



# CITY OF HELSINKI

ENVIRONMENTAL REPORT 2007 | SUMMARY



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# The City of Helsinki Environmental Report

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## Introduction

**T**he City of Helsinki Environmental Report is a common report for the city's administrative departments, which gives information on the city's environmental activities and environmental impacts. This report contains information from all of the city's 29 departments and 7 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 Environmental Report and the material provided by the departments is presented on the Internet (URL on cover).

The environmental reporting of the city is coordinated by the Environmental Reporting Group set up by the Mayor. All the most important departments in terms of the 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 around 5% of Finland's carbon dioxide emissions. The Viikinmäki wastewater treatment plant is responsible for the purification of wastewater produced by around 750,000 residents.

# Deputy Mayor's Overview

One year ago in this overview I wrote that the climate was the main topic for environmental discussions in 2006. Climate issues also took pole position last year, and at the same time the perspective of energy production and consumption has received more emphasis than before. Helsinki's solutions in terms of energy policy even became a topic of national policy discussion.

Finally, following these discussions Helsinki has taken the challenge posed by the climate seriously. We are committed to the climate strategy objectives for the metropolitan area, and have set our own objective, which is for us to reduce greenhouse gas emissions by at least 20% by 2020. Reaching this objective calls above all for changes in energy consumption and production, as well as in traffic. The changes must be both quantitative as well as structural: energy saving, reducing traffic, but also new fuel solutions.

The significance of traffic has been underscored in recent times, also in connection with the increase in problems on air quality and noise. A new noise study published last year found that more than half of the residents of Helsinki live in what the EU defines as street and road traffic noise areas. Incidents where the air quality limit values were exceeded, mainly as a result of traffic, also continued last year. This time, however, the concentrations of airborne particles remained within the permitted limits, but the annual limit value for nitrogen oxides was exceeded in the city centre.

The objectives for Helsinki's transport policy are in the right direction, but structural changes do not happen overnight. The city favours public transport, and especially rail transport, in new residential areas as well as in existing ones. After decreasing for a few years, last year saw an increase in the number of passengers using public transport. On the other hand, there was also an increase in the use of car transport, so that the proportion of all journeys made by public transport remained around the same.

The compactness of the urban structure is a very important means for controlling the environmental impact of transport. In terms of the environment, a positive development is expected in this area as both the release of Jätkäsaari for residential development and the future construc-

tion of Southwest-Sipoo support the eco-efficient urban structure of the area, in addition to which these areas will be supported by rail transport.

Both climate and transport policy solutions call for major structural changes that concern both the urban structure and the energy production structure. However, even these changes are not sufficient on their own, as consumers and businesses also play a major role in environmental policy. For the future even more cooperation between the city, businesses and the residents is needed. The city has responded to this challenge by introducing a project that is creating a model for developing the environmental work of SMEs in the metropolitan area.

The eco-efficiency of the city's own activities is also important, as the city is expected to be a pioneer in environmental matters. The eco-support activity for city departments and corporations, which last year advanced at a fast pace, has created a sound foundation for this work. However, at grass roots level eco-support activity needs the support of effective environmental management, so that the different organisation levels work towards the same goal.

Environmental matters have become part of the everyday work routines of an ever-increasing number of city employees. In addition to the eco-support activity, this testifies to the departments' own environmental programmes and sustainability programmes. The so-called sectoral programmes for environmental protection are providing a foothold for environmental thinking in the city's different functions: the eco-construction programme, the air protection programme, the noise prevention plan, the action plan for the challenges of the Baltic Sea, the small waters programme, and the nature protection programme, etc.

However, alongside the work on the programmes, there is also a need for innovativeness and new ways of thinking. If a single eagle owl (nicknamed Bubi) can succeed in being in the right place at the right time to provide thousands of football fans with a wonderful nature experience, one would imagine that the city could also be capable of a creative and eye-opening way of environmental thinking.

Pekka Sauri



PERTTI NISONEN

# The City of Helsinki's Environmental Management

The City of Helsinki set the target of integrating the management of environmental matters as part of the management of the whole city administration. The city has achieved this target in many ways, the most important of which are shown below. For its part, the city's environmental policy (City Council 2005) requires that the departments, corporations and subsidiary organisations improve the effectiveness of their environmental management.

The Helsinki Ecological Sustainability Programme (HEKO) 2005 – 2008 is divided into six thematic areas: greenhouse gas emissions, biodiversity, traffic and mobility, eco-construction, procurements, and environmental education. By the end of 2007, a total of 42 of the programme's 54 measures had been partially or totally implemented.

For many years now Helsinki has set binding environmental targets in its budget. In 2007 there were five of these targets. Of these targets, those that were not implemented were those concerning the share of public transport in the morning traffic towards the centre and in transverse traffic at the daily level, and the wastewater purification target in terms of the nitrogen loading in water led to the sea. However, the targets concerning the amount of phosphorous loading to the sea, the amount of street dust remaining below the limit values as set in the Decree on Air Quality, and preparing life cycle cost calculations for all construction projects decided by the City Council were all achieved as planned.

