

EMBARGOED UNTIL 8 JULY 2021 AT 00.30 CEST

Without Strong Mitigation Measures, Climate Change Will Increase Temperature-Attributable Mortality in Europe

If global warming is not curbed, the increase in heat-related deaths will outstrip the decline in cold-related mortality, especially in the Mediterranean Basin

Barcelona, 8 July 2021. Various studies have suggested that global warming will lead to a decrease in cold-attributable mortality and an increase in deaths caused by heat. Now, a new study by the Barcelona Institute for Global Health (ISGlobal), a centre supported by the "la Caixa" Foundation, has concluded that, if strong mitigation measures are not implemented immediately, overall temperature-related mortality in Europe will increase in the coming decades. According to the new study, published in *The Lancet Planetary Health*, **the decline in cold-attributable deaths will not offset the expected rapid increase in heat-related mortality.**

After analysing **mortality and temperature data** recorded in **16 European countries between 1998 and 2012**, the researchers concluded that **more than 7% of all deaths** registered during this period were attributable to temperature. **Cold temperatures** had a greater impact on mortality than warm temperatures by a **factor of 10**.

However, **projections based on epidemiological modelling** indicated that, if effective mitigation measures are not introduced immediately, **this trend could be reversed by the middle of the century**, leading to a **sharp increase in heat-attributable mortality**.

Using the data from 1998-2012 as a baseline, the team **combined four climate models** to make projections through the end of this century under **three different greenhouse gas emission scenarios**.

"All of the models show a **progressive increase in temperatures** and, consequently, a **decrease in cold-attributable mortality** and an **increase in heat-attributable deaths**," explained ISGlobal researcher **Èrica Martínez**, lead author of the study. "The difference between the scenarios lies in the rate at which heat-related deaths increase. The data suggest that the total number of temperature-attributable deaths will **stabilise and even decrease** in the coming years, but that this will be **followed by a very sharp increase**, which could occur sometime between the middle and the end of the century, depending on greenhouse gas emissions."

Researcher **Marcos Quijal**, co-lead author of the study, commented: "In recent decades, warming has occurred at a faster rate in Europe than any other continent. The incidence of this phenomenon is uneven, with **Mediterranean countries being more vulnerable than the rest**. Our models also project a **disproportionate increase in heat-attributable mortality** in Mediterranean countries, due to a significant rise in summer temperatures and this greater vulnerability to heat."

The projections indicate a **very large increase in deaths due to extreme heat**. In fact, under the highest-emission scenario and assuming no adaptation, deaths attributable to extreme heat would **outstrip cold-attributable mortality**.

“Our findings underscore the **urgency of adopting global mitigation measures**, since they will not be effective if they are only adopted in specific countries or regions,” commented ISGlobal researcher **Joan Ballester**, last author of the study. “Moreover, one decisive factor not included in our models is our **capacity to adapt** to new scenarios, which is already helping to reduce our vulnerability to temperatures.”


The study was carried out within the framework of **EARLY-ADAPT**, a project funded by the European Research Council (ERC) that analyses the **environmental, socio-economic and demographic factors** involved in adaptation to climate change. EARLY-ADAPT aims to improve its projections by analysing the social factors and inequalities in adaptation to climate change and incorporating these factors into its climate and epidemiological models.

This is the first study in this field of research that is based on population-wide epidemiological data and models rather than being restricted to urban populations. The countries analysed were Austria, Belgium, Croatia, the Czech Republic, Denmark, France, Germany, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Spain, Switzerland, and the United Kingdom.

Reference

Martínez-Solanas E, Quijal-Zamorano M, Achebak H, Petrova D, Robine JM, Herrmann FR, Rodó X, Ballester J. Projections of temperature attributable mortality in Europe: a timeseries analysis in 147 contiguous regions. *The Lancet Planetary Health*. 2021; 5: e446–54. [https://doi.org/10.1016/S2542-5196\(21\)00150-9](https://doi.org/10.1016/S2542-5196(21)00150-9)

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