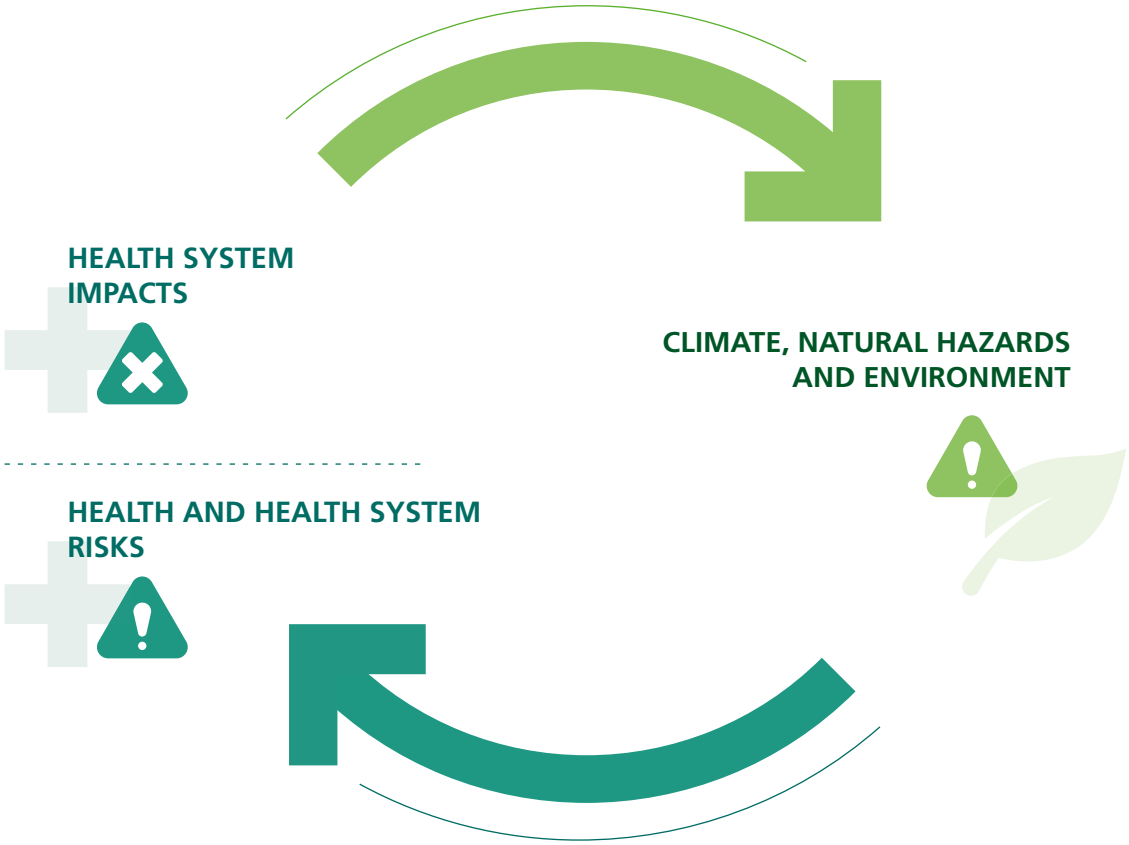
SDC Network **Climate, DRR & Environment**

SDC Health Network

Thematic Integration Brief (TIB)

Climate, DRR & Environment …and **the Health Sector**



Climate change, natural hazards, and environmental conditions hugely impact human health and well-being.[1] In turn, health services and healthcare systems can influence the climate and environment. The One Health approach to the health-climate-hazard-environment relationships can uncover co-benefits to be found in development activities.

This Thematic Integration Brief (TIB) provides a non-exhaustive compilation of the relationships between human health and health systems, and climate change, disaster risk (from natural hazards), and the environment (C/D/E).

The brief:

- helps explain potential risks for health and healthcare systems
- highlights possible adverse impacts of health systems on climate and environment
- offers practical advice on how to integrate C/D/E in health sector, and on how to add value, assure greening, and risk-proof the sector.

