Public Health Bulletin
South Africa

Strengthening South Africa's public health response to climate change

Zikhona Jojozi[1], Itumeleng Matiea[1], Zandile Nukeri[1], Nevashan Govender[1*]

[1]Division of Public Health Surveillance and Response, National Institute for Communicable Diseases, a division of the National Health Laboratory Service, Johannesburg, South Africa

*Corresponding author

Summary

Climate change is no longer a distant concern but a public health emergency that presents a threat globally, including in South Africa. The country is already experiencing climate-related health effects: rising temperatures, extreme weather events like floods and droughts, shifting vector-borne disease patterns, and water scarcity that compromises sanitation infrastructure. These factors heighten the risk of outbreaks of diarrhoeal, waterborne, and heat-related illnesses. Heat stress and soil degradation reduce crop yields, heightening food insecurity and malnutrition among vulnerable populations. Climate change also affects mental health, as communities facing displacement and loss of livelihoods often experience psychological distress. The urgency of these threats calls for a robust, multisectoral public health response that integrates climate resilience. While South Africa has relevant climate and health policy frameworks, these remain fragmented, under-resourced, and poorly operationalised. A co-ordinated national approach is needed to enable timely interventions, efficient resource allocation, and targeted protection of vulnerable communities.

Background

While climate change threatens all nations, its health impacts are felt unequally.[1] Low- and middle-income countries, especially in Africa, are disproportionately affected and face the greatest risks, yet often have the least adaptive capacity to prevent or reduce adverse outcomes.[2,3] The effects of climate change vary by region, with some areas facing recurrent droughts and food insecurity while others are more vulnerable to flooding or cyclones.[2] Within South Africa, the health burden is not evenly distributed; children, the elderly, pregnant women, people with pre-existing conditions, and those living in poverty are at heightened risk of climate-related health impacts.[4]

To address these inequities, mitigation and adaptive strategies that cut across health, agriculture, environment, and infrastructure are required.[3] Strengthening health service delivery and building resilience into health-related infrastructure is important to ensure continuity of care during extreme events.[2] Adaptation policies should prioritise health sector leadership and embed a health-centred approach, including national and local strategies to protect vulnerable groups.[5]

Current policy landscape

South Africa has been warming at a rate 1.5 times faster than the global average, with mean annual temperatures rising by 1°C over the past five decades.[6] Projections suggest continued increases in the frequency and intensity of extreme weather events.[6] Recent data on major climate-related incidents and associated deaths in South Africa are shown in Table 1.

Table 1. Extreme weather incidents and related fatalities across South African provinces during the period 2022 to 2024.

Extreme weather event	Year of occurrence	Province affected	Number of deaths	Sources
Floods	2022	KwaZulu-Natal	443	KZNedtea[7]
Floods/storms	2023	Western Cape	11	Reliefweb[8]
Severe heatwave	2023	Northern Cape	8	Foodformzansi[9]
Snowstorms	2024	KwaZulu-Natal, Free State	2	South African Weather Services[10]
Floods	2025	Eastern Cape	102	South African Government News Agency[11]

South Africa has developed numerous strategic frameworks to address the climate crisis, many of which acknowledge health as a concern. The National Climate Change Response Policy (NCCRP) (2011) set a foundation for a low-carbon, climate-resilient economy. While it highlights the vulnerability of public health, it lacks clarity on implementation timelines, measurable indicators, and health-specific adaptation actions.[12] The National Climate Change Adaptation Strategy 2019 provides direction for sectoral adaptation, including health, but treats health as a secondary benefit of interventions in sectors such as water, biodiversity, and disaster risk reduction.[13] Municipal uptake has been uneven due to varying local capacity.

In 2024, the Climate Change Act (Act No. 22 of 2024) introduced binding emissions targets and mandated all provinces and municipalities to develop climate adaptation plans. This law offers an opportunity to embed health more centrally within climate planning frameworks.[14] Although the National Development Plan 2030, National Health Insurance White Paper (2017), and other strategic documents acknowledge the intersection of climate and health, they do not articulate a comprehensive climate-health framework.[15] Implementation remains weak due to poor alignment, lack of accountability, and insufficient integration of health outcomes in climate response metrics.

