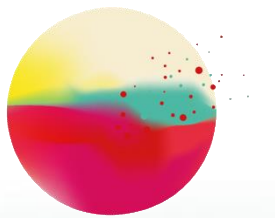




How to cool our cities?

A short introduction



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This is NOT breaking news



Key temperature statistics for 2024

Region	Anomaly (vs 1991–2020)	Actual temperature	Rank (out of 85 years)
Globe	+0.72°C (+1.60°C vs pre-industrial)	15.10°C	1st highest 2nd - 2023
Europe	+1.47°C	10.69°C	1st highest 2nd - 2020
Arctic	+1.34°C	-11.37°C	4th highest 1st - 2016
Extra-polar ocean	+0.51°C	20.87°C	1st highest 2nd - 2023

Find more about data, definitions and methods in the [GCH2024 Data and methods page](#). The European region is defined as 25°W–40°E, 34°–72°N. The extra-polar ocean region is defined as 60°N–60°S. Statistics for globe, Europe and the Arctic refer to surface air temperatures, statistics for extra-polar ocean refer to the sea surface temperature. Temperatures for Europe and the Arctic are over land only.

Data source: ERA5 • Credit: C3S/ECMWF



Figure 1. Key temperature statistics for 2024. The estimates for the globe refer to the surface air temperature over land and ocean, and for Europe and the Arctic over land only. Sea surface temperature is computed for the 60°N–60°S domain. Data source: ERA5. Credit: C3S/ECMWF.

- › In 2024, the Earth's global temperature reached a dangerous increase of +1.5°C compared to pre-industrial levels.
- › This global increase is significantly felt at the local level, with urban centers overheating and a rise in heat waves. This situation exacerbates health and well-being risks for populations, creating critical conditions (IPCC, AR6).

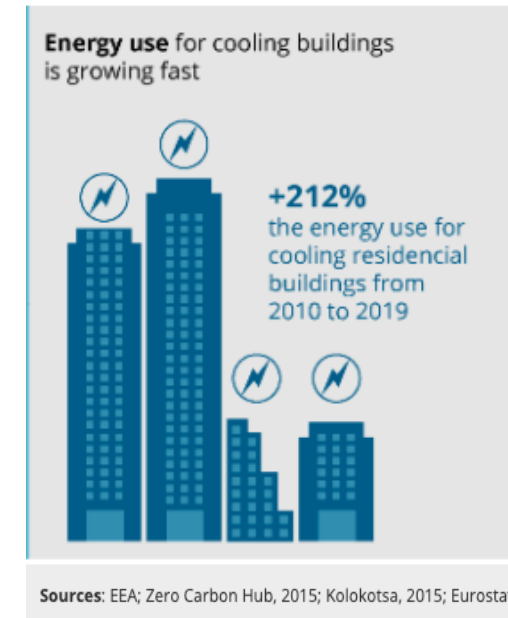


How can cities provide sustainable and decarbonized solutions for cooling their environment?

How can cities both work to mitigate their climate impact and adapt to increasing temperatures?

Key Facts & Figures

- › In 2025, together, heating and cooling account for half of the final energy consumption and nearly a quarter of CO₂ emissions. However, these figures mainly concern heat production. Cooling needs still represent less than 1% of the combined heating and cooling consumption of buildings.
- › In the 19 euro-area countries, **the amount of final energy used for cooling in residential buildings tripled between 2010 and 2019**. During summer 2022, the need for cooling became a serious issue in Greece, Italy, Spain and other countries as a result of long-lasting and repeated heatwaves (Copernicus, 2022) combined with high energy prices and the war in Ukraine.
- › The share of energy used for cooling, both in residential and non-residential buildings, could be **between 8% and 9% in 2050**, compared with only 2% in 2012.



What solutions?

- › **Technological solutions** can provide fossil-free solutions, such as District cooling.
- › **Integrated urban planning** is a key element to achieve cost-effective cooling policies. Integrated urban planning involves designing cities with strategies that reduce heat and improve thermal comfort.
- › **Nature-based solutions** can provide additional benefits, improving air quality and biodiversity in dense urban areas.