SDC's Climate, DRR and Environment, and Health sections welcome feedback to continuously improve this Thematic Integration Brief (TIB).

1 The WHO defines 'One Health' as an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. More information on this highly relevant approach can be found on WHO's website on 'One Health' and EDA's report on measures to contain zoonoses and combat their causes (2023).

Interconnections at a Glance

Adapted from: Health and Climate Network (HCN) 2021: Sustainable and Climate Resilient Health Systems (here, accessed July 2023) and Integration of environment, climate change and the green economy – health (DRAFT), 2012, Capacity4dev, EU (here, accessed June 2023)

Risks for health and the health system from climate, natural hazards and environment

- Healthier environments could prevent almost one-quarter of the global burden of disease.[2] The prerequisites for good health include clean air; a stable climate; adequate water, sanitation and hygiene; the safe use of chemicals; protection from radiation; healthy and safe workplaces; sound agricultural practices; health-supportive cities and built environments; and a preserved natural environment.

- Human health and healthcare systems are affected by disasters due to natural hazards such as earthquakes, flooding, heat, pollution, and depleted biodiversity. Non-resilient health systems are costly; the 2018 floods in Kerala, India, caused power outages and damaged medical supplies and equipment, resulting in a loss of over USD 15 million.

- Climate change poses direct and indirect threats to health. A highly conservative estimate of 250,000 additional deaths each year due to climate change has been projected between 2030 and 2050. Of these, 38,000 will result from heat exposure among the elderly, 48,000 from diarrhoea, 60,000 from malaria, and 95,000 from childhood malnutrition. Underrepresented groups such as elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or social and cultural discrimination are disproportionally amongst these additional deaths.

- Climate- and disaster-related issues such as malnutrition and displacement worsen existing health inequalities disproportionately affecting vulnerable populations and those in low and middle income countries (LMICs) and threaten to undo years of development and health gains, while pushing universal health coverage further out of reach.

- Climate change will also change patterns of vector-borne diseases, including zoonoses. Increasing temperatures and variable precipitation will bring greater risk of food- and water-borne diseases, shifting the seasonal and geographic distribution of diseases such as cholera and mosquito-borne diseases such as malaria, dengue, and chikungunya.

- Significant threats occur from the causes of climate change, and are disproportionally high for those who are lacking the means of adaptation. Indoor and outdoor air pollution from burning fossil fuels or woodstoves, from traffic, or industry causes millions of deaths each year, unsustainable and unhealthy diets cause both ill health and – in part – high greenhouse gas emissions.

- Climate change is a threat multiplier due to its influence on the social and environmental determinants of health, such as clean air, safe drinking water, sufficient food and shelter, forced migration and many others. The climate crisis is already being felt most drastically by indigenous peoples, elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or social and cultural discrimination, and those in low-income countries with poor infrastructure and health systems that are unable to adapt.

- The effects of climate change, disasters and environmental degradation lead to an increase in the number of people with disabilities and thus a higher burden of disease at the individual and societal levels.

- Water pollution and other pressures on water resources result in increased levels of morbidity and mortality from preventable diseases such as diarrhoea.

- Environmental degradation, loss of biodiversity due to deforestation, water pollution or land use change result in increased scarcity of traditional medicinal plants, and can result in reduced sources of protein for local populations through depleted fish or game populations.

Adverse impacts of the health system on climate and environment

- The health sector (including health care delivery, facilities, operations and supply chains)[3] accounts for 4.4 per cent of global greenhouse gas emissions, the vast majority of which come from energy use and the supply chain. Pharmaceuticals, medical waste, packaging and food production inflict heavy burdens on the environment.

