Finnish Red Cross

Thematic brief on heat and health

Facts and solutions on climate change-induced heat effects on health

Climate change is intensifying the frequency, duration and severity of extreme heat events, making heat a rapidly escalating global health threat. The past eleven years are the warmest years since the beginning of temperature recording. Heat contributes to approximately 500,000 deaths annually. Despite this, only 0.5% of multilateral climate adaptation finance goes to health.

Improving heat preparedness across societies and strengthening health systems to deal with heat-related health problems are essential to prevent further loss of life. This is especially urgent among people in particularly vulnerable situations such as outdoor workers, the elderly, children, pregnant women and people with pre-existing health conditions.

Health effects of climate change on policy level

Global climate and health policies are more and more intertwined, due to the occurring/ already visible impacts and expected risks of climate change on people's health across the world. Health is one of seven sectors included in the climate change adaptation indicators. They are intended to inform national approaches to tracking adaptation action and progress as well as to guide planning and focus of adaptation work. Health indicators monitor, for example:

- Evolution of heat stress and heat-related mortality
- The ability of health systems to respond to heatwaves and other climate risks
- How people in vulnerable positions are protected (children, the elderly, the chronically ill)
- Reporting on climate-health links in national adaptation plans

Heat currently contributes to approximately 500,000 deaths annually

Better understanding of the impacts of climate change on health is needed both globally and in each context. Climate adaptation indicators can support countries to report on health impacts as part of climate policy. This is expected also to guide financial investment in health related climate adaptation. Currently only 0.5% of multilateral climate adaptation finance goes to health[1].

Drought in Kenya

1 Alcayna, T., et al. (2023). How much bilateral and multilateral climate adaptation finance is targeting the health sector? PLOS Global Public Health, June.

Health effects of extreme heat on physical and mental level

It has been estimated that 84% of heatwaves between 2020 and 2024 occurred because of climate change. The past eleven years are the warmest years since the beginning of temperature recording in 1850s[2]. Extreme heat and heat waves pose significant health risks.

What is too hot?

According to the WHO, temperatures between 18°C and 24°C do not pose health risk to healthy adults when they have appropriate clothing and hydration, do not practice extreme physical activity and have time to acclimatize to changing temperature. Humidity between 30–60% is the most comfortable and safe.

Prolonged exposure to temperatures above 25°C, especially in humid conditions, can cause heat stress

Prolonged exposure to temperatures above 25°C, especially in humid conditions, can already cause a medical condition called heat stress. Short exposure to temperatures above 35°C in humid conditions or above 40°C in dry conditions can cause heat stroke and be fatal[3].

What happens in the body during uncomfortable heat?

Symptoms of **heat exhaustion** from prolonged heat stress include profuse sweating, weakness or fatigue, dizziness or lightheadedness, headache, nausea or vomiting, and a rapid heartbeat.

Heat stroke occurs when the body temperature rises dangerously high, typically above 40°C. This extreme heat exceeds the body's ability to regulate its temperature, leading to serious disruption of physiological functions.

- Damage to the central nervous system: One of the most serious consequences of heat stroke is brain damage. High temperatures can cause swelling of the brain, which manifests itself as confusion, restlessness, convulsions or even coma. This neurological damage can lead to loss of consciousness and an inability to seek help or respond to treatment.
- Organ failure: Prolonged exposure to high temperatures can lead to disruption of many organs. The heart, kidneys and muscles can suffer significant damage due to overheating, disruption of blood salts and dehydration. For example, the heart may struggle to pump blood, which can lead to a collapse of the cardiovascular system, while the kidneys may suffer from dehydration and heat stress.
- According to estimates, heat contributes to about 500,000 deaths worldwide[4] each year, making it the deadliest consequence of climate change. An estimated 16,600 people lost their lives in European cities alone during the summer of 2025.[5]

2 World Meteorological Organization (2026). State of the Global Climate 2025.
3 Asseng, S., et al. (2021). The upper temperature thresholds of life. The Lancet Planetary Health, 5(6).
4 World Health Organization (2026). Heat and health. Fact sheet, 28 April 2026.
5 Arrighi, J., et al. (2025). Ten years of the Paris Agreement: The present and future of extreme heat. Climate Central and World Weather Attribution.

Mental health problems are common in extreme temperatures. Heat causes discomfort and stress due to neurotransmitter disorders, leakage of the blood-brain barrier and lack of oxygen.

Mental health problems are common in high temperatures

Eventually, stress can lead to irritability, lower intellectual function and increase impulsive behavior. Difficulty in concentrating increases the likelihood of misjudgments, e.g. in traffic and work.

Individuals with pre-existing mental health issues may experience an intensification of symptoms during a heatwave.

