Sustainable and Climate Resilient Health Systems

The climate crisis is an acute health emergency with far-reaching effects on both human health and the environments that sustain it. The climate crisis and the health of citizens are interlinked and have many of the same solutions, especially when it comes to strengthening health systems.

Governments have a primary responsibility for the health and well-being of their citizens. However, basic health care provision is often inadequate in most low- and middle-income countries (LMICs) and among marginalised populations in many wealthy countries. Climate change and extreme weather patterns are making this worse, as already limited services are often disrupted by climate disasters, such as heatwaves, floods and droughts. Global heating drives a range of health impacts across the world – including malnutrition in all its forms, infectious vector-borne diseases, diarrhoea, heat stress, direct trauma, and mental illness – and therefore puts more strain on already stretched health care systems[1].

Current systems of health care provision also contribute to climate change, accounting for 4.4% of global greenhouse gas emissions (10% of emissions in the USA)[2]. If global health care were a country, it would be the fifth largest climate polluter on the planet[3]. Sustainable, climate resilient health systems are needed to deliver care when and where it is needed most in a way that limits the health impacts of a changing climate without adding further damage.

What are sustainable, climate resilient health systems? The World Health Organization (WHO) defines a climate resilient health system as: "one that is capable to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stress, so as to bring sustained improvements in population health, despite an unstable climate."[4] To make these systems sustainable, the health care sector, including its supply chain, must deliver care without contributing to climate change or environmental degradation[5]. These systems should bring ongoing and sustained health care to target populations and protect the health and well-being of future generations.

Recommendations

1. Build the capacity and resilience of health workers, facilities and systems to proactively anticipate and respond to climate change.

2. Develop sustainable and climate resilient health systems which provide primary health care for all and are underpinned by a rights-based approach to public health.

3. Decarbonise health systems in a health-centred way while also providing leadership for other sectors.

4. Prioritise, promote and facilitate investments in sustainable and resilient health care.

How are climate change and health systems connected?

Climate change increases the health care burden and prevents adequate health care provision in many contexts, while current carbon-intensive models of care damage the climate. Sustainable, climate resilient health systems offer a mechanism to break this devastating cycle – and the chance to demonstrate leadership for other sectors. As the world looks to health systems in response to the Covid-19 pandemic, health systems also have an opportunity to be climate leaders, contributing to a healthier planet and better health outcomes.

The growing health threat from climate change

- **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 undernutrition. While shocking, this figure is viewed as highly optimistic and only covers these four direct health effects of climate change[6]. There are other climate impacts and socioeconomic contexts which must also be considered.

- **Extreme weather patterns cause injury, death and disease,** while climate-related issues like undernutrition and displacement worsen existing health inequalities. These impacts disproportionately affect vulnerable populations and those in LMICs and threaten to undo years of development and health gains, while pushing universal health coverage (UHC) further out of reach[7]. **Extreme weather disasters like drought, heatwaves and flooding already cause over 60,000 deaths every year[8].**

- **Climate change will also change patterns of vector-borne disease[9].** Increasing temperatures and variable precipitation will bring greater risk of food- and water-borne diseases, shifting the seasonal and geographic distribution of diseases like cholera[10]. Climate change is also **likely to cause unexpected outbreaks of mosquito-borne diseases like malaria, which currently kills 400,000 people every year,** as well as dengue and chikungunya[11]. Without adequate surge capacity and disease surveillance, health systems will be overburdened and unable to anticipate new health threats.

- **These health risks from the impacts of climate add to the significant threats from the causes of climate change.** Air pollution (including $PM_{2.5}$ and ozone exposure) from burning fossil fuels causes millions of deaths each year[12], and unsustainable, unhealthy diets cause both ill health, premature death and high greenhouse gas emissions[13].

- **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, and forced migration[14]. The climate crisis is already being felt most drastically by indigenous peoples, marginalised populations, and those in low-income countries with poor infrastructure and health systems that are unable to adapt.

Inadequate health care response

- **Current health systems are not equipped to manage these changing health risks[15].** According to analysis by the Lancet Countdown, 67% of global cities surveyed expect climate change to "seriously compromise their public health assets or infrastructure."[16] In addition to the structural resilience of health systems, health professionals' capacity to recognise and respond to the health impacts of climate change must also be strengthened, given that this is largely missing from current training in health professional education programmes.
- The **direct damage costs to health from climate change are estimated to be between USD $2–4 billion every year[17].** Non-resilient health systems are also 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[18].