2 WHO, Environmental Health, 2024.

3 HCWH Europe, Designing a net zero roadmap for healthcare. Technical methodology and guidance, 2022.

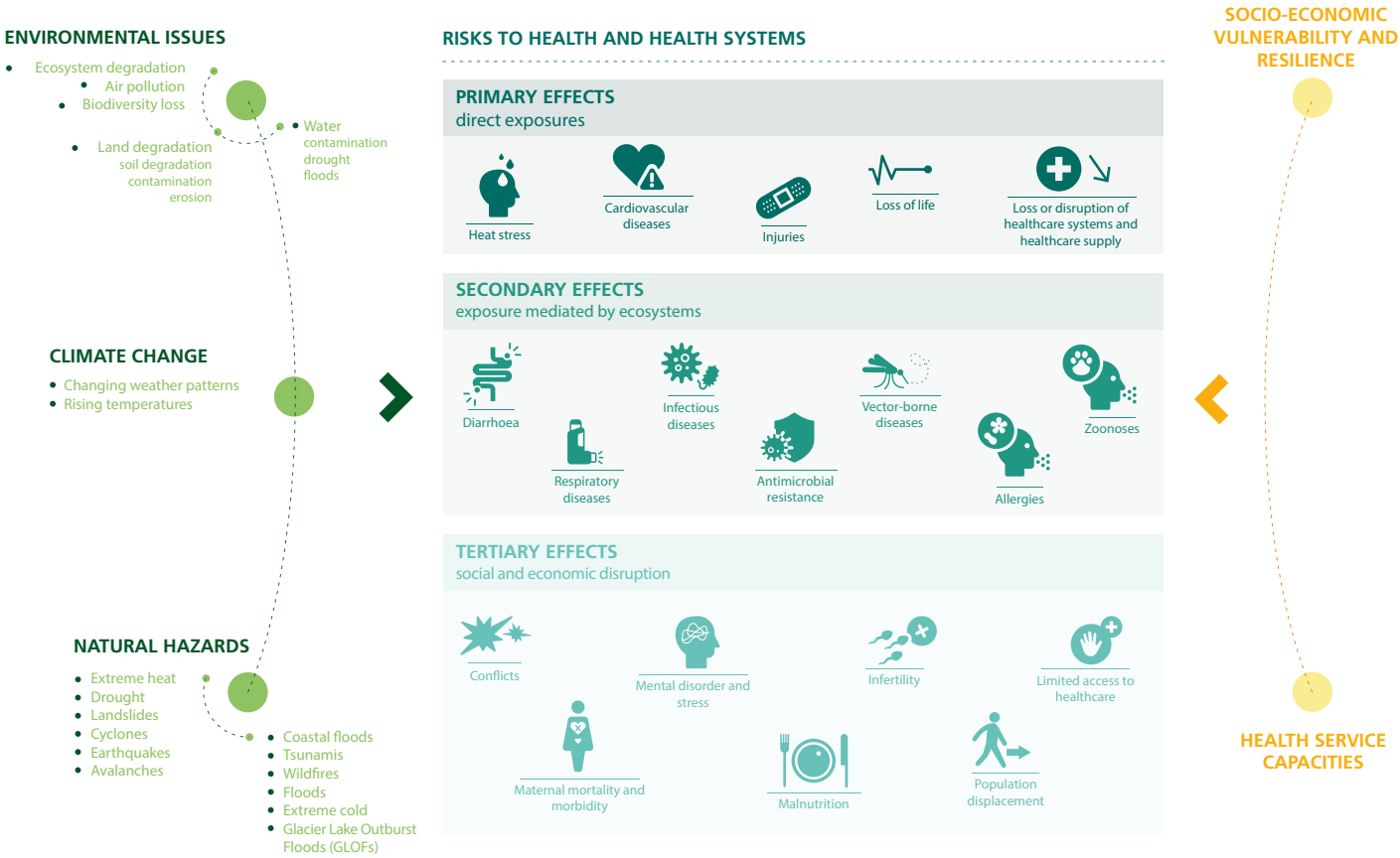
1. Interactions among the Health Sector and Climate, DRR and the Environment

Climate, natural hazards and environment influence the determinants of health,[4] the resilience of health systems, and hence, the health of societies in many ways. The WHO defines a climate-resilient health system as having "the ability to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses, so as to bring sustained improvements in population health, despite an unstable climate."[5] To make these systems sustainable, the health care sector, including its supply chain, must deliver care without contributing to climate change or environmental degradation.

