

Climate-Induced Health Emergencies and the Limits of Reactive Governance: Toward a Preventive Legal Framework in Africa

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ABSTRACT

Human-induced climate change represents the main global health problem, while sub-Saharan Africa experiences severe health risks from climate change despite its low greenhouse gas emissions. The research investigates how climate change creates health emergencies through various disease outbreaks, which include increasing cases of cholera and malaria and severe mental health conditions. The main issue with the research is that existing governance systems respond to emergencies rather than creating systems that prevent disasters. Their operation leads to fundamental system breakdowns, which create unequal access to public services. The study aims to assess existing legal systems and develop an African legal framework which will act as a system for stopping future threats. The research examines how African systems face policy-practice gaps through a doctrinal systematic analysis of national laws and peer-reviewed research materials. The results demonstrate that existing legal frameworks fail to provide sustainable solutions because institutional barriers and insufficient funding, together with ineffective enforcement procedures, create obstacles to achieving long-term sustainability. The study concludes that organizations need to establish a preventive framework which requires them to implement integrated monitoring systems, conduct compulsory health impact evaluations and create infrastructure that can withstand climate change to prevent their emergency management system from repeating cycles which violate human rights.

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1. INTRODUCTION

The public health risk from climate change continues to grow, with sub-Saharan Africa expected to experience the continent's most severe effects. The region experiences increased vulnerability to extreme heatwave events and changing rainfall patterns and extended drought periods because of its various climatic conditions and economic development obstacles¹. Environmental changes create direct threats to social and ecological health determinants, which encompass clean air and safe drinking water and nutritious food supply systems². The current state of climate change functions as a health risk multiplier which endangers all public health advancements made throughout multiple decades in Africa. African countries face severe health effects from multiple human wellness factors which result from their greenhouse gas emission levels, which remain below 4 per cent of worldwide emissions³. The existing health systems in the region already face operational challenges because of their historical funding shortfalls, yet they must handle increasing climate-related infectious diseases and natural disaster incidents. The climate justice issue requires a technical solution which needs public health and environmental governance systems to undergo fundamental changes⁴.

The health emergencies which climate change creates in Africa manifest through enormous floods and the return of viral outbreaks, thus demonstrating the complete failure of reactive governance to manage these health emergencies. The present governance system operates through an emergency-based approach which provides assistance and rebuilding efforts only after a disaster has struck⁵. Local governments face service delivery problems because they do not have the necessary resources to handle new requirements that emerge after disasters occur. Bureaucratic obstacles together with poor collaboration between different agencies have transformed governance in South Africa and Nigeria into a process that requires emergency requests instead of active risk management⁶. The organization possesses institutional memory, yet decision-making processes remain frozen because organizations use “symbolic compliance” to create policies which stay unimplemented in practice. Health systems experience structural instability because intergovernmental coordination functions as a fragmented system which fails to protect against

¹ Beatrice Valerian Njau and Ferdinand Marcel Temba, “Legal and Policy Dimensions of Climate Governance in Tanzania: Implications for Environmental Protection and Public Health Resilience,” *The Sub-Saharan Journal of Social Sciences and Humanities* 1, no. 2 (2025): 11–36.

² Aminata Kilungo, Godsgift N. Chukwuonye, Victor Okpanachi, and Mohamed Hussein, “Preparedness of Sub-Saharan African Countries to Address Climate Change and Health Impact: A Scoping Review,” *medRxiv* (2024), <https://doi.org/10.1101/2024.11.28.24318138>.

³ Stella Ngugi, “The Nexus of Law, Climate Displacement and Disaster Recovery: A Practitioner’s Perspective from Africa,” in *A Research Agenda for Disaster Law* (Cheltenham: Edward Elgar Publishing, 2025), 165–182.

⁴ Osikemekha Anthony Anani, Maulin P. Shah, Paul Atagamen Aidonojie, and Alex Ajeh Enunekku, “Bio-Nano Filtration as an Abatement Technique Used in the Management and Treatment of Impurities in Industrial Wastewater,” in *Bio-Nano Filtration in Industrial Effluent Treatment* (2023), 171–182.

⁵ Hashim Ulrich Hounkpatin, *How Are Health Systems in Sub-Saharan Africa Adapting to Protect Human Health from Climate Change Threats?* (master’s thesis, Institute of Tropical Medicine Antwerp, 2023).

⁶ Ibid

continuous climate-related disruptions⁷. The outdated national climate models lead to the second problem because planners who depend on them cannot identify specific local vulnerability areas. The transition from our current reactive pattern to our desired anticipatory adaptation system serves as the primary means of protecting development progress from damage caused by severe weather conditions⁸.

The main challenge emerges from the existing African legal frameworks, which fail to implement their progressive laws that should protect public health and promote health resilience⁹. The South African Disaster Management Act 57 of 2002 and Tanzania Environmental Management Act 2004 establish formal systems for interagency coordination, yet their practical implementation remains limited. The treaties establish public health as a secondary consideration which governments must address when implementing climate adaptation programs. Chronic water supply interruptions during droughts persist in regions which fail to maintain their essential infrastructure according to the National Water Act¹⁰. Most legal systems today fail to address current challenges because they do not recognize cross-border disease transmission and digital health surveillance systems. The public health acts in many jurisdictions offer disease surveillance safeguards, yet their operational alignment with climate legislation remains weak, resulting in fragmented emergency responses¹¹. The population suffers from increased risks because of the regulatory inconsistencies and the absence of required Health Impact Assessments for projects that affect climate conditions.

The research study “Climate-Induced Health Emergencies and the Limits of Reactive Governance: Toward a Preventive Legal Framework in Africa” presents its first original finding by developing a new legal system that serves as a protective defence mechanism for sub-Saharan regions¹². Existing research has created detailed maps of climate impacts, but it fails to show how legal changes can make governance systems move from their existing reactive state toward a new proactive method of operation. This research establishes a unified legal system which combines health protection with environmental conservation and disaster risk management through its creation of an integrated policy framework¹³. Legal epidemiology serves as a new research method which enables researchers to study how laws impact health equity while discovering ways to resolve existing disparities in infrastructure legislation. The study defines legal preparedness as an essential element of crisis management while

⁷ Peter O. Nweke and Izuagie Oshoke, “Securing AI-Driven Healthcare Systems in Climate-Resilient Infrastructure: A Framework for Sustainable Public Health in Nigeria,” *Multidisciplinary Journal of Engineering, Technology and Sciences* 2, no. 1 (2025).

