

## EREF input to the public consultation on the Heating & Cooling Strategy

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EREF welcomes the European Commission's initiative to develop a dedicated Heating and Cooling Strategy, as announced under the Affordable Energy Action Plan. Heating and cooling (H&C) accounts for nearly half of the EU's final energy consumption, and over 70% of this demand is still met with fossil fuels, exposing citizens and businesses to volatile prices, undermining climate objectives, and delaying energy system resilience.

To address this, the EU needs a coherent and forward-looking strategy that reduces demand, replaces fossil systems, and scales renewable heat and cooling solutions across all sectors.

Defossilising heating and cooling is one of the most urgent and impactful levers for achieving the EU's 2030 and 2040 climate and energy targets, improving air quality, and delivering affordable energy to all. It is also central to competitiveness, economic growth and job creation: from industrial process heat to seasonal cooling, energy costs in this sector directly affect economic performance and social welfare.

The Heating and Cooling Strategy must therefore become a cornerstone of the EU's transition to a fully renewable, more decentralised and inclusive energy system. To succeed, it must reap the benefits of all available renewable heating and cooling technologies (including solar thermal, aqua thermal, geothermal, bioenergy, ambient and waste heat, thermal energy storage, and renewables-based district heating and cooling) while establishing a clear commitment and timeline to phasing out fossil-based systems.

The Strategy must also reinforce the implementation of the Renewable Energy Directive (RED), the Energy Efficiency Directive (EED), the Energy Performance of Buildings Directive (EPBD), and strengthen REPowerEU, and work in close coordination with the Electrification Action Plan and the forthcoming European Grids Package.

### **A fully renewables-based and inclusive approach to heating and cooling**

Delivering this transformation starts with mobilising all renewable heating and cooling solutions alongside energy efficiency. Electrification will play a central role in defossilising heating and cooling, particularly through the deployment of individual and

collective heat pump systems. Heat pumps are a cornerstone of the transition, offering high efficiency and strong emissions reductions, especially when powered by renewable electricity.

However, harvesting their full potential depends on enabling policy frameworks. Electricity pricing must be rebalanced to reflect the cost advantages of renewable heat and efficiency. Hybrid systems combining heat pumps with solar thermal, aqua thermal (harvesting thermal energy from rivers), geothermal, or bioenergy sources should be supported. Additionally, infrastructure for renewable electricity must keep pace with rising demand. Integrating ambient or waste heat sources (such as wastewater, industrial processes, or data centres) into district heating and cooling systems, with or without heat pumps, solar thermal, can further improve efficiency and sustainability. Removing legal and technical barriers to such integration must be a priority.

It should be understood that the use of high-value, high exergy electricity for low temperature, low value applications, such as hot water below 120 °C, is a mismatch of thermodynamic proportions and at least inherently inefficient, if not wasteful of resources. Beyond electrification, a wide portfolio of renewable heating and cooling technologies must be mobilised. Solar thermal and geothermal systems offer decentralised, locally anchored heat production with minimal environmental impact. Both are well-suited for residential buildings, commercial use and industrial applications.

In addition, it should be recognised that aqua thermal heating is one of the most efficient ways for heat supply. The water temperature of rivers is higher than the air temperature during heating periods. Therefore, aqua thermal-based heat pumps are more efficient than the commonly used air-based heat pumps. One kWh of electrical energy can be converted into about 5 kWh of thermal energy. Therefore, aqua-thermal heating costs will be significantly lower than heating costs with fossil fuels.

Bioenergy, in parallel, plays a unique and indispensable role as a dispatchable and storable renewable heat source. It ensures energy security during winter peaks, provides resilience in rural and off-grid areas, and stabilises the electricity system during periods of low wind and solar generation. High-efficiency bioenergy cogeneration can supply both heat and electricity precisely when demand is highest, ensuring optimal utilisation of resources. To unlock this potential, the Strategy must support modern, sustainable biomass heating and cooling combined with power generation systems through investment incentives, simplified permitting, and a proportionate framework for sustainability and lifecycle emissions accounting. At the same time, fossil fuels must be held to the same standards. Establishing a comprehensive emissions traceability and

lifecycle framework for all heat sources will support transparency, fair competition, and informed energy choices for consumers and businesses alike.

Renewables-based district heating and cooling systems can deliver integrated, efficient, and flexible solutions at the system level, particularly in dense urban areas with rising cooling demand. These networks should be rapidly modernised to integrate low-temperature renewables such as solar thermal, geothermal, bioenergy and waste heat. District cooling must be developed as a strategic response to rising temperatures and heatwaves, especially in vulnerable urban zones. Municipalities, cooperatives and renewable heat communities should be empowered to lead these developments. Their role in designing, owning and managing district systems must be recognised and supported, in line with the governance provisions of RED III.

