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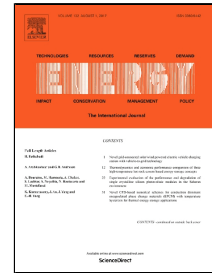
Heat Roadmap Europe: Quantitative comparison between the electricity, heating, and cooling sectors for different European countries

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Heat Roadmap Europe: Quantitative comparison between the electricity, heating, and cooling sectors for different European countries

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Keywords

Electricity; Heating; Cooling; Annual Demand; Peak Demand; Heat Roadmap Europe

Highlights

1. Demand for electricity, heating, and cooling is compared across 28 EU countries
2. Today, the annual demand for heat is the biggest in 25 of the countries
3. Annual cooling is small, representing 14% max of all demands considered
4. Heat is the most valuable sector in 18 countries, based on typical production costs
5. Electrifying heating & cooling with heat pumps could double the electricity demand

Abstract

This paper compares the electricity, heating, and cooling sectors at national level for various European countries. Annual energy demands are compared for all 28 EU countries, while peak hourly demands are compared for four countries that vary significantly. The results indicate that the heat demand is currently the largest of the three demand types considered in terms of both annual and peak demands: it is the largest annual demand in 25 of the 28 EU countries, and it represents the largest peak demand in all four countries analysed. Electricity, heating, and cooling demands are all likely to change significantly in the future with increasing electrification, energy efficiency (e.g. building insulation), and improved comfort (especially for cooling). Some extreme scenarios are presented here to quantify the potential impact of these changes on the electricity sector, with results revealing that the demand for electricity could double compared to today, depending on how these changes occur. Considering the scale of additional electricity required to electrify future heating and cooling demands, heat pumps should be prioritised over electric heating and other alternatives, such as district heating and cooling, will likely be required to minimise the strain on the electricity grid in the future.

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