⁸ Emmanuel B. Kasimbazi, “Analysis of Legal and Regulatory Frameworks for Disaster Risk Management in Africa,” in *Research Handbook on Disasters and International Law* (Cheltenham: Edward Elgar Publishing, 2024), 320–342.

⁹ Ibid

¹⁰ Ibid

¹¹ Masika Sarah Bino and Paul Atagamen Aidonojie, “Achieving Environmental Sustainability through Carbon Neutrality in Uganda: Legal Issues and Strategic Solutions,” *Cogito: Multidisciplinary Research Journal* 17 (2025): 72.

¹² Edward Wilson Ansah, Mustapha Amoadu, Paul Obeng, and Jacob Owusu Sarfo, “Health Systems Response to Climate Change Adaptation: A Scoping Review of Global Evidence,” *BMC Public Health* 24 (2024): 2015, <https://doi.org/10.1186/s12889-024-19459-w>.

¹³ Ibid

it supports the need for enforceable international and regional health safety regulations¹⁴. The study demonstrates how participatory governance creates an exclusive method for environmental peacebuilding which operates through technical planning and structural representation throughout Africa.

The main goal of this research is to investigate how African governance systems currently function while demonstrating their patent structural and legal shortcomings, which make climate-related health crises worse¹⁵. The research evaluates existing laws through disaster management and public health regulations to assess their ability to control disease outbreaks during climate-related emergencies. The second objective aims to identify existing policy gaps which prevent public health integration into national adaptation strategies¹⁶. The researchers intend to create a legal framework for prevention which combines integrated surveillance with essential health impact evaluations and investment in infrastructure that can withstand climate change. The research develops evidence-based pathways which will advance interagency cooperation and local community engagement in managing climate-related risks. The study develops a framework which protects human health and fosters health equity across Africa during the current period of increasing climate change.

2. METHOD

The researchers conduct their examination of African climate-related health regulations through a doctrinal research approach which uses literature review as their primary method.

Research Approach: This study used a qualitative doctrinal legal research approach in evaluating the legal framework surrounding health emergencies arising from climate change in Africa, and the development of a legal framework that will prevent future problems. The focus was on the interpretation, evaluation and synthesis of legal rules, principles, and mechanisms.

Data Collection Instruments: The tools used in data collection were entirely from secondary sources (documentary analysis). Primary doctrinal data include constitutional law and legislation. The secondary data sources were scholarly journal articles, books, papers presented at conferences, policies and reports published by scholarly authors and relevant institution, among others.

Validity and Reliability of Instruments: Validity and reliability of the data collection tools were achieved through selection of valid, reliable, and up-to-date legal and scholarly sources from reputable legal databases and websites of relevant organizations.

Data Collection Procedures: Pertinent legal resources have been located and obtained through systematic searching for relevant keywords within legal databases,

¹⁴ Umaru Sesay and Augustus Osborne, "Building Climate-Resilient Health Systems in Sierra Leone: Addressing the Dual Burden of Infectious and Climate-Related Diseases," *Infectious Diseases of Poverty* 14, no. 1 (2025): 23.

¹⁵ Davide T. Mosca and Michela Martini, "The Climate-Migration-Health Nexus: A Multisectoral Framework for Action, with Case Insights from MENA," *Tropical Medicine and Infectious Disease* 11, no. 3 (2026): 79.

¹⁶ Ibid

institutional repositories, and governmental/intergovernmental websites, after which they have undergone scrutiny based on their relevance to the study aims.

Data Analysis Tools: Doctrinal legal analysis was employed in the analysis of the collected material, alongside thematic and comparative analyses that were used in making sense of the laws and formulating proposals for a proactive legal framework for health emergencies occasioned by climate change in Africa.

3. RESULTS AND DISCUSSION

3.1. Conceptual Clarifications and Theoretical Framework

Health emergencies that arise from climate change result in sudden public health crises because environmental changes create multiple effects which lead to climate stressors combining with existing social and economic weaknesses¹⁷. The emergencies which stem from this phenomenon operate as environmental changes that actively transform ecological niches and geographical territories which serve as habitats for deadly pathogens¹⁸. The sub-Saharan African region experiences these events through a series of cascading effects which disrupt physical health, mental health, and social wellbeing while they burden already strained health systems that suffer from past funding shortfalls¹⁹. The causal pathways include direct impacts like heatstroke and drowning, as well as indirect consequences that arise from environmental systems through which diseases spread through vectors and water sources²⁰. The operational framework for emergency management requires organizations to work together throughout all stages of emergency management, from prevention through detection to incident response and social reconstruction²¹. The contemporary security landscape shows a fundamental shift because climate security now connects rising average temperatures and sea level increases to their effects on human health and economic activities. The emergencies create a major global problem which requires collective international action because their effects remain concentrated in local areas²².

The present state of African governance demonstrates a policy-practice gap that leads to reactive governance systems which lack both preventive and adaptive capabilities. The governance system at Stage 1 maturity operates through reactive governance which depends on "incident-driven" operations that deliver only basic

¹⁷ Mohamed Saber, Abdulai Koroma, Richard Vithundwa Posite, Aliousseyni Ly, Alhaji M. Tejan Bah, Alhassan Abdulai, Assou Y. Kokouvi, et al., "A Comprehensive Review of Climate Change Adaptation and Disaster Risk Reduction in Africa," *Journal of Water and Climate Change* 16, no. 5 (2025): 1831–1862.

¹⁸ Mercy Monden, Reem Hassanin, Hannah Sackeyfio, and Franziska Wolf, "A One Health Approach to Climate-Driven Infectious Diseases in Sub-Saharan Africa: Strengthening Cross-Sectoral Responses for Resilient Health Systems," *Applied Sciences* 16, no. 1 (2026): 261.

