

# An Impetus for Advancing a Climate-Resistant Health System

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## Introduction

The globe is inevitably like one body and constantly changing. When one country or part is affected, the whole world feels the impact. The challenge arises when one anatomical part of the integrated system has a dystopian perception of others or worse still believes in the excision of another if not operating in isolation, which is not feasible. It would be beneficial for all of us to reflect and learn more valuable lessons from the recent pandemic Covid-19. A climate-resilient health system should be designed to anticipate, respond to, cope with, recover from, adapt to and sustain remedies to climate-related health challenges. Building resilient, climate-resistant health systems faces several formidable challenges [1]. Firstly, there is the issue of resource scarcity, as climate change strains healthcare infrastructure and human resources, particularly in vulnerable regions. Extreme weather events, rising temperatures, and changing disease patterns require substantial investments in adaptive technologies, infrastructure upgrades, and workforce training to ensure continuity of care. Secondly, political will and policy coherence are crucial; without strong governance and integrated policies that prioritize climate resilience in health planning, efforts can be disjointed and insufficient. Thirdly, financing mechanisms must be robust and sustainable to support long-term adaptation strategies and emergency responses. Additionally, community engagement and education are vital to fostering understanding of climate-health linkages and promoting behavior changes that mitigate health risks. Lastly, international cooperation and knowledge-sharing are essential for developing scalable solutions and mobilizing global resources to support countries disproportionately affected by climate impacts. Addressing these challenges requires a coordinated, multi-sectoral approach that emphasizes equity, sustainability, and proactive risk management to safeguard public health in a changing climate.

## Surveillance and Early Warning Systems

Surveillance and early warning systems are critical components in various health fields, including public health, administration, environmental monitoring, security and disaster management. These system's goal is to detect, monitor, alert and provide timely health information about potential threats. This in return prompts effective responses to mitigate risks and minimize adverse impacts like the ones we experienced during the Covid-19 pandemic [1]. Through organizations like the World Health Organization (WHO), Center for Disease Control and Prevention (CDC), National Notifiable Diseases Surveillance System (NNDSS) among others and technologies and innovations like Electronic Health Records (EHRs), Laboratory-based Surveillance, Geographic Information Systems, Big data analytics, Internet of Things (IoT), Remote sensing et cetera, we have had crucial information for planning, implementing and evaluating public health-related practices through implementation of robust monitoring and evaluation for climate-sensitive diseases such as those influenced by temperature, precipitation and extreme weather events [2].

Surveillance and early warning systems are essential for identifying and responding to a wide range of threats from infectious diseases and environmental hazards to our security challenges. Advances in technology, particularly in data analytics, IoT and remote sensing are enhancing the effectiveness of these systems. Effective surveillance requires a coordinated approach, integrating data from various sources and involving all stakeholders to protect and secure public health, safety, equity and security.

## Planners and Developers

To promote and safeguard public health in both normal and challenging times planners must be ahead of developers [1]. In the majority of Low- and Middle-Income Countries (LMICs) investors and developers are ahead of planners. This situation has led to a

challenge in urban areas and gentrified areas since structures were developed without considering future expansions. A good example is a healthcare facility built 20 years ago for an area of about 100,000 population which has now multiplied tenfold and consequently an influx of patients in the facility not to mention space for both healthcare providers and clients. This challenge can be alleviated through better urban planning and design, especially in ensuring accessible public transport that is affordable and interconnecting, quality building designs and constructions that take into consideration health matters like natural ventilation, lighting and proper water sanitation and in case of remote areas, technology should be embraced to facilitate telehealth, e-health among other digital platforms. These healthcare facilities should be resilient enough to withstand natural disasters and pandemics with a robust power backup and IT infrastructure. Most importantly they should easily be accessible, especially to the most vulnerable groups.

### Health Human Resources

In my previous works, I emphatically emphasized the critical significance of Health Human Resources. Health human resources (HHR) are fundamental to the functionality and resilience of health systems as they are responsible for ensuring that the workforce is available, competent, adaptable, and well-supported. Strategic investments in HHR planning, training, and support are crucial for enabling effective responses to health crises and for promoting sustainable health outcomes for all populations [3]. These investments may include workforce development programs, ongoing training initiatives, and measures to support the overall well-being of healthcare personnel. By focusing on these areas, health systems can better prepare for and respond to various challenges, ultimately improving healthcare services for everyone. Having enough well-trained health professionals such as doctors, nurses, and allied health workers is crucial to address the health needs of the population, especially during emergencies. Continuous education and training are essential to ensure that health workers possess the most up-to-date knowledge and skills, including disaster response and infection control [4]. The challenge of geographic distribution is widespread, and ensuring that health professionals are distributed according to population needs, including rural and underserved areas, should be at the forefront for an impetus towards a climate-

resilient health system. Effective Leadership is a bottleneck in health systems and strong leadership at all levels of the health system to coordinate HHR planning, deployment, and response during emergencies is crucial if we are to make strides. As is common practice, intersectoral collaboration is essential to developing a comprehensive strategy towards an effective health system. As indicated in my article, very few countries, if any have adequate and competent Health Human Resources.

