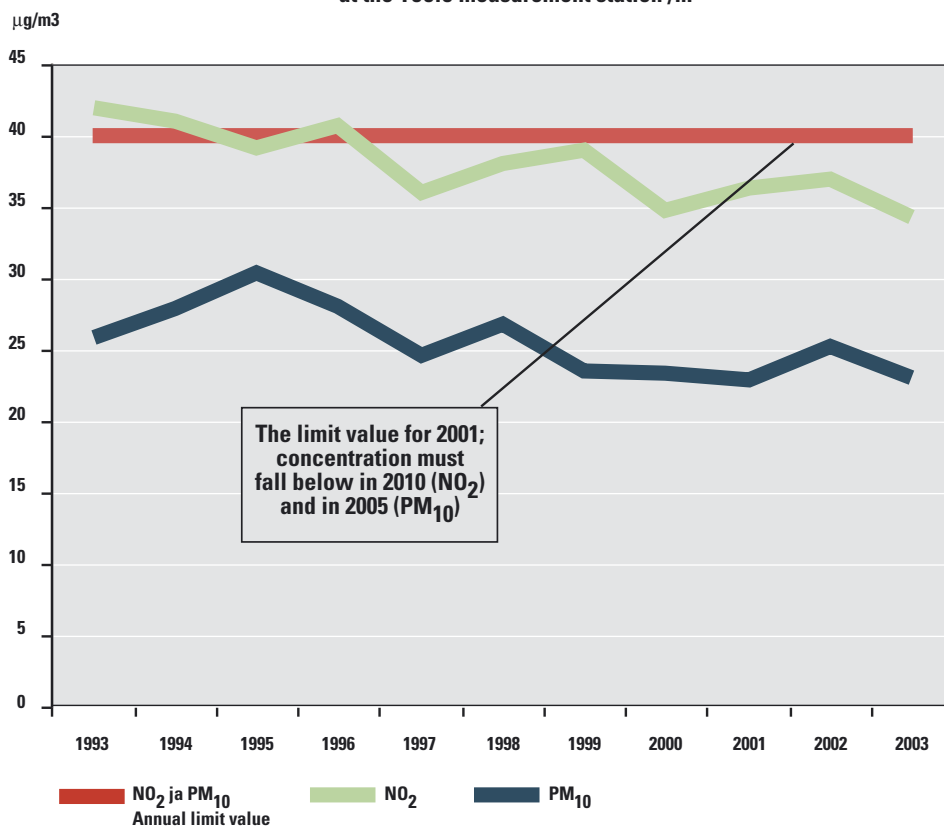
According to preliminary estimates the consumption based carbon dioxide emissions in Helsinki have increased about 8.5 % compared to 1990. The emissions from energy consumption increased about 14 % and from traffic about 7 %. The emission per inhabitant have decreased 5 % compared to 1990, but from 2002 there has been a rise of 11 %. The calculation model does not take into account energy produced elsewhere but consumed in Helsinki, but it changes all consumption as it were produced in the power plants of Helsinki. Instead the energy produced in Helsinki and consumed outside the city area

has been removed from the calculations.

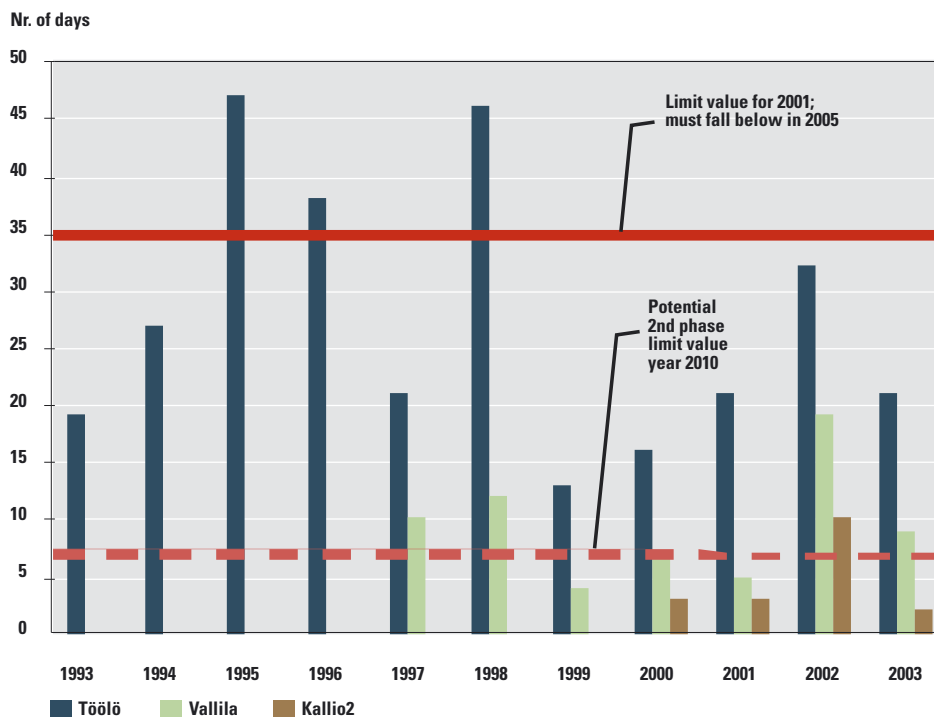
There was almost one percent more traffic in the main streets of Helsinki in 2003 than the year before. The traffic amounts in the city border and in transverse traffic increased by two percent. Instead the traffic amount in city centre border was about the same as in previous year and the traffic in the downtown area has decreased by one percent.

