



CITY OF HELSINKI

ENVIRONMENTAL REPORT 2008 | SUMMARY



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City of Helsinki Environmental Report 2008

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Introduction

The City of Helsinki environmental report is a shared report from various departments within the city organisation, describing how the environmental goals have been realised in practice and their effects on the environment. The report is assembled by the Environment Centre based on the information provided by all city departments and business units. For the first time, a short survey on the management of environmental issues within various affiliate organisations was carried out for the 2008 report.

The environmental report and the material produced by the administrative domains are

available on the internet (see the cover page). Environmental reports are coordinated by a working group appointed by the mayor. The working group includes representatives from all environmentally relevant departments or units. The City of Helsinki both produces a significant environmental load, and is also an important actor in environmental protection. The City of Helsinki produces 5% of the total carbon dioxide emissions in Finland. The Viikinmäki sewage treatment plant is responsible for processing the sewage for approximately 750,000 residents.

Summary from the Deputy Mayor

Year 2008 was the warmest year so far during the entire measurement history at Kaisaniemi measurement station. The past year was characterised by an almost unprecedented low amount of snow: statistically, the amount of days with snow was only half of the previous record year, 2007. Considering this, it is no wonder that the climate focus became increasingly important.

During January 2008, the city council accepted the energy policy report in which the City of Helsinki committed to reduce the emissions of greenhouse gases by 20% by the year 2020. The City of Helsinki did not stop at this, but has actively pursued putting the climate policy in practice. Significant actions include preparing the Helsinki Energy wind power farm together with the energy company Etelä-Pohjanmaan Voima, launching several low energy construction projects and preparing the city plan for the environmentally friendly Honkasuo city district.

On top of promoting these best practices, the city is looking into the possibility of re-organising the entire energy production toward a solution with fewer emissions as well as means of improving the energy efficiency of the entire city housing base.

Helsinki also realises the climate policy through traffic planning. For example, developing cross traffic public transport has already provided favourable results. The city budget binding requirement of increasing cross public traffic to exceed 13% has been clearly met and even exceeded to 15%, mainly due to the success of the JOKERI route. Overall, the use of public transport increased by 2% during 2008, while the amount of private cars within the city road network was decreased by approximately 2%. In conclusion, the development of traffic during 2008 can be stated to comply with the principles of sustainable development.

The economic downturn that started to gain speed toward the end of the year had an effect on the reduction of traffic and the reduction of mixed waste. Also the average domestic water consumption decreased by three litres per resident. On the other hand, the consumption of electricity per capita increased by almost 2% in comparison to the previous year.

During 2008, sewage treatment faced challenges due to the maintenance work on the Pääjanne tunnel and the high amount of sewage. Overall, processing results in the Viikinmäki treatment plant were fairly good, even though the goals set for nitrogen processing were not fully met. A major improvement in sewage treatment during 2008 was the introduction of the steam processing technique. After this improvement, the soil produced during sludge composting meets the Finnish Food Safety Authority hygiene requirements.

The city strategy that was passed this spring increases the weight of the environmental focus within the city management and calls for a pioneering role in environmental protection and climate policy. In addition to the climate, the strategic focus is in the preservation of the Baltic Sea and in an environmental view in procurement. Fulfilling these goals requires both new innovations and improved efficiency in the execution of existing techniques. Sustainable procurement policy requires commitment and cooperation from all departments. To facilitate this, the deputy mayor has recently accepted the chair in the ICLEI Procura+ campaign that also aims to create sustainable best practices for procurement for the City of Helsinki.

The environmental work of the departments has recently picked up. This can be seen in, for example, the various environmental programmes within the city departments, the amount of 450 trained eco-supporters and the clear trend of decreasing paper consumption in city departments. Naturally, this continues to be a challenge for the city.

However, the city cannot tackle environmental challenges solely from within city management. New types of cooperation between the enterprise sector and other interest groups are needed, as recommended by the environmental management peer evaluation last winter. For example, the Helsinki environmental award competition, organised for two consecutive years, has demonstrated that there are plenty of enterprises and organisations in Helsinki that have the prerequisites of successful environmental cooperation with the city.

The City of Helsinki has already started several initiatives for environmental cooperation with various interest groups. The key initiatives are the Baltic Sea Challenge launched by the mayors of Helsinki and Turku and the EU-funded Ekokompassi (ecological compass) initiative that is targeted toward small- and medium-sized businesses.

Initially, the Baltic Sea Challenge has focused on municipalities, organisations, research institutes and various other public bodies. However, the challenge is being extended to reach the enterprise sector through addressing the large shipping companies and other large enterprises. The pilot domains of the Ekokompassi initiative have been the printing and tourism industries and the Wholesale Food Market area, but the goal is to extend the development of environmental management to other domains as well. While extending both the Baltic Sea Challenge and the Ekokompassi initiative are the cornerstones of the new environmental cooperation for the City of Helsinki, there is still room for new innovations as well.

Pekka Sauri



PERTTI NISONEN

Environmental management in the City of Helsinki

The City of Helsinki has set the goal of including environmental management as an integral part of the entire city government. This goal has been realised by several individual methods (see Figure below).