¹⁹ Oluwaseun Ibuife Oluwaniyi, "Climate-Induced Occupational Health Risks: Addressing Heat Stress, Air Quality and Emergency Preparedness," *International Journal of Scientific Research in Science, Engineering and Technology* 12, no. 4 (2025).

²⁰ Muhammad Mutawalli Mukhlis, Maskun Maskun, Muhammad Saleh Tajuddin, Andi Tentri Yeyeng, and Paul Atagamen Aidonojie, "The Crisis in Red Sea Region: Legal and Socio-Economic Impact on International Commerce," *Al-Risalah: Forum Kajian Hukum dan Sosial Kemasyarakatan* 24, no. 2 (2024): 17–35.

²¹ Mostafa Kabir, Mohammad Rafiqul Islam, Sen Sen, and S. M. Abir, "Climate Change and Its Effect on Public Health Policies," *Clinical Epidemiology & Public Health* 3, no. 1 (2025): 1–9.

²² Ibid

first-aid and post-event debriefs after disasters or disease outbreaks²³. The model depends on "symbolic compliance" because national frameworks exist as official documents which organizations fail to implement because of administrative delays and insufficient collaboration between agencies²⁴. The system of preventive governance establishes its need for a basic shift which requires organizations to adopt "anticipatory adaptation" and forecasting methods²⁵. The system of preventive models establishes links between climate projections and infrastructure development processes and workplace safety protocols to achieve "climate-integrated" governance. The shift from reactive approaches to proactive approaches requires organizations to establish climate risk assessments as a standard practice throughout all stages of facility development and health planning²⁶. The process needs to proceed because postponing climate action results in expenses that exceed all economic and health impacts which preventive measures can achieve within their scheduled time frame.

The Precautionary Principle acts as the primary theoretical framework which Tanzania's Environmental Management Act (EMA) of 2004 requires to establish scientific proof before taking protective measures. The principle establishes a standard which development project must use to assess their effects on climate vulnerability and public health. The principle states that organizations should implement environmental protection measures which have proven cost-effective even when they lack complete scientific evidence²⁷. The principle allows health systems to establish early warning systems and vaccination programs which operate before health emergencies reach critical outbreak points. The principle enables legal systems to grant ministers and regulatory agencies power to work together across different sectors for the purpose of reducing risks that might result in permanent damage²⁸. Project proponents must provide evidence that their actions will not increase existing climate-related health disparities according to this regulation²⁹.

The Preventive Principle in environmental law states that organizations should prioritize hazard prevention because it leads to better efficiency and lower costs than handling disasters after they occur. The preventive principle establishes risk management procedures which reduce known dangers and their associated harmful

²³ Sileshi Demelash Sasie, Fantu Mamo Aragaw, Tigist Ali Gebeyehu, Sintayehu Abdella Shikur, Lensa Fekadu, Neima Zeynu Ali, Zenebech Mamo Argaw, et al., "Building Systems for Preparedness: Global Scoping Studies on Institutional Governance and National Public Health Agencies," *PLOS Global Public Health* 6, no. 2 (2026): e0005427.

²⁴ Ibid

²⁵ Miracle Henry Chukwuma Madubueze, Obioma Davison Mbanefo, James Kodilichukwu Anekwe, Nnamdi Michael Nwadiogbu, and Anthony Ejue Egberi, "Institutional and Policy Responses to Climate-Driven Vector-Borne Diseases in Nigerian Public Health," *International Journal of Global Trends and Research* 3, no. 1 (2026): 191-198.

²⁶ Ibid

²⁷ Ibid

²⁸ Ibid

²⁹ Joseph K. Kamara, Berhe W. Sahle, Kingsley E. Agho, and Andre M. N. Renzaho, "Governments' Policy Response to Drought in Eswatini and Lesotho: A Systematic Review of the Characteristics, Comprehensiveness, and Quality of Existing Policies to Improve Resilience," *Discrete Dynamics in Nature and Society* 2020 (2020): 3294614.

effects, while the precautionary principle deals with uncertain situations³⁰. The principle operates through Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs), which serve as essential tools to assess health effects from major infrastructure developments³¹. The absence of mandatory Health Impact Assessments (HIAs) in African countries establishes a fundamental obstacle that prevents the actualization of the preventive principle. Governments need to enhance their judicial and regulatory systems which protect environmental standards, while all infrastructure projects should implement "climate-proofing" measures against future environmental challenges³². The main objective is to establish resilience in social-ecological systems which enables them to withstand disturbances while maintaining their core operational capabilities³³.

The WHO Health System Resilience Framework serves as a guiding framework which international public health risk governance uses to implement its comprehensive global health security strategy through the integration of these core principles³⁴. The framework establishes resilience as a health system capacity which enables health workers and communities to effectively manage emergencies while sustaining essential health services³⁵. The governance process requires health organizations to work together with environmental agencies, agricultural departments, and urban development organizations to implement the "One Health" approach, which unites human health with environmental health³⁶. The organization recommends "legal preparedness", which requires statutory instruments like Disaster Management Acts to establish comprehensive guidelines and emergency response resource distribution procedures. Institutional fragmentation together with overlapping mandates creates obstacles for governance, which results in duplicated work efforts and delayed emergency management response. The system-building process needs to establish local risk knowledge-based practices through decentralised data-driven planning, which enables women and residents of informal settlements to take part in decision-making processes³⁷. The development of future governance systems needs to establish human-centered methods which safeguard human dignity during climate transformation that creates new challenges.

³⁰ Anita Shologu and Rozenda Hendrickse, "Bridging Policy Gaps in Climate-Resilient Water and Sanitation Governance: Critical Analysis and Reform Pathways for South Africa's Eastern Cape Province," *International Journal of Business Ecosystem & Strategy* 8, no. 1 (2026): 164–175.

³¹ Osikemekha Anthony Anani, Paul Atagamen Aidonjio, and John Ovie Olomukoro, "Environmental Principles and Ethics: Current Challenges in the Field of Bioscience and Law," in *Ethics, Media, Theology and Development in Africa* (2022), 142.

³² Shine Dela-Edem Wormenor and Michael Osei Asibey, "Digital Technologies for Climate-Induced Disaster Risk Reduction and Management in Ghana: Applicability and Operational Challenges," *Land Use Policy* 150 (2025): 107459.