This chapter describes possible interactions between the health sector and climate, DRR and the environment.

This brief looks at climate, and natural and other environmental hazards alike – stressing the importance of avoiding exposure holistically.

Risks by climate change, natural hazards and environmental degradation on health and healthcare



4 WHO, Determinants of Health, 2024.

5 WHO, Operational framework for building climate resilient health systems, 2015.

Primary effects occur when exposure to hazardous events results in injuries or loss of life and infrastructure:

- Loss of life or injuries due to floods, heat, earthquakes, storms, tsunamis, mudslides, wildfires, environmental issues and accidents, etc.
- Loss of life, heat stress and cardiovascular diseases due to extreme temperature events, or due to air pollution.[6] The elderly, children and the chronically ill are particularly vulnerable to heat- and pollution-related conditions.
- Loss of infrastructure, disruption of healthcare systems, disruption of power supply, healthcare supply, disruption of access to care caused by natural hazards. These primary effects affect disproportionally vulnerable groups such as elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or cultural discrimination.

Secondary effects occur when ecosystem changes induced by climate change, natural hazards or environmental degradation create new health risks or lead to indirect health effects:

- Increase in waterborne diseases (diarrhoea, hepatitis A, typhoid fever and cholera) from reduced water levels and disrupted water, sanitation and hygiene (WASH) infrastructure due to droughts or flooding or any event reducing the services of WASH infrastructure.
- Increase in vector-borne diseases such as malaria and dengue fever due to higher temperatures at higher elevations or latitudes that were previously too cold for mosquitos to survive and breed.
- Increased risk for zoonosis:[7] the survival, reproduction, abundance and spread of pathogens, vectors and hosts can be affected by rising temperatures, extreme heatwaves and drought, wildfires, increased seasonal precipitation, flooding, and thawing permafrost in arctic and subarctic regions.
- Disrupted fresh water supplies, especially in already dry regions, resulting in drinking water shortages and sanitation problems.
- Increased water pollution that results in disruptions in the availability of drinking water and in health problems.
- More heat that results longer allergy seasons, increased respiratory disease and the occurrence of new diseases or epidemics. More rain resulting in increases in mould, fungi and indoor air pollutants.

