



EUROPE

Fact sheet
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The solid facts on climate change and health

Warming of the global climate is unequivocal. The global average surface temperature has increased by about 0.74 °C over the last 100 years. The projected increase for Europe between the end of the 20th and 21st centuries varies from 2.3 °C to 6 °C, depending on the scenario.

Man-made greenhouse gas (GHG) emissions, particularly from the burning of fossil fuels, are warming the earth. GHGs have increased by 70% over the last four decades, trapping more heat in the lower atmosphere. Even if emissions were to halt immediately, temperatures would still be expected to rise by over 0.6 °C this century. In the WHO European Region, the largest increases in emissions have come from the transport sector.

Health effects are already observed. Natural disasters, such as heat-waves, floods and droughts, cause severe human suffering, great loss of life and substantial financial loss each year. Since 1990, the International Disaster Database (EM-DAT) has recorded more than 1200 natural events in the WHO European Region, which affected over 48 million people and caused more than 112 000 deaths, at an estimated loss of more than US\$ 241 billion. Extreme temperatures caused the highest death tolls. Evidence is growing that climate change is contributing to an increase in the frequency of such disasters.

The life of thousands of people may be threatened by more frequent extreme weather events. In Europe, over 70 000 excess deaths were observed in 12 European countries in the heat-wave summer of 2003. Summer temperatures as high as those are expected to be the norm by the middle of the century in Europe.

Although cold waves are projected to decrease, they will still affect a major part of the European Region, especially in northern latitudes. Poorer households that cannot afford to pay for fuel will be most affected, particularly when electricity and heating are cut.

The intensity of heavy rain events has increased in the past 50 years. Up to 20% of the European population lives in river basins that are likely to be affected by increased flood hazards. The number of winter floods is projected to rise in north-western countries, and of flash floods throughout the Region. Coastal flooding is likely to threaten up to 1.6 million more people every year in the European Union.

Climate change affects some of the most fundamental prerequisites of health: food, water and air. Crop production is extremely susceptible to climate change. In the European Region, food productivity is projected to decrease in the Mediterranean area, south-eastern Europe and

central Asia, where food security is at risk. Crop yields could decrease up to 30% in central Asia by the middle of the 21st century and threaten food security. This may lead to a worsening of malnutrition, especially among the rural poor, whose family income is closely linked to food production.

Climate change also raises the issue of food safety. Higher temperatures favour the growth of bacteria in food. Infections with *Salmonella* spp. rise by 5–10% for each one-degree increase in weekly temperature, at ambient temperatures above 5 °C.

Water stress is projected to increase over central and southern Europe and central Asia, affecting 16–44 million additional people by 2070. Water runoff is projected to increase up to 40% at higher latitudes, and decrease up to 30% in dry regions at mid-latitudes by the middle of this century. In central Asia, around 70% of the total population has access to a safe water supply, but only 25% of the rural population. This disparity contributes to the diarrhoea-related deaths of 13 500 children every year.

In 2005, 40 European Member States faced a total of 500 000 premature deaths per year from particulate matter (PM) air pollution. Changes in wind patterns, increased desertification and fires boost the long-range transport of air pollutants. The projected increase in heat-waves in Europe is expected to result in more frequent ozone episodes. During heat-waves mortality is higher when PM and ozone pollution are high.

Shifts in the distribution and behaviour of insect and bird species are early signs that biological systems are already responding to climate change. Plant and animal species have shifted northward by hundreds of kilometres and upwards by hundreds of metres; for example, ticks have progressively spread into higher latitudes in Sweden and altitudes in the Czech Republic. This is leading to changes in infectious disease transmission by vectors. The movement of people and goods certainly plays a significant role, as in the case of the introduction of Chikungunya virus to Italy in 2007. As temperatures and precipitation favourable to malaria persist in some areas of Europe and central Asia, climate change may challenge the progress made towards eliminating this disease (from over 90 000 cases in 1995 to only 589 in 2008) in some countries of the WHO European Region.

Public health security may be at risk. Climate change can have impacts far beyond the locations where it originates and can create conflicts and competition for resources. In the Mediterranean, a decrease in water availability is anticipated to cause increasing competition between the demands for human consumption and for irrigation by 2025. Recent cuts in energy supply have illustrated the risk of dependency, raising concerns for security and human health: for example over 54% of energy in the European Union is imported.

Climate change will affect everybody but everybody is not equally vulnerable. Children are developing organisms with long-term exposure, and are thus most at risk from the effects of climate change. Heat and cold primarily affect elderly people: an unhealthy cardiovascular system and multiple chronic diseases can increase the risk of heat-related mortality. Emergency service providers and labourers in outdoor environments are especially affected by extreme weather events.

Climate change will have adverse effects on economic growth. Already, more than 60 million people in the eastern part of the Region live in absolute poverty. Climate change may significantly worsen health inequities within and among countries and put additional stress on

poorer groups. The global cost of climate change is estimated to be up to 5% of gross domestic product by the end of this century. Thus, climate change threatens to undermine progress made towards the Millennium Development Goals: poverty cannot be eliminated while environmental degradation exacerbates malnutrition, disease and injury.

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