Indirect effects of extreme heat

Heat waves cause damage to crop and livestock, thereby reducing yields from agriculture. In the long run food production suffers, causing malnutrition. Heat waves and droughts have increased food insecurity for more than 120 million people compared with the period of 1981–2010.[6]

Densely built cities have higher day and night temperatures and more pollution. Compared to rural environments, dark surfaces of pavements and roofs in urban areas store and transfer heat. This phenomenon is called the **Urban Heat Island** phenomenon. Dense urban construction is therefore a health risk.

Heat affects people differently depending on local climate, housing, access to cooling, health status, and social and economic conditions.

Dried riverbed in Somaliland

6 Lancet Countdown (2025). 2025 report visual summary.

Who is most in danger of heat?

Risk groups for heat stroke include outdoor workers, people living in institutions or having pre-existing health conditions the elderly, children and pregnant women

Risk groups for heat stroke include **outdoor workers** in hot environments, e.g., construction workers, farmers (small farmers are the largest occupational group in the world), gardeners or those working in confined spaces such as miners and drivers.

In addition to workers, other people who lack sufficient opportunities to influence their living conditions, like people living in **institutions**, such as prisons or care homes, are in danger of extreme heat.

Individuals with **pre-existing health conditions** like cardiovascular diseases, respiratory diseases such as asthma or kidney diseases, experience worsening of their underlying conditions. With heat the pulse rises, blood vessels dilate and the body loses fluid, which can lower blood pressure and place strain on the heart and other organs.

Older people are more vulnerable to heat because their bodies are less able to regulate temperature and they may not feel thirsty as easily. They are also more likely to have existing health conditions or take medications that affect how the body responds to heat, and may need more support to stay safe during hot weather.[7]

Similarly, **children** are more vulnerable to extreme heat because they heat up faster than adults and do not cool down as effectively. As a result, their bodies can struggle to cope with high temperatures.

Pregnant women are particularly vulnerable to heat. During pregnancy, the body produces more heat and needs more water, and it becomes harder to cool down. Exposure to high temperatures during pregnancy is associated with an increased risk of preterm birth, stillbirth and low birth weight.

Heat & health – adaptation

Levels of climate adaptation

Globally, governments have committed to climate action through international agreements such as the United Nations Framework Convention on Climate Change.

On the **country** level, 60% of the countries have completed their National Health Adaptation Plans (HNAPs), which should take into account educational, health, and gender sensitivity aspects.

Awareness of climate change is key for effective measures to prepare for and address climate related health risks. According to a Lancet review, 33–58% of public health and medical institutes provide climate change education to healthcare professionals.[8]

7 Romanello, M., et al. (2024). The 2024 report of the Lancet Countdown on health and climate change: Facing record-breaking threats from delayed action.

8 Sørensen, C., et al. (2024). Climate and health education in public health schools worldwide during 2023–24. The Lancet Planetary Health, 8.

The **healthcare sector** itself is responsible for nearly 5% of all greenhouse gas emissions.[9] Poor management of energy consumption, healthcare supply chains and healthcare waste pollute the environment. Therefore, making healthcare points more ecological, for example with the help of solar panels and digital patient systems, also contributes to the prevention of heat waves and climate change mitigation.

How to protect from heat?

As an **individual**, one needs to protect from heat by staying in the shade, especially at noon, taking care of hydration and using protective clothing.

Environment should offer enough shade. For example, urban tree cover can significantly reduce heat exposure. Green roofs and infrastructure assist to avoid heat absorption, as well as the use of lighter-coloured surfaces on built structures. In rural areas, shade construction and access to safe water around farming areas and walking routes can be lifesaving.

People who **work outside** or live in conditions where they are not in control of their own living conditions like in institutions, or if they have pre-existing health conditions, may need additional measures to protect themself from heat, including scheduled break times and access to hydration and shade at all times. Eventually labor and detention laws need to consider the safety of outdoor workers and prisoners, which is rarely happening for the moment.[10]

The **elderly, children and pregnant** women need special care during heat waves as the exposure can be quickly life-threatening. Protection of these people at risk should be a priority. Health care workers and people working with children need to be educated on when and how to protect people who cannot make informed decisions themselves.

Health care facilities are easily overloaded during heat waves; therefore, health infrastructure needs to be prepared to manage extra heat disease burden. Local governments should upgrade health facilities and organise volunteers to prepare for assistance to access care during heat waves.

Local **communities** need to prepare adequately for the health effects of heat beforehand. Communities have traditional ecological knowledge that is essential for adapting to heat. Their experience and perspective must be at the heart of the development of relevant strategies.

What is the Red Cross Red Crescent doing?

The focus of National Red Cross Red Crescent Societies is on **community- and facility-based action** in responding to excess heat.

