

# Helsingborg: building the future on history, strategy and district heating

In 2018, the Swedish city of Helsingborg adopted a climate and energy plan. The plan not only conforms to Sweden's national goal of a net-zero carbon footprint by 2045, it also includes a set of energy principles where district heating is key.

The Climate and Energy plan extends until 2024 and contains ambitions and measures in six priority areas including climate emissions, transports and travel, sustainable consumption and efficient use of energy.

## Eliminating 350 000 tons/annum

The plan is the logical extension of a long row of climate and environmental actions in Helsingborg. District heating was introduced in the city in 1964 and is today supplying some 80 percent of all heating and hot tap water needs, among which are 40.000 apartments. All this through a DH network spanning some 700 km's. In 2018, fossil fuel (oil, natural gas or coal) made up a minute 0,3 percent of the district heating fuel mix. The primary energy factor came in at a super low 0,07. And compared to the 1990:s, some 350.000 ton CO<sub>2</sub> has been eliminated from the city's annual emissions.

## Guiding energy principles

The city is keen to safeguard those numbers. Second only to Stockholm, Helsingborg is the fastest growing city in the country, projected to expand from today's 125.000 inhabitants to 200.000 in 2050. Recognizing the need to grow in a responsible, sustainable way, the city's property development code stipulates that district heating should always be available in new development areas. That in turn is based on a set of energy principles which are at the core of the climate and energy plan. First, keep end usage of energy as low as possible. Second, minimize energy losses and waste. Third, use waste, rejects and residual heat for energy purposes, not primary energy. And lastly, when additional energy is needed, make sure it is renewable. These principles were introduced into the plan by Öresundskraft, the city owned energy company.

## Contributing to national goals

The energy principles are based on Öresundskraft's long experience as an energy supplier. Founded in 1859, the company historically walked a long road of syngas, coke, oil and coal before completing today's production environment where 96 percent of the heat stems from secondary, recycled resources. Two thirds of the annual 1000 GWh is delivered from two CHP plants using waste and wooden pellets as primary fuels, whilst one third is residual heat from Kemira, a chemical plant just south of the city center. The combined production of power and heat is a crucial element in reducing load on the national grid and contributes to Sweden's goal of 100 percent renewable electricity production by 2040.

## Millions of dollars

The almost exclusive use of recycled energy for heating purposes have not only placed Helsingborg in the forefront among cities with the lowest carbon footprint. It also creates jobs, tax money and corporate advantages. In 2017, medical manufacturer McNeil in Helsingborg was named the world's first carbon neutral manufacturing site within Johnson & Johnson who in turn granted millions of dollars for McNeil's expansion in Helsingborg.

Another company, Svenska Retursystem, hot wash close to 100 million plastic bins each year in a national closed loop system for food distribution, saving vast amounts of energy and material in the process. And for Kemira, maker of water cleaning chemicals, district heating enables the company to sell excess heat from its chemical processes, providing a competitive edge over its' rivals and making Helsingborg its' preferred location.

## Prized district cooling

The city is also supplied with district cooling, pre-dominantly in the downtown area. Users include McNeil's pharmaceutical production facility and the city hospital together with an array of offices and other commercial buildings. The original district cooling system commenced in 1999 but was lately reengineered to allow for an expansion to 30 MW thermal cooling capacity and to significantly improve energy efficiency and environmental performance. The new production mix includes the use of cold sea water and absorption chillers powered by surplus heat from waste incineration. The solution was awarded by the Climate and Clean Air Coalition, CCAC, during COP23 in Bonn.

## High tech heating

Helsingborg's district heating doesn't stop at the city limit. Following a 2005, 50 MW connection with the neighboring city of Landskrona, the network was expanded in 2015 to include a 60 MW connection between Landskrona and Lund. The entire system is 90 kilometers in length and connects 4 CHP plants and 5 municipalities with some 110.000 households. Apart from optimized production economy and security in supply, the network enables more residual heat to be used. For example, heat from the X-ray laboratory MaxIV and the European Spallation Source, ESS, will be used to heat Lund.

In summary, district heating can touch all parts of the modern society, contributing to growth, sustainability and efficient use of resources.

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