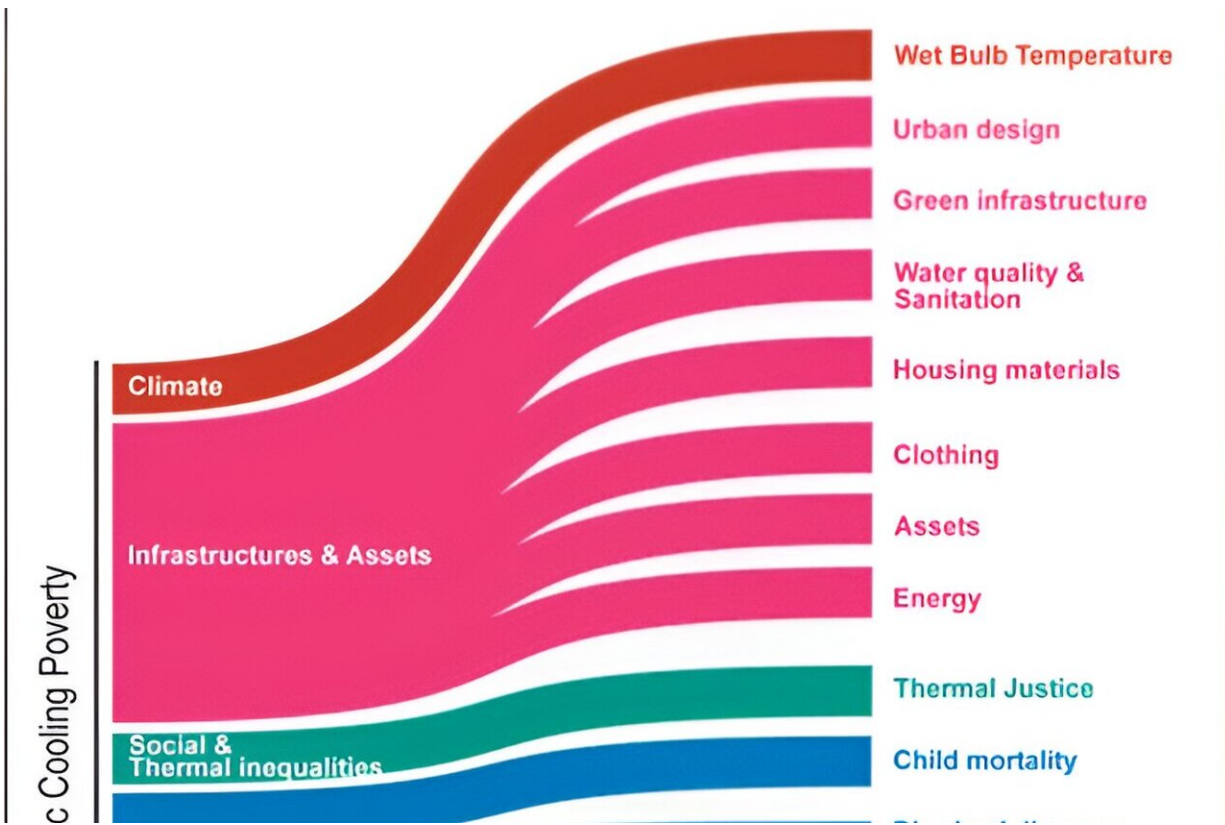


# Systemic cooling poverty: A new facet of deprivation emerging in a warming planet

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The proposed framework with the five core dimensions defining systemic cooling poverty and its 15 sub-dimensions or variables. The framework builds on the Multidimensional Poverty Index (MPI) developed by Oxford Poverty and Human Development Initiative (OPHI)<sup>35</sup>, putting the health and education dimensions of human well-being at the core. Credit: Mazzone A et al.

A [new study in \*Nature Sustainability\*](#)—published by researchers from Oxford University, Ca' Foscari University of Venice, the Euro-Mediterranean Center on Climate Change, the European Institute on Economics and the Environment and the London School of Hygiene & Tropical Medicine—brings attention to a new relevant dimension of deprivation that is clearly emerging in a warming world: cooling poverty.

The study highlights the multidimensional nature of cooling [poverty](#) and introduces the new concept of systemic cooling poverty.

Cooling poverty can be defined as systemic because it develops in a context in which organizations, households, and individuals are exposed to the detrimental effects of increasing [heat stress](#) mainly because of inadequate infrastructures.

Such infrastructures include physical assets (such as passive retrofit solutions, cold chains, or personal technological cooling devices), [social systems](#) (as networks of support and social infrastructures), and intangible resources (such as knowledge, to intuitively adapt to the combined effects of heat and humidity).

The study identifies five core dimensions that interact with each other, defining together the proposed concept of systemic cooling poverty: Climate, Thermal comfort Infrastructures & Assets, Social and thermal inequality, Health, and Education and Work standards.

The lead author of the study, Antonella Mazzone—a research affiliate with the University of Oxford—points out that "the proposed definition departs from existing concepts of energy and fuel poverty. It highlights the role of passive cooling infrastructures (water, green, and white surfaces), [building materials](#) for adequate outdoor and indoor heat protection, and social infrastructures.

"Its systemic scope also considers the state of available cooling provision for outdoor working, education, health, and refrigeration purposes. In this sense, space, and place play a key role in this conceptualization of cooling poverty. It goes beyond energy and embraces a multidimensional, multi-levelled analysis of infrastructures, spaces, and bodies."

Enrica De Cian, professor at Ca' Foscari University of Venice and senior researcher at Euro-Mediterranean Center on Climate Change (CMCC), co-author of the study, emphasizes how "the concept has many important policy implications, as it points at the importance of addressing the risks related to heat exposure with effective coordination between different sectors, such as housing, health care, food, and agriculture, transports."

This new index can help governments to timely and ethically program the most needed cooling intervention while accounting for important tradeoff considerations. "The next challenge will be to render the proposed systemic [cooling](#) poverty framework fully operational in diverse contexts and at different scales, as we wish to pursue in future research work," says Giacomo Falchetta, a scientist at the CMCC who contributed to the study.

**More information:** Antonella Mazzone et al, Understanding systemic cooling poverty, *Nature Sustainability* (2023). [DOI: 10.1038/s41893-023-01221-6](https://doi.org/10.1038/s41893-023-01221-6) , [www.nature.com/articles/s41893-023-01221-6](https://www.nature.com/articles/s41893-023-01221-6)

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