³³ Ibid

³⁴ Israel Edem Agbehadji, Stefanie Schütte, Muthoni Masinde, Joel Botai, and Tafadzwanashe Mabhaudhi, "Climate Risks Resilience Development: A Bibliometric Analysis of Climate-Related Early Warning Systems in Southern Africa," *Climate* 12, no. 1 (2023): 3.

³⁵ Ibid

³⁶ Ibid

³⁷ Ibid

3.2. Climate Change and Public Health Risks in Africa

The continent of Africa stands as the most climate change-vulnerable region because it produces only 4 per cent of global greenhouse gases³⁸. The combination of fast population expansion, which will reach 2 billion people by 2050, and the extreme dependence on agriculture that needs rainfall creates high vulnerability. More than 413 million Africans lived in poverty during 2015, which shows a 67 per cent increase since 1990 and creates major obstacles to their ability to adapt³⁹. The Intergovernmental Panel on Climate Change (IPCC) reports that African regions experience temperature increases which exceed global temperature rise, with sub-Saharan Africa experiencing warming at rates between 0.3 and 0.5 °C per decade. The regions which experience warming trends will see streamflow reductions between 5 and 30 percent while vulnerable basins and soil moisture will experience major declines, which create more water and food shortages⁴⁰. The ongoing climate change crisis has become a basic factor which creates health hazards that threaten to erase all the public health progress which African nations have achieved during the past 50 years.

The rising temperatures, together with altered rainfall patterns, create conditions that let pathogens spread to new areas and extend active infection periods. The malaria transmission season has extended by approximately two weeks throughout the sub-Saharan African highlands⁴¹. The Nigerian modelling study shows that dengue transmission will extend for more than 30% of the time in major cities like Lagos and Abuja, according to projections for the year 2050. The "sylvatic cycle" of yellow fever spreads because changing forest ecosystems create more breeding territory for unvaccinated people who live in areas where the climate supports mosquito reproduction. Extreme weather events such as floods create stagnant water bodies that enable mosquito breeding, while droughts drive vectors and humans to gather near limited freshwater supplies⁴². The combined pressure from VBD outbreaks on primary healthcare centers creates a situation that results in ongoing stress for the health system because it prevents facilities from handling other medical needs.

The combination of climate-related water shortages and inadequate sanitation systems creates health hazards which impact 157 million individuals during the

³⁸ World Health Organization, *Health System Strengthening Interventions to Improve the Health of Displaced and Migrant Populations in the Context of Climate Change* (Geneva: World Health Organization, 2025).

³⁹ Osikemekha Anthony Anani, Kenneth Kennedy Adama, Paul Atagamen Aidonjio, and Okagbare Aregbor, "Zooplankton and Community Phytoplankton: Influence of Personal Care Products, Legislative Status, and Possible Remediation," in *Emergent Pollutants in Freshwater Plankton Communities* (2025), 80–93.

⁴⁰ Olakunle Saheed Soyegbe, Collins Nwannebu Nwokedi, Busayo Olamide Tomoh, Ashiata Yetunde Mustapha, Akachukwu Obianuju Mbata, Obe Destiny Balogun, Adelaide Yeboah Forkuo, and Cyril Enahoro Imohiosen, "Public Health Crisis Management and Emergency Preparedness: Strengthening Healthcare Infrastructure against Pandemics and Bioterrorism Threats," *Journal of Frontiers in Multidisciplinary Research* 5, no. 2 (2024): 52–68.

⁴¹ Dongli Peng, Atiqah B. Fayyaz, Shafei M. Hali, and Hassan J. Shah, "Reproductive Health Financing for Flood-Displaced Women," *African Journal of Reproductive Health/La Revue Africaine de la Santé Reproductive* 29, no. 12s (2025): 183–195.

⁴² Sakchhi Tiwari, "Climate Change and Human Health: Interdisciplinary Challenges in Medicine, Policy, and Environment," *Vascular and Endovascular Review* 8, no. 8s (2025): 213–221.

period from 2008 to 2018 who experienced hydro-meteorological disasters in sub-Saharan Africa⁴³. The Senegal floods of 2020 which resulted in thousands of people being displaced and contaminated water sources, which caused a return of waterborne diseases, including cholera and typhoid. The WHO African Region reported 17 countries which experienced cholera outbreaks in 2023, with the situation becoming worse because of conflict-related displacements and insufficient WASH (Water, Sanitation, and Hygiene) facilities⁴⁴. The lack of a clean water supply prevents people from maintaining proper hygiene practices, which forces families to use unclean water and results in increased cases of diarrheal diseases that continue to affect many children. Women and girls in rural communities must walk greater distances to find water because their areas lack sustainable water systems which protect against climate change impacts. The complete solution for these risks requires water governance systems which combine health measurement systems with resource control methods.

The number of people who experience occupational health risks from thermal stress has increased because 2.4 billion workers worldwide face heat stress, especially those who work in Africa's labor-intensive industries⁴⁵. Studies indicate that manual labor capacity can be reduced by as much as 82% under conditions of extreme heat. Workers who spend extended periods outdoors in construction and agriculture, plus mining environments, experience dehydration and heat exhaustion together with increased rates of workplace accidents⁴⁶. Heatwaves currently cause around 19000 deaths each year worldwide while businesses lose approximately 21 trillion dollars in productivity. The thermal stress condition creates two problems, which include the accelerated material fatigue process that destroys health infrastructure and the reduced capacity to store heat-sensitive vaccines and pharmaceuticals⁴⁷. The process of protecting workers requires both improved regulatory systems and the use of customized thermal load assessments, which need to be included in workplace safety procedures.

Climate change fundamentally affects nutritional and maternal-child health outcomes, which creates a severe threat to future generations through increased childhood anaemia burdens that result from global warming⁴⁸. Major flood and drought events create an additional risk of food insecurity that ranges from 5 to 20 percentage points, which directly causes malnutrition and stunting in children. Agricultural droughts and unpredictable rainfall patterns have worsened

⁴³ Ibid

⁴⁴ Ibid

⁴⁵ William Manga Mokofe, "Building Disaster Resilience through Social Protection Policies: A South African Perspective with Comparative Insights from SADC," *The Easta Journal of Law and Human Rights* 4, no. 1 (2025): 139–145.

