POSITION PAPER

July 2026

The other side of heat pumps: cooling matters

Europe's heat pump debate has focused overwhelmingly on heating. As climate change drives up temperatures and increases the frequency of heatwaves, cooling is no longer simply a matter of comfort. It is becoming an essential adaptation measure to protect people's health. Heat pumps can both heat and cool, as well as recover and reuse the heat generated when cooling, which makes them a dual-purpose technology that supports climate mitigation, adaptation and energy system flexibility. This paper explores why cooling should become a core element of European energy policy, and proposes policy actions to accelerate deployment of heat pumps for both heating and cooling.

Why cooling matters

Amid rising temperatures, and the clear evidence that such extremes will increase, overheating is increasingly recognised as a major health challenge across Europe. The demand for **affordable and accessible cooling**, especially **for vulnerable households** living in poorly insulated buildings, has become increasingly urgent[1]. Adding to the problem, as indicated in a recent report by the European Commission on summer energy poverty[2], **75% of European buildings remain energy-inefficient**, and may, therefore, quickly overheat. During the peak of the heatwave of end of June 2026 Europe recorded 10.000 excess deaths.[3] Cooling is therefore an essential health protection measure, comparable to adequate heating in winter, rather than a comfort service. Adding to this context, many households across Europe still perceive cooling as a luxury or are unaware that mature and existing technologies like heat pumps can provide both heating and cooling efficiently.

In different European countries, the cooling topic is becoming increasingly important. When summer starts and temperatures are rising, newspaper articles explain how to keep your house cool. In France, cooling has been a politically polarising issue, where the left opposes widespread air conditioning installation for environmental reasons. The far right, has most strongly advocated preparing the country for what lies ahead by calling for a "major national air conditioning plan".[4] In Belgium, the Flemish Heat Pump Action Plan that was adopted on 3 July 2026 highlights the importance of heat pumps for cooling. In southern European countries like Spain, Italy and Greece, cooling is already recognised as a necessity and there is a higher penetration of cooling systems.

But meeting cooling needs efficiently means starting in the right place. Building orientation, external shading, thermal mass and night ventilation can cut cooling demand dramatically before any system is switched on[5]. These measures should come first, in both new build and renovation.

[1] European Commission - Directorate-General for Energy and Cornelis, M. (2025). *Framing summer energy poverty – Insights and recommendations for a resilient future – Final report*, Publications Office of the European Union, https://data.europa.eu/doi/10.2833/3135617

[2] Ibid.

[3] Blackburn, G. (2026). *Europe records 10,000 excess deaths during June heatwaves, new data shows*. Euronews. https://www.euronews.com/my-europe/2026/07/13/europe-records-10000-excess-deaths-during-june-heatwaves-new-data-shows

[4] Villaécija, R. (2025). *Is it right wing to have air conditioning? In France, it is*. *El País*. https://english.elpais.com/climate/2025-08-15/is-it-right-wing-to-have-air-conditioning-in-france-it-is.html

[5] Nowak, T. (2026). *Cooling in stages: a smarter order for a warming Europe*. BUILD UP (European Commission portal). https://build-up.ec.europa.eu/en/resources-and-tools/articles/cooling-stages-smarter-order-warming-europe

European Heat Pump Association (EHPA)
Avenue de Cortenbergh 120, 1000 Brussels – Belgium
info@ehpa.org
www.ehpa.org

However, passive measures alone cannot cope with multi-day heatwaves and the rising number of tropical nights. Where active cooling is needed, it should be as efficient as possible, and, where feasible, the heat removed from the building should be recovered rather than wasted. This is where heat pumps come in.

Heat pumps are uniquely positioned

As the Flemish Heat Pump Action Plan[6] notes, heat pumps have a distinctive position: while they are known for heating, cooling is increasingly what drives adoption, and in many cases is the primary reason a household installs an air-to-air unit. The same heat pump then delivers efficient, low-carbon heating in colder months. When intelligently controlled, it can also respond to periods of local electricity overproduction, when market prices are low or negative, and so support the efficient operation of the electricity market. Seen this way, the cooling function becomes an additional, comfort-related incentive for households to move to fossil-free heating[7].

