

Trees could cut urban heatwave mortality by a third: study

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Currently, just under 15 percent of urban environments in Europe, on average, are covered by some kind of foliage. A woman cools off in a fountain in central Rome.

Planting more trees in urban areas to lower summertime temperatures

could decrease deaths directly linked to hot weather and heatwaves by a third, researchers said Wednesday.

Modeling found that increasing tree cover to 30 percent would shave off 0.4 degrees Celsius (0.7 degrees Fahrenheit) locally, on average, during hot summer months, they reported in *The Lancet*.

Of the 6,700 premature deaths attributed to higher temperatures in 93 European cities during 2015, one third could have been prevented, according to the findings.

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The study is the first to project the number of premature deaths due to higher temperatures in cities that could be prevented by additional tree cover, said lead author Tamara Lungman, a researcher at the Barcelona Institute for Global Health.

"We already know that high temperatures in urban environments are associated with negative health outcomes, such as cardiorespiratory failure, hospital admission, and premature death," she said in a statement.

"Our goal is to inform local policy and decision-makers about the benefits of strategically integrating green infrastructure into urban planning in order to promote more sustainable, resilient and healthy urban environments."

Cities record higher temperatures than surrounding suburbs or countryside due to the so-called urban heat island effect.

This extra heat is caused primarily by a lack of vegetation, exhaust from

air conditioning systems, along with dark-hued asphalt and building materials that absorb and trap warmth.

Climate change has already amplified the problem. Last year, Europe saw its hottest summer on record, and second warmest year.



A computer-generated image for the transformation of the emblematic Plaza de Espana in Madrid.

Health benefits

Heatwaves around the world are seeing record-breaking peaks, and have increased in duration in recent decades.

Today, cold conditions still cause more deaths in Europe than hot weather. But climate models project that heat-related illness and death will present a bigger burden to health services within a decade.

"This is becoming increasingly urgent as Europe experiences more extreme temperature fluctuations caused by climate change," said Iungman.

The researchers estimated mortality rates for people over 20 years old between June and August 2015, accounting for 57 million inhabitants in total.

This data was analyzed in relation to daily average city temperatures in two modeling scenarios.

The first compared the city temperature with and without urban heat islands. The second simulating temperature reduction if tree cover was increased to 30 percent.

On average, the temperature in cities was 1.5C warmer during summer 2015 than in the surrounding countryside. The city with the highest difference—4.1C—was Cluj-Napoca, Romania.

Across all cities, 75 percent of the total population lived in areas at least one degree warmer, while 20 percent experienced temperatures at least two degrees higher.

Overall, cities with highest temperature-related mortality rates were in southern and eastern Europe.

"This is an important piece of research," commented Laurence Wainwright, a lecturer at the University of Oxford's Smith School of Enterprise and the Environment.

"Urban tree planting—on the right scale, in the right places, and under certain other conditions—likely leads to a modest-yet-real reduction in heat-related deaths in many urban areas."

Earlier studies have shown that green spaces can have additional health benefits such as reducing cardiovascular disease, dementia and poor mental health, as well as improving cognitive functioning of children and the elderly.

More information: Cooling cities through urban green infrastructure: a health impact assessment of European cities, *The Lancet* (2023). DOI: 10.1016/S0140-6736(22)02585-5, [www.thelancet.com/journals/lan ... \(22\)02585-5/fulltext](https://www.thelancet.com/journals/lan/article/S0140-6736(22)02585-5/fulltext)

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