⁴⁶ Augustine I. Wonor, Gloria Chigbu, Maryjane Y. Oghogho, and OMC Osazuwa, "Assessing the Impact of Climate Change Induced Flooding on Human Security in Nigeria's Middle Belt," *Emerging Frontiers Library for The American Journal of Interdisciplinary Innovations and Research* 8, no. 3 (2026): 23–39.

⁴⁷ Ibid

⁴⁸ Ibid

undernutrition conditions for children under five in Kenya's Kilifi County⁴⁹. Seasonal water stress and crop failures lead to "growth faltering" in infants, as mothers face difficulties in maintaining adequate nutrition during pregnancy and lactation. Heat exposure during pregnancy causes negative health effects that include increased miscarriage risk and heat-related exhaustion among mothers who work in subsistence farming⁵⁰. The intersection of these factors shows that the climate crisis has become a fundamental health determinant which affects health most strongly in Africa's vulnerable population groups.

The climate crisis affects African communities through its mental health and social impacts, which researchers have not yet studied sufficiently. "Solastalgia" describes a psychological condition which people experience when their home environment undergoes destructive changes that lead to environmental degradation⁵¹. The combination of cyclones and droughts which occur repeatedly causes people to leave their homes, and this results in increased urban population density together with higher rates of gender-based violence and social unrest⁵². Humanitarian assistance needs to reach 33 million people in the Sahel region because climate-related water shortages, extreme hunger, and political unrest have created a humanitarian crisis⁵³. The climate-conflict-migration nexus destroys social structures in fragile societies while it also dismantles crucial systems, which include healthcare services⁵⁴. The complicated psychosocial effects need a "climate-in-all-policies" strategy which places human dignity and social protection as its main objectives⁵⁵. The community needs educational programs together with grassroots participation to build resilience which protects them from enduring social hazards.

Based on the above, the data obtained are therefore represented in a diagrammatic flow below:

Table 1: Climate Change & Public Health Risks in Africa

Area	Key Drivers	Health Impact	Core Challenge
Vulnerability Context	Low emissions (<4%); poverty; population growth	Low adaptive capacity	High exposure, weak resilience

⁴⁹ Dyah Mutiarin, Hazel D. Jovita, Halimah Abdul Manaf, and Imron Sohsan, "Designing Architecture Enterprise of Disaster Management in Indonesia," *IOP Conference Series: Earth and Environmental Science* 1610, no. 1 (2026): 012009.

⁵⁰ Christina-Ioanna Papadopoulou, Stavros Kalogiannidis, Dimitrios Kalfas, George Konteos, and Ioannis Kapageridis, "Civil Protection in Greece's Cities and Regions: Multi-Hazard Performance, Systemic Gaps, and a Roadmap to Integrated Urban Resilience," *Urban Science* 9, no. 9 (2025): 362.

⁵¹ Isaac Olajide Areo, Marian Onyemaechi Ashikodi, Christopher Mupenzi, and Thompson Faraday Ediagbonya, "Climate Induced Thermal Stress in the Workplace and Its Implications for Health Risks Adaptation and Policy Responses," *Discover Public Health* 22, no. 1 (2025): 819.

⁵² Ibid

⁵³ Goitom Sisay, Abay Sefene, Abdu Kassaw, Derby Getachew, and Getachew Ali, "Sendai Framework for Disaster Risk Management: Practices and Challenges against the Targets in Ethiopia," *Natural Hazards* 121, no. 11 (2025): 13131-13151.

⁵⁴ Ibid

⁵⁵ Ibid

Area	Key Drivers	Health Impact	Core Challenge
Climate Trends	Rising temperature; water decline	Food & water insecurity	Structural risk to health systems
Vector Diseases	Changing rainfall & heat	Malaria, dengue, yellow fever	Expanded transmission zones
Water & Sanitation	Floods; droughts; weak WASH	Cholera, typhoid, diarrhea	Unsafe water access
Extreme Events	Floods; displacement	Disease outbreaks; injuries	Strained healthcare systems
Occupational Health	Heat stress	Fatigue, injury, deaths	Productivity loss
Nutrition & Child Health	Crop failure; drought	Malnutrition; stunting	Food insecurity
Maternal Health	Heat exposure	Pregnancy risks	Weak maternal support
Mental & Social Health	Displacement; conflict	Anxiety; GBV; instability	Social system breakdown

Sources: Ansah et al.⁵⁶; Areo et al.,⁵⁷; Hounkpatin⁵⁸; Kilungo et al.⁵⁹; Madubueze et al⁶⁰; Nyandiko et al.⁶¹,

Climate change now serves as the primary factor that determines public health risks in Africa because it intensifies existing vulnerabilities which stem from poverty and inadequate infrastructure and climate-sensitive economic activities. The combination of rising temperatures and water shortages and extreme weather

⁵⁶ Edward Wilson Ansah, Mustapha Amodu, Paul Obeng, and Jacob Owusu Sarfo, "Health Systems Response to Climate Change Adaptation: A Scoping Review of Global Evidence," *BMC Public Health* 24 (2024): 2015, <https://doi.org/10.1186/s12889-024-19459-w>.

⁵⁷ Isaac Olajide Areo, Marian Onyemaechi Ashikodi, Christopher Mupenzi, and Thompson Faraday Ediagbonya, "Climate Induced Thermal Stress in the Workplace and Its Implications for Health Risks Adaptation and Policy Responses," *Discover Public Health* 22 (2025): 819, <https://doi.org/10.1186/s12982-025-01227-9>.

⁵⁸ Hashim Ulrich Hounkpatin, How Are Health Systems in Sub-Saharan Africa Adapting to Protect Human Health from Climate Change Threats? (master's thesis, Institute of Tropical Medicine Antwerp, 2023).

⁵⁹ Andrew Kilungo, Godswill Ndu Chukwuonye, Victor Okpanachi, and Mohammed Hussein, "Preparedness of Sub-Saharan African Countries to Address Climate Change and Health Impact: A Scoping Review," *medRxiv* (2024), <https://doi.org/10.1101/2024.11.28.24318138>.

