

# STRENGTHENING PRIMARY HEALTH CARE FOR CLIMATE RESILIENCE AND UNIVERSAL HEALTH COVERAGE

## Problem statement

### Contribution of the health system to climate change

Notwithstanding its central function in maintaining people's health, the healthcare sector considerably contributes to climate change globally, and in so doing is at odds with the principle of "first do no harm". If it were a country, the global healthcare industry would rank as the fifth largest carbon emitter,<sup>1</sup> contributing almost 5% of global greenhouse gas emissions<sup>3</sup> and large volumes of waste.<sup>1</sup> With the rising global demand for healthcare services, the sector's environmental effect is expected to grow, further, intensifying its impact on climate change.<sup>2</sup>

Emissions from the health sector can be direct or indirect. Direct emissions, which account for 17% of the health sector's emissions, are from the use of fossil fuels (coal combustion) to power hospitals.<sup>1</sup> In addition, anaesthetics and propellant gases, such as nitrous oxide, used in patient treatment, also contribute to these direct emissions.<sup>1</sup>

Indirect emissions account for 83% of the health sector's emissions, of which a relatively small percentage is due to electricity used in hospitals for heating, lighting, cooling and operating medical equipment.<sup>1</sup> By far the largest portion of total health system emissions (71%) are indirect emissions caused by the use of water for patient care and sanitation, provision of food, use of information technology, manufacturing of medical goods, waste disposal, transportation and the use of medical devices.<sup>1</sup>

The healthcare sector's contribution to climate change extends beyond the delivery of patient care to the manufacturing of medical and pharmaceutical products. Greenhouse gases are also emitted during the production of medications, medical devices, and consumables, as these processes require high energy and raw materials.<sup>1</sup> Transportation of medical supplies, patients and healthcare workers within the healthcare sector also plays a role in climate change as the vehicles used emit greenhouse gases.<sup>1</sup>

### Effect of climate change on rural areas

Notably, in some high-income countries, the health sector's contribution to greenhouse gases is as high as 10%.<sup>3</sup> However, even though low and middle-income countries produce the lowest greenhouse gas emissions, climate change affects them to a greater extent.<sup>4</sup> People living in rural areas, especially in low and middle-income countries, are particularly vulnerable to climate change.<sup>4,5</sup> The high temperatures resulting from global warming have been shown to reduce the yields of staple foods like wheat and maize.<sup>4</sup> Such food is likely to be the main source of nutrition for people in rural areas and its scarcity would expose them to food insecurity. Moreover, many rural households rely on income generated through farming or non-agricultural work, and when climate change incidents occur, these opportunities become

limited, leaving people with reduced income in the face of increasing food prices.<sup>4</sup> This is likely to leave many people in rural areas vulnerable to a deeper level of poverty.

Another consequence of rising temperatures is the spread of pests and disease.<sup>4</sup> Climate change has also resulted in increased frequency of events like floods, droughts and earthquakes.<sup>6</sup> These natural disasters, lead to the contamination of water sources, disintegration of sewage systems, stagnation of bodies of water and deterioration of hygiene conditions which creates a breeding ground for waterborne diseases such as diarrhoea, cholera and typhoid.<sup>6</sup> Furthermore, infrastructure such as healthcare facilities, and people's homes may also be damaged due to natural disasters.<sup>4</sup> In South Africa, floods occurred in KwaZulu-Natal in April 2022, resulting in damaged infrastructure.<sup>7</sup> In instances where healthcare facilities are damaged, access to health services may also be limited as a result, exacerbating existing access problems in rural areas.

In light of this, it is important not only to reduce the contribution of the health system to climate change, but also to equip it to deal with the impact climate change has on disease patterns and access to healthcare. Investing in primary health care (PHC) services may be a way to achieve this, while at the same time moving us closer to realising universal health coverage (UHC).

## Aim

This policy brief aims to:

- Describe the impact of the health system on climate change
- Describe how this impact affects rural areas
- Demonstrate how climate change increases the need for PHC
- Demonstrate how climate change impacts access to PHC
- Identify measures to mitigate the effect of climate change on accessing PHC
- Outline how PHC can be used to reduce the impact of the health system on climate change
- Outline how PHC can improve universal health coverage
- Advocate for investment into PHC for climate change mitigation and adaptation, as well as the realisation of UHC.

