

Cooling must be seen as critical national infrastructure, new report says

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A Cranfield University academic has contributed to a new landmark report that says that governments and policy makers must recognize

cooling as critical national infrastructure (CNI) if humanity is to build resilience to the impact of climate change.

Published on 18 July, the [report](#) "The Hot Reality: Living in a +50°C World" calls for a radical shift in policy to create more ambitious strategies for delivering [cooling](#), effectively managing [energy use](#) and achieving reductions in cooling demand.

The Center for Sustainable Cooling, led by the University of Birmingham, produced the report, which warns that governments must accurately assess how much cooling is needed to meet societal, environmental, health, well-being, economic and adaptation goals in a warming world.

Global events continue to demonstrate the urgency for action on the issue. In India, long power outages have occurred when cooling demands overloaded the electricity grid in a heat wave, with power consumption in the Punjab increasing by 43%.

In Europe, Greece experienced the largest-ever recorded wildfire in Europe in 2023, and this year has shut popular tourist sites and schools due to [extreme temperatures](#). In Saudi Arabia earlier this year hundreds of Hajj pilgrims died in part due to unprecedented heat waves.

Already in today's warmer U.K. climate, anecdotal reports suggest that between 30 and 60 stores per large retailer experience whole store cooling system failures within a matter of days when temperatures exceed equipment design boundaries. And an estimated 90% of hospital buildings in England are vulnerable to overheating.

Lack of robust cold chains compromise food security

Dr. Natalia Falagán, Senior Lecturer in Food Science and Technology at

Cranfield University, provided expert advice on the crucial role of temperature in [food](#) production, and the postharvest handling of food. Her input to the report also included climate change impacts on food production, availability and affordability, and the management of postharvest cold chains to minimize food loss.

Dr. Falagán stated, "An estimated 12% of food produced globally is lost, due to a lack of robust cold chains, compromising our food security. To guarantee safe and nutritious food, we must create more resilient systems. This new report takes a wide-reaching systems approach, bringing together experts in food, refrigeration, logistics and energy to propose solutions to mitigate and adapt to the challenges we face today."

Key recommendations for policy makers, industry and academia

The report makes several key recommendations for policy makers including:

- Treating cooling systems as essential to national resilience and planning—backed by funded studies to help ensure they meet future needs.
- Creating policies that promote fair and equitable cooling solutions—making sure cooling systems are environmentally sustainable.
- Including climate migration in adaptation plans, helping people stay in their communities and making destination areas more resilient.
- Promoting integration of renewable energy and waste heat recovery in cooling systems for better performance and benefits.
- Funding national programs to train people in designing, operating, and maintaining advanced and sustainable cooling

technologies.

The report also recommends a range of actions for academic communities and industry leaders to help ensure that they support governments in meeting cooling needs as part of critical national infrastructure.

Compelling evidence for cooling as critical national infrastructure

Center for Sustainable Cooling Director and report co-author Toby Peters, Professor of Cold Economy at the University of Birmingham and Heriot-Watt University, stated, "Cooling is already vital to our safety and comfort, health, food security and our economic well-being. Our most pressing goal remains to ensure basic needs are met for all people in a warming world, while living within our natural resource limitations and mitigating future risks to our survival on the planet.

"Given both the fast-growing need for cooling and also its impact on our energy systems, we have uncovered compelling evidence for the global recognition of cooling as critical national infrastructure."

Critical national infrastructure is defined in the U.K. as facilities which, if compromised, could seriously disrupt essential services—possibly leading to significant loss of life or casualties. Losing such infrastructure elements could have a major impact on national security, defense, or basic functioning of the country.

Dr. Tim Fox, lead author of the report, said "In the absence of a whole-of-government, multi-sector, CNI level approach to policymaking on cooling infrastructure, governments risk failing to lay the foundations for well-adapted, climate-resilient cooling provision.

"This will create vulnerability, low national resilience to rising temperatures and more frequent severe heat waves, and risks to services that are vital to the food, health, industrial, digital and economic security of a country and well-being of its citizens.

"Services, the integrity of which if compromised, can lead to loss of life and significant economic and social impacts, ultimately leading to a reduced ability of a State to function and potentially societal breakdown. The stakes could not be higher."

More information: The Hot Reality: Living in a +50°C World, cleancooling.org/news/2084591

Provided by Cranfield University

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