⁶⁰ Miracle Henry Chukwuma Madubueze, Onyinyechi Deborah Mbanefo, Jennifer Kenechukwu Anekwe, Nneoma Miracle Nwadiogbu, and Augustine Emmanuel Egberi, "Institutional and Policy Responses to Climate-Driven Vector-Borne Diseases in Nigerian Public Health," *International Journal of Global Trends and Research* 3, no. 1 (2025): 191–198, <https://doi.org/10.54117/rkj8f21>.

⁶¹ Nicholas Ouma Nyandiko, Susan Kimokoti, John Okoth Odongo, and Dongmei Ma, "Harmonizing Disaster Risk Reduction and Climate Change Adaptation Frameworks for Risk-Informed Development Planning in Sub-Saharan Africa: The Case of Uganda and Malawi," *Journal of Sustainable Development* 15, no. 5 (2022): 22–37, <https://doi.org/10.5539/jsd.v15n5p22>.

patterns leads to the spread of infectious diseases while it increases food shortages and heightens dangers to both occupational workers and mothers. The combination of environmental destruction and human displacement has produced two problems which now create more mental health issues and greater social unrest. The combined risks show that climate change creates both environmental problems and a health emergency that affects entire systems. The solution needs collaborative preventive strategies which connect climate adaptation with public health development and social safety net systems.

3.3. African Union and Regional Legal Framework on Climate-Induced Health Emergencies and Reactive Governance

The legal structure that governs climate change and public health matters in Africa is established through the African Charter on Human and Peoples' Rights, which declares that every person has the right to achieve their most optimal physical and mental health according to Article 16. The African Charter on Human and Peoples' Rights establishes this right for all people through Article 24, which enables them to attain "a general satisfactory environment favorable to their development" The African Convention on the Conservation of Nature and Natural Resources establishes this union between environmental protection and development needs through Article III, which requires states to achieve their development and environmental objectives through sustainable and just methods. Article VII of the Convention establishes a requirement for water resource management to achieve high water quality standards because the water must "protect human health against pollutants and water-borne diseases". Article XXII establishes a requirement for states to build disaster preparedness and management systems, which need to supply environmental emergency data across borders whenever resource impacts are anticipated⁶². The human rights-based legal framework provides strong protection through its laws, but their actual execution remains incomplete because traditional legal methods have only started to recognize the emergency health effects which arise from fast climatic changes.

The Africa Health Strategy 2016–2030 makes a substantial change because it requires Member States to handle disaster management through a major paradigm shift⁶³. The organization found that its earlier methods needed broader scope because they could not handle the three different types of diseases which climate change causes. The strategy's Strategic Objective 1 aims to achieve universal health coverage while enhancing "emergency health preparedness and response systems" at national and regional levels⁶⁴. The African Union Climate Change and Resilient Development Strategy (2022-2032) designates human health as an affected sector because climate patterns have changed the way diseases like cholera and malaria spread. The AU advocates for "anticipatory governance" through its Strategic Intervention Axis 1 to enable governments to stop using "reactive crisis-management approaches". The analysis found that the frameworks show a need for proactive governance yet their

⁶² Chukwuemeka Kingsley John and Jaan H. Pu, "Climate-Driven Water Scarcity and Its Public Health Implications: A Multi-Regional Assessment across Vulnerable Socio-Ecological Systems," *Water* 18, no. 6 (2026): 699.

⁶³ Ibid

⁶⁴ Ibid

legal requirements about health and environmental ministry cooperation in intersectoral matters are insufficient to address climate policy that restricts health outcomes⁶⁵.

The Africa CDC Climate Change and Health Strategic Framework (2025) serves as the most comprehensive plan for emergency response implementation because it shows that 56% of African public health incidents between 2001 and 2021 resulted from climate change⁶⁶. The framework establishes a One Health Approach by defining the interconnected relationship between human health, animal health, and environmental health, which serves as the basis for managing climate-related zoonotic and vector-borne disease outbreaks. The organization uses its fourth pillar, which investigates "Public Health Emergency and Disaster Response," to develop better real-time risk monitoring through Early Warning Alert and Response Systems (EWARS) implementation⁶⁷. The solution addresses the "reactive governance" critique by creating a system that allows National Public Health Emergency Operation Centers to monitor climate-related risks. The framework acknowledges political will and "limited health system capacity" as primary hurdles because only 14% of sub-Saharan African nations possess complete surveillance systems that can monitor climate data. The legal effectiveness of this framework relies on its "domestication" through national law processes, which remain underdeveloped in many Member States⁶⁸.

The ECOWAS Regional Climate Strategy (2022-2030) states that West African medical services experienced a historical deficiency because the region lacked proper health services. The strategic plans of the West African Health Organisation (WAHO) have historically neglected to include climate elements, according to the findings of the research. The ECOWAS Revised Treaty (Article 112) requires integrated disaster management methods, but the health governance systems of the region operate through reactive methods. The RCS now attempts to bridge this by targeting "gender-sensitive measures" to increase health infrastructure resilience⁶⁹. The strategy acknowledges that scientists have not yet established a complete understanding of how climate change affects human health in West Africa, which prevents appropriate adaptive solutions from being developed. The health emergency legal framework established by ECOWAS currently emphasizes capacity building and knowledge generation activities which represent the expected results of Results Expected R2.S more than actual emergency response procedures that can be enforced⁷⁰. The transition from vulnerability assessment strategy to emergency response system

⁶⁵ Jürgen Scheffran, "Limits to the Anthropocene: Geopolitical Conflict or Cooperative Governance?" *Frontiers in Political Science* 5 (2023): 1190610.

⁶⁶ Stern Mwakalimi Kita, "Disaster Insurance for Climate Loss and Damage: Assessing Challenges and Opportunities to Adoption in Malawi," *Risk, Hazards & Crisis in Public Policy* 16, no. 1 (2025): e70002.

⁶⁷ Ibid

⁶⁸ Muhammad Danish Mohd Haikel, Nur Izzah Hadirah Zawawi, and Syahir Arif Syahmi Sazali, "Toward Resilient and Peaceful Futures: Climate Security and Governance in the Global South," *WIMAYA* 6, no. 2 (2025): 123–148.