Gaps and challenges

Several national policy frameworks address the climate health interface in parallel, yet without a unified operational plan. The NCCRP, 2011, administered by the Department of Forestry, Fisheries and the Environment (DFFE), establishes the main national climate adaptation framework, while the National Health Act (No. 61 of 2003) and the District Health System, under the National Department of Health (NDoH), govern

the public health response. The Disaster Management Act (No. 57 of 2002) under the Department of Co-operative Governance and Traditional Affairs (COGTA) manages climate-related disaster risk, yet this framework is orientated primarily towards emergency response with limited emphasis on addressing the long-term health impacts associated with climate change. The National Development Plan (2030) and the National Adaptation Strategy (2020) reference health co-benefits of climate adaptation, but neither assigns binding inter-departmental implementation responsibilities or accountability mechanisms. Co-ordination between these frameworks is nominally enabled through the Inter-Governmental Relations (IGR) Framework Act (No. 13 of 2005), the Presidential Climate Commission (PCC), and sectoral Minmec and CominTech structures. In practice, however, these mechanisms have not produced joint action plans at the provincial or municipal level, where climate-sensitive disease burdens, including malaria in Limpopo and KwaZulu-Natal, cholera and diarrhoeal disease in informal settlements, and heat-related illness in urban areas are most acutely experienced.[16,17]

Despite growing awareness of climate-related health risks, training on this topic among existing personnel remains limited across South Africa's health workforce. The Health Professions Council of South Africa's (HPCSA) Continuing Professional Development system does not include climate and health as a required competency for doctors, nurses, or allied health professionals. At the facility level, clinical guidelines and service delivery programmes have not been systematically updated to incorporate climate-informed risk assessment, climate-related triage, or changing seasonal disease patterns associated with climate change. Similarly, community health workers within Ward-Based Primary Health Care Outreach Teams, who are based in communities most vulnerable to climate impacts, receive limited training on heat-related illness, climate risk communication, or referral for flood- and drought-associated conditions.[18,19,20]

Surveillance systems for climate-sensitive diseases in South Africa remain fragmented despite recent efforts to strengthen climate-informed public health surveillance. While routine surveillance for established climate-sensitive diseases, such as malaria, is well developed through the National Institute for Communicable Diseases (NICD) and provincial malaria control programmes, surveillance for other climate-sensitive diseases, including leptospirosis, Rift Valley Fever, and waterborne diseases, remains inconsistent and is often strengthened only during outbreaks. The integration of meteorological and environmental information into routine disease surveillance and early warning systems is still limited, restricting the timely prediction and detection of climate-related health threats. Although the Integrated Disease Surveillance and Response strategy recognises climate health linkages as a priority within a One Health framework, implementation of climate-informed surveillance at provincial and district levels remains limited.[21,22]

Collaboration between government departments responsible for health, environment, disaster management, and infrastructure remains limited in practice.[21] Although the IGR Framework Act provides a formal mechanism for co-ordination, joint climate and health planning between the NDoH, DFFE, COGTA, and the National Disaster Management Centre (NDMC) has not consistently translated into shared action plans at the provincial or district levels.[23] At the municipal level, despite requirements to integrate climate resilience into Integrated Development Plans, many municipalities lack the technical capacity and tools to

effectively address health-related climate risks.[24] Climate risk mapping that links environmental hazards with local disease burden remains limited, vulnerability assessment tools are not standardised, and early warning systems are not fully integrated into primary healthcare services. Capacity to interpret and apply available data sources, including South African Weather Service (SAWS) seasonal forecasts and existing health information systems such as the District Health Information Software 2 climate modules, remains constrained among municipal environmental health practitioners. These gaps are particularly evident in rural districts, where health service pressures are already high and populations are increasingly exposed to climate-sensitive health risks.[25,26]