Last but not least, energy efficiency must stand as a central pillar of the Heating and Cooling Strategy. The best kilowatt hour is the one that is not needed. Efficiency improvements in buildings, agriculture, industry, and public facilities are essential to reduce demand and maximise the benefit of every unit of renewable energy used. Measures such as better insulation of roofs and walls, high-efficiency windows and doors, demand-based control of heating, cooling and ventilation, and the recovery of residual heat from appliances and industrial processes can substantially cut energy needs. These efforts must be supported through targeted incentives, tax measures, education and awareness programmes, and smart control systems that ensure heating, cooling, and ventilation interact efficiently rather than work against each other. A stronger focus on efficiency will lower total system costs, enhance comfort, and accelerate the clean heat transition.

Together, electrification, renewable heat/cooling deployment, and energy efficiency form the pillars of a truly integrated heating and cooling transition.

### **Replace outdated fossil systems and phase out fossil fuels**

Scaling renewable heating and cooling, as well as energy efficiency alone, will not suffice unless fossil systems are simultaneously phased out in a coordinated manner.

The Strategy must explicitly commit to a gradual but definitive phase-out of fossil fuels for heating and cooling. Today, over 70% of heating in the EU remains fossil-based, primarily fossil gas, resulting in approximately 1.5 billion tonnes of CO<sub>2</sub>eq emissions per year. This status quo is incompatible with the EU's long-term climate, energy security, and affordability goals, including the proposed 90% GHG reduction target until 2040.

Both price shocks and uncertainty of fossil fuel supply have badly disturbed the European energy market, causing hardship to citizens and unpredictable cost burdens to industry and agriculture, which in turn has filtered through to higher prices and political pressure points in European consumer markets. This is particularly so in the heating and cooling sector where the need for policy support and financing instruments lags that of the electricity market. Support for European solar thermal, heat pumps, biomass boilers, geothermal, aquathermal and thermal energy storage for the most part would be beneficial to SMEs and Small Mid-Caps based in Europe and their associated European supply chains. Substituting imported fossil fuel with European heating and cooling technology would drive economic activity and increase overall security and well-being for Europe.

Replacing outdated fossil systems with renewable, efficient and affordable alternatives must be a central pillar of the strategy. Financial incentives and taxation must be urgently redirected: from subsidising fossil fuels to supporting the uptake of renewable heat solutions across all sectors: residential, industrial, and district heating.

To facilitate this shift, the Commission should establish dedicated EU-level funding mechanisms, including blended finance and public guarantees, to support the rapid replacement of inefficient fossil heating systems. These instruments should prioritise low-income households and vulnerable regions, including rural and mountainous areas where access to renewable energy remains limited. One-stop shops and simplified energy performance contracting must also be scaled up to enable broader citizen participation and accelerate renovation.

Crucially, the environmental and social costs of fossil heating are still not fully priced into the system. The Strategy must introduce a robust EU-wide framework for lifecycle emissions accounting and traceability of fossil fuels, ensuring transparency and a level playing field for renewable alternatives. By recognising the full emissions profile of all heating technologies, this framework would support better-informed energy choices by consumers, enable fair competition, and unlock investment in sustainable heat.

Only by combining phase-out measures with parallel investment in renewables can the EU secure an affordable and lasting transformation.

### **Mobilise investment and tackle energy poverty**

Achieving this shift will require unprecedented investment and strong social safeguards. Scaling up renewable heating and cooling requires the mobilisation of investment, guided by long-term certainty and aligned with the EU's climate and energy objectives.

The Heating and Cooling Strategy must unlock blended finance mechanisms that leverage both public and private capital and redirect existing financial flows (including through EU cohesion, recovery, and energy funds) away from fossil fuels and into sustainable heat infrastructure and technologies. Consideration should be made to create a large European Heat Fund for EU citizens, district heating networks and industries. The fund should be accessible to local authorities with a governance structure to ensure fair distribution.

This shift must be supported by dedicated EU funding instruments, including grants, soft loans, public guarantees, and Just Transition mechanisms. Special attention should be given to unlocking finance for distributed, community-led and SME-driven projects, which often face disproportionate barriers in accessing capital.

Affordability must remain a guiding principle. The Strategy should ensure tax fairness between sustainable and clean heat carriers, lower electricity costs, and address distortions that currently disadvantage renewable heating and cooling technologies. Support for upfront investment costs (especially for low-income households and small actors) should be a core component of national and EU-level frameworks.

Particular focus must be placed on vulnerable households and rural or mountainous regions, where outdated fossil systems are still widespread and access to renewable energy is often limited. In these contexts, renewable heat (such as bioenergy, solar thermal, and decentralised renewable heating systems) offers affordable and locally appropriate solutions. Supporting their modernisation and deployment would not only reduce emissions but also strengthen social cohesion and territorial equity.

Recognising the legal standing of Heat Energy Communities or Thermal Energy Communities would encourage collaborative groups to utilise local generation and distribution of heat from low-carbon sources like solar thermal, geothermal, biomass or waste heat. Standardised and recognised communal heating contracts could facilitate the transfer of heat between sites, for example, within a building or between a copper smelter and a district heating system, or a data centre and a hospital. Whereas community-level agreements may cover distribution within a single building or small-scale development, Heat Purchase Agreements typically occur in larger-scale business projects up to and including district heating. The Strategy should also promote integrated support structures, including one-stop shops, advisory services, and streamlined permitting, to help consumers and small actors navigate technical, administrative, informational, and financial barriers.