⁶⁹ Nicodemus Omoyo Nyandiko, Susan Kimokoti, Janes Ouma Odongo, and Donghui Ma, "Harmonizing Disaster Risk Reduction and Climate Change Adaptation Frameworks for Risk-Informed Development Planning in Sub-Saharan Africa: The Case of Uganda and Malawi," *Journal of Sustainable Development* 15, no. 5 (2022): 22–38.

⁷⁰ Ibid

requires mandatory funding for emergency operations across all fifteen Member States.

The EAC Climate Change Policy (2011) and the SADC Climate Change Strategy show how different regions treat climate-related health emergencies. The EAC policy identifies climate threats through its description of how “vector-borne diseases” lead to malaria and “water-borne diseases”, which result in cholera⁷¹. The EAC requires “effective early warning systems” development together with medical personnel capacity building on climate impact assessment through its Sectoral Approach in Section 3.1.3.3. The SADC framework identifies climate change as a “threat multiplier” because it makes health problems worse while creating conflicts over limited resources. The Protocol on Health (1999) mandates “preventive healthcare” as a method to decrease health risks. The two regions encounter major obstacles which affect their ability to perform “reactive governance” because they lack necessary “meteorological infrastructure” and “limited data collection” systems that support early warning functions. SADC’s strategy demonstrates a “large risk protection gap” which results in 91% of climate risk losses remaining without insurance because regional legal systems lack proper “Loss and Damage” and health insurance regulations⁷².

The analyzed laws disclose an advanced legal system which relies on unfulfilled implementation methods outlined in Axis 3 of the AU Strategy. The governance system needs to shift from its current mode of operation, which reacts to situations but cannot proceed until it receives the required annual funding between \$7 billion and \$15 billion needed for climate-resilient health systems. The Africa CDC Framework creates a technical pathway which shows how to operate "Predictive Disease Modelling" and "Climate Emergency Simulation", but states need to use these models because "cumbersome procedures" and "weak institutional coordination" prevent them from doing so⁷³. The African Charter together with the Conservation Convention establishes rights and principles which create the essential framework to address climate-health emergencies, but regulatory bodies use non-binding "strategies" and "action plans" to implement these emergency response protocols. The African Union and RECs need to create binding regional protocols which combine their existing sectoral strategies into one framework that requires them to allocate specific funds for emergency response across national borders.

3.4. Normative Gaps in Existing Legal Frameworks

The existing legal framework faces its main normative deficiency because it lacks definite legal requirements which establish climate change as a basis for public health emergencies. The African Charter on Human and Peoples' Rights grants wide health rights through Article 16, which guarantees the best possible physical and mental health, and Article 24, which guarantees a satisfactory environment; yet both articles

⁷¹ Ibid

⁷² Ibid

⁷³ Getaneh Mihret Ayele and Fentaw Leykun Fisseha, “Does Climate Change Affect the Financial Stability of Sub-Saharan African Countries?” *Climatic Change* 177, no. 10 (2024): 158.

fail to provide necessary details which would enable emergency responses⁷⁴. The African Convention on the Conservation of Nature and Natural Resources allows countries to establish disaster response protocols which violate the treaty's provisions according to Article XXV. Environmental laws which protect public health must be maintained because they provide vital health security, but current regulations permit environmental law suspension for unplanned emergency responses⁷⁵. The existing system contains a structural defect because its "reactive" bias leads legal systems which handle health and environmental matters as separate entities to create emergency response regulations that only activate when crises happen.

The implementation of regional strategies into binding national laws represents the second major problem that needs to be addressed. The Africa CDC reports that only 35% of African nations have integrated health into their primary national climate policies or Nationally Determined Contributions (NDCs). The Regional Economic Communities (RECs) established by ECOWAS and SADC created advanced "strategies" which include the ECOWAS Regional Climate Strategy (2022-2030), yet these strategies operate as "soft law" instruments that lack mandatory enforcement through regional protocols⁷⁶. The existing protocols which govern free person movement face "limited" implementation because national procedures do not properly execute their requirements. The strategies established to reduce risks function only as guidelines since their execution lacks a legal framework that connects regional goals with national security measures⁷⁷. The disconnected legal system maintains governance through reactive methods because national institutions do not possess the necessary legal power or financial resources to implement regional climate-health recommendations before an official emergency declaration occurs.

The third gap shows how ministerial mandates force health ministries into a legal system which prevents them from accessing the authority needed to control environmental and industrial regulations. The African Union Climate Change and Resilient Development Strategy (2022-2032) identifies "weak institutions" and "inadequate coordination" between sectoral ministries as a primary barrier to resilience⁷⁸. The African continent contains only 20% of its countries which have established a legal policy system that connects climate initiatives with health results. The Ministry of Health serves its role in most areas as a health service organization instead of a central agency for managing climate change dangers. The current regulations exclude health-impact assessments from major infrastructure and industrial projects because outdated land and forest laws control these activities. The absence of "Whole of Government" legal alignment stops anticipatory governance

⁷⁴ Dragan R. Milićević, Božidar Udovički, Ana Šuša, Andreja Rajković, and Jelka Pleadin, "Climate-Driven Aflatoxin M1 Risks in Serbia: Implications for Integrated Food Safety Management Along the Dairy Chain," *Toxins* 18, no. 2 (2026): 105.

⁷⁵ Ibid

⁷⁶ Ibid

⁷⁷ Saadaq Adan Hussein, Marian Muse Osman, Mohamed Mohamoud Hassan, Mohamed Abdullahi Awale, Yahye Sheikh Abdulle Hassan, Abdullahi Mohamed Mohamud, Abdirahman Aden Hussein, et al., "Combating Infectious Disease Outbreaks in Somalia's Fragile Health System: The Impact of Climate Change – Narrative Review," *Tropical Medicine and Health* 53, no. 1 (2025): 142.

⁷⁸ Ibid

because environmental agencies do not need to make public health results their main focus in climate change adaptation programs⁷⁹.

