

New study on decarbonized heating and cooling

The CO₂ neutral city starts with district energy

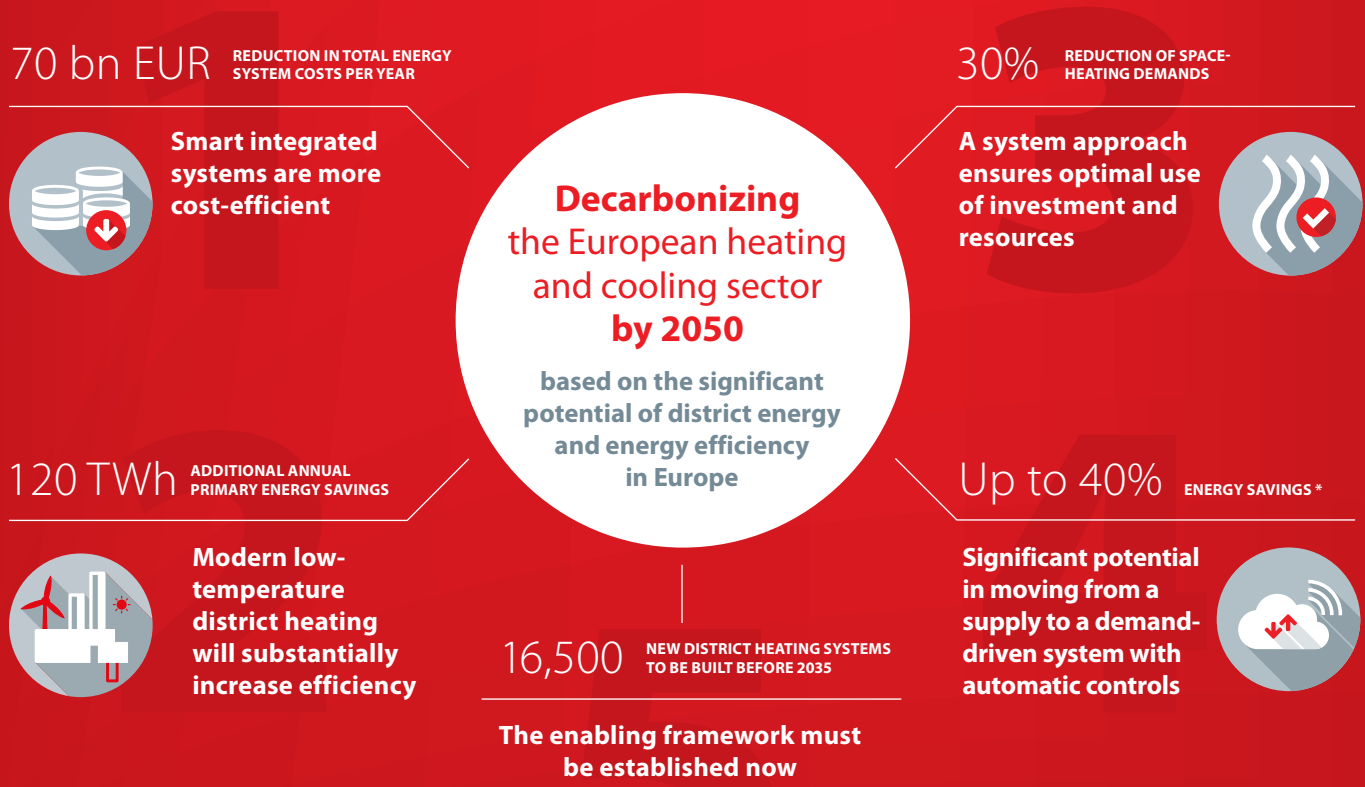
Heating and cooling accounts for half of the EU's energy consumption and is currently 75% fossil fuel-based. To succeed with the energy transition in Europe, therefore, decarbonizing our heating and cooling supply is essential.

A new report from Aalborg University in Denmark shows how the European decarbonization goals can be reached by combining energy efficiency with the smart integration of renewable energy through sector coupling.

According to the Heat Roadmap Europe studies, the share of district heating can be increased from 12% today to 50% in 2050. Based on this significant, untapped potential, Aalborg University has outlined a roadmap for decarbonizing the European heating and cooling sector by 2050.



Five key takeaways:



* https://ec.europa.eu/energy/sites/ener/files/documents/2014_final_report_eu_building_heat_demand.pdf

Five key steps towards a decarbonized heating and cooling sector

#1 Smart integrated systems are more cost-efficient

Utilizing energy system synergies and exploiting energy efficiency results in a reduction in primary energy of 13% compared to a 'conventionally decarbonized' scenario in 2050. And it reduces total energy-system costs by approximately 70 bn EUR per year.

#2 Modern low-temperature district heating will substantially increase efficiency

4th generation district heating operating with low temperatures could lead to primary energy savings of around 120 TWh/year and cost savings of up to 6 bn EUR/year in the HRE scenario. It will also enable the integration of low-carbon energy sources, such as waste heat and geothermal.

#3 A system approach ensures optimal use of investment and resources

With the right balance between investments in end-user savings and investments in decarbonized energy supply, an affordable decarbonization is possible by reducing space-heating demands by 30%.

#4 Significant potential in moving from a supply to a demand-driven system

By improving the energy efficiency of district energy systems and moving from a supply to a demand-driven system with automatic controls, savings of up to 40% can be achieved. Exact pressure, temperature and flow control minimizes heat losses and optimizes network operation.

#5 The enabling framework must be established now

District energy has the potential to cover 50% of the anticipated heating demand in 2050. To realize this potential, 21,500 new district heating systems need to be established by 2050, of which 16,500 before 2035. Accordingly, individual heating should change from accounting for 82% of annual heat sector investment costs to 44%.

The policy framework is key to this transition

Setting ambitious targets, ensuring a level playing field for different solutions and securing finance, are some of the elements the policy framework should cover. Absolutely crucial is the collection of data and the making of detailed plans for how to decarbonize heating and cooling.

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Download the report

The study **Towards a decarbonized heating and cooling sector in Europe** by Aalborg University was initiated by Danfoss and Engie, and is the first one to provide a clear vision and roadmap for achieving a sustainable heating and cooling sector. The report can be downloaded here: danfoss.com/district-energy