In addition, different heat pump technologies suit different cooling needs, so a suitable solution exists across a wide range of buildings, from individual homes to commercial and industrial sites and district-scale networks.

I. Cooling in individual buildings

Residential buildings

In homes, the most widely deployed solutions are air-source systems: a reversible air-to-air unit; an air-to-water heat pump, which can also cool through the emitters, depending on the system design; or the two combined, with an air-to-water heat pump for heating and air-to-air units for cooling. Ground coupled heat pumps add a further option for buildings with access to the ground: they can provide cooling directly, using the low temperature of the ground with the compressor largely bypassed, and the heat removed in summer can be stored underground to improve heating efficiency in winter.

Commercial and industrial buildings

These buildings and sites more often have simultaneous heating and cooling demand which is what makes the "cooling by-product" worth capturing. A standalone cooling unit rejects the heat it removes to the outdoor air; a heat pump can instead redirect it to a useful purpose: heating domestic hot water, serving a neighbouring building, or feeding an industrial process or a thermal network.

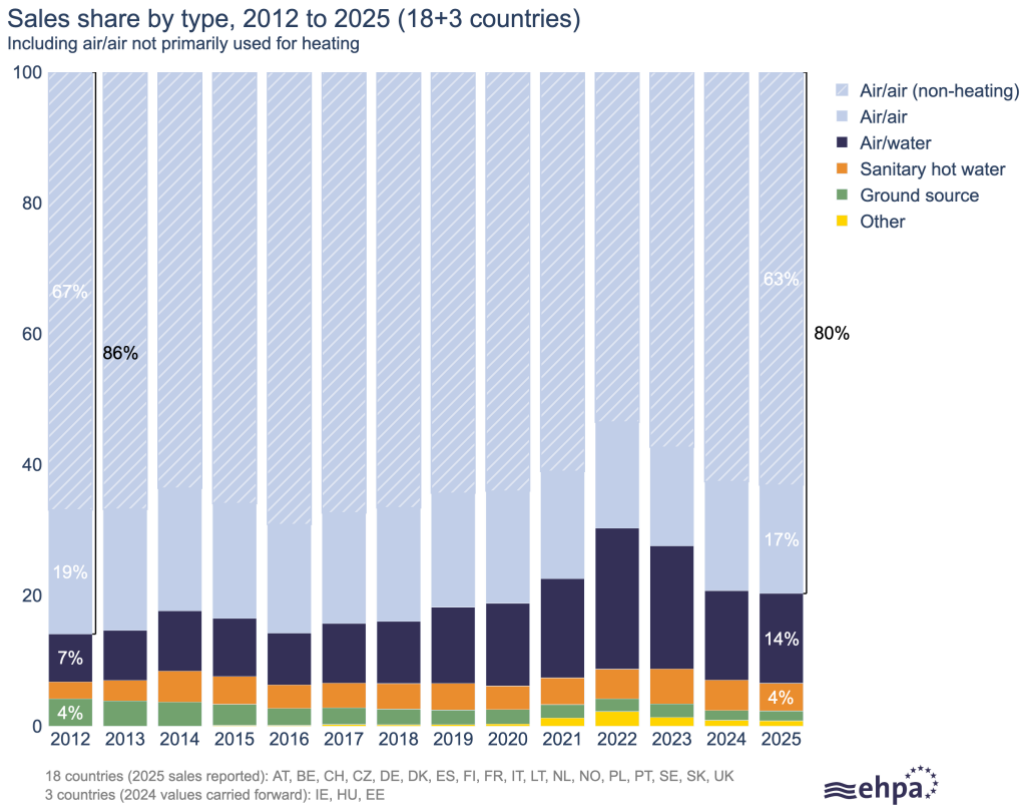
II. Cooling connected at district scale

In conventional district heating and cooling networks, large centralised heat pumps serve as the source, producing hot and chilled water that is distributed to many buildings through a pipe network, drawing on waste heat or ambient sources. Another option is the ambient temperature network. Buildings that need cooling reject heat into the loop; those that need heating lift it out with water-source heat pumps; boreholes, aquifers or waste heat sources absorb the seasonal difference. Dense housing, a supermarket's refrigeration, a data centre's servers or a metro station can all feed the same loop.

