Joint approach by cities in the Helsinki Metropolitan Area - climate protection by reducing energy consumption
EU targets are challenging
Global atmospheric warming
not to exceed 2ºC
The greenhouse gas emissions and energy consumption of the Helsinki Metropolitan Area are increasing more rapidly than its population

- The millionth inhabitant 30.4.2007.
- The growth of population nearly 1% per year.
- Total GHG-emissions increased 12 % between 2000 and 2004
- Traffic volumes of the region are growing heavily
Consumption-based greenhouse gas emissions in the Helsinki Metropolitan Area

The main sources of emissions are:
heating 43 %,
electricity consumption 28 %
transport 23 %
Greenhouse gas emissions in Nordic cities

- Helsinki
- Reykjavik
- Copenhagen
- Oslo
- Malmö
- Gothenburg
- Stockholm

$tCO_2$ (eqv) per inhabitant
Building density is low in most parts of the Helsinki Metropolitan Area
An increase of 1% in the modal share of public transport reduces greenhouse gas emissions from traffic by about 0.6%.

Number and shares of journeys made by private car and public transport in the Helsinki metropolitan area from 1966 to 2005:

Share of public transport 38% in 2005.
Proposal for a climate vision for the Helsinki Metropolitan Area

*Improved energy efficiency and the sparing use of natural resources leads to a fall in greenhouse gas emissions in the region and to improved competitiveness.*

This main vision is supplemented by six sectoral visions concerning:

- Transport
- Land use
- Construction and buildings
- Electricity
- Energy generation
- Consumption and waste
The target and trends in greenhouse gas emissions in the Helsinki Metropolitan Area

The target is to reduce per capita energy consumption in the metropolitan area over the period 1990–2030 to minimize GHG emissions:

- from 6.3t CO₂ eqv in 2004 to 4.3t CO₂ eqv in 2030 per capita.
- by 39% over the period 1990 – 2030.

Annual greenhouse gas emissions per inhabitant
Vision and operating policies for transport

Greenhouse gas emissions from transport have fallen by at least 20 per cent. Public transport, walking and cycling are the preferred forms of mobility.

Influencing demand for transport and patterns of mobility by improving the status and service standards of public transport, walking and cycling.
- through mobility service pricing,

Cutting emissions from city transport operation
- through the use of low-emission standards

Promoting the use of low-emission vehicles through
- economic guidance in favour of low-emission vehicles
- environmental zones based on motor vehicle emissions
Reducing public transport emissions with the help of a new fuel:

- The providers of public transport and Neste Oil have signed a letter of intent aiming at using NExBTL biofuel to power buses and waste disposal trucks.
- 300 buses will start using the fuel in August 07 and the aim is that in 2008 half of the buses will use synthetic biodiesel.
- Biodiesel (100%) will reduce emissions from buses by half.
- An obligation to use biofuels to be introduced in fuel distribution at the turn of the year 2007/2008.
- A tax relief from the state would encourage the use.
NExBTL-biodiesel

The first commercial scale 2nd generation biodiesel unit
Oil refinery integrated unit will start-up in Porvoo, Finland summer 2007
Very high quality diesel fuel from vegetable oils and animal fats

BTL = Bio to Liquids
Operating policies for construction and buildings

Improving energy efficiency in new buildings
new technology pilot projects e.g. low-energy buildings

Improving energy efficiency in the existing buildings
new renovation technology

Guiding choices of heating and cooling systems
impact of various heating and cooling methods
improving various financing and grant procedures

Improving maintenance
retraining building service staff
active use of servicing logbooks
improving consumption metering to ensure that energy costs can be allocated to the end consumer
new control and guidance technology for information

A solar heated building in Viikki, Helsinki
Operating policies for electricity consumption

Improving city procurement procedures in support of higher energy efficiency
- introducing the latest technology for street lighting and illumination control systems

Improving allocation of energy costs to the consumer and associated information gathering
- enhancing and extending the scope of electricity consumption metering
- ensuring energy bills based on actual consumption

Information
- information campaigns and guidelines for saving electricity

Photo: Helsingin Energia
Operating policies for energy generating and distribution

Benefiting from the opportunities of a more compact urban structure

- optimising the benefits of **cogeneration**

- investigating the use of **district heating return flows** (e.g. low energy sites, wastewater sludge heating, cooling)

- investigating **waste heat sites and heat recovery prospects** at small (e.g. condensation heat from ice rink refrigeration) and large (e.g. wastewater treatment plants) sites

- **auditing, energy reviews and suggestion prizes**

- extending **district cooling networks** and replacing separate cooling installations in buildings
Centralised energy generation falls wholly within the scope of increasingly strict emissions trading rules
- promoting use of renewable energy sources
- promoting use of clean technology for coal and natural gas
- replacing some coal and natural gas with fuels of waste origin and electric power generated from renewable energy sources

Promoting eco-efficiency of decentralised energy generation and increasing use of renewable energy sources

Expanding the district heating network

Increasing energy saving advice and research
Possible Top 10 areas for action

- Energy consumption and GHG emissions in all the municipalities within the metropolitan area
- Public sector procurement procedures
- Replacing coal with recovered fuels and eco-electricity
- Energy efficiency at all levels
- Rail traffic and vehicle biofuels
- Heating systems of detached houses
- Information
- Motivating people to save energy
- Promoting life-cycle thinking and developing eco-areas
- Monitoring and statistics

Vision and operating policies for transport

Greenhouse gas emissions from transport have fallen by at least 20 percent. Public transport, walking and cycling are the preferred forms of mobility.

Operating policies and proposed measures for transport:

a) Influencing demand for transport and patterns of mobility by improving the status and service standards of public transport, walking and cycling
   - mobility service pricing, and promoting public transport, walking and cycling
   - improved safety and comfort standards and enhanced provision of real-time information in public transport
   - safe and agreeable access routes to public transport, pedestrians and cyclists
   - secure cycle parks at public transport stations
   - dimensioning standards for cycle parking in planning
Preventing climate change must play a key role in city planning and decision making!