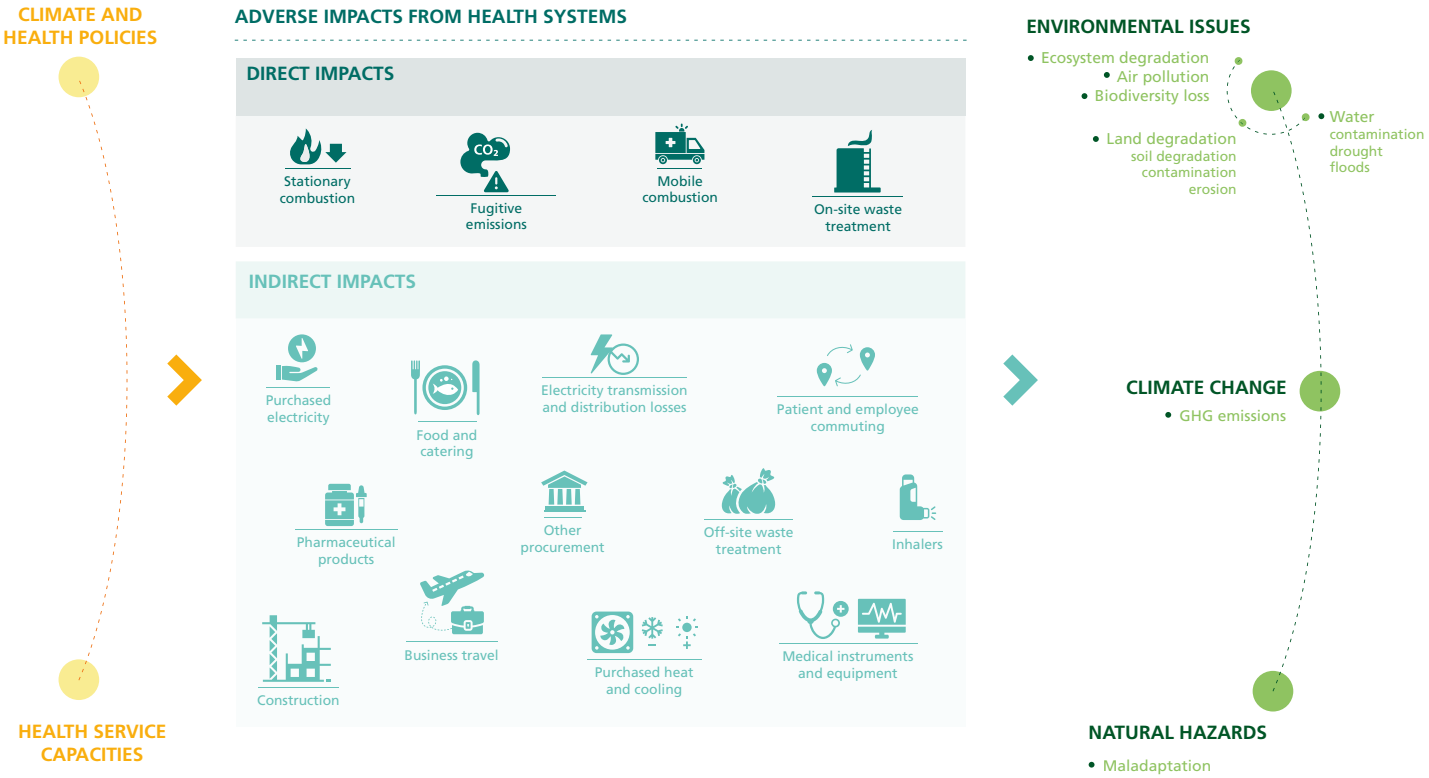
Tertiary effects such as malnutrition or mental stress can occur as a consequence of climate change, natural hazards or environmental degradation:

- Malnutrition – especially among children – will increase due to droughts, rising temperatures, shifting seasons, degradation (land, soil, ecosystems, biodiversity), salinisation, pests, locust infestations, and saltwater intrusion all of which lead to lower crop yields and higher food prices. Malnutrition hits vulnerable populations more strongly, e.g. children and women (especially when breastfeeding or during pregnancy), as well as elderly people, people with cronic diseases or who are reliant on a diet.
- Climate change and disasters due to natural hazards can cause anxiety-related responses, existential angst and exacerbate mental health disorders (e.g. related to flooding and prolonged droughts, particularly when combined with situations of conflict- or disaster-related migration). Extreme weather events are also associated with increases in aggressive behaviours and domestic violence. Communities suffer when interpersonal aggression and social instability increase.
- Deforestation and wildfires destroy the ecosystems that support plants and animals, or may hold the key to treating illnesses (e.g. medicinal resources from natural landscapes and forests).
- Deforestation and wildfires lead to worsened environmental conditions, including air pollution in wildfire episodes, leading to increased primary, secondary and tertiary effects.
- Damage to public infrastructure (health, transport, water, electricity) due to storms, floods, landslides, mass movements, sea level rise, earthquakes or tsunamis prevents the execution of health services and supply chains. This affects disproportionally people with reduced mobility and high opportunity costs for transportation and travel.
- Power outages (due to extreme events, water scarcity, etc.) can disrupt medicinal storage (cooling), hospitals and transportation systems when they are most needed.

6 SDC, The SDC's Engagement for Clean Air for All, 2022.

7 Zoonoses are diseases or infections that can be transmitted naturally from vertebrates to humans and vice versa. These include SARS (severe acute respiratory syndrome) as well as avian flu (H1N1), Ebola and Covid-19. Antibiotic resistance in bacteria is also considered a zoonosis and is treated as such, see WMO's website on zoonoses and EDA's report on measures to contain zoonoses and combat their causes (2023).

