

Case study 5: Heat pump deployment policies (Denmark)

Description of the policy instrument

The REPowerEU plan aims to double the deployment rate of heat pumps in the EU in the next five years.¹⁸¹ The Danish example outlines how a combination of measures are being implemented in parallel to increase heat pump uptake among homeowners and at a commercial scale. The purpose of this case study is to provide some ideas for how the EU-wide target could be realised across the continent by maximising policy synergies.

How could it work?

The Danish government plans to increase heat pump installation among domestic and industrial consumers. The aim, announced in April 2022, is to convert around 50 per cent of Danish households, currently heated by natural gas, to district heating by 2028 and to substantially increase the use of heat pumps in houses as well as in district heating systems.¹⁸²

✔ To achieve these objectives, the government has implemented a synchronised set of policies to increase the relative attractiveness of heat pumps and to reduce the costs associated with the switch.

Firstly, in 2021, the Danish Energy Agency announced that gas grid operator Evida will not charge homeowners for the costs of disconnecting from the traditional gas network if they wish to replace conventional gas boilers with electric alternatives.

Secondly, subsidies were made available to consumers who switched from individual oil and gas boilers to district heating. Additional funds were made available for heat pump installations to households.¹⁸³

Thirdly, the Danish Energy Agency launched a DKK 44.6 million (around USD7 million) subsidy programme to support the installation of commercial-scale heat pumps, targeting companies specialising in the provision of district heating.¹⁸⁴ This creates a strong synergy between the separate subsidy schemes and incentives: customers are encouraged to switch to heat pumps or district heating, while providers are also supported to adopt the heat pump technology.

Denmark relies heavily on variable renewable electricity sources, which increases the risk of serious grid congestion issues.¹⁸⁵ The high efficiency of heat pumps reduces this risk considerably by lowering electricity demand. Heat pumps can also be used to cool homes during hotter days,¹⁸⁶ which are becoming increasingly frequent. By investing heavily in efforts to increase heat pump adoption, the Danish

government can hope to reduce both the costs associated with blackouts and brownouts, through a drop in voltage, and increased death rates during heatwaves.

Key learnings

While heat pumps powered by renewable energy are highly efficient and can provide an emission-free solution, district heating and the replacement of thermal generators with heating systems powered by heat pumps is yet to gain widespread traction in many countries. Experts have identified significant potential for large heat pumps in many European countries, beyond the frontrunners such as Denmark or Sweden.¹⁸⁷ For instance, in Eastern European countries, where district heating is widely used but still predominantly coal-powered, the right mix of policies could support a shift to more sustainable energy sources and the adoption of a more efficient technology.

In addition to their sustainability credentials, the high efficiency of district heat pumps could contribute to lowering household energy bills, or to mitigate the effects of rapidly increasing energy costs. A recent report analysed the cost to consumers of low carbon heating options, including heat pumps and hybrid heat pumps, in Spain, Italy, the Czech Republic and Poland. It concluded that heat pumps provide the most cost-effective route to decarbonisation of domestic heating.¹⁸⁸

However, in countries where the cost of electricity is substantially higher than gas, energy market reform may be needed to ensure that heat pumps are cheaper to operate than fossil fuel alternatives.¹⁸⁹