During 2008, the city began the preparation work for the new strategy process in which environmental issues will be included in a more comprehensive manner. During the preparation of the process, the city council decided to update the environmental policy.

2008 was the last year of the Helsinki ecological sustainability programme (HEKO). By the end of the year, 46 of the actions in the programme were realised either fully or partially, and only three were not started. Seven of the actions were considered to be continuous in nature.

As a result of the HEKO programme, environmental management as a whole has gained new properties. According to the HEKO objectives, four thematic programmes have been set up: nature protection, preserving the diversity of urban nature, sustainable construction and small water preservation. In addition, during the HEKO programme, Helsinki developed an air protection programme, a plan for noise reduction and a climate strategy for the metropolitan area. Also, in accordance with the HEKO objectives, an eco-support activity and an eco-support network were established.

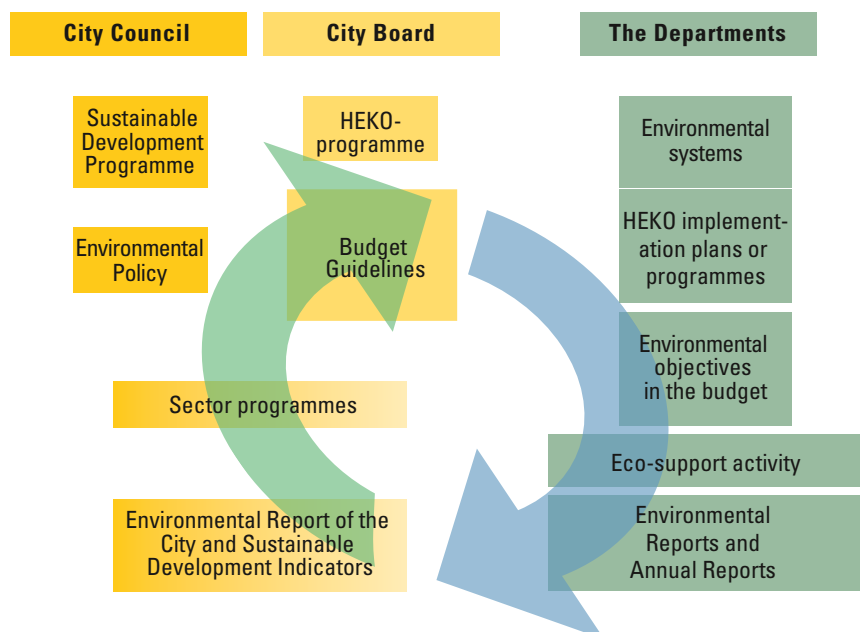
The 2008 budget included eight binding environmental objectives of which all but one were realised. The objectives involved the share of public transportation both toward the city centre and cross traffic between city districts, concentration levels of street dust, life cycle estimates for construction projects, information sharing on the status of the sea and the nitrogen and phosphorus nutrient load of processed sewage. The objective on the nitrogen load (below 600 tons) was not fully met.

Environmental management in the city administrative domains is on a variable level. There are ISO 14001-standardised environmental management systems in operation in the Port of Helsinki and in the Helsinki Energy power plants, heating plants and district heating systems. In addition, there are non-certified environmental management systems in five departments and there are active sustainable development or environment programmes in seven departments. Two departments are currently developing their own environmental programmes.

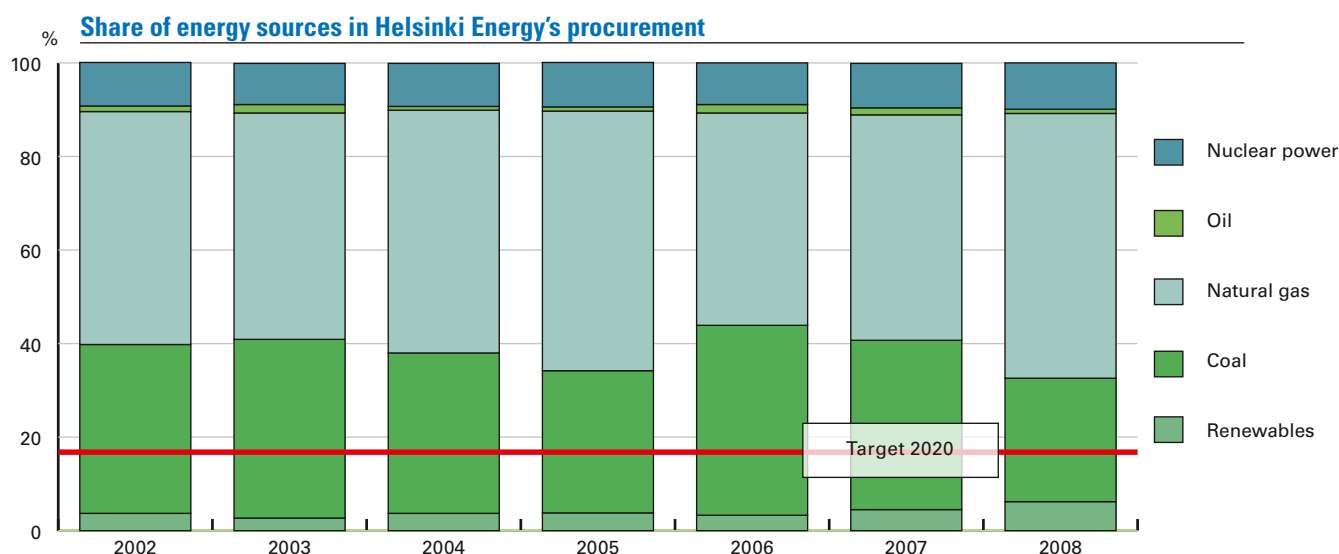
Within the affiliate organisations of the city, systematic environmental management was executed by only a small number of enterprises. However, a larger number of organisations actively collected environmental information. On the other hand, significant resources have not been allocated so far for developing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