## Rationale

### 1. Effect of climate change on PHC services

#### How climate change increases the need for PHC

The effects of climate change have serious implications for human health<sup>8</sup> and have been labelled as the greatest health challenge in the 21<sup>st</sup> century.<sup>3</sup> Increases in outbreaks of food- and waterborne diseases like viral gastroenteritis, typhoid, cholera and schistosomiasis (bilharzia) have been reported.<sup>8</sup> Climate change also has a negative impact on non-communicable diseases such as cardiovascular disease, asthma, mental health and injuries,

amongst others.<sup>9</sup> In areas experiencing drought, water becomes scarce leading to food insecurity and the little water available may become contaminated.<sup>8</sup> Incidents of flooding exacerbate the breeding of mosquitos and ultimately the transmission of malaria, especially in lower socio-economic settings.<sup>8</sup> In South Africa, the effects of climate change are already evident, with severe weather events and the rise of vector and waterborne diseases.<sup>10</sup>

Extreme heat conditions caused by climate change also have serious health impacts, particularly for labourers (e.g. farm workers) exposed to high temperatures.<sup>8,11</sup> Prolonged exposure to heat causes sweating, dehydration, heat exhaustion and heat stroke as well as increased mental stress.<sup>8</sup> The wide variety of health impacts resulting from climate change highlights the urgent need for strengthened PHC.<sup>8</sup> Primary health care is the first point of contact in the health system and is meant to provide comprehensive health services, thus climate change-related illnesses are likely to increase the need for PHC services.<sup>12</sup> Rural communities are likely to be hit hard by disease outbreaks and extreme weather conditions, and yet they generally have poorer access to health services.

## How climate change affects access to PHC

### 1. Damaged infrastructure

In Africa, access to PHC facilities is often limited, and climate change further exacerbates these challenges.<sup>8</sup> Extreme weather events like floods or fires, damage healthcare facilities and reduce access to health services.<sup>8</sup> When facilities are destroyed, entire communities may be left without access to healthcare services. For example, after heavy rains in Durban, some health facilities remained closed for over a year.<sup>13</sup>

### 2. Travelling

Climate change also affects the transportation of medications, healthcare workers, and patients.<sup>8</sup> Flooded or damaged roads make travelling difficult, especially in many low-and middle-income countries where the condition of roads may already be poor.<sup>6</sup> In rural areas where people already face long travel distances and challenging circumstances to access healthcare, crossing flooded rivers or walking in extreme heat to reach PHC services is likely to exacerbate the problem.

### 3. Burden of diseases

Climate change increases the overall burden of disease,<sup>14</sup> which is likely to result in more people needing healthcare services.

## Measures to mitigate the effect of climate change on PHC services

### 1. Resilient Infrastructure

Primary health care facilities must be built to withstand local extreme weather conditions (e.g. floods, droughts, etc).<sup>8</sup> Having climate-resilient infrastructure may help to minimise interruptions in service delivery and ensure continuous access to healthcare.

## 2. Renewable energy sources

The use of renewable energy sources such as solar or wind power can provide PHC facilities with a reliable and sustainable energy supply, even during disruptions such as load-shedding or extreme weather events.<sup>8</sup>

The use of sustainable energy sources at these facilities would mean that not only is care less likely to be interrupted, but also that the facilities' carbon emissions are reduced.

## 2. The role of PHC in addressing climate change

### How PHC can be equipped to tackle the health issues caused by climate change

#### 1. Strengthening PHC

Strengthening PHC services to respond to climate change involves equipping facilities with reliable emergency plans for events such as infectious disease outbreaks, training and retaining staff, and tailoring services to meet the evolving health needs of communities.<sup>8</sup>

#### 2. Using socio-ecological indicators

The use of new indicators for early warning of extreme climate events and shifts in climate-sensitive disease patterns could be important in building resilient PHC services.<sup>8</sup> Socio-ecological indicators from other sectors, such as data on weather patterns, agriculture, food insecurity and air quality, could be integrated into health information systems,<sup>8</sup> enabling better anticipation and response to environmental risks.