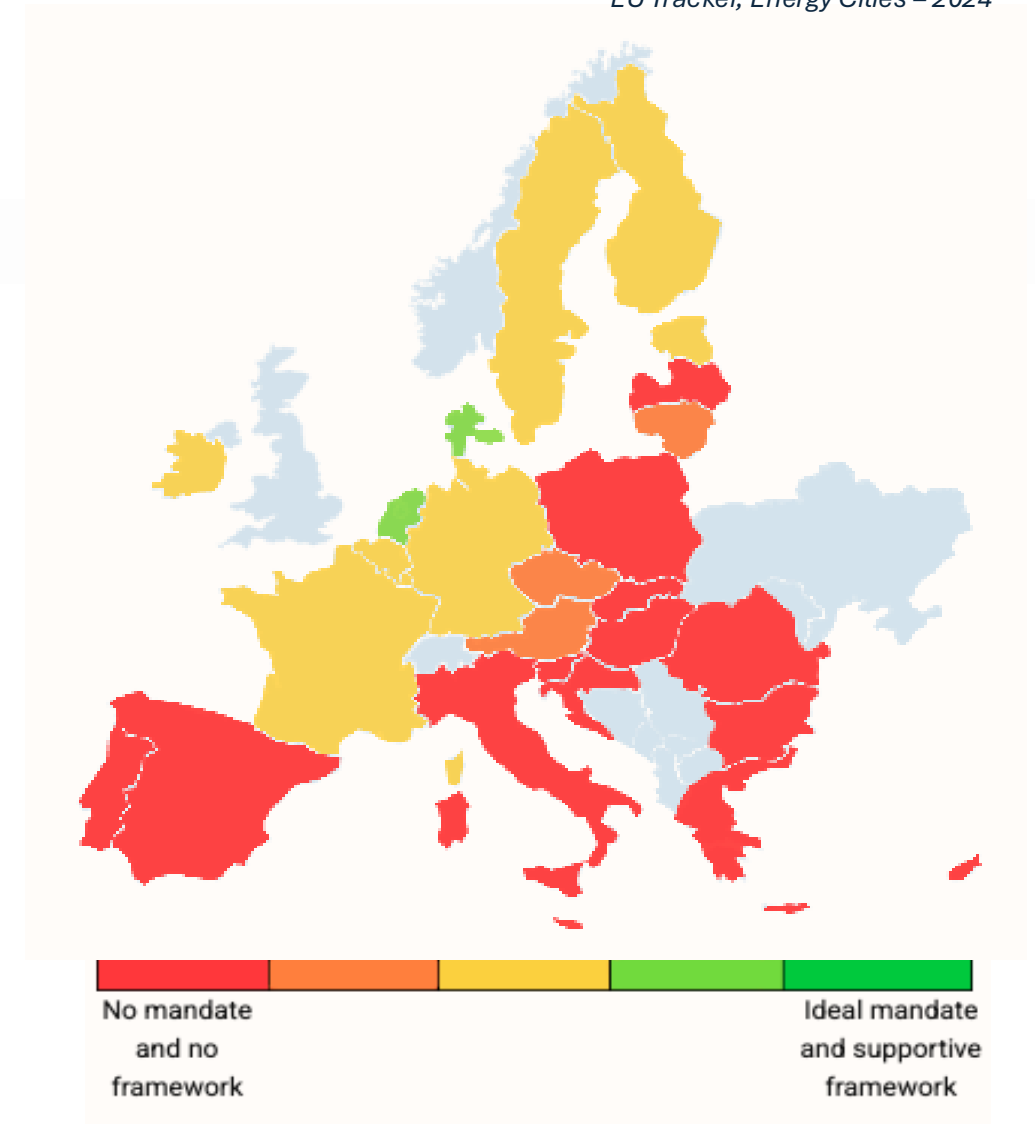
Community of Practice on cooling - This initiative offers city staff a platform to discuss, exchange ideas, and collaborate on effective cooling strategies, especially for the built environment. It's an opportunity to share your experiences, learn from others, and become part of a growing network of cities working to cool their built environment.



EU Context

- › **Renewable Energy Directive**, introducing new targets for the heating and cooling sector (remember the Green Deal). The directive sets now a binding goal of a 1.1 percentage point increase per year in the share of renewables from 2026 to 2030.
- › **Energy Efficiency Directive**, introducing further measures for the decarbonization and efficiency of the cooling sector, treating it on equal footing with heating. It also introduces a requirement for local authorities with more than 45,000 residents to implement heating and cooling plans (article 25.6)
- › **HFCs regulations**, strengthens enforcement. Those requirements apply to the manufacturers, installers and to the end-life cycle.

EU Tracker, Energy Cities – 2024





Beyond cool air

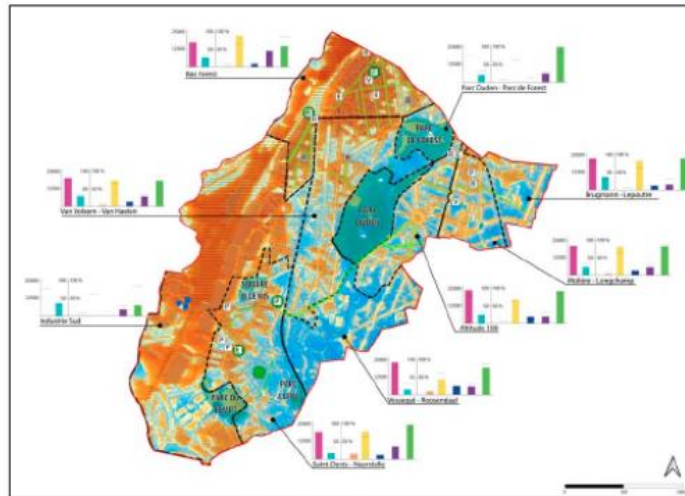
How can a society remain resilient while maintaining environmental and social boundaries?



Protecting the most vulnerable

- › Social and environmental inequalities amplify the negative effects of climate disruption.
- › Residents of less green neighborhoods and older housing are disproportionately affected by the "urban heat island" effect. These communities also tend to have lower-than-median taxable incomes.

Example of Forest
(Belgium)



Providing affordable energy for all

- › 35 to 72 million people across the EU are facing energy poverty, creating have powerful implications today.
- › In the context of geopolitical tensions and war in the European continent, the most cost-efficient manner to reduce the energy bill is to rapidly phase out fossil fuel and develop fossil-free energy systems.

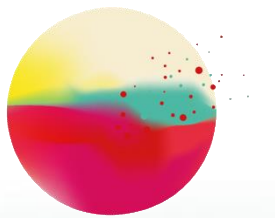
The City of Munich started developing its own cooling network in 2014, consisting of eight groundwater plants of 16 MW, and operated by Stadtwerke München (SWM), the municipal energy utility. The main source is the Isar river with remaining underground streams. This District Cooling allows the city to save energy, between 50-70%, compared to decentralised cooling supplies.





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