During 2008, a peer evaluation of the impact of environmental management was carried out together with the city of Rotterdam. In the evaluation, Helsinki was considered to have a number of key strengths: functional public transportation, high quality of drinking water and sewage treatment, having a good air protection programme and environmental education in public schools. The evaluation recommended further development in the areas of executing the air protection and noise reduction programmes, improving the energy efficiency requirements of residential areas, techniques for restoring polluted soil, removing the incoherence of water area management and building a culture of cooperation in environmental management.

City of Helsinki Environmental Management (until 2008)



Climate change, energy policies and use of land



According to the Kaisaniemi measurement station in Helsinki, 2008 was the warmest year on record. The average temperature in 2008 was 7.6 degrees Celsius, 0.4 degrees higher than the previous record from 1934. According to the Intergovernmental Panel on Climate Change (IPCC), avoiding the critical 2 degree rise in average temperature requires that industrial countries reduce their emissions by at least 25 - 40% by 2020 and 80 - 95% by 2050.

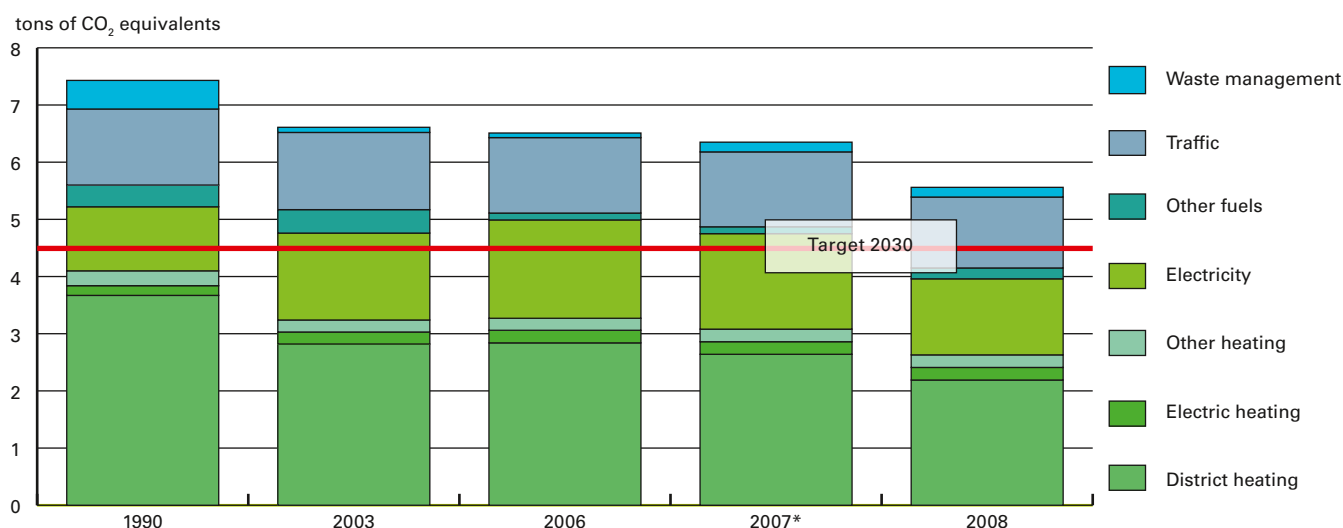
The decisions made in the energy policy report accepted by the city council in January 2008 and in the climate strategy for the metropolitan area have already started to be implemented. Helsinki Energy, together with the energy company Etelä-Pohjanmaan Voima, started to prepare building two major wind power farms (500 - 1,000 MW)

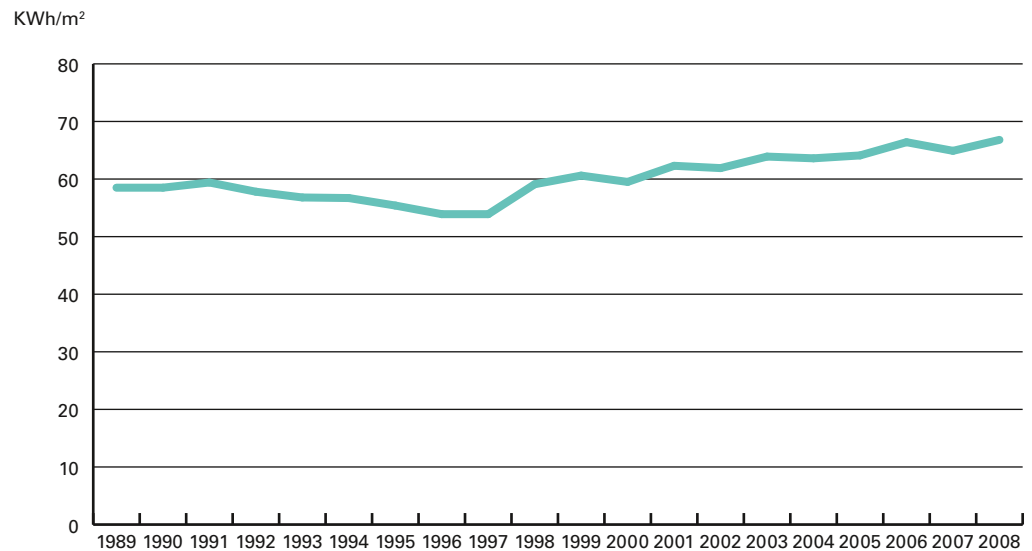
in the Gulf of Finland and the Bay of Bothnia areas.