### Emergency Preparedness

In today's interconnected world, the importance of robust emergency preparedness within health systems cannot be overstated. From natural disasters to pandemics and humanitarian crises, the ability of healthcare systems to respond swiftly and effectively can mean the difference between containment and catastrophe. Emergency preparedness is a multifaceted endeavor crucial for mitigating the devastating impacts of disasters and crises. It encompasses a spectrum of activities, from risk assessment and early warning systems to capacity building, coordination mechanisms, and community resilience towards the strategies, protocols, and resources healthcare systems put in place to respond to a wide range of emergencies [5]. These emergencies may include natural disasters such as earthquakes, hurricanes, and floods, as well as pandemics like influenza outbreaks or novel viruses such as COVID-19. Additionally, man-made emergencies such as terrorist attacks or industrial accidents require health systems to be equally prepared. effective emergency preparedness in health systems requires proactive planning, robust infrastructure, well-trained personnel, and strong community engagement [6]. By investing in these key components and addressing challenges through collaboration and continuous improvement, health systems can enhance their resilience and ability to protect public health in the face of emergencies. Building a culture of preparedness not only saves lives but also strengthens societal resilience and promotes sustainable development in communities worldwide. Readiness can be achieved through strategic planning, investment in infrastructure and resources, training of personnel, and fostering partnerships across sectors and borders [7]. Moreover, global emergency preparedness necessitates a proactive approach to addressing systemic vulnerabilities, such as climate change impacts, urbanization pressures, and

socioeconomic disparities, which can exacerbate the severity of emergencies. By promoting collaboration, innovation, and knowledge sharing among governments, international organizations, NGOs, and communities, global emergency preparedness strives to build resilience, save lives, and safeguard sustainable development in an increasingly interconnected world.

## Community Engagement

It takes a village to raise a child and the “child” in question here is a resilient climate-resistant health system. Are we raising an effective and better child or the contrary? Community engagement and participation are fundamental pillars in effective health systems worldwide. At its core, community engagement involves the active involvement of individuals, groups, and organizations within a community in decision-making processes that affect their health and well-being [8]. This approach recognizes that communities possess invaluable insights into their own health needs, priorities, and challenges. By fostering genuine partnerships between health providers, policymakers, and community members, health systems can better tailor services and interventions to meet local needs, thereby improving health outcomes and equity [9]. Effective community engagement in health systems entails several key elements. First and foremost is inclusivity, ensuring that diverse voices within the community are heard and represented. This inclusivity promotes a deeper understanding of cultural norms, beliefs, and practices that influence health behaviors and preferences for health services. Furthermore, transparency and communication are essential to building trust between communities and health institutions [3]. Clear, accessible information empowers individuals to make informed decisions about their health and encourages active participation in health promotion activities and programs [10]. Participation in health systems goes beyond mere consultation; it involves meaningful involvement in planning, implementation, and evaluation processes. Communities are not passive recipients of health services but active partners in identifying priorities, designing interventions, and monitoring their effectiveness. This collaborative approach fosters ownership and sustainability of health initiatives, as communities are more likely to support and advocate for solutions that they have helped develop [11].

Moreover, community engagement strengthens health systems' resilience and responsiveness to crises such as outbreaks or natural disasters. Local knowledge and networks can be mobilized swiftly to disseminate accurate information, mitigate risks, and ensure access to essential health services during emergencies [12]. By building robust partnerships with community-based organizations, faith-based groups, schools, and local leaders, health systems can leverage existing resources and infrastructure to achieve broader population health goals.

## Conclusion

If we embrace the world as one piece and integrate components of health systems, we can better protect the populations from the adverse health impacts of climate change. Governments should continuously and constantly educate and update their healthcare on climate-related health risks and adaptation strategies. Integrated health services, feasible and strategic policies and funding, sustainable environmental practices and community engagement and participation are integral to building resilient, equitable, and effective health systems. By fostering collaboration, inclusivity, and empowerment, health systems can harness the strengths of communities to address health disparities, promote preventive care, and improve overall health outcomes. Embracing community-driven approaches not only enhances the effectiveness of health interventions but also strengthens social cohesion and solidarity, paving the way for healthier and more resilient societies.

## Declarations

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### Contributors

Salim Omambia Matagi is the sole author and is responsible for ideation, writing, images and submission.

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The sole author designed, analysed, interpreted and prepared the manuscript

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