

Cold stress days

Definition

This indicator measures the annual number of days on which the daily minimum temperature falls within a range capable of inducing cold stress in humans, based on EU Copernicus Programme data. Cold stress is classified into five severity categories: slight (0°C to 9°C), moderate (-13°C to 0°C), strong (-27°C to -13°C), very strong (-40°C to -27°C), and extreme (below -40°C).

Examples

During cold stress days, increased household energy demand to maintain indoor thermal comfort can lead to higher energy expenditure, placing particular pressure on vulnerable households already facing energy poverty.

The impact of cold stress is likely to be more severe in dwellings with poor energy performance, particularly those with inefficient windows, insufficient thermal insulation, or the presence of leaks, damp, or rot, where maintaining thermal comfort requires substantially more energy.

Numbers

In 2024, the EU averaged 4.9 days of very strong cold stress (minimum daily temperature between -40°C and -27°C) and 41.3 days of strong cold stress (-27°C to -13°C). Overall, 74% of days recorded some level of cold stress (below 9°C), corresponding to 270.5 out of 366 days.

Limits

A country where severe cold periods are frequent may have developed infrastructure and adaptive strategies to reduce population impacts, such as district heating networks, adequate housing insulation, retrofitting incentives, efficient heating equipment, and heating cost subsidies, whereas countries where such events are rare may suffer greater impacts due to limited experience and infrastructure.

This indicator is exclusively based on temperature thresholds and does not measure possible effects of cold stress on the population.

Additional insights in the EPAH report:

[“Expanding energy poverty measurement in the EU: Integrating new climate, health, and mobility indicators”](#)

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Total cold stress days (min. daily temperature below 9°C)

