

**The role of the heating and cooling sector  
in the EU 2040 climate and energy framework**

joint non-paper by

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In February 2024, the Commission presented its Communication “Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society”. We thank the Commission for the Communication and the impact assessment, initiating the process to establish an upcoming EU 2040 climate target setting the path to 1.5-degree objective and climate neutrality by 2050 at the latest. Decarbonisation of the energy sector will play a key role in delivering on these ambitions, and in this respect, there is a need for an increased focus on **the decarbonization efforts within the one of Europe's major energy-consuming sectors, namely heating and cooling.**

The Commission’s Communication emphasizes that the EU building stock accounts for 42% of final energy consumption, more than half of the natural gas gross inland consumption and about 35% of energy related greenhouse gas emissions<sup>1</sup>. Around 80% of energy consumption in buildings stems from heating and cooling needs. It is therefore clear that this is a central sector to tackle and one that deserves further attention. The decarbonisation of the EU heating and cooling sector in the last decade has not gained the needed momentum – according to Eurostat, in the span of 10 years, the average share of energy from renewables for heating and cooling in the EU grew from 18.6% to 24.8% in 2022 (+6.2pp).

The heating and cooling sector has a **significant role to play in EU's progress towards achieving its 2040 climate goals**. Recent developments have also showed the potential of this sector to **reduce dependency on fossil fuels** and consequently strengthen Europe’s security of supply. Many Member States have already successfully reduced their natural gas consumption significantly by shifting to renewable sources in the heating and cooling sector and in case of some Member States also important steps to phase out the use of fossil sources in the heating sector have been laid out for the longer term.

According to the International Energy Agency, the **heating** sector and especially district heating offers great decarbonisation potential, which, however, remains largely untapped at EU level. The Commission’s impact assessment of the 2040 target communication clearly indicates that renewable energy sources will play a predominant role in energy system decarbonisation. The Commission’s Impact Assessment notes that certain member states in the south of Europe will experience an increase of overall energy demand and an increase in peak electricity demand due to **cooling** and final energy consumption related to cooling buildings is projected to double by 2040 as well as number of Cooling Degree Days are assumed to increase in all member states compared to today.

**Therefore, there is a clear need to unlock the significant potential of renewable energy sources for the decarbonisation of the heating and cooling sector in general and district systems in particular. It is crucial to make sure that the decarbonisation of the cooling and heating sectors is equally promoted. Alongside improving energy efficiency of existing systems and the development of new ones, thus ensuring operationalization of energy efficiency’s first principle and minimization of buildings energy needs related to heating and cooling this would imply also switching them to heat from renewable energy sources, such as, solar energy, ambient energy, bioenergy, geothermal energy, etc., and use of such technologies as large scale heat pumps, solar water heaters and waste heat.** We fully agree with the Commission’s assessment, that by 2040, **electrification** will serve as the primary **catalyst for the energy transition**. Therefore, the EU needs to set out a concrete plan to quickly ramp up the use of the different renewable energy technologies that could deliver this such as solar district heating plants, heat pumps (including heat pumps using ambient energy from sewage water and other sources) and especially large-scale industrial heat pumps that need to be integrated in district heating systems alongside energy storage systems. The shift towards heating and cooling from renewable energy sources and waste heat will **not only pave the way to decarbonisation, but also contribute to energy security, reduced energy poverty as well as energy system integration, sector coupling and increased flexibility**. JRC analysis shows that replacing 30 million fossil fuel individual boilers in residential dwellings with heat pumps would reduce the EU’s gas and oil consumption by 36% . In the majority of cases, switching from a fossil fuelled boiler to a heat pump will result in lower heating bills for the consumers as well. In 2021 Commission calculated that cooling accounts for around 4% of final EU energy demand. With increasing impacts of climate change and severe heat periods stretching across Europe, the demand for cooling is growing rapidly.

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<sup>1</sup> It is important to point out that these are average values, which vary greatly across the EU depending on the climate.

In addition, industry accounts for 25% of the Union's energy consumption, and is a major consumer of heating and cooling, 91% of which is currently supplied by fossil fuels. However, the great share of heating and cooling demand is low and medium temperature for which there are cost-effective renewable energy options, including through electrification and direct use of renewable energy, among others low temperature solar thermal and geothermal. Thermal storage might also play a relevant role in promoting the electrification of the industrial sector demand, particularly in hard-to-abate sectors. **Setting a clear direction for the uptake of renewable solutions for low- and medium-temperature industrial heat applications as well as a smart deployment of waste heat is key.**

For those situations where **electrification does not present the optimal solution** other sustainable renewable energy sources can contribute. The existing sustainable bioenergy, biogas, geothermal and high temperature solar thermal solutions can build a bridge to replace fossil fuels in our way towards decarbonisation until the necessary solutions of renewable non-emission technologies and fuels for district systems are adequately developed and electrical systems are adapted to the new needs.

The International Energy Agency's data shows that Europe currently leads in renewables integration in district heating, with around 25% of its district heat supplies produced by renewable sources. It is crucial not to lose this momentum and to increase the already high rates of heating that is produced by renewable energy sources.

Given the long investment cycles and the necessity of engagement of citizens, consumers and investors to contribute to the energy transition in the heating and cooling sector, **we need clear political signals in an upcoming framework to deliver on the decarbonisation of the sector**, including taking stock of existing regulatory measures, implementation of those specific policy measures and targeted public and private financial support to create stable conditions and **enable investment** fully in line with the energy efficiency first principle. Otherwise, there is a significant risk of long-term carbon lock-in, and ultimately stranded assets, which will be difficult and expensive to correct if steps are not taken in the period until 2030.

Speeding up the deployment and increasing the demand for renewable heat and cooling solutions will not only play a significant role in decarbonisation and in the long term increase affordability for all consumers, but also contribute to EU competitiveness in providing a scalable market for European flagship renewable industries, such as heat pumps. To this end, **we call on the Commission to publish the announced Heat Pump Action Plan, as well as to revise its outdated EU Heating and Cooling Strategy from 2016 and to bring it in line with the upcoming 2040 climate targets.**