The city's organisations that have been certified in accordance with the ISO 14001 environ-

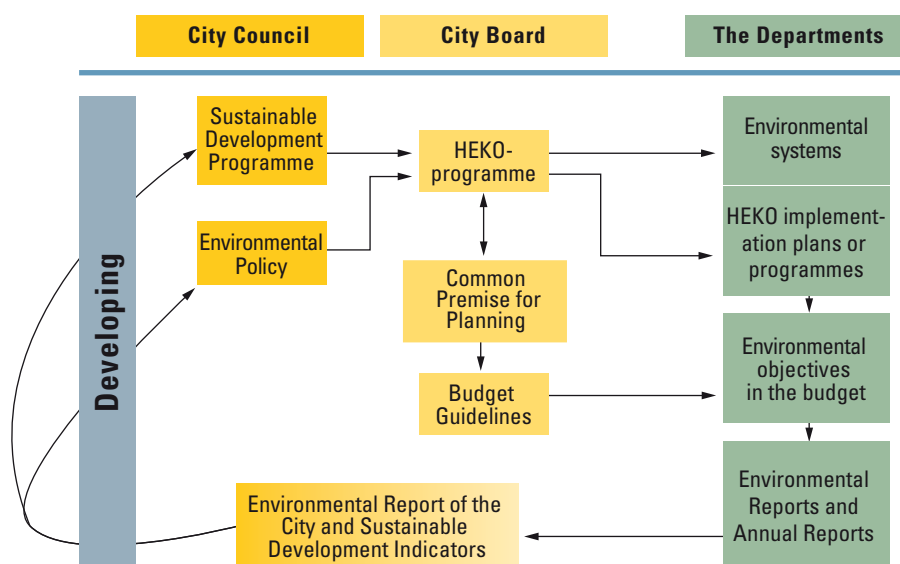
mental management standard are Helsinki City Transport's Buses (nowadays Helsingin bussiliikenne Oy), the Port of Helsinki, and Helsinki Energy's Salmisaari, Vuosaari and Hanasaari power plants. At the end of the year, six Helsinki Energy office buildings, the Helsinki City Transport corporation, and the Education Department had the right to use the Green Office environmental management certificate.

In 2007 there was rapid progress in eco-support activity, which is an initiative that aims to promote environmental responsibility among city personnel and support environmental management in the city's departments. Fourteen departments appointed their own eco-support personnel, and a total of 357 people were appointed. Of these, 257 eco-support people have participated in the two-day basic training session.

An assessment of the project showed that eco-support activity is a form of activity that is capable of improving environmental responsibility in the city's different organisations and increasing the environmental awareness of the personnel, as well as creating a new activity culture that produces environmental responsibility.

At the end of 2007 an external assessment of the city's environmental management structure and effectiveness was also carried out. This assessment showed that the areas for development included the integration of environmental management into the city's strategies, reducing the number of tools for steering environmental management, and increasing the use of incentives, for example by linking environmental matters to the city's performance pay system..

## City of Helsinki Environmental Management







# Climate Change and Energy Policy

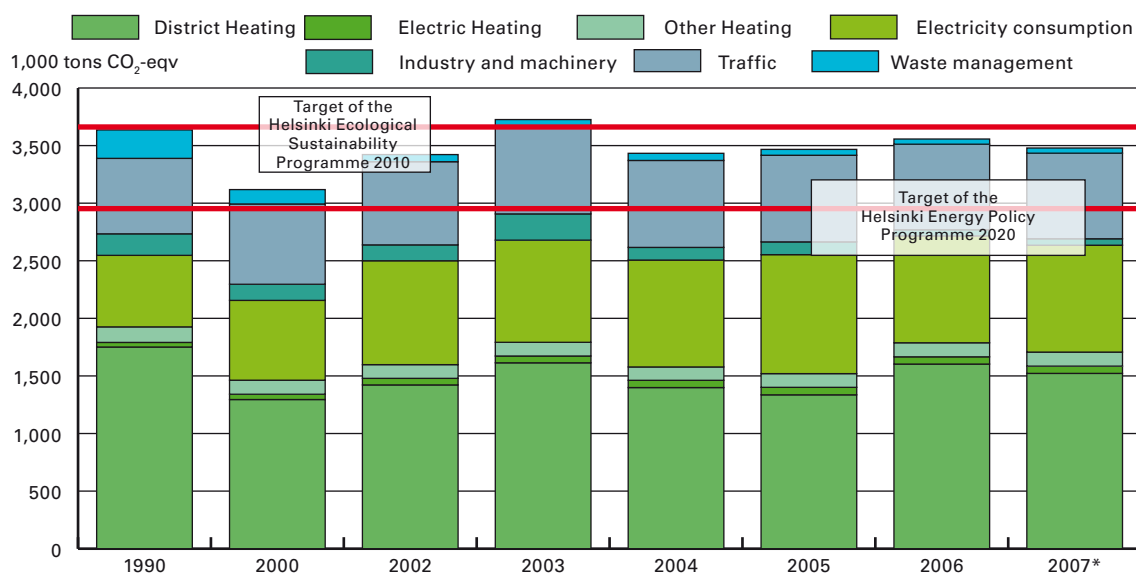
The Climate Strategy for Helsinki Metropolitan Area 2030 was approved by the Executive Board of the Helsinki Area Metropolitan Council (YTV) in December 2007 and by Helsinki City Council in February 2008. It was prepared in cooperation with the cities in the metropolitan area and one aim is to reduce greenhouse gas emissions in the metropolitan area by more than one third from current levels by 2030.