Busy main roads and busy streets surrounded by high buildings in the downtown are the most problematic sites of the air quality in Helsinki. Nitrogen oxide and small particles from combustion processes are the most harm-

Annual averages for inhaled particles (PM₁₀) and nitrogen dioxide (NO₂) at the Töölö measurement station /m³



Days exceeding the 24 hour guideline value for inhaled particles (PM₁₀) in Helsinki

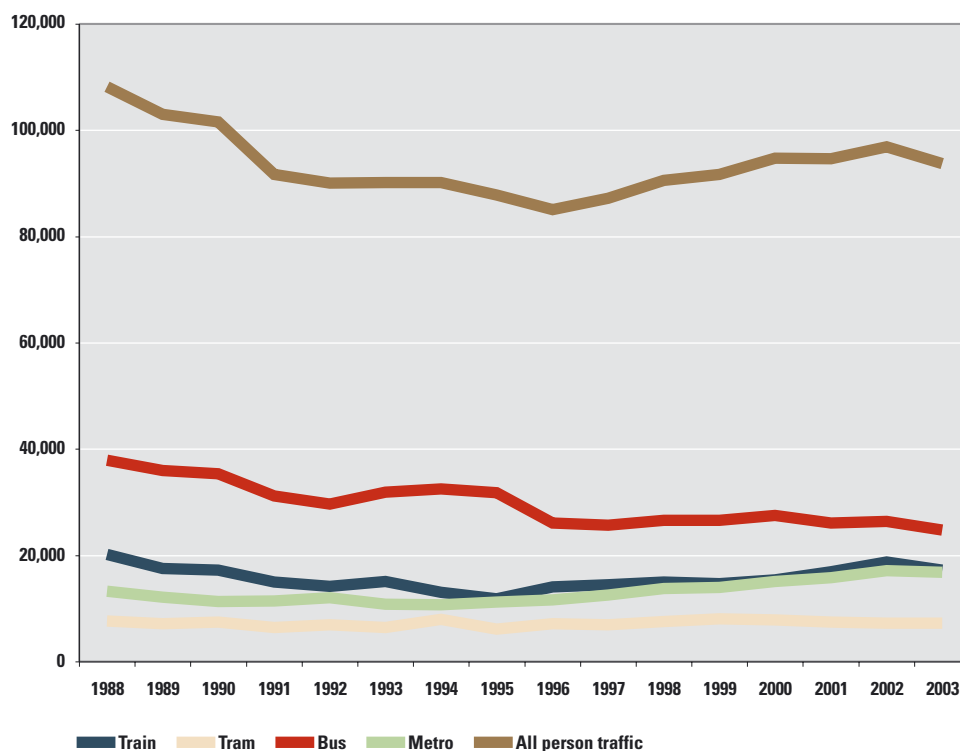


ful substances in the Helsinki air. The year average values for the so called inhaled particles (PM₁₀) concentration were clearly under the limit-value (40 µg/m³). The particle concentrations have not remarkably risen in the last few years.