Adverse impact of healthcare on climate, natural hazards and environmental degradation



- The health sector (including health care delivery, facilities, operations and supply chains) accounts for 4.4% of global greenhouse gas emissions, of which 70% are attributable to supply chains.
- Healthcare affects the environment through various interactions, contributing directly to climate change and environmental degradation via fuel consumption and the generation of poorly managed medical waste and packaging.
- Healthcare systems also drive environmental degradation indirectly through the production and disposal of pharmaceuticals, transportation of patients, staff, and visitors, and energy consumption.

2. Integrating C/D/E and Healthcare: Key Areas for Action

Entry points for integrating C/D/E in the Health and Health Systems initiatives (and vice versa) can be found at various operational, strategic, or capacity building levels, and should be considered from the outset of a planning process. The following sections are meant to inspire the search for possible entry points. Links to other resources appear at the end.

Adding value to health systems by reducing risk[8]

Know your risk

- Conduct climate, disaster and environmental risk assessment in cooperation with the local community and decision makers. Ensure the meaningful participation of vulnerable groups such as elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or cultural discrimination, in order to avoid putting health facilities, and access to health services, in jeopardy. For instance, avoid setting up health facilities in floodplains; build earthquake-resistant health infrastructure; assure access to medical supply during rainy or flood periods.

- Conduct health system assessments with the direct participation of the local community and decision makers. Ensure the meaningful participation of vulnerable groups such as elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or cultural discrimination to understand health system challenges during heatwaves, floods, insect infestations, pandemics and other climate-related events, and conduct gender and intersectionality assessments to understand the needs of the most vulnerable.

- Strengthen existing capacities and institutionalise risk management capacity across public and private institutions and community structures.

- Recognise that primary healthcare plays key functions in any health crisis response and serves as the first point of healthcare. Prepare plans to respond to increased incidences of diarrhoea, dengue fever, and infectious diseases and injuries due to contaminated water, heatwaves, earthquakes, mudflows, and other hazards.

- Integrate sustainable healthcare and planetary health into medical and healthcare training, and include such information in curricula for medical and healthcare staff and for the general public.

- Raise awareness and understanding of the impact of healthcare on the climate and the environment, using different formats of communication such as easy and local language, audio (radio) and visuals (pictures and pictograms).

Improve information for better planning, preparedness, and response

- Conduct integrated risk monitoring that includes epidemiological and environmental surveillance, and build workforce capacity and population awareness to enable the use of climate and weather information for better health decisions.

- Prior to developing activities, include climate, disaster risk and environment assessments in country health system evaluations to determine the appropriate approaches to achieve responsive and resilient healthcare systems.[9]

- Establish early warning systems, and anticipate responses to climate- and weather-related shocks such as extreme heat, or disease outbreaks. Ensure that these early warning systems are accessible to everyone (e.g. blind and deaf people, illiterate and elderly people).

- Build the capacity of the health workforce and decision makers to understand the relationships between development decisions and pollution, nutrition, climate, and health.

- Inform management, planners, communities, and donors on the potential vulnerability and exposure to natural hazards, and the effects that the environment and climate can have on health and healthcare.

8 SDC, Nexus Brief on Climate Change & Environment and Health, 2017.

9 WHO, Joint External Evaluation Tool, 2022 (third edition).

Strengthen investments in sustainable and resilient healthcare systems[10]

- Foster multisectoral and community engagement, and identify short- and long-term actions and investments that increase the resilience of health systems, and that consider climate, disaster risk and environment information.
- Take steps to understand how climate, natural hazards and environment can affect the ability of health systems to finance, manage, and protect the health of populations and individuals under various conditions.
- Encourage policymakers and practitioners to:
    - identify opportunities to operationalise their climate and health plans down to the lowest levels
    - leverage routine information, climate services, and surveillance data to support informed decision making and optimise resource use
    - tailor primary healthcare and health system response plans to the local context and needs in order to allow for greater adaptability to address emerging challenges.