The city's Energy Policy Report, and the related policy guidelines were completed in autumn 2007, and these were approved by the City Council in Jan-

uary 2008. According to the report Helsinki will profile itself as an environmentally friendly city and as a pioneer in energy-efficiency (the efficient production, transfer and use of energy).

Consumption based greenhouse gas emissions in 2007 were 4% lower than in 1990 and 2 % lower than in the previous year. The production based CO<sub>2</sub> emissions of Helsinki Energy were 15 % lower than in 2006. Each year these emissions are affected by, for example, the Nordic electricity market (mainly the hydro-electric power situation) and the coldness of the winter.

## Consumption-based Greenhouse Gas Emissions (1,000 tons CO<sub>2</sub> equivalent)



# Land Use and Construction

The largest and most important planning objects in the downtown area are still Jätkäsaari, Kalasatama and Keski-Pasila, which are mainly being changed to residential and business use following the transfer of the goods activity of Länsisatama (West Harbour) and Sörnäinen harbour to Vuosaari in autumn 2008. Both areas will be served by the Metro, and tram connections are also being planned for these areas. In conjunction with the city planning, the environmental impacts have also been studied; these are mainly connected with the soil contamination caused by previous activities, air quality and noise problems caused by traffic, and to the problems and risks caused by energy production and harbour operations that remain close to the areas.

Viikki in Helsinki has received two important international awards for sustainable construction. At the “Ecobuilding Performance 2007” event in Paris it received the “Grand Prix, Cadre de Vie Bâti Durable” award, and in Malmö, at the “Sustainable City Development 2007” conference, Viikki received the “Sustainable City Award 2007”. Viikki is the first residential area in Finland to be

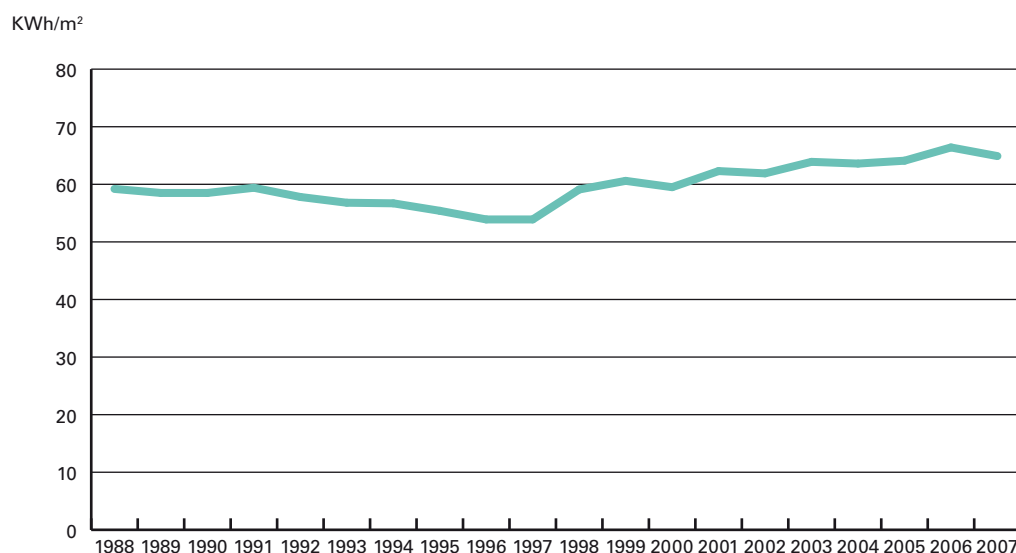
built with sustainability objectives, and last year it was Finland’s best internationally known residential construction project.

The preparation of Helsinki’s “Eco-construction programme” began in spring 2007, and the draft stage was completed on schedule by the end of 2007.

Contaminated soil in Helsinki was cleaned up on a total of 53 sites in 2007. The biggest areas for remediation work in 2007 were the site for the Music House, the former shooting range area at Viikinmäki that will change to residential use, the former workshop area at Pasila, and in Salmisaari and Toukoranta.