A key objective of the energy efficiency agreement between the City of Helsinki and the Ministry of Employment and the Economy is to save 9% in total energy consumption between 2008 and 2016. One of the key actions was to create an action plan that describes the methods of improving the energy efficiency of the City of Helsinki. During 2008, both heat and electricity consumption increased in the city properties. Consumption of electricity increased by as much as 3%.

Helsinki also launched several pilot projects in low energy and passive energy construction. The pilot projects include both new productions and renovations. New productions include the building for the Environment Centre in Viikki, the

Consumption-based Greenhouse Gas Emissions





Myllypuro health centre, the Oulunkylä family support centre and the Koskela food supply centre. Renovations include the Käpylä district primary school. In addition, the proposal for the Honkasuo district town plan was the first to require development of an environmentally friendly city district by using low energy construction and renewable energy sources.

The Helsinki Public Works Department has decided to focus on low energy construction and has defined separate objectives for new productions and renovations. The City Planning Department has launched the Suburban Renaissance project that aims to control climate change and reduce urban traffic through supplementary construction.

The total greenhouse gas emissions were significantly reduced last year. The emissions were 14% lower than in the reference year 1990 for the energy policy (objective -20%). The exceptionally low total emissions were due to lowered emissions in energy production, affordable hydroelectric power, exceptionally warm temperatures during the year and the beginning of the economic downturn. Due to these reasons, the high-emission condensate production of electricity was lowered in the power plants in Helsinki and in Finland. Despite the lower emissions, the electricity consumption per capita in Helsinki increased by 1.7% in comparison to the previous year.

The share of renewable energy for the Helsinki Energy procurement for electricity, district heating and district cooling was increased to 6.2% in 2008 from 4.5% in 2007. The increase was due to the significant growth of the production of district heating and cooling in the Katri Vala heat pump plant and affordable hydroelectric power.

The proposal for the ecological construction

programme in Helsinki was finalised and circulated for comments in 2008. The comments were appended and the programme was approved by the city council in June 2009.

The City of Helsinki has committed to systematically carrying out energy efficiency reviews for city-owned buildings and thus investigating economically viable methods for saving energy. By the end of 2008, energy efficiency reviews had been carried out for 80% of the public service properties owned by the City of Helsinki.

In connection to the reviews, applicable public service properties are provided with an energy certificate (Display certificate for energy and emissions). During 2008, 700 new certificates were given, bringing the total number of certificates to 800 at the end of 2008.

A total of 150,000 tons of polluted soil or land was processed or moved to disposal areas during 2008. The largest processing sites were in the Ormuspellontie industrial area where the area was being transformed into residential use. Equally large sites were in the former Viikinmäki district shooting range and in the engineering district in Pasila, both of which are being transformed into residential areas. Re-use of polluted soil in various construction sites has clearly increased.

During 2008, the programmes for securing the biodiversity (LUMO programme) and a nature conservation programme were prepared. The nature conservation programme was accepted by the Environmental Committee for the years 2008 to 2017. The programme proposes conserving 29 new areas (total 267 hectares). Environmentally significant forests are the largest part of the programme. The LUMO programme is discussed by the city council during 2009.



Water protection and waste treatment

The load on the water system caused by the Viikinmäki district sewage processing plant remained low and within required levels even though the amount of sewage was at peak levels. The average processing efficiency was nearly on the same level as in previous years but the nutritional releases to the sea increased. The levels were 25,000 kg/year for phosphorus and 610,000 kg/year for nitrogen.

The sludge from sewage treatment is further processed by composting the sludge to soil used in landscaping. During 2008, a new technique of steam processing was introduced. After this improvement, the soil produced during sludge composting meets the Finnish Food Safety Authority hygiene requirements.

The Baltic Sea Challenge, launched by the mayors of Helsinki and Turku in 2007, has continued to expand. The actions defined for the City of Helsinki are in progress. By the end of 2008, 120 out of 600 organisations that were involved have accepted the challenge. In addition, 15 international organisations have joined the challenge.

The Ämmässuo waste processing plant received a total of 850,000 tons of waste and soil. Mixed waste amounted to 267,000 tons, over 16,000 tons less than the year before. Mixed waste was reduced mainly because some of the waste was processed outside the metropolitan area.