Support a multisystem approach and advocate for other sectors

- Target measures that improve the determinants of health through participatory and accessible feedback mechanisms, and that build the health and resilience of vulnerable communities through access to public health, sustainable and nutritious diets, clean water, clean energy, and sustainable transport.
- Encourage the provision of healthy, sustainably grown food, and support sustainable food systems.
- Support green development to reduce air and other environmental pollution and to reduce polluted and polluting workspaces.
- Enhance health gains from sustainable development investments, and design development strategies with health in mind, as healthy environments could prevent up to one-quarter of deaths annually worldwide.[11]
- Support climate change mitigation to realise health benefits from reduced emissions, improved hospital waste management, the use of improved cook stoves, and improved ventilation in housing.
- Improve early warning systems linked to preparedness and prevention in order to reduce injuries and the loss of life and infrastructure in hazardous events. These improvements can only be achieved through meaningful and accessible participatory consultation processes, involding elderly people, women, men and children with disabilities, poor people and other excluded groups, based on gender or cultural discrimination.
- Engage with actors beyond the health sector to encourage other sectors to help reduce the burden on the environment and climate.

Opportunities to curb the environmental impact of health systems

Greening healthcare[12,13]

A roadmap for decarbonising the health sector needs to:

- Power health care with clean, renewable energy; transition to low-impact refrigerants for cold-chains; and invest in zero-emission buildings and infrastructure.
- Assure accessibility to health systems for patients, staff, and visitors with sustainable, low-emission transport, including ambulances.
- Provide remote consultations where feasible and consistent with good health outcomes. Remote consultations could be beneficial in improving access to health services for people with reduced mobility and high opportunity costs of transport and travel.
- Incentivise and produce low-carbon medicines and medical supplies and packaging, and use low-pollutant anaesthesia.
- Implement circular health care and promote reusable products where possible.
- Implement environmentally friendly waste management, and avoid discharges of medical waste to wastewater.
- Establish greater overall health system effectiveness through awareness raising and prevention strategies that reduce the need for health services.

10 Lugten, E. and Hariharan, N., Strengthening Health Systems for Climate Adaptation and Health Security: Key Considerations for Policy and programming, 2022.

11 Capacity4dev, EU, Integration of environment, climate change and the green economy – health (DRAFT), 2012.

12 Adapted from: Health and Climate Network HCN, Sustainable and Climate Resilient Health Systems, 2021.

13 Healthcare without Harm, Designing a Net Zero Roadmap for healthcare: Technical Methodology and Guidance, 2022.

Recommendations for sustainable and resilient health systems

- Develop locally informed national and subnational roadmaps for decarbonising the health system, including supply chains (see Health Care Without Harm roadmap, for example).[14]
- Support health ministries' and governments' ambitions to reduce environmental footprints and to improve the resilience of health care systems, and encourage monitoring.
- Build health care decarbonisation into Nationally Determined Contributions (NDCs) and existing emissions monitoring frameworks and join the UNFCCC Race to Zero (health as an entry point for advocacy for clean air).
- Regulate emissions in the pharmaceutical and medical supply industries by taking such steps as:
    - mandating the declaration of the carbon intensity of products
    - encouraging major suppliers to set their own ambitious net-zero plans
    - setting procurement rules and regulations.
- Adopt health indicators to measure progress in sustainable development.

Further reading

Health Care Without Harm, Global road map for health care decarbonization, 2023.

Lugten, Elizabeth and Neetu Hariharan, Strengthening Health Systems for Climate Adaptation and Health Security: Key Considerations for Policy and Planning, 2022.

Government of the Netherlands, Sustainable healthcare, 2024.

WHO, Health-care waste, 2024.

Swiss Academies of Arts and Sciences, Sustainable health system, 2024.

The Lancet, Momentum builds for health-care climate action, 2023.

Alliance for Transformative Action on Climate and Health (ATACH)

Singh, Keshav et al., Healing with Care: A Roadmap to Sustainable Healthcare, 2024.

14 Health Care Without Harm, Global road map for health care decarbonization, 2023.

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