A flagship report **"Heat through the eyes of the most vulnerable**: perceptions and pathways to action" portrays insights from across the network of the International Federation of Red Cross and Red Crescent Societies (IFRC)[11]. It brings together the latest science, risk perception

9 Zeynep, T., et al. (2024). The role of the health sector in tackling climate change. Health Policy, 143.
10 Leiter, T. (2021). Do governments track the implementation of national climate change adaptation plans? An evidence-based global stocktake of monitoring and evaluation systems. Environmental Science & Policy.
11 International Federation of Red Cross and Red Crescent Societies (IFRC) (2025). Heat: Through the eyes of the most vulnerable – Perceptions and pathways to action.

research and voices from affected communities. Produced by the IFRC and the Red Cross Red Crescent Climate Centre, the report provides a bottom-up perspective on extreme heat.

Local communities have essential traditional knowledge on adapting to heat

In Burkina Faso, the Red Cross Society assisted the Ministry of Health in a mixed method **cross-sectoral study** to find a range of health impacts and vulnerability factors of extreme heat. The study brings light to heat-related health effects in an understudied part of the world. The study reported excess deaths especially in children and elderly during a heat wave.

In Nepal, the Terai region experiences an increase in urban heat-related health issues, fatalities and economic losses. The Nepal Red Cross, the Climate Centre and the local government took steps to **address urban heat risks** through the Heat Action Plan including the establishment of water ATMs, greenings and installation of drinking water facilities in schools.

Cooling centres in cities are critical for the vulnerable population. A shady area with clean water for drinking can be created near workplaces or health care stations. The stations can be cooled, for example, with fans powered by solar panels. Such cooling centers have been established in Southern Europe by the National Red Cross Societies.

In 2021, IFRC launched June 2 as a **Heat Action Day**. This global day raises awareness of heat risks and shares simple ways to #BeatTheHeat. The event encourages creative engagement with local communities to demonstrate how to recognize heat exhaustion and heat stroke and what to do to help. This year's theme — **indoor heating** — highlights the health risks that people face in their homes, schools, workplaces and care facilities.[12]

Family getting water from a well in Ethiopia

12 International Federation of Red Cross and Red Crescent Societies (IFRC) (2025). Heat: Through the eyes of the most vulnerable – Perceptions and pathways to action.

IFRC stresses that **humanitarian response** needs to include extreme heat. Agencies are testing the viability of, for example green roofing in shelter emergency housing, establishing mobile cooling centres and making solid 'summerization' (or 'heat season') plans.

Traditional heat-management techniques were developed mostly in rural settings and often held in older generations and passed down orally. With urbanization people have brought these techniques to cities. For example, passive ventilation and cooling techniques used in traditional and indigenous shelters and preserving food in hot conditions in a clay pot have been adapted to modern settings. [13]

Red Cross and Crescent **volunteers** are vital in heat response: they can visit people in vulnerable situations, inform communities on health stress prevention and distribute food and relief items in shade.

First aid in extreme heat often involves recognising heat exhaustion, which is common in hot conditions. Symptoms include heavy sweating, weakness, dizziness, headache, nausea and a rapid pulse, while the person remains alert. The person should be moved to a cool, shaded place, clothing loosened or removed, and the body cooled with wet cloths and fanning. If they are fully alert and able to swallow, they should be given small sips of water.

If heat exhaustion progresses to **heat stroke**, it is a medical emergency. Signs include a very high body temperature, hot skin, headache and dizziness, and—most importantly—restlessness, confusion, or a rapidly worsening level of responsiveness. When these appear, first aiders must act quickly to cool the person as rapidly as possible, and emergency medical services should be called immediately. First aid skills and education are an important contribution of the Red Cross and Red Crescent to community preparedness for heat.

Information about the health effects of heat and first aid must be increased everywhere: in the media, at community meetings, on social media, even through computer games. Communities, health workers, volunteers and climate adaptation specialists need to come up with innovative **solutions** to avoid the health consequences of extreme heat.

The climate crisis is also a health crisis. Urgent mitigation actions are necessary to limit temperature rise to 1.5 degrees. Adaptive actions on health are crucial to support people and communities in most vulnerable situations to minimize, avert and respond to loss and damage caused by climate change.

13 International Federation of Red Cross and Red Crescent Societies (IFRC) and United Nations Office for the Coordination of Humanitarian Affairs (OCHA) (2022). Extreme heat: Preparing for the heatwaves of the future.

Finnish Red Cross

Finnish Red Cross International Aid
International Knowledge Development and Advocacy Unit

June 2026

Photos: Terhi Heinäsmäki, Emil Helotie, Esa Salminen, Aki Kolehmainen / Finnish Red Cross

With support from Finland's development cooperation

Finnish Red Cross International Aid Policy Paper 1/2026