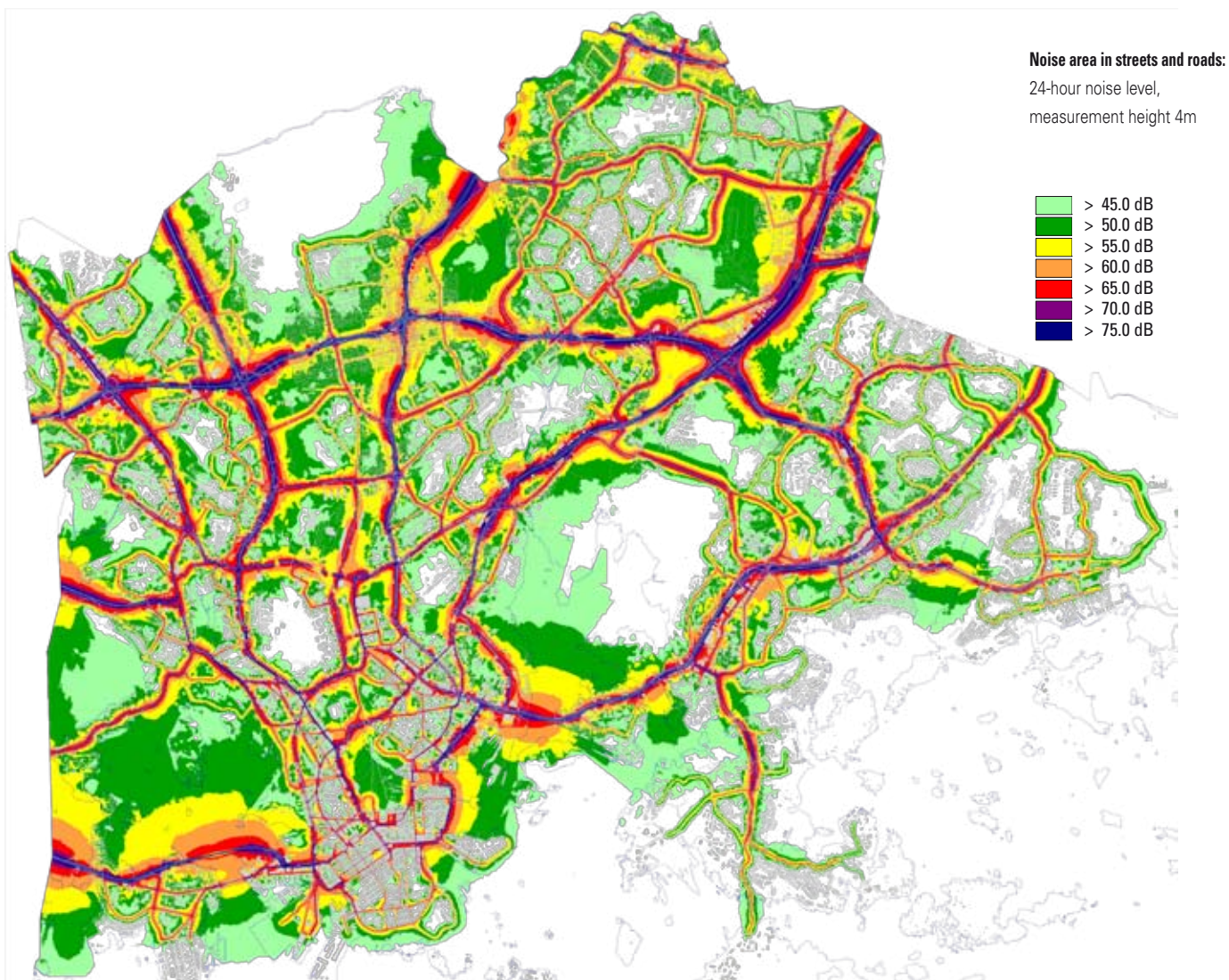
There was a lot of active work on nature protection programmes. The Action Plan for Safeguarding Biodiversity and the Nature Protection Programme were completed to the consultation phase, and the Programme on Small Waters was approved by the Public Works Committee in October 2007. During the year, nature protection area management and use plans were drawn up for the Haltiala forest area, Ruutinkoski, Pitkälampi and the Niskala arboretum.

## Electricity Consumption in the City’s Buildings (kWh/m<sup>2</sup>)



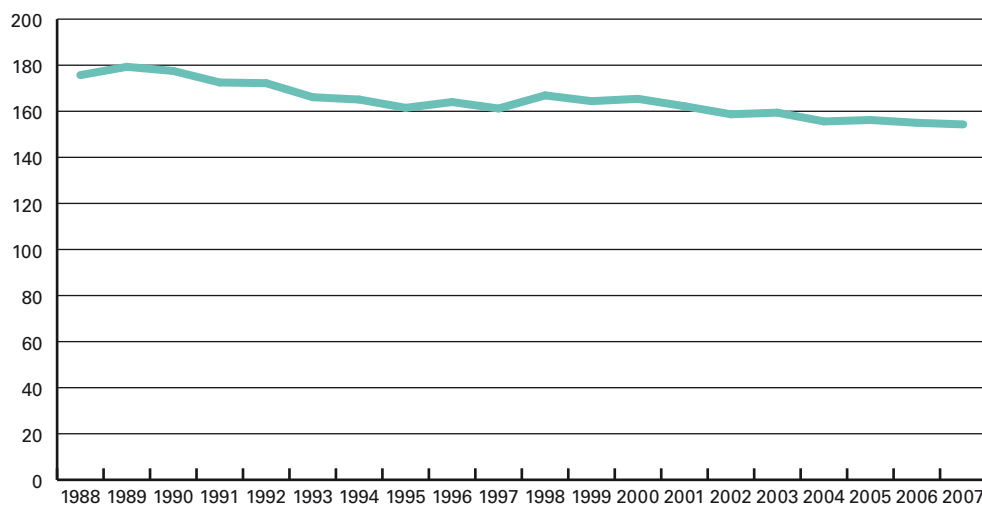


### Noise Areas in the Helsinki Street and Road network



### Heating Consumption in the City's Buildings (kWh/m<sup>2</sup>)

kWh/m<sup>2</sup>



# Loading and Eco-efficiency

In 2007 good production was achieved from the Katri Vala heating and cooling plant, which utilises the heat energy from purified wastewater and seawater in the production of district heating and cooling. The plant has an output of 90 MW of district heat and 60 MW of district cooling. The carbon dioxide emissions are 80% lower than in alternative production solutions. The Finnish Municipal Engineering Association chose the plant as the “Municipal engineering achievement of the year”, as an exemplary sustainability project.