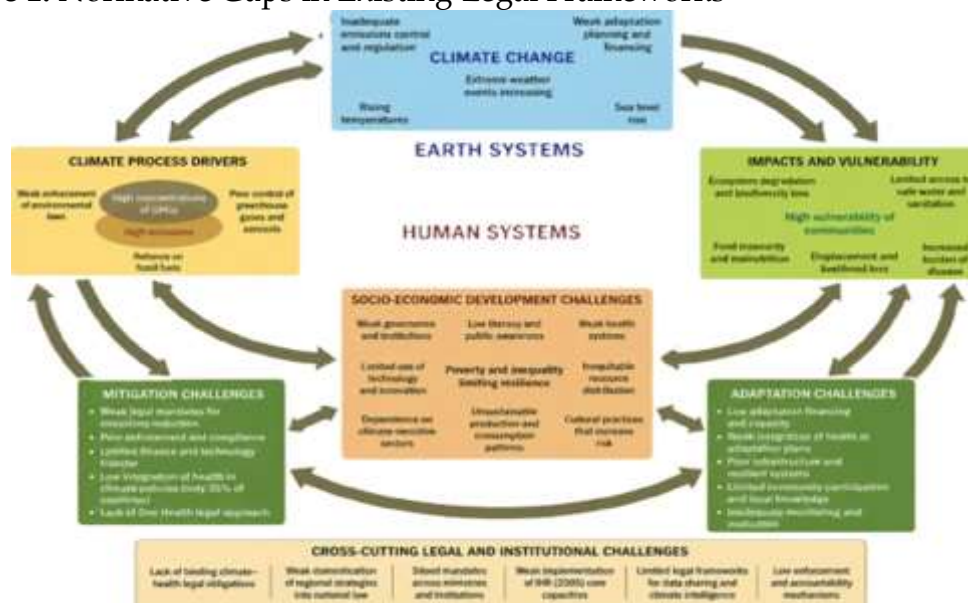
The legal system fails to implement international standards because it cannot implement the International Health Regulations (IHR 2005) correctly. The regulations require Member States to establish national core capacities, which several states have not yet achieved because they lack the necessary legal systems to identify and address “severe public health risks” which can escalate into disasters. Africa CDC has a statutory responsibility to help Member States close their gaps according to its founding legislation (Article 4), but the authority to implement this duty belongs to individual countries. The system creates a situation where countries do not possess any national capabilities to control zoonotic and vector-borne diseases, which are affected by climate change during their initial development. The legal framework for Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) is historically distinct, with different conceptual bases and separate political institutions, which legally inhibits the “preventive” integration needed to manage the “triple burden” of disease exacerbated by climatic shifts⁸⁰.

The existing legal system for data sharing and climate intelligence research suffers from a major normality deficiency. Public health systems in sub-Saharan Africa have only 14 per cent of their countries equipped with operational health surveillance systems that enable real-time meteorological and epidemiological data integration. The “legal frameworks and MoUs for ethical data sharing” need immediate development because these frameworks will enable climate data to cross international borders while protecting national security and privacy rights⁸¹. Current laws often prohibit or complicate the sharing of “climate intelligence” between environmental and public health institutions. African countries cannot monitor cross-border climate-related health risks because they do not have a regional legal framework that requires data sharing for “Early Warning Alert and Response Systems (EWARS)”. The lack of legal clarity compels governments to act only after they receive outbreak notifications through standard clinical procedures, which usually take time to arrive. These challenges are therefore represented in a diagrammatic flow below.

⁷⁹ Ibid

⁸⁰ Subrato Sarker, “Role of Management Information Systems in Environmental Risk Assessment: A Systematic Review of Geographic and Ecological Applications,” *American Journal of Interdisciplinary Studies* 6, no. 1 (2025): 95–126.

⁸¹ Xi Ning and Cuibai Yang, “The Judicial Dimension of Climate Governance: The Role of the International Court of Justice,” *Review of European, Comparative & International Environmental Law* 34, no. 1 (2025): 194–209.

Figure 1: Normative Gaps in Existing Legal Frameworks

Source: Design by authors base on data obtained

The analysis shows that the legal system of Africa, which connects climate change and health issues, reacts to changes because of its uncoordinated regulations, insufficient local application and separate institutional functions. The existing regional instruments offer general guidance, yet they lack the power to be enforced in national jurisdictions, while essential instruments like the International Health Regulations stay underused. The separation of disaster risk, climate adaptation, and public health laws further undermines anticipatory governance. The existing legal frameworks which govern data sharing create obstacles that prevent organizations from delivering prompt emergency alerts. Africa needs to establish mandatory international "One Health" legal frameworks while developing its national execution systems and establishing unified data management protocols to address climate-related health crises.

4. CONCLUSION AND RECOMMENDATION

The current system which governs climate-related health emergencies in Africa operates through a crisis-response approach which fails to solve the three main health issues, which include infectious diseases, chronic diseases, and climate-related health problems. The African Charter, together with ECOWAS and SADC strategies, establishes the existential threat, but they become stuck because the legal system divides health matters into separate spaces which exclude 65 per cent of national climate regulations. The system exhibits a reactive tendency because it lacks adherence to IHR (2005) regulations about public health and because ministerial powers operate as separate entities which stop public health systems from using "climate intelligence" for disease monitoring. The existing governance system operates only after death rates increase, which leads to missed chances for early disease control solutions. Africa needs to replace its conventional development model with "anticipatory governance", which requires the development of an all-encompassing

legal system that safeguards health benefits through climate protection strategies, instead of relying on soft law approaches.

The African Union and regional economic communities need to establish unified regional protocols which implement the One Health Approach through legal requirements that mandate cooperation among health, environmental, and agricultural ministries. The Member States need to establish climate-health legislation which mandates public health and industrial measures to evaluate environmental impacts through "Mandatory Climate Impact Assessments". The implementation of these laws requires innovative financing mechanisms which include climate-health bonds and a minimum allocation of 1% of GDP for local research and innovation funding. The establishment of a mandatory regional data sharing protocol is necessary to implement EWARS, which will enable "climate intelligence" to move between borders for early response activation. Africa can develop a future where health systems function as effective defenses against climate-related risks through a resilience framework which combines political commitment with equitable community participation.

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