[6] Vlaamse Regering. (2026). Visienota 'Actieplan Warmtepompen 2030'. Vlaanderen. https://www.vlaanderen.be/vlaamse-regering/beslissingen-van-de-vlaamse-regering/visienota-actieplan-warmtepompen-2030
[7] Ibid.

Market data

In its latest market report, EHPA added sales of all air-to-air heat pump units and not only those that are considered for heating only, resulting in an overall figure of 7.3 million heat pumps sold in 2025 across 21 European countries (from a 'corrected' figure of 2.7 million) with 79% of the market being air to air technology by unit count[8]. Cooling demand is becoming a major driver of market growth, especially in southern European countries, changing the traditional narrative of heat pumps as purely heating technologies.



The benefits of cooling with heat pumps

- **Health and resilience***:* efficient cooling protects people from dangerous indoor overheating during heatwaves, particularly vulnerable households, hospitals, care homes and schools.
- **Decarbonisation***:* one system displacing both a fossil heating appliance and a separate cooling unit cuts emissions from both services at once.
- **Efficiency and cost***:* recovering the heat generated during cooling means less energy is needed for heating; one system instead of two lowers costs and needs less space and maintenance.
- **Grid flexibility***:* intelligently controlled, heat pumps can shift cooling demand to periods of high renewable generation, easing pressure on the grid at peak times.

EU policy framework

- **Energy Efficiency Directive (EED):** Although primarily addressing winter heating, the EED includes provisions that recognise cooling as an essential energy service.

[8] European Heat Pump Association. (2026). *2026 European heat pump market report*. https://ehpa.org/market-data/.

- **Energy Performance of Buildings Directive (EPBD):** The EPBD addresses summer challenges through specific standards aimed at improving energy efficiency in buildings, including provisions for cooling needs[9].
- **Renewable Energy Directive (RED):** The RED includes a methodology to calculate renewable cooling[10], however the actual implementation and use of that methodology at national level is very limited. In addition, the recognition of waste heat is limited to industry and the tertiary sector, excluding the waste heat from residential cooling.

At the same time, subsidy schemes and building regulations at national level primarily target heating decarbonisation, while cooling is often treated as a separate issue or even discouraged through building energy performance rules or reduced financial support for reversible systems.

More attention needs to be put on implementing the EU policy framework and building comprehensive solutions to address both immediate risks and build yearlong resilience. The European Commission's Cooling and Heating Action Plan and the new integrated framework on European Climate Resilience and Risk Management[11] are clear opportunities to address this topic.

Policy recommendations

- **Promote heat pumps that both heat and cool as the standard solution:** Policy frameworks, installers and renovation programmes should encourage households and buildings seeking cooling to install heat pump systems that provide both heating and cooling rather than standalone, single-purpose cooling units. Depending on the building, this may be a single reversible unit, an air-to-water heat pump combined with air-to-air cooling, a ground-source system that also stores heat seasonally for use in winter, or connection to a shared thermal network that balances heating and cooling demand across buildings. Where a gas boiler is retained initially, the heat pump can progressively take over the heating function and facilitate a future transition away from fossil fuels.

- **Ensure policy and financial incentives support systems that can both heat and cool:** National subsidy schemes, building regulations and energy performance methodologies should recognise the value of heat pumps for both heating and cooling. Buildings equipped with efficient cooling through heat pumps that provide both heating and cooling should not be disadvantaged through lower subsidies or poorer energy performance ratings.

- **Implement social leasing for heat pumps that both heat and cool:** Cooling is a health imperative to protect from overheating, especially for vulnerable households often living in inefficient buildings that quickly overheat. Social leasing schemes as being proposed in the European Commission's Electrification Action Plan[12] and in France should be rolled out to increase the uptake of efficient heating and cooling systems.