An energy-efficiency agreement between the City of Helsinki and the Ministry of Trade and Industry (nowadays the Ministry of Employment and the Economy) was signed in December 2007. The aim of this agreement is to improve energy efficiency and promote the use of renewable energy. Helsinki Energy has also signed a similar agreement, in which it undertakes not only to improve the efficiency of its own energy use but also to promote energy savings by its customers.

The objectives of the earlier agreement, in force until the end of 2007, were achieved, as the specific consumption of heat had decreased by 4.9% by 2007, and the specific consumption of electricity began to fall in 2007. Objectives had also been set for the coverage of consumption monitoring and for energy surveys. By the end of 2007 there was 90% coverage in terms of monthly consumption monitoring, and surveys had been carried out and

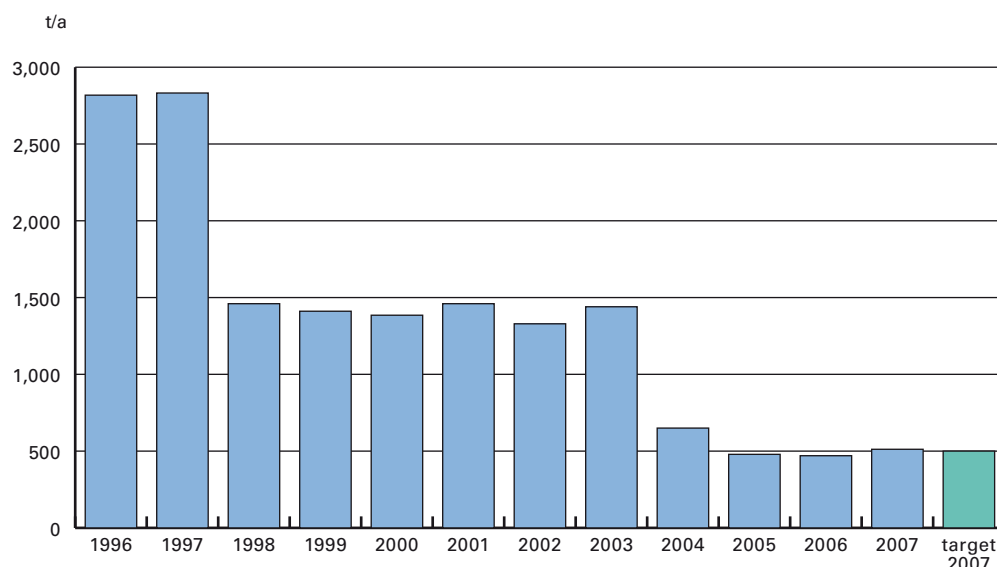
reports written for 80% of buildings, meeting the objectives in both cases.

In 2007, the loading caused by wastewater remained low and in line with requirements. In terms of phosphorous, the Viikinmäki wastewater treatment plant achieved its best ever purification result, the result for nitrogen weakened somewhat, and the operational objective set in the budget was not quite achieved. In 2007, in terms of purification efficiency, 97% of the phosphorous, 97% of the organic compounds, and 88% of the nitrogen was removed.

In 2007, the Ämmässuo waste treatment centre received a total of 563,400 tons of waste, which is 10% more than in the previous year. The biggest growth was in reusable building waste, with 143,000 tons being received. The amount of mixed waste for final placement once again showed a slight decrease, with a total of 283,200 tons. The amount of reusable biowaste increased as in previous years.

The number of customers at the “Sortti” sorting stations, intended for small loads of waste from domestic households, grew by 12% over the previous year. In addition, an agreement was made between Helsinki Area Metropolitan Council (YTV) and the cities in the area for upgrading the local collection system for recyclable waste. In 2007, the City of Helsinki approved the models for the collection containers, but Helsinki’s turn in terms of construction comes after Espoo and Vantaa.

## Wastewater Nitrogen Emissions to the Sea from the Helsinki Water Viikinmäki plant (tons/year)







# Transport and the Impact of Traffic

The number of vehicles in Helsinki grew by one percent over the previous year, and there are now one third more vehicles than there were in 1994. In autumn 2007, the traffic on Helsinki's main road network was about one percent more than one year previously. As in some previous years, the traffic in the centre even decreased somewhat, whereas traffic at the city borders and on the transverse routes once again increased by 1 – 2 %.

In 2007, 219.9 million public transport journeys were made in Helsinki's internal traffic, which is slightly more than in the previous year. In autumn 2007, the share of public transport of weekday morning traffic to the centre (70.44%) was almost the same as one year previously.

