

Energy Transition: A Multifaceted Challenge for Europe

How can the 2030 Energy & Climate
Package be implemented in a cost-
effective and collective way?

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CITY OF HELSINKI

- Northernmost capital city of European Union: a winter city
- Population about 621 000 (Greater Helsinki 1,1 million)
- Heat market total ca. 8 000 GWh
- Thermal energy demand is greater than electricity demand



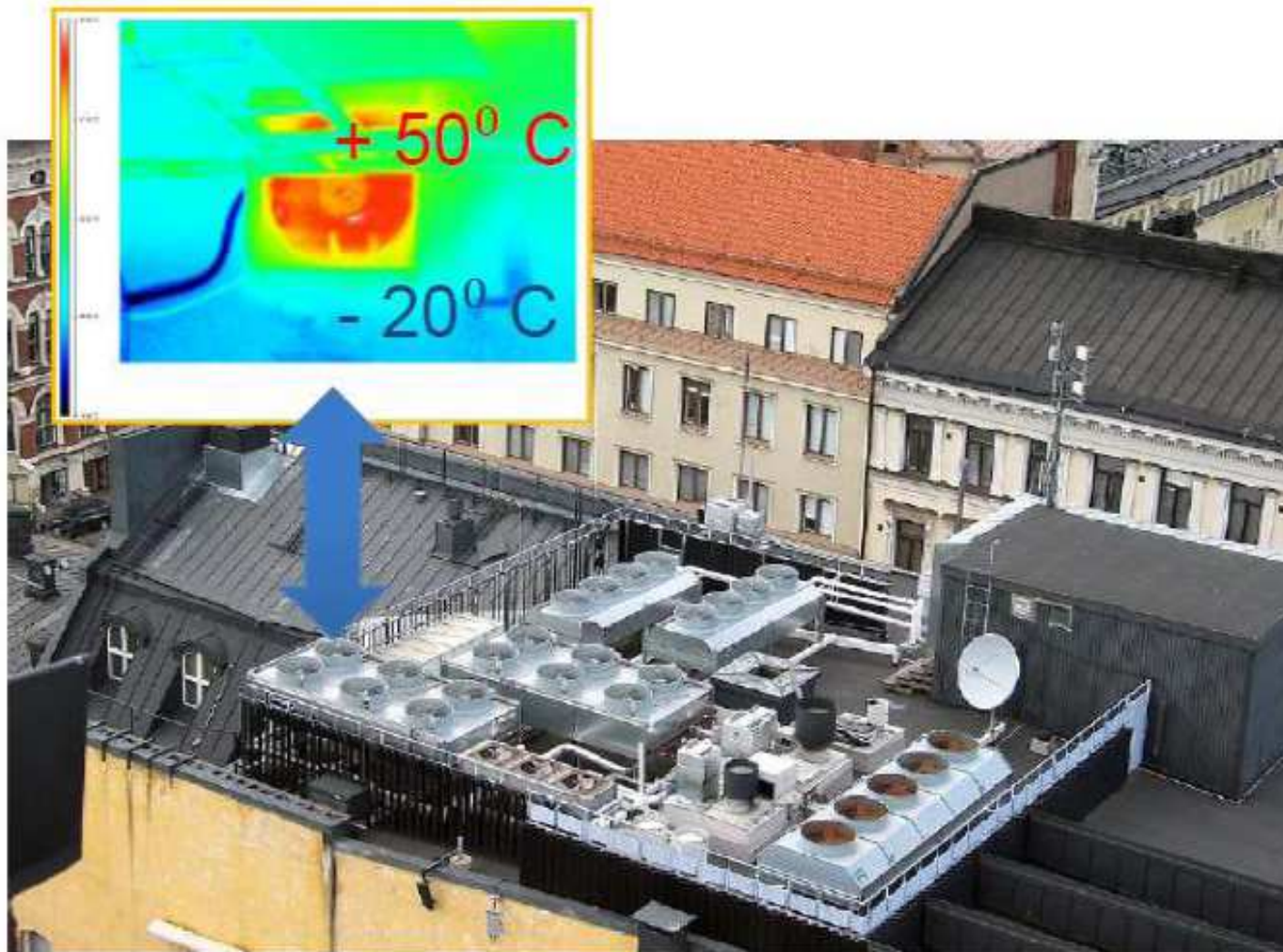
The highest temperature ever recorded in the city centre was 33.1 °C in July 1945, the lowest –34.3 °C in January 1987.

COMBINED HEAT AND POWER (CHP) PRODUCTION

- CHP plant generates electricity and heat in the same process
- Combined generation achieves high efficiency: more energy is gained from the same amount of fuel
- Combined generation reduces carbon dioxide emissions



WASTE HEAT FED INTO THE DISTRICT HEATING NETWORK



WORLD'S LARGEST HEAT PUMP PLANT

Uses heat pumps to produce District Heat and District Cooling from both purified sewage water and sea water

- Total output 90 MW of District Heat and 60 MW of District Cooling - enough to heat a small town.
- The plant is located underground near the City Centre.



THE THREE NINETIES

- 1) Market share of District Heating is more than 90 %
- 2) Share of Combined Heat and Power is more than 90 %
- 3) Overall efficiency of District Heating is more than 90 %

>90>90>90

Helsinki: Waste to Energy Plant started operation in October 2014



Waste to Energy Plant

- Domestic sorting of household waste: biowaste, metals, cardboard (white and brown), glass, paper recycled
- The remainder is principally plastic packaging -> waste to energy
- Reduces local use of fossil fuels by 30 %
- Reduces local CO2 emissions by 20 %



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1990 TO 2020 TO 2050

- Business as usual (no additional measures): 24 % emissions cut by 2020
- Cuts achieved by 2013: 21 %
- Target revised to 30 % by 2020
- Development Programme on energy and heat generation and 18 additional measures will produce cuts of 44 % by 2020 (58 % per capita)
- Energy and heat generation largest emitter, traffic second largest
- If all above measures implemented, total emission cuts in 2050 will be 92 %
- Energy and heat generation measures will require major investments

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Thanks for your interest.