Health systems are part of the problem

- **The health sector (including health care delivery, facilities, operations and supply chains) accounts for 4.4% of global greenhouse gas emissions,** the vast majority of which come from fossil fuel combustion and high-income countries[19].

Actions for delivering sustainable and climate resilient health systems

To deliver sustainable and climate resilient health systems, national governments are recommended to take the following actions:

1) Build the capacity and resilience of health workers, facilities and systems to proactively anticipate and respond to climate change.

Investing in capacity-building will enable all parts of the health system to adapt to and mitigate climate change-related health threats. This should be based on local health vulnerability and adaptation assessments[20], developed with health care professionals.

Once local needs are established, governments must develop and implement Health National Adaptation Plans (HNAPs) through training and infrastructure investment[21]. Threats and vulnerabilities from climate change – extreme weather, disease migration, threats to clean water or food supply – vary by context and geography, therefore the responses must be nationally and locally specific[22].

As first responders to climate change and its health impacts, health workers must be equipped with the necessary training and resources to implement adaptation and mitigation programmes, especially in areas already facing severe environmental damage. This also means training staff to respond to a changing disease landscape in more sustainable ways, and to champion locally relevant climate solutions[23].

Facilities and supply services must also adapt to be more climate resilient while mitigating their environmental impacts. National governments and other health care providers should invest in renewable energy sources for health care facilities to provide reliable power and consider using telemedicine as a potential alternative to in-person care, for example in cases when disasters disrupt transport systems.

Policy recommendations:

- Join and implement 'Building climate resilient health systems initiative'[24] which is championed by the WHO and the Adaptation Action Coalition. This initiative calls on governments to commit to the following: conduct climate change and health vulnerability and adaptation assessments; develop a Health National Adaptation Plan; and allocate, or apply for, climate finance for health action[25].
- Invest in the health care workforce, including increasing staff numbers and prioritising curricula and institutional policies on environmentally sustainable health care.
- Build the capacity of health workers, facilities, and systems to proactively anticipate climate-related health risks and address and respond to climate change while minimising their own environmental impacts[26].
- Develop leadership in decarbonising health care systems and institutions.
- Equip different stakeholders, including ministers, health professionals and planners, to access data and information on climate risk and on local experience, to inform actions to build resilient health.
- Support the UN Health Facility Electrification Energy Compact[27] to deliver sustainable energy access to thousands of health care facilities currently running without electricity.

2) Develop sustainable and climate resilient health systems which provide primary health care for all and are underpinned by a rights-based approach to public health.

The current health status of a population is a significant predictor of the future health impacts of climate change and the costs of adaptation[28]. Given that poor health is a key determinant of climate vulnerability, overall actions to strengthen health can be seen as climate adaptation measures, especially in developing countries with under-funded health care systems.

In order to mitigate and adapt to the effects of climate change on health, national governments must consider how to continue to progress towards universal health coverage in light of a shifting and increasing disease burden. Investing in preventative and promotive health care interventions will have benefits for the communities and regions most at risk – by improving health, reducing disease vulnerabilities, and reducing the burden on health systems.

Healthier communities are more resilient to threats, so communities should have access to affordable healthy diets, non-polluting cooking fuels and clean air, and sustainable and healthy transport[29]. In the face of the changing climate, there is increasing need to retrofit homes to protect people from heat and cold in a sustainable way, and to secure and maintain access to a reliable and safe water supply.

The health risks posed by climate change – including greater exposure to current and new diseases, lack of safe drinking water, extreme weather, and higher temperatures – disproportionately affect already marginalised populations and those living in many LMICs[30]. Areas with weak health infrastructure will be least able to cope with and respond to these changing health risks. At the same time, climate change pushes vulnerable households further into poverty, making it even harder to afford health care[31]; additionally, the economic costs of climate change at the national level make universal health coverage an even greater challenge.

Sustainable and resilient health systems must be built on a foundation of human rights and equitable access, as per the Alma-Ata Declaration[32]. As the main historical and per capita contributors to climate change, high-income countries must help finance this transition globally.

Policy recommendations:

- Provide equitable access to primary health care for all.
- Target measures which build the health and resilience of vulnerable communities through access to: public health; sustainable and nutritious diets; clean water; and clean energy and sustainable transport[33].
- Integrate public health provision into national climate change mitigation and adaptation strategies.