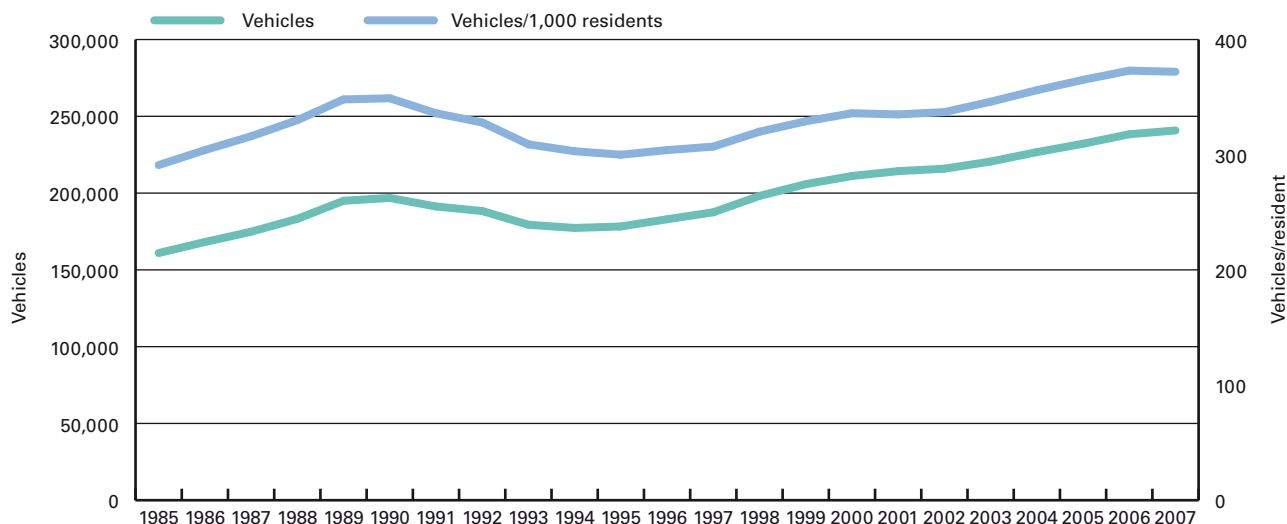
In terms of air quality, 2007 was slightly better than normal. The limit value for thoracic particles was not exceeded as the street dust period in spring was early and short due to the mild winter and early spring. However, as a consequence of traffic emissions the limit value for nitrogen dioxide ( $40 \mu\text{g}/\text{m}^3$ ) was exceeded at the Mannerheimintie measuring station. Following the entry into force of the Decree on Air Quality, the

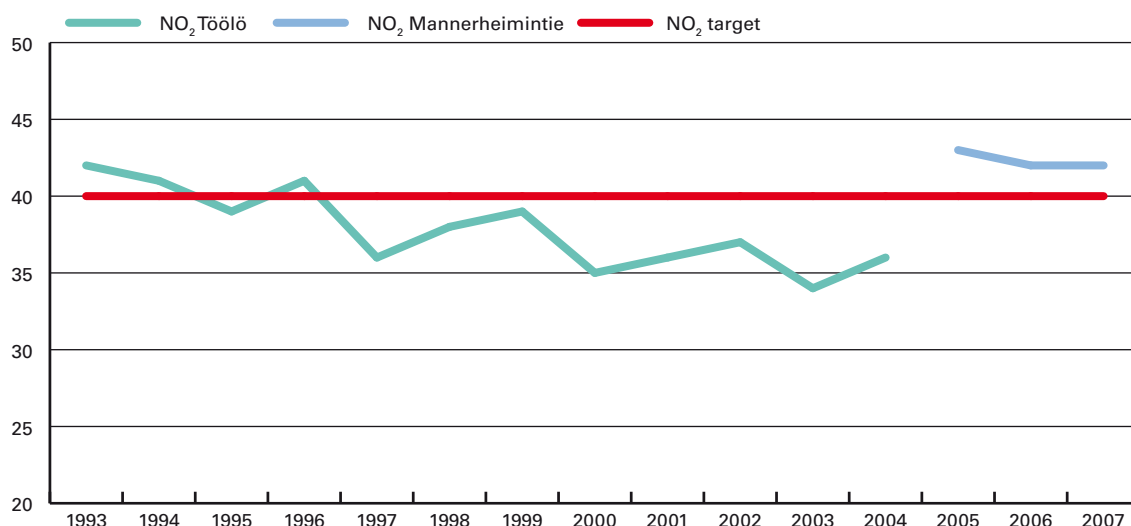
limit values were also exceeded in 2005 and 2006. During 2007 the Helsinki Air Protection Action Plan was prepared, which contains long-term actions for reducing the concentrations of impurities in the air.

The City of Helsinki's noise study, in accordance with the EU's environmental noise directive, was completed in summer 2007. This study shows that the most significant causes of noise problems are road and street traffic, and 237,500 Helsinki residents live in noise zones where the  $L_{den}$  (day-evening-night equivalent level) exceeds 55 dB. There are 69,800 residents in zones with equivalent noise levels from rail traffic (railways, metro, trams). Following the completion of the noise study, work began on preparing a Noise Prevention Action Plan in accordance with the environmental noise directive.

The highway noise prevention objects located in the Helsinki area have not been implemented in accordance with the Programme for Noise Prevention on Highways in the Metropolitan Area 2005 – 2025, because the Finnish Road Administration has not had finance for the projects.