- **Encourage smart and flexible cooling:** Member States should combine the deployment of reversible heat pumps with smart controls and time-of-use electricity tariffs to encourage cooling during periods of high renewable electricity generation. This can lower energy bills, reduce

[9] European Commission - Directorate-General for Energy and Cornelis, M. (2025). *Framing summer energy poverty – Insights and recommendations for a resilient future – Final report,* Publications Office of the European Union, https://data.europa.eu/doi/10.2833/3135617

[10] European Commission, Directorate-General for Energy. (2022). *Renewable cooling under the revised Renewable Energy Directive*. European Commission. https://energy.ec.europa.eu/publications/renewable-cooling-under-revised-renewable-energy-directive_en

[11] European Commission (2026). European Climate Resilience and Risk Management – Integrated Framework. https://climate.ec.europa.eu/eu-action/adaptation-and-resilience-climate-change/european-climate-resilience-and-risk-management-integrated-framework_en

[12] European Commission, Directorate-General for Energy. (2026) *Electrification Action Plan*. Publications Office of the European Union https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52026DC0595&qid=1784715609929

pressure on the electricity grid during peak demand, and improve the integration of renewable energy into the power system while maintaining thermal comfort, as noted by the European Commission in the Electrification Action Plan[13].

- **Ensure support schemes and certification accommodate innovation:** Certification and support schemes should be up to date with market developments, for example, with regards to technologies that combine heating and cooling and/or ventilation. Frameworks should be flexible enough to accommodate and recognise innovative technologies.

- **Increase awareness among consumers and installers:** There is limited awareness that many heat pump technologies can provide both heating and cooling, and even less that the same systems can recover waste heat, cool directly using the ground, or share heat between buildings through a thermal network. Information campaigns should raise awareness of these capabilities, and installer training should reflect the full range of solutions available across building types.

- **Recover the waste heat from cooling instead of rejecting it:** Building regulations and subsidy schemes should reward systems that recover heat from cooling where feasible. At EU level, recognition of waste heat recovery should extend to on-site and building-level applications in the residential sector, not only industry and tertiary sectors.

Heat pumps for heating and cooling – technology types

Air to air heat pumps

These systems extract heat from the outdoor air and deliver it indoors via air units. In cooling mode, they remove heat from the indoor air and releasing it outdoors.

Air to water heat pumps with fan coils and drains or with underfloor cooling

These systems transfer heat from the air to water, which is then circulated through fan coil units or underfloor pipes inside the building. When used for cooling, they require the fan coils equipped with condensate drains to manage moisture removal effectively. When the underfloor pipes are used for cooling they typically cool to around 16°C to 20°C, to avoid condensation if the floor would get too cold.

Ground source and water source heat pumps

Ground source and water source heat pump systems can cool a building in two ways. In passive cooling, the low temperature of the ground is used to remove heat from a building without using the compressor. In active cooling, the compressor runs to provide greater capacity. In both modes the ground acts as seasonal storage: heat deposited underground in summer can be reused to improve heat pump efficiency in winter.

Polyvalent units (also known as multipurpose, or 4-pipe multifunctional units)

Capable of producing hot and chilled water simultaneously and independently using a single machine serving two separate hydronic loops. When different zones require heating and cooling at the same time, the unit works efficiently in heat recovery mode, extracting heat from the zones that need cooling and directly transfers it to the zones that need heating.

Integrated heat pumps in ventilation systems

Heat pumps built into air handling units recover energy from a building's exhaust air to heat or cool the incoming fresh air and can also recover heat from exhaust air to produce hot water.

[13] Ibid.

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Avenue de Cortenbergh 120
1000 Brussels – Belgium

info@ehpa.org
www.ehpa.org

The European Heat Pump Association (EHPA) represents the European heat pump sector. Our over 170 members include heat pump and component manufacturers, research institutes, universities, testing labs and energy agencies.

EHPA advocates, communicates and provides policy, technical and economic expertise to European, national and local authorities, and to our members.

We organise high level events and manage or partner in multiple projects.

We work to shape EU policy that allows the heat pump sector to flourish, and to become the number one heating and cooling choice by 2030. Heat pumps will be a central part of a renewable, sustainable and smart energy system in a future decarbonised Europe.