



SIEMENS



Helsinki's 2030 Climate Technologies

City Performance Tool – March 2016

Global Center of Competence Cities

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Executive Summary

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In this study we modelled two scenarios for Helsinki's emission development in 2015-2030: the Business As Usual¹ (BAU) scenario and the City Performance Tool (CyPT) scenario, which features additional technologies that will bring greenhouse gas savings.

This report has found:

1. Helsinki is benefiting from major investments to clean up its electricity and heating mix from its local energy company HELEN. However, because of rapid population growth, these gains will be mainly levelled out due to an increase in total household floor area by 34% in the city by the year 2030. The city therefore needs to find further investments if it is to meet its targets.
2. Due to Helsinki's cold climate, the residential buildings' share of total greenhouse gas emissions currently stands at 1 megaton, accounting for almost 42% of total emissions. This is considerably higher in relative terms to other European cities. Although targeting these emissions is straight forward, financing retrofitting initiatives can be difficult particularly because of Finland's very low energy prices, which have consistently been amongst the lowest in Europe.
3. The CyPT scenario features ten technologies from the transport, buildings and energy sectors. The technologies were selected in a workshop with city stakeholders. Compared to the BAU scenario, these technologies can deliver a further 23 percent (550 kiloton) of CO₂eq reduction over the next 15 years at a total investment cost of €2.8 billion. In this CyPT scenario, compared to the year 1990 the emissions would be reduced by nearly 50 percent, whereas in the BAU scenario the emissions would be reduced by only 34 percent.
4. In the CyPT scenario for the buildings sector, we identified a number of technologies delivering over 13 percent of citywide emission savings compared to the BAU scenario. The total investment for these technologies stands at €1.9 billion, but in return over €2.2 billion of energy savings will be delivered in the 15 year period. Although this is long pay-back period for investors, the city could look at setting up a warehousing loan facility to increase the total loan value for retrofits and attract larger investors.
5. Although transport emissions account for only 24 percent of emissions in Helsinki's BAU scenario, a share that will not change over the next 15 years, two technologies provide considerable savings as they target the largest emission sources. City tolling, which targets over half of the transport related emissions delivers 2.5 percent of citywide savings. Onshore power for vessels provides 1.9 percent CO₂eq reductions and cuts more than one third of the city's NO_x transportation emissions compared to 2030 business as usual levels.
6. There are clear winners in both the buildings, transport and energy sectors and Helsinki should look at funding and financing initiatives that bundle technologies from all the sectors. Cross sector funding such as Green City Bonds may exploit Helsinki's entrepreneurial culture and invite CO₂eq saving projects to compete for funds as was recently proved in Gothenburg. Furthermore, revenues from city tolling may help to prop up investments in other sectors.

1. In BAU scenario the electricity consumption per capita stays constant until 2030 (Helsingin parhaat energiatehokkuuskäytännöt, 2011). Total district heating consumption is reduced by 0,5 TWh by 2030 (Pöyry, 2015). Fuel shares in local district heating and national electricity are based on Helsinki's 30 % emission reduction study's (2013) BAU scenario.