## **Strengthen industrial leadership, innovation and skills**

Europe's transition to renewable heating and cooling is also a major industrial and innovation opportunity. The Heating and Cooling Strategy must actively support the development of strong EU value chains for renewable technologies from local manufacturing and supply chains to deployment and maintenance. Strengthening Europe's strategic autonomy in this sector will enhance competitiveness, create jobs, and ensure that renewable heating and cooling technologies are produced and deployed at scale across all regions.

Innovation plays a central role. Stakeholders across Europe, including EREF members, have underlined the need for dedicated EU support for early-stage technologies, system-level pilots, and new hybrid configurations that combine electricity, heat, and storage. Novel approaches (such as integrating heat pumps with solar thermal or bioenergy, embedding heat networks into flexible regional systems, or aquathermal energy for heating purposes) must be supported even where short-term cost-effectiveness is not yet achieved, as long-term benefits will only materialise if such innovations are supported and scaled from the outset. The Commission should establish clear funding channels for such innovations, based on their system value, long-term efficiency, and contribution to resilience. Innovations in the field of finance and communications should be strongly encouraged to support greater consumer uptake and reduce payback times. For B2B, Incentivised Heat Purchase Agreements could address specificities of heat supply, facilitate market-based support mechanisms and increase transparency to the renewable origin of the supply.

The Strategy should also launch an ambitious EU-wide skills and training initiative, aimed at equipping installers, energy planners, and system operators with the technical competencies needed to implement renewable heating and cooling solutions at scale. Addressing the labour and skills gap in this sector is essential to match growing deployment with quality, safety, and consumer confidence.

Finally, the Strategy should strengthen local and regional manufacturing ecosystems for renewable heating and cooling components, ensuring that production capacity keeps pace with demand and that value creation remains within Europe. Cross-border innovation platforms (such as "Net-Zero Valleys" or regional clusters) can play a central role in accelerating deployment, scaling best practices, and fostering industrial cooperation.

## Governance, implementation and monitoring

Effective governance will be the glue that binds all these measures together. To succeed, the Heating and Cooling Strategy must be firmly embedded in the implementation frameworks of the RED III, EED, EPBD and National Energy and Climate Plans (NECPs). This requires clear governance structures, measurable indicators, and strong national accountability mechanisms. Planning and implementation must be coordinated across sectors (heating, electricity, transport, and buildings) and across levels of government, while ensuring sufficient flexibility for local and regional actors to tailor solutions to territorial needs.

Renewable heating and cooling must be mainstreamed in spatial, infrastructure and investment planning. This includes integrating renewable heating and cooling into municipal renovation strategies, energy zoning, district heating upgrades, and rural energy development. Renewable district heating, heat communities, and decentralised solutions should be explicitly included in regional energy plans and grid development strategies.

Tracking progress will require clear indicators for renewable heating and cooling deployment, including technology-specific data and integration benchmarks. Monitoring must go beyond general RES shares and reflect real-world system uptake, affordability, and equity outcomes. In addition, tracking and reporting should be comparable between member states to ensure clarity.

In parallel, Member States must be discouraged from introducing retroactive support cuts or overly burdensome national implementation rules, particularly those that jeopardise small-scale renewable heat projects or undermine investor confidence. Recent developments in some Member States (including abrupt tax changes and disproportionate environmental standard gold-plating) have weakened the enabling environment for prosumers, small hydropower operators, and rural bioenergy actors. These trends must be reversed through consistent EU-level guidance and enforcement to ensure a stable, transparent, and coherent policy framework.

## Conclusion

The Heating and Cooling Strategy is a core pillar of the EU's climate, energy security, and competitiveness agenda. Heating and cooling represent nearly half of final energy use in the Union, and remain one of the most fossil-dependent and under-addressed sectors.

A successful strategy must therefore send strong and coordinated signals: reduce demand through efficiency, scale up all forms of renewable heating and cooling, phase out fossil systems, and consolidate Europe's industrial base in the sector through investment, innovation, and governance. This integrated approach must guide the Strategy as a whole.

To deliver on its promise, the Strategy must:

- Commit to a timely and irreversible phase-out of fossil heating, aligned with the 2040 climate targets
- Mobilise the full portfolio of renewable heat solutions on an equal basis
- Ensure the pursuit of energy efficiency, ensuring that demand reduction complements renewable deployment
- Ensure territorial and social equity by supporting affordable, community-based and decentralised solutions
- Strengthen Europe's industrial leadership through support for innovation, skills, and clean heat manufacturing
- Improve economic activity and security for Europe
- Embed renewable heating and cooling into spatial, infrastructure, and climate governance frameworks at all levels

With the right policy signals, the EU can deliver a resilient and decentralised energy system in which renewable heating and cooling is increasingly the new, more affordable normal.

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