The use of recycling stations for domestic waste continued to increase. There was a 15% increase in the number of domestic users. According to a survey by the Metropolitan Area Council (YTV), domestic recycling has become more popular overall. Over 90% of the residents state that they recycle paper, nearly 80% recycle cardboard and approximately 70% recycle glass waste on a regular basis. Domestic recycling has been a steadily increasing trend during the entire 2000's.

The YTV incineration plant project took a step forward in December when the YTV administrative board chose Vantaa Energy Ltd as the supplier of the plant. The plant will be built in the Långmossebergen area in Vantaa.



Traffic and the impact of traffic

During autumn 2008, the economic downturn reduced traffic in Helsinki compared to 2007. In the main road network, there was approximately 2% less traffic in comparison to 2007. The number of public transport passengers travelling from and to the immediate city centre increased by 5.5% while the number of passengers in private cars was reduced by 3.8%. During 2008, a total of 224.9 million individual public transportation trips within Helsinki city limits were made, approximately 5 million trips more than in 2007.

Helsinki has set an objective to increase the amount of cross traffic between city districts by at least 4% from the 2004 traffic levels by the year 2012. In 2008, the amount of cross traffic public transportation was 15%, meeting the objective set by the city council. The share of rail traffic also increased: the number of tram passengers increased by 2.1% and the number of subway passengers by 2.4%.

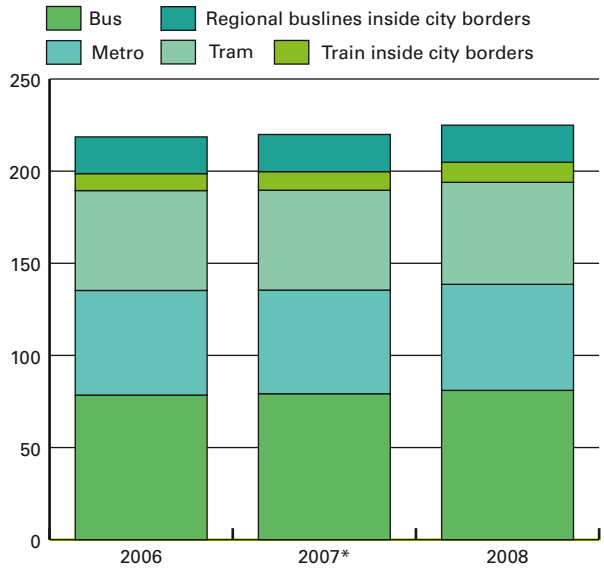
Helsinki City Transport (HKL) and the Metropolitan Area Council (YTV) continued the trial of using renewable diesel (NExBTL) for the metropolitan buses. The goal of the three-year trial includes reducing harmful emissions and greenhouse gas emissions during the entire life cycle of the fuel. In the long term, HKL and YTV require that renewable synthetic diesel fuels are produced from non-edible materials by fulfilling all criteria for sustainable development.

The air quality in Helsinki was somewhat better than normal in Helsinki in 2008. However, the allowed limit of nitrogen dioxide was exceeded in the city centre, as it was during the previous years. Most nitrogen dioxide originates from traffic, especially from heavy traffic. Particle levels were lower than in previous years and the allowed limits were not exceeded in any of the YTV measurement stations. As the winter was warm and the amount of snow was low, cleaning the streets required less effort due to the low amount of gravel on the ground.