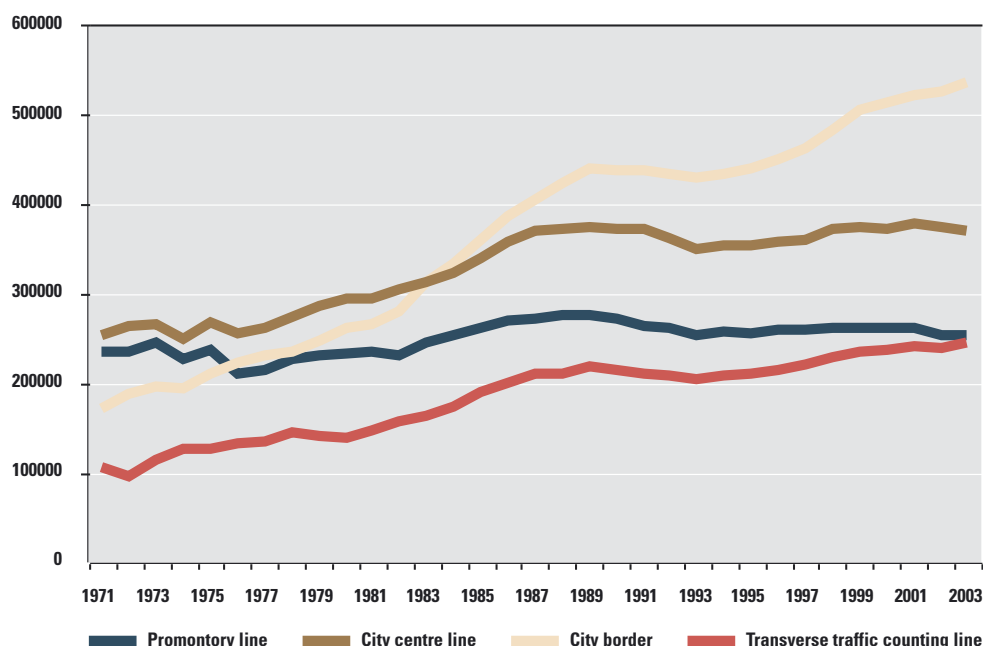
A renewed plan for preventing street dust harms was

taken in use in the beginning of 2003 by the City of Helsinki. The plan includes prevention measures and an operations model for those situations when the air impurity concentrations are considerably higher than normally. The most important source of inhaled particles is the dust raised by car traffic.

Amount of passengers on the City border in morning rush hour (8-9) to the city direction



Traffic amounts by counting points (vehicles/day)



The condition of the sea region outside of Helsinki is affected by the overall loading of the Gulf of Finland and the changes in its water management as well as the emissions from Helsinki itself. In June 2003 there was a salt water pulse from the North Sea to the Baltic Sea, which raised the salt concentrations even in the Gulf on Finland. At the same time the concentrations of phosphorus increased in the sea. Despite the high nutrient concentrations the blooming of blue-green algae was not very massive in summer 2003.

The amount of waste received by the Ämmässuo land-fill has decreased for the third year in a row, this time by some 21,000 tons. The amount of mixed waste decreased by about 30,000 tons, while the amounts of bio-waste and other exploitative wastes increased a little. The overall

waste amount produced in the region has not necessary been reduced, because some treatment has moved away from Ämmässuo. More and more wastes under producer's responsibility (for example paper, construction waste) are collected by the producers themselves.

The biodiversity of Helsinki forests was affected by the dryness in summer 2003. Remarkable amounts of pines, firs and leafy trees, especially birches died or will die in the near future especially in the rocks and the forests near them. Most of the deaths of trees occurred in the archipelago or in the east part of Helsinki. The dryness has positive effects on the biodiversity as well. Many mushrooms, insects and birds benefit directly or indirectly from the increasing amounts of rotting trees.

