A progRESsHEAT case study

Ensuring energy security and cost-efficient heat supply

HELSINGOR
Denmark
61,600

1 Key figures

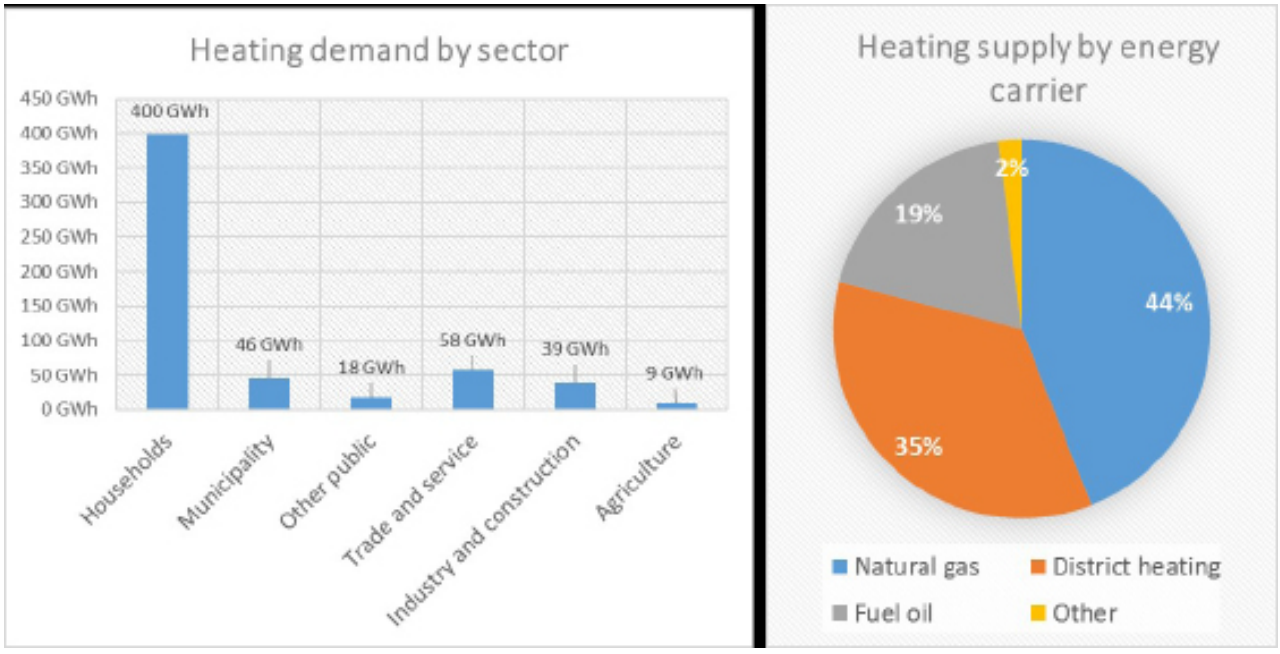

Fig.: District heating energy carrier mix (Rambøll 2014)

2 Main challenges

The key issues to be solved in the foreseeable future which the progRESsHEAT project has highlighted, are some suggestions on how to navigate technical issues and a not always favourable tax regime and to do so with the possibilities available at municipal level, while still being in compliance with regional and national strategies.

3 Current policies and targets

Helsingør developed its own Climate Plan back in 2009. The municipality is part of a regional cooperation programme aimed at developing a Strategic Energy Plan in partnership with all the municipalities in the area, and is a signatory to the European Covenant of Mayors (www.eumayors.eu).
Helsingør uses a set policy instruments, supplemented by knowledge-building instruments, addressing all relevant groups of stakeholder (public institutions, companies, residential sector, energy suppliers, craftsmen…).

In line with ambitious national targets, the municipality of Helsingør aims to reach the following GHG-emission targets:
- **a 25% reduction by 2020** (reference year 2008)
- **reducing CO_2 emissions per capita to <1t** by 2030
- **an annual reduction of 2%**
- Becoming a **CO_2-neutral city by 2050**.

Furthermore, Helsingør has set the following targets regarding renewables:
- a 30% share of RES in the energy supply by 2030
- Electricity and heat demand 100% covered through RES by 2035.

4 Barriers and drivers

Main barriers
- Amongst the identified barriers to the uptake of RES and energy efficiency measures, one of the most important ones is the current tax regime. Indeed, it is very unfavourable to sustainable heating solutions, such as heat pumps and the use of excess heat, notably because of taxes.
- Furthermore, the high investment costs for RES and energy efficiency is also an obstacle.

Main drivers:
- Amongst the most important drivers identified in Helsingør are the municipality's efforts in increasing general awareness.
- The absence of tax on biomass, which encourages a more biomass-based energy supply.

5 Results from scenarios and policy assessment

Two alternatives have been established for the years 2030 and 2050 respectively.

1. Scenario BIO2030 (Reference scenario)
- District heating based on a biomass CHP and a biomass boiler
- Individual supply based on various shares of: Biomass boilers, natural gas boilers and heat pumps.

2. Scenario HP2030
- District heating based on heat pumps and thermal storage
- Individual supply based on various shares of: Biomass boilers, natural gas boilers and heat pumps.

3. Scenario BIO 2050 (Reference scenario)
- District heating based on a biomass CHP and a biomass boiler
- Individual supply based on various shares of: Biomass boilers, natural gas boilers and heat pumps.

4. Scenario Combi2050
- District heating based on heat pumps, thermal storage, solar heating and heat-only biomass boilers
- Individual supply based on various shares of: Biomass boilers, natural gas boilers and heat pumps.

The names of the scenarios relate to the technology used for district heating generation in Forsyning Helsingør, so only the competition with other supply options determines what the fuel mix for the individual supply will be in each scenario. In all scenarios, about 33 GWh of district heat generated from waste and natural gas is supplied yearly from the Norfors neighbouring.

6 Recommendations and possible solutions

The main recommendations for the Helsingør municipality are:
- **Promoting heat savings in buildings** - A 40% heat saving can be reached in the municipality's building stock. These savings can be achieved through information campaigns targeting owners of old buildings with a high energy demand and old buildings supplied with oil boilers.
- **Promoting the shift from individual fossil heat supply,** especially in regards to oil boilers The project has identified a number of buildings within and close to district heating areas supplied by oil boilers. These are 'low-hanging fruits' which should be converted to district heating.
- **Discouraging the installation of individual biomass boilers** in densely-populated areas through information campaigns
- **Ensuring cheap, CO_2-neutral DH** from Forsyning Helsingør by looking into future investment in profitable RES solutions such as large heat pumps
- **Advocating for a shift to fossil-free district heating** - if continued import from Norfors.

7 Outlook and open questions

For decades, Denmark has had a strong focus on promoting district heating and transitioning away from fossil fuels, and Helsingør is already far ahead.

Developing a heating and cooling roadmap for Helsingør would not be relevant. Nevertheless, the recommendations developed may still prove useful for Helsingør and other Danish municipalities. Data and knowledge generated through research projects such as progRESsHEAT provides useful inputs for validating and adapting the ongoing efforts of the municipalities. As Helsingør is planning to develop a new climate action plan in 2018, the data and knowledge generated through progRESsHEAT will feed this work.

Interested?
Find more information in the full-text case study on the project website!

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