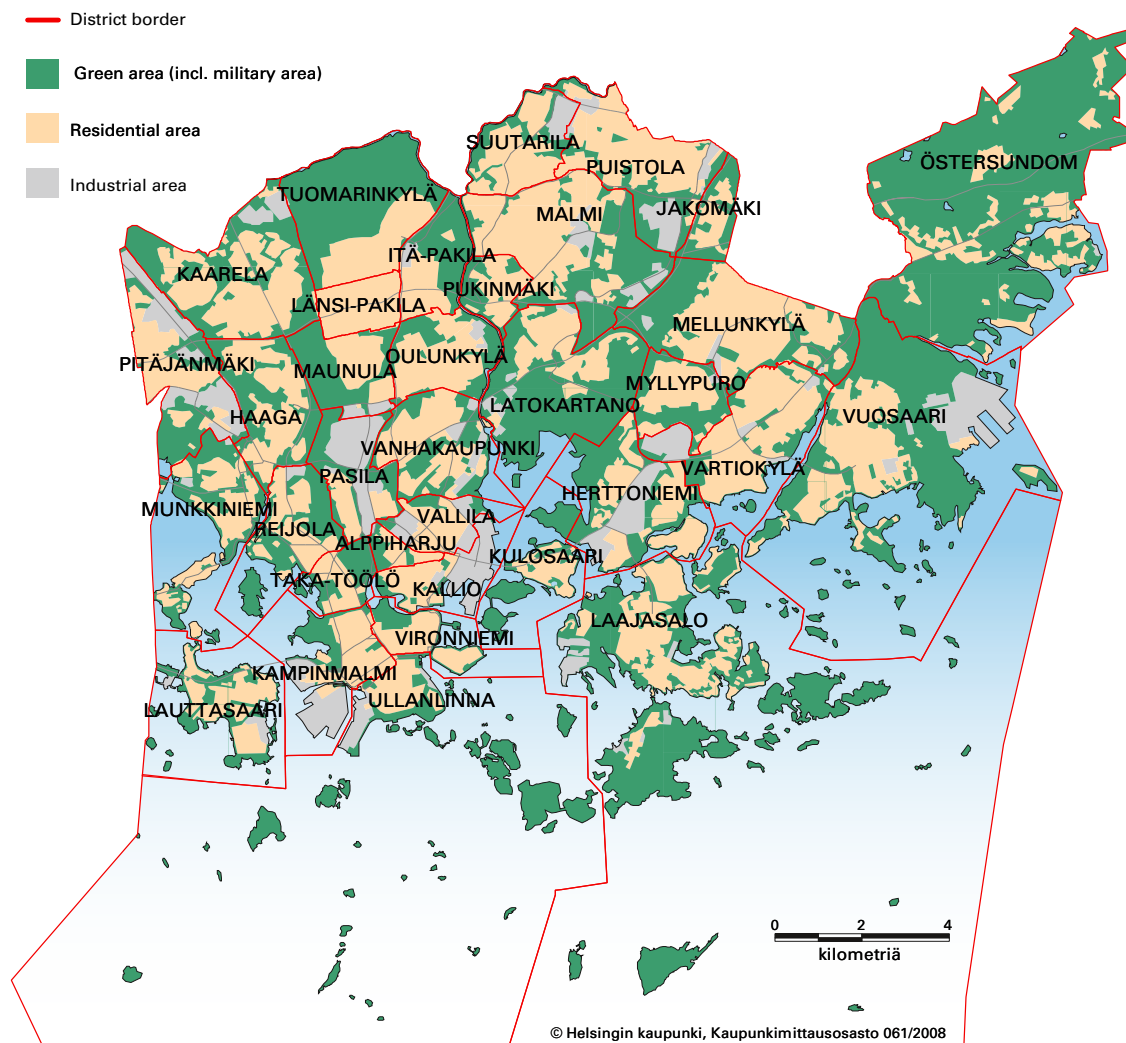
In May 2008, the Helsinki city board accepted the air protection action plan for 2008 – 2016 that aims to reduce the levels of nitrogen dioxide, inhaled particles (street dust) and small particles. The plan includes 43 actions, out of which 10 actions were prioritised as strategically important actions. These include increasing the amount of low-emission vehicles, increasing the appeal of public transport, researching environmental zones and methods for traffic control and pricing as well as improving the equipment used for cleaning and preventing street dust.

In November 2008, the city board approved an action plan for noise reduction. The plan includes 26 actions for the duration of 2008-2012. 12 actions were prioritised, including the increase of public transportation, using noise cancelling surface materials, building noise barriers and setting up and maintaining a database of quiet areas.

Journeys of public transport, millions of journeys



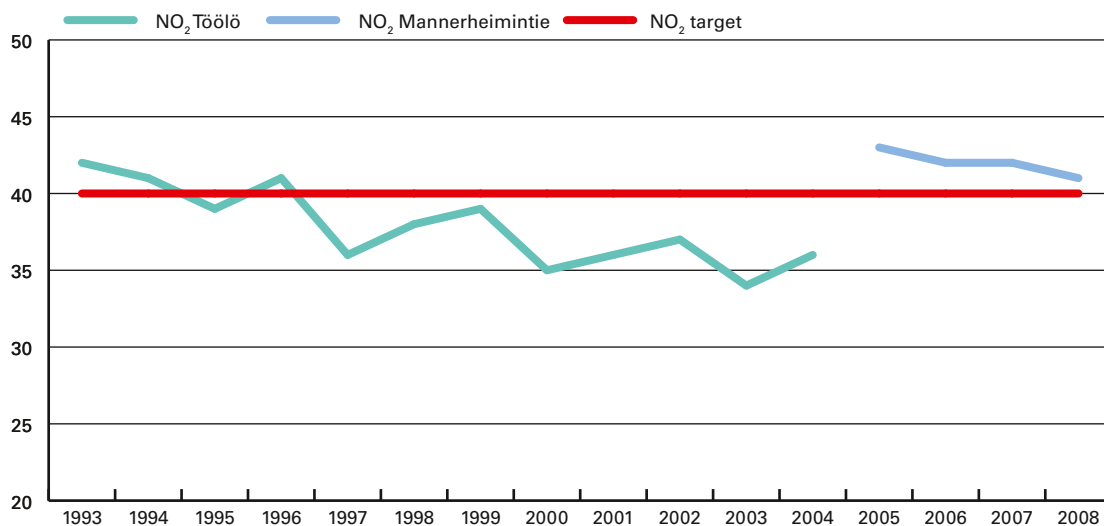
Green areas, residential areas and industrial areas in Helsinki



During 2008, noise barriers were built on a number of streets: Itäväylä near the Vartiokylä district, Lahdenväylä near the Koskelantie junction and the Alppikylä district, Hakamäentie and Hämeenlinnanväylä near the Etelä-Haaga and

Kivihaka districts. Street work began on Itäväylä near the Herttoniemi district to clear the street for noise barriers. Noise cancelling surface materials were used on two streets in the Tapanila and Malmi districts.