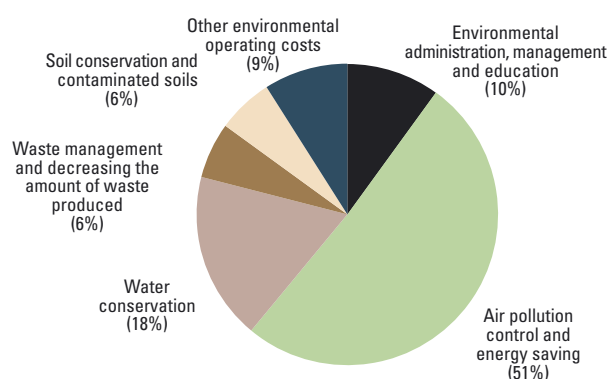
KEY FIGURES IN ENVIRONMENTAL PROTECTION 2002 AND 2003

	Development	2003	2002
Carbon dioxide emissions, consumption based CO ₂ -ekv	--	4,997 kt	4,504 kt
Phosphorus emissions into the sea, Helsinki Water	+	34 t	42 t
Nitrogen emissions into the sea, Helsinki Water	-	1,440 t	1,330 t
Amount of waste received at Ämmässuo land-fill	+	452,210 t	473,450 t
Amount of vehicles / day at transverse traffic counting points	-	245,300	240,000
Mass transportation's share of morning traffic at city border	-	70.5 %	71.7 %
Annual average of so-called inhaled particles (PM ₁₀) in Töölö	+	23 µg/m ³	25 µg/m ³
Contaminated soil treated in the City area	+	347,670 m ³	199,230 m ³
Groups attending nature school and fairytale adventures in Gardenia and Harakka	-	260	313
Number of persons attending guided nature walks	--	2,009	3,049

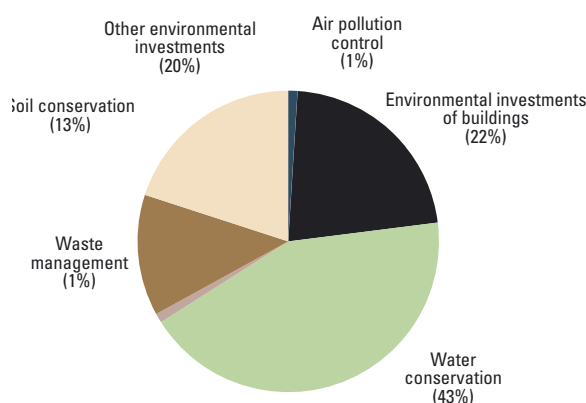
++ positive development
+ some positive development

- some negative development
-- negative development

Distribution of Environmental operating costs



Distribution of Environmental Investments



ENVIRONMENTAL ECONOMY INDICATORS

The environmental economy indicators of the City are based on information provided by the departments. Not all source information for the environmental costs are from accounting but is based in part on estimates, with the environmental projects of buildings for example. In 2003 the costs for purifying contaminated soils were specified in order to get a best estimate at the whole city level.

The City's aggregate environmental income for the year 2003 was 55.8 million euros, comprising 4.3 % of the City's overall operational income (1,298.5 million euros). The biggest source of income was the wastewater charges that was 89 % of all external environmental income.

Helsinki's overall environmental operating costs in 2003, according to figures provided by the departments, were 82.8 million euros, which is 2.7 % of the entire operational costs of the City (3,086 million euros). The largest sectors of costs were air pollution control (45 %), water protection and waste water treatment (18 %) and environmental costs of cleaning the common areas (7 %). The largest single amount was the environmental tax paid on fuel by Helsinki Energy, which amounted to 30.7 million euros.

The reported environmental operating costs increased by 0.5 million euros. There was an increase in almost all the sectors of environmental protection despite the sector 'other environmental costs'. The rise of costs was reduced by a change in assessing costs of cleaning the common areas by the Public Works Department. This change reduced the environmental costs by about 2.8 million euros compared to year 2002.

The environmental investments of the City of Helsinki in 2003 amounted to 60.1 million euros, which is 12.2 % of all City investments (490.9 million euros). The biggest single investments were the expansion of nitrogen

Environmental economy indicators, € 1000	2003	2002
Environmental income	55,780	55,847
Environmental operating costs		
Env. administration, management and education	8,597	8,959
Air pollution control and energy saving	42,232	39,946
Water conservation and waste water management	14,895	14,103
Waste management	4,994	4,646
Soil conservation	4,593	4,132
Other environmental operating costs	7,445	10,062
Total	82,756	81,848
Environmental investments		
Air pollution control	603	2,940
Environmental investments of buildings	13,038	8,541
Water conservation	26,062	25,564
Waste management	642	985
Soil conservation	7,579	9,068
Other environmental investments	12,208	3,838
Total	60,132	50,936

purification at the Viikinmäki treatment plant (13.3 million euros), sewerage investments (8.4 million), investments in Salmisaari coal cave (4.7 million euros) and the clean-up work of contaminated soil at Prakticum site in Toukola (3.1 million euros).

The environmental investments increased by 9.2 million euros compared to 2002. The most important reasons for the growth were the Salmisaari coal cave and the increased environmental investments in buildings, mostly because of mould damages.



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