#### 3. Multisectoral collaboration

The complex effects of climate change on agriculture, water, sanitation, food security, poverty, and public health, demand a multisectoral response.<sup>8</sup> Activities in non-health sectors, such as promoting healthy diets and investing in sustainable food systems, benefit both climate and population health.<sup>12</sup> Policies that promote multisectoral integration are essential for preparing for extreme weather events and long-term climate impacts.<sup>8</sup>

#### 4. Community empowerment

Primary health care is where the health sector and community action intersect. Engaging communities on decisions related to health and climate crisis enables communities to contribute to and participate in climate change mitigation and adaptation.<sup>12</sup>

### How PHC be used to mitigate the health system's contribution to climate change

#### 1. Preventive care over higher level care

Within the health system, hospital care is one of the main sources of carbon emissions.<sup>2</sup> Primary health care is less resource-intensive than hospital care and thus less polluting.<sup>2</sup> Therefore, decreasing unnecessary hospital stays can improve the quality and efficiency of care, and lower the energy consumption in hospitals.<sup>2</sup> The goal of PHC is to provide local,

community-centred services that focus on meeting people's health needs.<sup>15</sup> Primary health care focuses on health promotion, disease prevention, treatment, rehabilitation, and palliative care.<sup>15</sup> This emphasis on preventive care and early treatment means that PHC has the potential to reduce hospitalisations, and thus also reduce the carbon footprint of the health system.

## 2. Reduced medical product demand and transportation

As PHC is based on early diagnosis and managing illnesses at their onset,<sup>15</sup> investing in PHC has the potential to reduce the need for advanced medical products, interventions and complex treatments. Most medical products and device manufacturing processes release greenhouse gases.<sup>1</sup> Reducing the demand for these products is likely to also reduce the impact these manufacturing processes have on climate change. Furthermore, the transportation of these products to health facilities also contributes to climate change,<sup>1</sup> and so lowering demand for these would likely also reduce the emissions caused by the transportation of medical products.

## 3. Potential to reduce medical waste

Primary health care facilities generally produce limited quantities of waste.<sup>16</sup> However, their ability to manage medical waste is dependent on factors such as access to waste disposal facilities, policies that guide waste management and trained personnel.<sup>16</sup> In South Africa, a study of community healthcare workers and medical waste management practices showed that during outreach activities numerous barriers lead to improper disposal of medical waste.<sup>17</sup> If medical waste is improperly disposed of, it leads to environmental contamination.<sup>1</sup> For this reason, it is important that medical waste is appropriately disposed of, however, current medical waste disposal methods involve processes such as incineration, which contributes to carbon emissions and thus to climate change.<sup>18</sup> Thus, while prioritising PHC may help reduce the medical waste produced by the health sector, there is a need for improved waste management processes, specific policies and training of staff.

## 3. The role of PHC in achieving Universal Health Coverage

Primary health care is considered to be the vehicle through which UHC will be achieved.<sup>19</sup> Reorienting services towards the PHC approach creates an opportunity for people to access a full range of health services close to their daily environments.<sup>19</sup> The World Health Organization (WHO) estimates that around 90% of UHC interventions can be delivered through the PHC approach and that the progress towards Sustainable Development Goals (SDGs) from this approach could result in millions of lives being saved and life expectancy increasing.<sup>19</sup> By strengthening PHC services, progress towards UHC can be improved and all individuals, regardless of their circumstances, will have the opportunity to achieve optimal health.

## Conclusion

In the battle against climate change, strengthening PHC services could be crucial for resilience and sustainability. The healthcare sector is responsible for nearly 5% of global carbon emissions and is a major contributor to climate change. Prioritizing more climate-oriented PHC solutions can enable mitigation of the environmental impact of the health system and at

the same time, safeguard the health of rural communities who are disproportionately affected by these environmental changes. Primary health care facilities powered by renewable energy and built to withstand extreme weather events can help to ensure more consistent access to health services. Such strategic investments not only enhance health outcomes and improve UHC, but also position PHC as a mitigation strategy to reduce the healthcare sector's carbon footprint. As we look to the future of health in rural landscapes, the imperative is clear: strengthening PHC is essential for combating climate change and achieving UHC.

## Recommendations

### Invest in primary health care

The call to invest in PHC is driven by two main objectives: to reduce the environmental impact of the health system and ensure greater momentum towards the realisation of UHC, particularly for rural communities. Investment into PHC services could help achieve the following objectives:

- The construction of climate-resilient PHC facilities that are able to withstand climate-related disasters and extreme weather conditions.
- The transition of PHC facilities, especially in rural areas, to renewable energy sources like solar or wind power by partnering with renewable energy companies.
- Over time, with preventative health practices, it could reduce the need for higher levels of care, as well as medical products and the transportation of these.
- Reduction in and more appropriate disposal of medical waste produced by the health system.
- Promotion of health education focused on climate-related health risks through education programs in local schools and community organisations, and hosting workshops in rural areas to raise awareness and empower residents.