Growth in the Number of Vehicles in Helsinki



Average annual nitrogen dioxide (NO<sub>2</sub>) levels at the Töölö and Mannerheimintie measurement stations

## Procurements, Environmental Education, Environmental Risks

In 2007, environmental criteria were used in the competitions for tender for the destruction of confidential material, for copying services, and for washing and cleaning products, and personal hygiene and disinfection. The Procurement Centre prepared projects that assess the level to which sustainability is taken into account in the city's common procurements.

The city's paper saving week was held in autumn 2007. During one week information was distributed in many ways on opportunities for saving paper and on good practices; among other actions, awards were given for seven paper saving initiatives. The week culminated in a paperless day on 12th October.

Nature schools held at Harakka, Gardenia Töyhtöhyppä and the Young People's Nature House attracted a total of around 6,230 school-children in 2007. In cooperation with other cities in the metropolitan area, the Environment Centre and Gardenia organised 38 guided excursions to nearby Helsinki nature areas, and over 1,391 participants took part in these, an average of 37 people per excursion.

In 2007, there were 379 accidents involving oil in Helsinki, whereas the average for 2004 – 2006 was 273. There were 23 accidents caused by dangerous substances, while the average for previous years was 37. In 2007 there were two oil spills involving vessels in or near the Helsinki water area, and two “near-miss” situations, where oil was not spilt into the sea. For the city's Risk Management Coordination Group, the Environment Centre has drawn up, for example, the responsibilities and tasks for the management of environmental risks.

| Environmental economy indicators 2006 (1000 e)     |       | 2007          | 2006          |
|--|-------|---------------|---------------|
| <b>Environmental income</b>                        | total | <b>70,234</b> | <b>70,111</b> |
|  |       | 10,532        |               |
| <b>Air protection</b>                              |       | 53,049        | 9,743         |
| <b>Water conservation</b>                          |       | 4164          | 54,654        |
| <b>Waste management</b>                            |       | 44            | 2,895         |
| <b>Nature conservation</b>                         |       | 0             | 3             |
| <b>Other measures</b>                              |       |               |               |
| Environmental administration                       |       | 238           | 539           |
| Environmental training and education               |       | 1694          | 1,586         |
| Activity to improve eco-efficiency                 |       | 175           | 334           |
| Cleaning of public areas                           |       | 338           | 357           |
| <b>Proportion of the city's operational income</b> |       | 4.7 %         | 4.7 %         |
| <b>Euros/resident</b>                              |       | 124           | 124           |
| <b>Environmental costs</b>                         | total | <b>96,416</b> | <b>95,355</b> |
| <b>Air protection</b>                              |       | 11,500        | 14,755        |
| <b>Water conservation</b>                          |       | 30,820        | 28,162        |
| <b>Waste management</b>                            |       | 6,511         | 6,614         |
| <b>Soil conservation</b>                           |       | 2,497         | 1,659         |
| <b>Noise prevention</b>                            |       | 379           | 413           |
| <b>Nature conservation</b>                         |       | 2,275         | 2,236         |
| <b>Other measures</b>                              |       |               |               |
| Environmental administration                       |       | 4,152         | 4,066         |
| Environmental training and education               |       | 1,098         | 1,322         |
| Activity to improve eco-efficiency                 |       | 554           | 652           |
| Environmental management                           |       | 2,388         | 1,670         |
| Cleaning of public areas                           |       | 7,033         | 7,135         |
| Environmental taxes and charges                    |       | 27,209        | 26,671        |
| <b>Environmental investments</b>                   | total | <b>39,297</b> | <b>30,793</b> |
| <b>Air protection</b>                              |       | 216           | 909           |
| <b>Water conservation</b>                          |       | 19,198        | 4,825         |
| <b>Waste management</b>                            |       | 449           | 671           |
| <b>Soil conservation</b>                           |       | 12,605        | 13,452        |
| <b>Noise prevention</b>                            |       | 891           | 2,152         |
| <b>Nature conservation</b>                         |       | 129           | 409           |
| <b>Other measures</b>                              |       |               |               |
| Activity to improve eco-efficiency                 |       | 5,309         | 3,035         |
| Cleaning of public areas                           |       | 500           | 19            |



# Environmental Economics

The City of Helsinki's aggregate environmental costs (including depreciation) for 2007, according to figures provided by the departments, were MEUR 96.4, which is 2.7% of the city's entire operational costs (MEUR 3,538). The largest sectors of costs were environmental based fuel taxes and electricity taxes, and wastewater treatment costs.

The aggregate environmental income reported by the city's departments in 2007 was MEUR 70, representing 4.7% of the city's overall operational income (MEUR 1,478). The biggest source of income was the wastewater charges (75% of all environmental income).

