

Extreme Weather Events

Heat: heat exposure can have direct effects such as heat stress or dehydration, or indirect effects such as a worsening of cardiovascular and respiratory diseases, kidney diseases, electrolyte disorders, and negative impacts on maternal health. Between 2000 and 2019, there were approximately **489,000 heat-related deaths globally each year, with the European Region accounting for 36% of these deaths, averaging over 175,000 annually** [1].

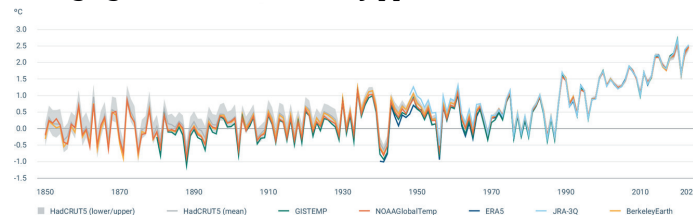


Figure 1: Global annual average near-surface temperature anomalies relative to the pre-industrial period 1850-1900 [2]

- **Drought:** In 2019, **38% of the EU's population experienced water scarcity** [5].
- **Wildfire:** wildfires impact both physical and mental health, with studies linking **smoke exposure to higher overall and cardiovascular mortality, and possibly increased respiratory deaths** [6].
- **Flood:** floods can harm physical and mental health, **increasing the risk of depression, anxiety, and PTSD in victims** [6].

Food Security

Extreme weather events threaten food security by disrupting crop yields, reducing water availability for agriculture, and reducing labor capacity. **In 2021, hot and dry days caused moderate to severe food insecurity for almost 12 million people in 37 European countries** [8].

Occupational health

Rising temperatures reduce labor productivity by affecting outdoor workers. **Extreme heat currently accounts for the global loss of approximately 150 million full-time jobs, a figure comparable to the losses caused by the COVID-19 pandemic** [9].

Mental health

Climate change consequences such as rising temperatures affect mental health by increasing suicide risk and heat-related morbidity and mortality among people with mental health problems [10]. **Each 1°C rise is linked to a 2.2% increase in mental health-related mortality** [11].

Soil, water and air quality

Fossil fuels use directly impacts air, soil and water quality. It is responsible for **approximately 5.13 million global deaths annually due to air pollution from fossil fuels emissions** [3] and causes soil and water contamination through spills, runoff, and heavy metal deposition. Pollutants are further diffused by floods and concentrated in water during droughts.

Healthcare system

Climate change will disrupt and damage healthcare systems while leading to higher demand for medical services and resources. Analysis suggests that **global warming has already resulted in a 27% increase in risk of damage to hospital infrastructure in Europe since 1990** [4].

Infectious diseases

Climate change fuels the spread of infectious diseases by expanding the habitats of vectors like mosquitoes and ticks, increasing respiratory illnesses due to poor air quality, and raising the risk of food- and waterborne diseases as higher temperatures and extreme weather events compromise food safety and water quality. **58% of infectious diseases worldwide have been aggravated by climate change** [7].

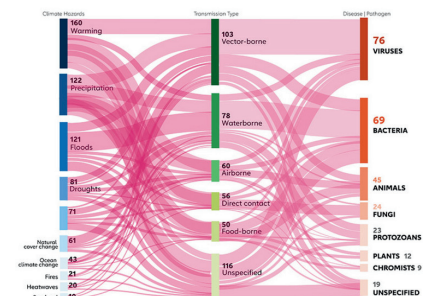


Figure 2: Pathogenic diseases aggravated by climatic hazards. [7]

