



Energy poverty is no longer just about keeping warm at reasonable cost: it's about keeping cool too

IN BRIEF

Researchers on the CUSSH project say the definition of energy poverty should be changed to address the ability of a household to maintain safe indoor temperatures and consider cooling needs and overheating risk.

This is an increasing concern in cities where human activity and building density cause an Urban Heat Island effect. Urban Heat Islands have higher temperatures than the surrounding rural areas. Night time temperatures remain higher, putting the most vulnerable residents at risk. The researchers explored the links between heat exposure, housing characteristics, vulnerable populations and the risk of summer energy poverty.

Methods:

Madrid and London were selected as case studies as both experience the UHI effect, but have different climates, socioeconomic factors and housing types.

Data were used to create maps of each area, looking at:

- Urban Heat Island intensity: temperature, humidity and the population adaptation to heat
- Housing stock efficiency: in Madrid, cooling energy demand was explored (construction, glazing etc.). In London, a model for indoor overheating risk was applied
- Household income: income and age data determined risk of summer energy poverty
- People over 65: taken from censuses as a key parameter of heat vulnerability

Results:

Population living in hot spots of exposure or vulnerability indicators for each city.

Indicators		Madrid		London	
		Population	% of total	Population	% of total
Exposure	UHI daytime	906,946	29%	2126,612	26%
	UHI nighttime	1099,152	35%	2174,331	27%
	Housing summer thermal performance	1381,145	44%	3724,780	46%
Vulnerability	Low income	714,521	23%	1251,620	15%
	Elderly*	155,082	24%	193,335	21%

* This percentage is referred to the total number of elders in each city.

Climate change and increased temperatures means energy poverty should include summer cooling needs in cities

IMPLICATIONS

Poorer households tend to be exposed to the highest temperatures during both daytime and nighttime and have lower thermal performance. Their residents are both more vulnerable to heat and less able to afford to mitigate the risks.

In Madrid, a higher proportion of older people were at risk of heat exposure. These people are more vulnerable and at greater risk of negative health impacts.

In both cities, there were clear areas of overlap between vulnerable populations and heat exposure which need to be addressed as temperatures continue to increase in order to reduce the risk of summer energy poverty and negative health impacts.

Local and National Policy Makers:

- Understand deprivations and implement actions and policies to tackle urban heat risk
- Prioritize action in the most vulnerable and deprived areas as they are at the highest risk of heat exposure
- Consider policies to mitigate the against overheating
- Promote effective natural strategies e.g. night ventilation and green areas

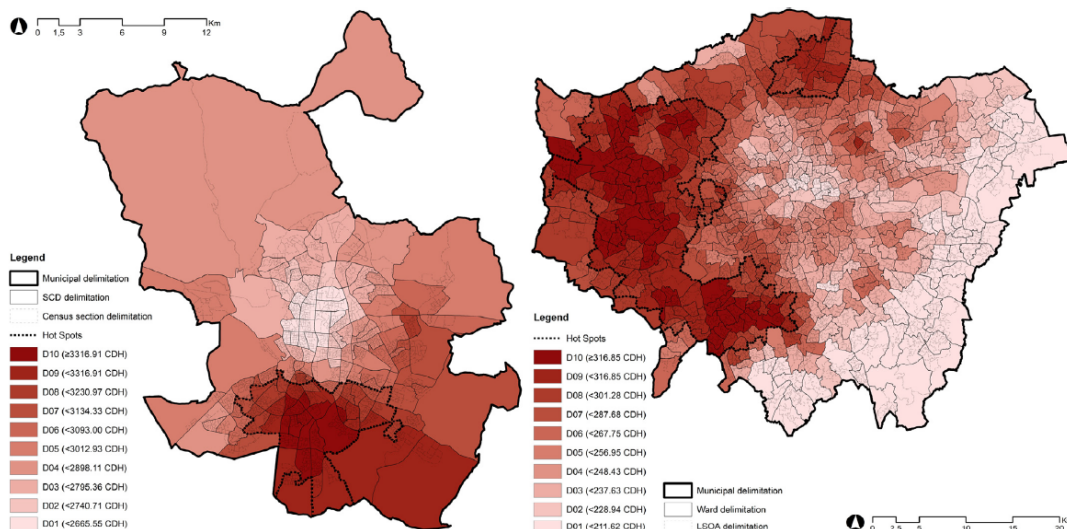


Fig. 1. UHI intensity during daytime hours for Madrid (left) and London (right).