3) Decarbonise health systems in a health-centred way while also providing leadership for other sectors.

To improve the health of their citizens and act as credible leaders in the health and climate space, national governments and health organisations must develop health-specific decarbonisation strategies and include health systems in their broader plans to cut emissions. It is worth noting that supply chains currently account for over 70% of emissions from the health sector; addressing this as well as direct emissions from health care facilities' operations will require engagement with actors beyond the health sector[34].

In 2020, the UK's National Health Service (NHS) became the first national health system to commit to becoming carbon net zero by 2045 . The NHS plan involves a combination of interventions – for example, shifting to renewable energy sources in its buildings, electrifying its vehicle fleet, and moving to low-carbon inhalers and anaesthetic gases – that can be adopted or modified to meet the needs of other national contexts .

Decarbonising the health sector will require a roadmap[37] to deliver a number of elements, including:

- Powering health care with 100% clean, renewable energy.
- Investing in zero emissions buildings and infrastructure.
- Transitioning to zero emissions, sustainable travel and transport for attending appointments and visiting relatives in hospital, in addition to ambulances.
- Greater provision of remote consultations, where this is shown not to be detrimental to health outcomes.
- Providing healthy, sustainably grown food, and supporting climate resilient agriculture.
- Incentivising and producing low-carbon medicines and medical supplies, including low-impact refrigerants for cold-chain and low-pollutant anaesthesia.
- Implementing circular health care and sustainable health care waste management.
- Establishing greater overall health system effectiveness through promotion and prevention strategies, reducing the need for health services.

Governments must also consider health systems in their broader plans to cut emissions, including integrating the monitoring of carbon emissions from health systems into existing climate frameworks. Last year, Argentina became the first country to include health care decarbonisation in its NDC (Nationally Determined Contribution) – something that other nations should also adopt[38].

Policy recommendations:

- Declare health ministries' and governments' ambition to decarbonise and improve the resilience of their health care systems in the lead up to COP26, in line with the joint initiative between the UK's COP26 Presidency, UNFCCC Climate Champions, WHO and Health Care Without Harm[39].

- Develop locally informed national and subnational roadmaps for decarbonising the health system, including supply chains, for example based on Health Care Without Harm's roadmap[40].

- Require ministries of health to monitor and reduce the carbon footprint of their health systems, at a national, state or municipal level, and therefore gain political weight to influence other sectors.

- Build health care decarbonisation into NDCs and existing emissions monitoring frameworks and join the UNFCCC Race to Zero by committing to achieving zero emissions health care by 2050[41].

- Regulate emissions from the production of medicines and medical supplies, including the pharmaceutical industry; for example, mandate the declaration of products' carbon intensity, implement a carbon tax for industry, and pressure major suppliers to set their own ambitious net-zero plans.

4) Prioritise, promote and facilitate investments in sustainable and resilient health care.

Implementing the above adaptation and mitigation plans will require dedicated financing; acting now is likely to save money and lives in the long term. Having identified the vulnerabilities and risks at a local and national level, health care providers (public or private), working with government and other stakeholders, should develop business cases that demonstrate the economic opportunities that sustainable and climate resilient health systems offer.

National governments must learn from the COVID-19 pandemic and the pressing need to strengthen public health infrastructure everywhere. Greater dialogue is needed around healthy post-pandemic recovery and economic stimulus packages, facilitated by the health sector. National governments must use the immediate opportunity to build climate resilient and sustainable health infrastructure for the post-pandemic world, while political will must be stimulated to mobilise climate finance for health.

Building resilience and sustainability for health care systems will require cross-sectoral coordination – including waste management, transport, supply chains, food, medical supplies manufacturing, and more – and the necessary incentives to motivate change.

International financing for this transition should be based on the principle of common but differentiated responsibilities, with high-income countries committing to provide funding through existing mechanisms like the Green Climate Fund (GCF)[42] or Adaptation Fund[43], or through a bespoke facility to fund resilient health systems in low- and middle-income countries.

Policy recommendations:

- Increase the availability of national and global financial resources, including through post-pandemic stimulus packages and the GCF, for sustainable climate resilient health systems research, innovation and implementation; as well as the surveillance of climate-sensitive diseases and epidemic outbreaks.

- Build national and local governments' capacity in low- and middle-income countries so that they can competitively apply for climate finance.

- Create and fund mechanisms and incentive structures that foster cross-sectoral coordination, coherence and integration across government and with other stakeholders in the supply chain.

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