Climate change mitigation/adaptation and health co-benefits

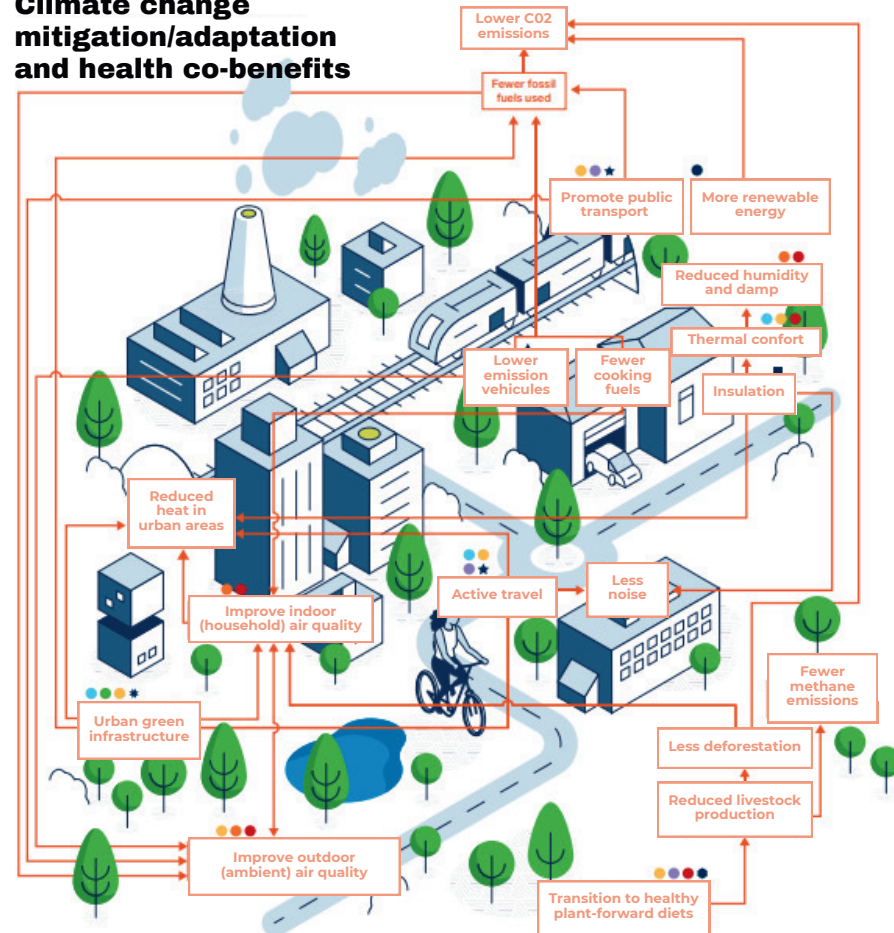


Figure 3: Key pathways and connections between climate mitigation actions and health [12].

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Example interventions

These interventions have benefits both for health and reducing GHG emissions (climate change mitigation).

- Renewable energy replaces energy from fossil fuels
- Improve insulation and ventilation in homes
- ▲ Encourage use of lower emission, electric vehicles
- ★ Promote active travel and public transport
- ◆ Reduce solid fuel used for cooking
- ◆ Less red meat in diets
- ◆ Increased fruit and vegetables in diets
- ✳ Integrated natural/semi-natural areas and features into city environments

Health co-benefits

- Better mental health
- Fewer deaths from extreme heat
- Less cardiovascular disease
- Less respiratory disease
- Lower rates of cancer
- Lower rates of obesity

Examples of co-benefits

Cycling

A country of low- to moderate-cycling culture such as France, cycling already generates important public health and health-related economic benefits, with an approximate annual 1,900 deaths and €5 billion of intangible costs averted. This corresponds to an **approximate 1€ prevented for every km cycled** [13].

Planetary health diet

About **10–11 million premature deaths from non-communicable diseases could be prevented annually worldwide by 2040** if a diet characterised by high consumption of plantbased foods and low intake of red meat and dairy products was widely consumed [14].

Green spaces

Trees play a crucial role in improving air quality by filtering pollutants from the atmosphere. In 2010, trees and forests in the U.S. removed an estimated 17.4 million tonnes of air pollutants. This **reduction in pollution led to significant health benefits, valued at \$6.8 billion**, including a decrease of over 670,000 cases of respiratory diseases. The monetary value was substantially greater in urban areas (\$4.7 billion) [15].

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