In addition to direct investment into PHC, the following activities would support a strong PHC response to climate change and help progress towards UHC:

- Fostering multisectoral collaboration between health, agriculture, education, and environmental sectors to address broader health determinants, through integrated strategies and implementation of policies that promote sustainable practices.
- Expanding training programs for healthcare workers, especially in rural areas, to enhance their skills in managing climate-related health issues.
- Engage and empower community members in healthcare decision-making by establishing community health groups to set healthcare priorities and foster open dialogues (e.g. Imbizo) and community participation.

To strengthen PHC for climate resilience and UHC, there is a need to advocate for funding and resource allocation to PHC services. By working collaboratively with communities and multiple sectors of government it is possible to gear PHC to achieve health for all.

## References

1. Leal Filho W, Luetz JM, Thanekar UD, Dinis MAP, Forrester M. Climate-friendly healthcare: reducing the impacts of the healthcare sector on the world's climate. *Sustain Sci*. 2024 May 1;19(3):1103–9.
2. Or Z, Seppänen AV. The role of the health sector in tackling climate change: A narrative review. *Health Policy*. 2024 May 1;143:105053.
3. Campbell-Lendrum D, Neville T, Schweizer C, Neira M. Climate change and health: three grand challenges. *Nat Med*. 2023 Jul;29(7):1631–8.
4. Food and Agriculture Organization of the United Nations. The unjust climate [Internet]. Rome, Italy: FAO; 2024 [cited 2024 Sep 2]. 120 p. Available from: <http://www.fao.org/documents/card/en/c/cc9680en>
5. Sharpe I, Davison CM. Climate change, climate-related disasters and mental disorder in low- and middle-income countries: a scoping review. *BMJ Open*. 2021 Oct 1;11(10):e051908.
6. Nashwan AJ, Ahmed SH, Shaikh TG, Waseem S. Impact of natural disasters on health disparities in low- to middle-income countries. *Discov Health Syst*. 2023 Sep 4;2(1):23.
7. South African Broadcasting Corporation. Why are floods in KwaZulu-Natal so devastating? - SABC News - Breaking news, special reports, world, business, sport coverage of all South African current events. Africa's news leader. [Internet]. 2024 [cited 2024 Oct 21]. Available from: <https://www.sabcnews.com/sabcnews/why-are-floods-in-kwazulu-natal-so-devastating/>
8. Lokotola CL, Mash R, Naidoo K, Mubangizi V, Mofolo N, Schwerdtle PN. Climate change and primary health care in Africa: A scoping review. *J Clim Change Health*. 2023 May 1;11:100229.
9. Climate change and noncommunicable diseases: connections [Internet]. [cited 2024 Nov 2]. Available from: <https://www.who.int/news/item/02-11-2023-climate-change-and-noncommunicable-diseases-connections>
10. Chersich MF, Wright CY. Climate change adaptation in South Africa: a case study on the role of the health sector. *Glob Health*. 2019 Mar 19;15(1):22.
11. Ansah EW, Ankomah-Appiah E, Amoadu M, Sarfo JO. Climate change, health and safety of workers in developing economies: A scoping review. *J Clim Change Health*. 2021 Aug 1;3:100034.
12. Kadandale S, Marten R, Dalglish SL, Rajan D, Hipgrave DB. Primary health care and the climate crisis. *Bull World Health Organ*. 2020 Sep 28;98(11):818.
13. Lokotola CL. Towards a climate-resilient primary health care service. *South Afr Fam Pract*. 2023 Sep 26;65(1):5749.

14. World Health Organization. Climate change [Internet]. [cited 2024 Apr 8]. Available from: <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>
15. World Health Organization. Primary health care [Internet]. 2024 [cited 2024 Sep 27]. Available from: <https://www.who.int/health-topics/primary-health-care>
16. World Health Organization. Management of Solid Health-Care Waste at Primary Health-Care Centres [Internet]. Geneva: World Health Organization; 2005 [cited 2024 Nov 4]. Available from: <https://iris.who.int/bitstream/handle/10665/43123/9241592745.pdf>
17. Hangulu L, Akintola O. Health care waste management in community-based care: experiences of community health workers in low resource communities in South Africa. *BMC Public Health*. 2017 May 15;17:448.
18. Banerjee DS. The Impact of Biomedical Waste on Climate Change: A Silent Threat Unveiled. *Int J Res Publ*. 2024;5(1):6.
19. World Health Organization. Universal health coverage (UHC) [Internet]. 2023 [cited 2024 Sep 19]. Available from: [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc))