Fast moves in Helsinki – examples for Transformation of a City

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Helen today

Turnover 930 M€

25% of district heat in Finland

7 TWh district heat

Growth with new energy services
We need to decrease emissions both in production and consumption.
Towards carbon neutral energy system

1. Carbon dioxide emissions -40%, Renewables to 25%, halve the use of coal by 2025

2. Phase out of coal in 2029

3. Carbon neutral energy production by 2035
Hanasaari power plant will be replaced by biomass, heat pumps and storages

1ST STEP:

- Hanasaari, fuel capacity
- Hanasaari, heat production
- Heat pumps
- Geothermal heat
- Heat trade
- Regional renewable solutions
- Vuosaari bioenergy heating plant

New heat production, total

<table>
<thead>
<tr>
<th>Component</th>
<th>MW</th>
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<tr>
<td>Hanasaari, fuel capacity</td>
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<td>Hanasaari, heat production</td>
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<td>Vuosaari bioenergy heating plant</td>
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<tr>
<td><strong>New heat production, total</strong></td>
<td>240</td>
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Towards carbon neutral energy production

CO₂ emissions, g/kWh

1990: 400
2018: 230
2025: 130
2030s: 60
CASE: Heat Demand Response

Demand response enables cutting the most polluting and expensive hours.

WIN – WIN – WIN
Customer – System – Energy Producer
CASE: Giga-scale Heat Storage

The old oil caverns are reused
Hot water is used for energy storage
The charging capacity 120 MW
Decarbonisation cannot be achieved without involving customers.
CASE: Paulig & Open District Heat

Excess heat from a coffee roastery is sold to Helen and transferred to the district heating network.
CASE: Data Optimized Heating

Innovative solution for metering and optimising conditions in residential buildings

- Maximizing comfort
- Minimizing energy costs
- Optimising energy flows

5-10% savings in heat consumption
Recommendations to EU energy and climate policy

Future of Heating:
Net zero emissions target for 2050
Strong EU ETS - no overlapping regulation
Low-carbon
Customer-focused
Servicized

Vision for carbon neutral heating
Level playing field for all heating

HELEN