Average annual nitrogen dioxide levels at Töölö and Mannerheimintie measurement stations ($\mu\text{g}/\text{m}^3$)



Procurement, environmental education, environmental risks

Environmental focus in the city procurement processes was given more resources in 2008 when the city Procurement Centre launched the Sustainable procurement campaign. The objective of the campaign is to analyse all product and service segments handled by the Procurement Centre by evaluating the possibility of imposing criteria related to environmental or social sustainability.

Environmental criteria were introduced for the first time in 2008, for example, for public school equipment.

The consumption of paper in the city offices clearly decreased during 2008. The average consumption was 2,905 sheets of paper per employee, nearly 20% less than in 2007. At the

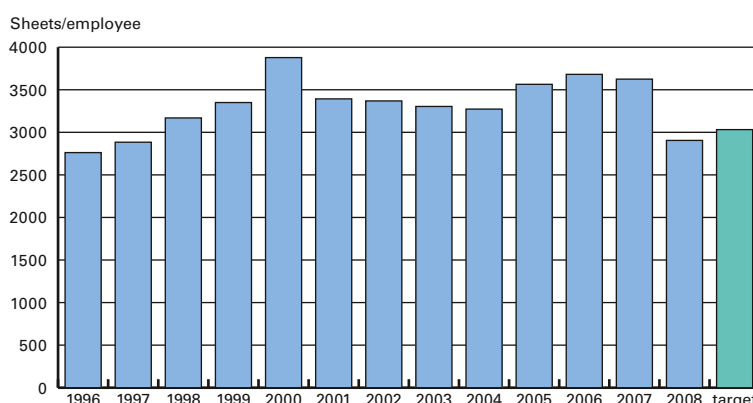
same time, the goal of a 10% decrease compared to 2002 set in the Helsinki ecological sustainability programme (HEKO) was successfully met. Approximately one fourth of the reduction during 2008 was due to the shutdown of the digital printing service in the city. Another reason was the introduction of several new web-based data systems.

A total of 23,900 Helsinki residents (4.2% of all residents) participated in city events related to environmental education. The number is somewhat larger than during the previous year. The largest events were the Easter Island event in the Helsinki Zoo in Korkeasaari and nature schooling events in the Harakka, Gardenia and Young People's Nature houses.

A joint strategy for preventing and reducing damage caused from floods was finalised at the end of 2008. An action plan set to realise the strategy identifies key development areas: building flood protection constructions, evaluating the recommended minimum construction heights on coastal areas and mapping the underground locations with a risk of being flooded.

Environmental economy indicators (1000 euros)		2008	2007
Environmental income	total	61,255	70,111
Air protection		192	10,532
Water conservation & sewage treatment		51,944	53,049
Waste management		5,775	4,502
Soil protection		493	44
Nature conservation		0	0
Other			
Environmental administration		185	238,1694
Environmental education		2,065	
Environmental management		111,490	175
Activity to improve eco-efficiency			
Environmental income, euros/resident		107	124
Share of the city's operational income		3.8 %	4.7 %
Environmental costs	total	106,381	95,697
Air protection		12,845	11,500
Water conservation & sewage treatment		38,042	30,820
Waste management		15,049	13,544
Soil protection		1,813	2,497
Noise prevention		364	379
Nature conservation		2,555	2,275
Environmental taxes and charges		24,042	27,209
Environmental administration		4,131	4,152
Other			
Environmental education		2,392	1,098
Environmental management		1,060	554
Activity to improve eco-efficiency		4,133	2,388
Environmental costs, euros/resident		186	170
Share of the city's operational costs		2.8 %	2.7 %
Environmental investments	total	37,871	39,297
Air protection		294	216
Water conservation & sewage treatment		20,415	19,198
Waste management		374	949
Soil protection		10,188	12,605
Noise prevention		772	891,129
Nature conservation		1,417	5,309
Other		4,411	
Environmental investments, euros/resident		66	69
Share of the city's total investments		5 %	6 %

Copy paper consumption of city employees (sheets / employee)



Environmental economy

The total expenses, as reported by city departments, for various environmental actions in Helsinki were 106.4 million euro, 2.8% of the total city expenses. The largest individual expenses were environmental taxes on electricity and fuels, as well as expenses from sewage treatment. The total environmental expenses increased by 11.2% compared to 2007, and for the first time exceeded 100 million Euros. The largest increase was in the expenses for sewage treatment, air protection, climate policy, environmental management and environmental education.

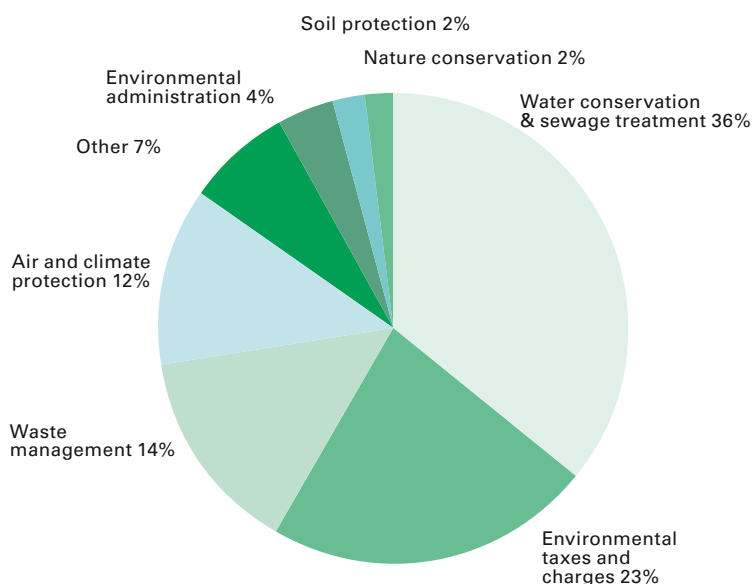
The total environmental incomes for 2008, as reported by the administrative domains, were 61.3 million Euros, covering 3.8% of all city incomes. The incomes decreased slightly, mainly because there was no income from global emission trading during 2008. The largest incomes came from sewage fees that produced 84% of all environmental incomes.

