



# China: District heating - Danish experiences

Recently, the Danish Energy Agency issued a publication on Danish experiences with district heating in cooperation with State of Green and Danish Board of District Heating. The work, which is available in English and Chinese, has been defined as the best publication currently available because it gives a good overview of the historical development of District heating, the regulatory framework and some state of the art case examples.

## A history of district heating in Denmark

Denmark is not least known for Scandinavian design and the fairy tales of Hans Christian Andersen. But Denmark is also one of the most energy efficient countries in the world. The widespread use of district heating (DH) and combined heat and power (CHP) is one of the most important reasons why it has been possible to increase energy efficiency and reduce carbon emissions over several decades - a small fairy tale in its own right.

The first combined heat and power plant in Denmark was built back in 1903. It was a waste incineration plant which made it possible to handle waste in an environment-friendly way, and to provide electricity and heat to a new hospital. Thereby, the plant solved two problems at the same time.

During the 1920's and 1930's, a collective district heating system was developed based on waste heat from local electricity production. District heating also supplied some urban areas with heat and accounted for around 4 % of the Danish heat supply. From here on, district heating from combined heat and power expanded in the larger Danish cities and in the 1970's, around 30 % of all homes were heated with the use of district heating systems.

At the time of the energy crisis in 1973/1974, energy consumption per capita had risen to very high levels. This made it evident that it was necessary to save energy - including energy for space heating - to decrease the dependency of imported fuels and to reduce the consumers' heating expenses. Therefore,

it was decided to expand the fuel-efficient combined heat and power system to not only the larger cities, but also to medium and small-size cities in Denmark.

### **Modern district heating in Denmark**

Today, 63 % of heating in private Danish houses is provided by district heating - not only for space heating, but also for hot tap water.

Denmark has six large central DH areas with a total heat production of approximately 60 petajoules (PJ) per year. There are also around 400 smaller decentralized DH areas with an annual heat production of app. 75 PJ.

In 2013, the production of district heating in Denmark amounted to 134 PJ. 72.8 % of all district heating was produced in cogeneration with electricity (CHP), thus saving around 30 % of fuel compared with separate generation of heat and power.

### **Download the publication in the right sidebar**

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