The environmental investments of the City of Helsinki in 2005, according to the figures provided by the city's departments, amounted to MEUR 39.3. The investments were MEUR 8.5 more than in the previous year. The largest invest-

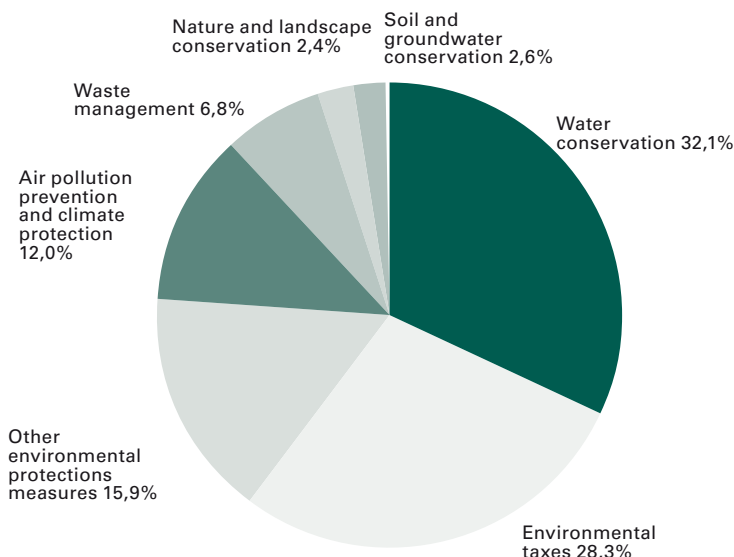
ments were connected with extending and renovating the sewerage network, and the cleaning of contaminated soil.

Each year the city draws up a plan in which shows the financing for the next five years for the cleaning up of the most urgent contaminated sites. Under this plan MEUR 10 – 15 is set aside annually in the Real Estate Department and Public Works Department budgets.

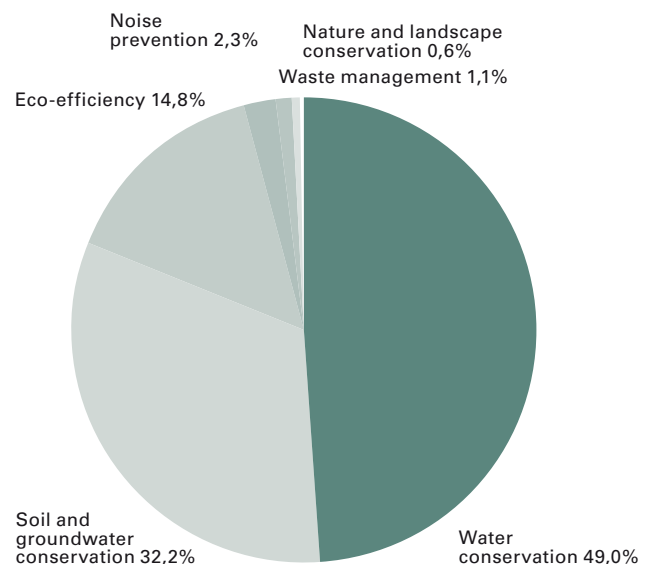
A compulsory reserve has been set aside for cleaning up the old Myllypuro landfill site, and similarly for the environmental responsibility relating to taking the Hanasaari A power plant site into a new use. In an appendix to its financial accounts, Helsinki Water has shown a MEUR 3.4 conditional environmental debt, concerning the contaminated soil of the sedimentation basins and surface oil tanks of the Pitkääkoski water purification plant. ■

## Breakdown of Environmental Operating Costs and Investments, 2007

Environmental costs



Environmental investments







ENVIRONMENTAL REPORT 2007 Summary  
City of Helsinki Administration Centre publications

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### The Helsinki sustainable development indicators (joint indicators for the six cities<sup>1)</sup>)

| Indicator   | 2,007              | 2,006              |
|---|--------------------|--------------------|
| Greenhouse gas emissions, tons/resident/year  | 6.1                | 6.3                |
| Share of buildings and dwellings built in the city plan area                                    | 100%               | 100%               |
| Proportion of nature protection areas and reserves of the land area                             | 3.7%               | 3.7%               |
| Proportion of nature protection areas and reserves of the total surface area                    | 0.9%               | 0.9%               |
| Community electricity consumption, kWh/resident/year  | 8,014              | 8,026              |
| Community water consumption, l/resident/year  | 258                | 256                |
| Heating needs covered by district heating   | 93%                | 93%                |
| Specific consumption of heat in city owned buildings, kWh/m <sup>3</sup>                        | 154.3              | 155.0              |
| Specific consumption of electricity in city owned buildings, kWh/m <sup>3</sup>                 | 64.9               | 66.4               |
| Community air quality, PM <sub>10</sub> exceeding the daily limit values (35 allowed)           | Mannerheimintie 33 | Mannerheimintie 37 |
| Community air quality, bad and very bad day according to the index, % of hours                  | 42                 | 42                 |
| Community wastewater load, phosphorus, g/resident/day   | 0.08               | 0.09               |
| Community wastewater load, nitrogen, g/resident/day   | 1.9                | 1.7                |
| Community wastewater load, BOD <sub>7</sub> , g/resident/day                                    | 2.6                | 2.5                |
| Amount of community waste for final placement (Ämmässuo), kg/resident/year                      | 352                | 376                |
| Amount of waste utilized, biowaste kg/resident/year   | 33.7               | 33.3               |
| Number of cars/1,000 residents  | 372                | 373                |
| Number of public transport journeys/resident/day  | 1.06               | 1.06               |
| Cycle path network, m/resident  | 2.0                | 2.0                |
| Copy paper consumption in City departments, A4-sheets/employee/year                             | 3,625              | 3,681              |
| Green flag schools and kindergartens  | 16                 | 15                 |
| Participation in environmental education arranged by the city, proportion of Helsinki residents | 3.4                | 6.8                |

\* Helsinki, Espoo, Vantaa, Tampere, Turku, Oulu