Environmental investments for the City of Helsinki during 2008 were 37.9 million Euros. The major investments were the expansion and upgrade of the sewer network and cleaning of contaminated land.

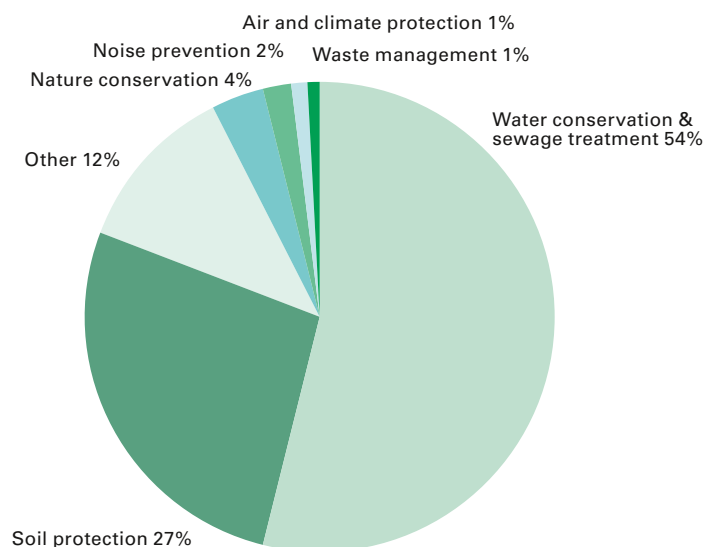
The 2008 financial statement includes fund reservations for the renovation of the old waste dump in the Myllypuro district and for the reuse of the Hanasaari A power plant area (18.8 million Euros). Helsinki Water has presented a 3.4 million euro conditional environmental debt in its appendix to the financial statement. The item pertains to the soil polluted by sediment pools and ground level oil containers in the Pitkääkoski water treatment plant. The conditional debt of 0.1 million Euros for the Helsinki Public Works Department pertains to the removal of soil polluted by iron cyanide on a playground in the Herttoniemi district.

Breakdown of Environmental costs and investments 2008

Environmental costs



Environmental investments





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The Helsinki sustainable development indicators (joint indicators for the six cities¹)

Indicator	2008	2007	2006
Resident satisfaction with city services (index from 1-5)	3.45		3.46 (v. 2005)
Greenhouse gas emissions, tons/resident/year	5.6	6.4	6.5
Share of buildings and housing built on area defined by the city plan	100%	100%	100%
Share of existing and planned nature reservation areas from land area	3.7%	3.7%	3.7%
Share of existing and planned nature reservation areas from total area (water and land)	0.9%	0.9%	0.9%
Community energy consumption, kWh/resident/year	8,152	8,014	8,026
Community water consumption, litres/resident/year	261	258	256
District heating production, by coal	35%	48%	54%
by natural gas	60%	48%	42%
by oil	2%	3%	4%
by sewage thermal energy	3%	1%	0.1%
Share of district heating in housing area	86%	86%	86%
Consumption of heat in properties owned by the city, kWh/built m ²	155.6	154.3	155.0
Consumption of electricity in properties owned by the city, kWh/built m ²	66.8	64.9	66.4
Communal air quality, number of times of exceeding PM ₁₀ daily limits (35 allowed), measurement location Mannerheimintie	35	33	37
Yearly average for nitrogen dioxide, location Mannerheimintie (limit 40 µg/m ³)	41	42	42
Communal sewage load, phosphorus, grams/resident/day	0.09	0.08	0.09
Communal sewage load, nitrogen, grams/resident/day	2.1	1.9	1.7
Communal sewage load, BOD ₇ , grams/resident/day	2.7	2.6	2.5
Amount of non-recyclable communal waste (Ämmässuo dump), kg/resident/year	362	352	376
Amount of mixed waste (Ämmässuo), kg/resident/year	255	281	293
Amount of recycled biological waste, kg/resident/year	51.0	37.2	33.3
Private cars, cars/1000 residents	384	372	373
Number of public transport journeys/ resident/day	1.08	1.06	1.06
Cycle road network, metres/resident	2.1	2.0	2.0
Consumption of sheets of copy paper in city departments, A4 sheets/employee/year	2,905	3,625	3,681
Schools and day care centres with environmental certificates	22	16	15
Percentage of Helsinki residents participating in environmental education provided by the city	4.2%	3.4%	6.8%

¹ Helsinki, Espoo, Vantaa, Turku, Tampere, Oulu