

Fact sheet - Health

Climate Change Impacts and Risks

Since AR5, new evidence and awareness of current impacts and projected risks of climate change on health, well-being, migration and conflict have emerged, including greater evidence of the detrimental impacts of climate change on mental health (*very high confidence*). {ES-Ch7} Climate change impacts on health are mediated through natural and human systems, including economic and social conditions and disruptions (*high confidence*). {SPM.B.1.4} Observed societal impacts of climate change, such as mortality due to floods, droughts and storms are much greater for regions with high vulnerability compared to regions with low vulnerability, which reveals the different starting points that regions have in their move towards climate resilient development (*high confidence*). {ES-Ch8} Cascading and compounding risks affecting health due to extreme weather events have been observed in all inhabited regions, and risks are expected to increase with further warming (*very high confidence*). {ES-Ch7} A wide range of risks across scales, sectors and regions could become severe under particular conditions of hazards, exposure, and vulnerability. {16.5.2.1} Severe health impacts are projected to occur for particular sub-populations and regions where vulnerability is currently high and is assumed to persist into the future. {ES-Ch16} With proactive, timely and effective adaptation, many risks for human health and well-being could be reduced and some potentially avoided (*very high confidence*). {ES-Ch7}



Observed impacts to health

Climate change has adversely affected physical health of people globally (*very high confidence*) and mental health of people in the assessed regions (*very high confidence*). {SPM.B.1.4} Climate-related illnesses, premature deaths, malnutrition in all its forms, and threats to mental health and well-being are increasing (*very high confidence*). The net impacts are largely negative at all scales (*very high confidence*), and there are very few examples of beneficial outcomes from climate change at any scale (*high confidence*). {ES-Ch7} Hot extremes including heatwaves have intensified in cities (*high confidence*), where they have also aggravated air pollution events (*medium confidence*). {SPM.B.1.5} Climate change has increased observed heat-related mortality (*medium confidence*) and contributed to the observed latitudinal or altitudinal range expansion of vector-borne diseases into previously colder areas (*medium to high confidence*). {ES-Ch16} Climate variability and change contribute to food insecurity, which can lead to malnutrition, including undernutrition, overweight and obesity, and to disease susceptibility in low- and middle-income countries (*high confidence*). {ES-Ch7}



Projected risks

Climate change and related extreme events will significantly increase ill health and premature deaths from the near- to long-term (*very high confidence*) {SPM.B.4.4}. An excess of 250,000 deaths per year by 2050 attributable to climate change is projected due to heat, undernutrition, malaria and diarrheal disease, with more than half of this excess mortality projected for Africa (compared to a 1961-1991 baseline period for a mid-range emissions scenario) (*high confidence*). The burdens of several climate-sensitive food-borne, water-borne, and vector-borne diseases are projected to increase under climate change, assuming no additional adaptation (*very high confidence*). {ES-Ch7}

Mental health impacts are expected to arise from exposure to extreme weather events, displacement, migration, famine, malnutrition, degradation or destruction of health and social care systems, and climate-related economic and social losses and anxiety and distress associated with worry about climate change (*very high confidence*). {TS.C.6.2}

Adaptation Options and Barriers

With proactive, timely and effective adaptation, many risks for human health and well-being could be reduced and some potentially avoided (*very high confidence*). Targeted investments in health and other systems, including multi-sectoral, integrated approaches, to protect against key health risks can effectively increase resilience (*high confidence*). Investments in other sectors and systems that improve upon the social determinants of health have the potential to reduce vulnerability to climate-related health risks (*high confidence*). {ES-Ch7} Considering climate change impacts and risks in the design and planning of urban and rural settlements and infrastructure is critical for resilience and enhancing human well-being. {SPM.C.2.6} Heat Health Action Plans that include early warning and response systems are effective adaptation options for extreme heat (*high confidence*). {SPM.C.2.11}

Early warning systems based on targeted climate services can be effective for disaster risk reduction, social protection programmes, and managing risks to health and food systems (e.g. vector-borne disease and crops) (*high confidence*). {ES-Ch9}

Since AR5, the value of cross-sectoral collaboration to advance sustainable development has been more widely recognised, but despite acknowledgement of the importance of health adaptation as a key component, action has been slow (*high confidence*). A significant adaptation gap exists for human health and well-being and for responses to disaster risks (*very high confidence*). Globally, health systems are poorly resourced in general, and their capacity to respond to climate change is weak, with mental health support being particularly inadequate (*very high confidence*). {ES-Ch7}