Funding for climate-health initiatives in South Africa remains fragmented and insufficient. Although several financing mechanisms exist, including the Green Fund administered by the Development Bank of Southern Africa, the National Treasury's Climate Finance Framework, and broader health financing reforms under the National Health Insurance system, none provide dedicated or sustained funding for climate-sensitive disease surveillance, early warning systems, or health workforce capacity building. As a result, climate and health interventions are largely dependent on donor support and short-term project-based funding, which limits long-term sustainability and system-wide integration. Khine and Langkulsen[16,27] further note that the lack of robust data on climate-health linkages makes it difficult to cost interventions and allocate resources effectively. In the South African setting, this data gap is particularly noticeable at the local level, where data on the health impacts of climate variability in informal settlements, smallholder farming communities, and coastal populations remains limited. This weak evidence base continues to hinder targeted investment and effective prioritisation of climate and health interventions.

Opportunities and recommendations

South Africa has the institutional and legal foundation to lead a health-focused climate adaptation agenda. Priority actions include:

1. Integrated climate and health adaptation plan: A national climate and health plan should be finalised through a joint process led by the DFFE, NDH, COGTA, and NDMC, and should be co-ordinated under the oversight of the PCC. The plan should outline health-specific goals, measurable indicators, dedicated funding streams, and institutional accountability. Robust risk and vulnerability assessment should be developed to support priority settings and ensure that adaptation measures are targeted to the most at-risk populations and regions.[27]
2. Strengthen surveillance and early warning systems: The Directorate: Environmental Health within the NDoH, in collaboration with the SAWS and the DFFE, should strengthen integrated disease surveillance and early warning systems through formal institutional agreements that enable systematic sharing of meteorological, environmental, and health data. This should support the development and application of predictive analytics to enhance early detection and timely response to climate-sensitive health threats, particularly for vector-borne and heat-related illnesses. In addition, academic and research institutions, such as the Medical Research Council of South Africa and the NICD, should prioritise research

on the health impacts of climate change and support the development of cost-effective, evidence-based interventions and forecasting tools.[20,22,28,29]

3. Workface capacity building: The HPCSA and the South African Nursing Council, in collaboration with higher education institutions, should integrate climate change and health content into medical, nursing, and public health curricula. The Directorate: Human Resources for Health within the NDoH should develop and implement targeted in-service training programmes on climate and health risks for all health workers across the health system, with provincial health departments responsible for cascading training to district and facility levels to ensure consistent and system-wide capacity strengthening.[30]
4. Community engagement: The Directorate: Health Promotion and Nutrition within the NDoH, in partnership with the COGTA and the Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities (CRL Rights Commission), should ensure that climate and health adaptation plans are developed together with communities, civil society organisations, and traditional leaders to ensure local ownership and cultural relevance. The South African Local Government Association should support municipalities in facilitating meaningful community participation in adaptation planning processes. Clear and accessible public health communication campaigns on climate-related health risks should be prioritised, with a targeted focus on informal settlements and under-resourced municipalities where vulnerability to climate impact is highest.[13]
5. Sustainable financing and international co-operation: The National Treasury, in collaboration with the NDoH and the DFFE, should align climate and health budgets, mobilise domestic resources, and pursue international climate finance opportunities.[23] Drawing on the success of the Southern African Development Community Malaria Elimination Eight (E8) initiative and South Africa's co-financing of malaria source reduction in Mozambique, this model of regional solidarity should be extended to other climate-sensitive health threats, including cholera, heat-related illness, and flood-associated disease outbreaks.[28]

Conclusion

South Africa is at a critical juncture. The health impacts of climate change are no longer hypothetical; they are accelerating. By embedding health into national climate strategies, integrating climate into health strategies, investing in adaptive capacity, and prioritising equity, South Africa can build a health system resilient to future climate shocks. The urgency is clear: safeguarding health in a changing climate is both a moral imperative and a national security priority.

Acknowledgements

The authors acknowledge Genevie Ntshoe of the Outbreak Response Unit, Division of Public Health Surveillance and Response, NICD/National Health Laboratory Service, for her valuable contributions to this work.

Conflict of interest

The authors declare that they have no conflicts of interest related to this work.

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