Climate change and human health and wellbeing: Risks and responses

CLIMATE HAZARDS, VULNERABILITY AND EXPOSURE		IMPACT AND RISKS	SOLUTIONS SPACE AND CLIMATE RESILIENT DEVELOPMENT PATHWAYS	
Vulnerability and upstream determinants of health outcomes	Exposure pathway	Example health outcomes	Health System Solution Space	Climate Resilient Development Pathways
Environmental factors Air pollution Biodiversity loss Deforestation Desertification Land degradation Land-use change Water pollution	Social factors 	Physical and mental health risks, displacement, forced migration, other context-specific risks	Environmentally sustainable and resilient technologies and infrastructure	Fully implementing climate-resilient health systems Achieving universal healthcare coverage Achieving net zero Greenhouse Gas Emissions from healthcare systems and services Achieving the Sustainable Development Goals Adopting mitigation policies and technologies with significant health co-benefits
Socioeconomic factors Growing inequity Demographic change Economic growth Migration and (im)mobility Urbanization Science and tech investment	Vector distribution and ecology 	Chikungunya, dengue, hantavirus, Lyme disease, malaria, Rift Valley, West Nile, Zika	Health information systems (includes integrated risk monitoring and early warning and response systems, vulnerability, capacity, and adaptation assessments, health component of national adaptation plans, health and climate research)	
	Nutrient dense diets and food safety 	Malnutrition, salmonella, foodborne diseases	Service delivery (includes climate-smart health programs, management of environmental determinants of health, disaster risk reduction)	
Susceptibility Political commitment Social infrastructure Socioeconomic conditions Population health status Individual factors	Water quality and quantity 	Diarrheal diseases, campylobacteria infections, cholera, cryptosporidiosis, algal blooms	Collaborations with other sectors, agencies, and civil society	
	Air quality 	Exacerbated respiratory diseases, allergies, cardiovascular disease	Leadership and governance Coherent policies and strategies Sufficient health workforce	
	Heat stress 	Heat-related illness and death, adverse pregnancy outcomes, lost worker productivity	Health authorities Strengthening health delivery and system resilience Leveraging climate change specific funding streams	
	Extreme weather events 	Injuries, fatalities, mental health effects		

Figure 1: Multiple socio-economic environmental factors interact with climate risks to shape human health and well-being. Achieving climate resilient development requires leveraging opportunities in the solution space within health systems and across other sectors. {Figure TS.8}

Climate Resilient Development

Climate resilient development has a strong potential to generate substantial co-benefits for health and well-being and to reduce risks of involuntary displacement and conflict (*very high confidence*). Sustainable and climate resilient development that decreases exposure, vulnerability, and societal inequity, and that increases timely and effective adaptation and mitigation more broadly, has the potential to reduce but not necessarily eliminate climate change impacts on health, well-being, involuntary migration and conflict (*high confidence*). A key pathway towards climate resilience in the health sector is universal access to primary health care, including mental health care (*high confidence*). Building climate resilient health systems will require multi-sectoral, multi-system and collaborative efforts at all governance scales (*very high confidence*). {ES-Ch7}

Health co-benefits of mitigation polices

Substantial co-benefits from climate action can result from investing in health systems, infrastructure, water and sanitation, clean energy, affordable healthy diets, low-carbon housing, public transport, improved air quality, and social protection. These benefits are in addition to the avoided health impacts associated with climate change. {7.4.6.5} Achieving the Paris Agreement and SDGs can result in low-carbon, healthy, resilient and equitable societies with high well-being for all (*very high confidence*). {CCB HEALTH-Ch7} Given the overlap in sources of greenhouse gases and co-pollutants in energy systems, strategies that pursue green house gas emission reductions and improvements in energy efficiency hold significant potential health co-benefits through air

pollution emission reductions (*high confidence*). {CCB HEALTH-Ch7} Urban systems are critical, interconnected sites for enabling climate resilient development. {SPM.D.3.3} Urban planning that combines clean, affordable public transportation, shared clean vehicles and accessible active transportation modes can improve air quality and contribute to healthy, equitable societies and higher well-being for all. Stimulating active mobility (walking and bicycling) can bring physical and mental health benefits (*high confidence*). Urban green and blue spaces contribute to climate change adaptation and mitigation and improve physical and mental health and well-being (*high confidence*). {CCB HEALTH-Ch7}