HAPPENING NOW!

CLIMATE CHANGE AND ITS DISASTROUS IMPACT IN AFRICA

Climate change is happening now in Africa! This is substantiated by the occurrence of prolonged severe droughts and desertification, periodic flash or perennial devastating floods, melting of ice caps, sea-level rise and pest invasion as illustrated in **Plate 1.** In addition to these climatic hazards, the vulnerability of the African population to climate change is further aggravated by the presence of multiple debilitating factors including, topographic heterogeneity, prevalence of pre-existing climate-sensitive diseases and the low adaptative capacity of the vulnerable groups who lack reliable economic resource base.

Further temperature rise is projected in the African continent as well as more frequent cyclones in Eastern and Southern Africa. These events will lead to water crisis and desertification affecting food security and cascading into multiple interrelated adverse health and other impacts.

Climate change is approaching a disastrous tipping point in Africa. It is adversely affecting socio-economic development and is threatening the lives and livelihoods of millions of Africans by directly and indirectly causing many adverse health impacts including respiratory and heat-related illnesses, increased prevalence of infectious diseases and vector-borne diseases, non-communicable diseases (NCDs)-associated with food insecurity and malnutrition, as well as behavioral health problems. Climate change is driven by collective anthropogenic activities producing Green House Gases (GHGs). Africa produces substantially less GHGs than industrialized countries, yet it bears the highest brunt of health impacts. Climate change is a global issue, therefore it is patently clear that rich and highly industrialized countries have a moral responsibility to empower African countries in finding equitable adaptation and mitigation solutions to reduce the social injustice and inequalities created by climate change.

Plate 1:
Pictorial illustration of some extreme weather & climatic events in Africa

__A.__ Rising temperature melting icecap on Mt. Kilimanjaro; __B.__ Severe floods causing roads to be impassable, Burundi; __C.__ Drought/desertification affecting livelihoods in Ethiopia; __D.__ Locust invasion leading to crop failure in Somalia.

This policy document focuses on the needs and reasons for protecting human health against climate change in Africa, elaborating six key messages and recommendations and urging actions that can be initiated now based on available evidence.

KEY MESSAGE 1

The African continent is the most vulnerable to the adverse health impacts of climate change.

Findings: Climate change is causing the emergence of new diseases and amplifying the levels of existing climate-sensitive diseases. According to the World Health Organization (WHO), the African continent has the highest disease burden due to climate change in the world: for instance, out of the 9,203 DALYs globally attributed to climate change, 3071 DALYs are in Africa, thus accounting for one third of the global morbidity and mortality.

NETWORK OF AFRICAN SCIENCE ACADEMIES NASAC

Africa is also ranked top in the world in comparison to other regions such as Southeast Asia for which only 1,703 DALYs[1] were estimated. The actual number of deaths per 1 million inhabitants in Africa has been estimated to be between 2–4 to 70–120 for various countries of Africa[2], as shown in **Figure 1.** Estimates of disease burden for other climatic hazards also point to a grim scenario, for example some 91 million episodes of diarrhea are annually associated with floods, some 118 million Africans may be at risk of NCD due to food insecurity caused by frequent crop failure, while 1.1 million deaths are due to total air pollution of which indoor air pollutions contributes towards 697,000 deaths. The actual numbers are likely to be higher when adjustment is made for the inability to accurately measure the climatic exposure and health outcomes.

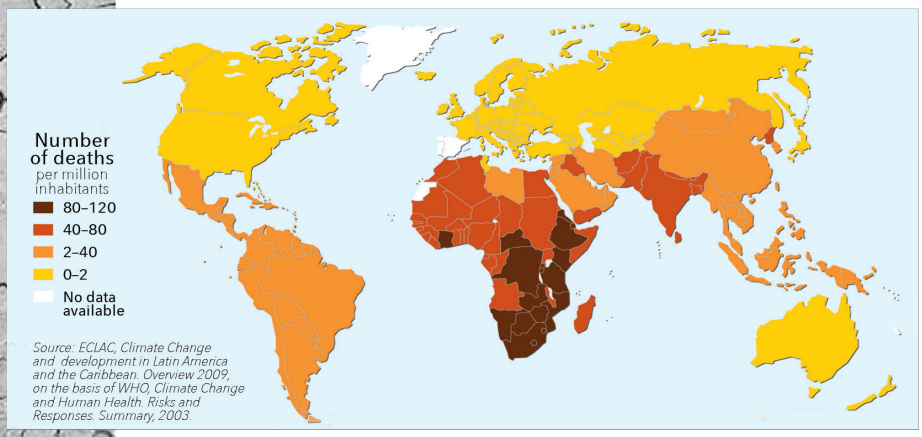

Figure 1. Estimates by WHO Afro of climate change deaths/million for the years 2000 to 2030

RECOMMENDATION 1:

- Strengthen the health system for detection, monitoring, and management of the accrued burden of climate-related diseases,
- Set up or strengthen EWARS[3] for event-based surveillance especially for the most vulnerable groups[4].

KEY MESSAGE 2

Intersectoral policy and actions on climate change and health are limited at the national levels.

Observations: Global, regional, and local health protection policy on climate change in the form of laws, regulations and guidelines are the cornerstones for guiding and implementing climate actions. Globally, such policy is set mainly by UN-agencies[5] while at the regional level these policies are formulated by several agencies including the African Union, African Climate Policy Centre, and NEPAD[6]. Two commonly used tools for benchmarking policy on health actions are the Nationally Determined Contribution (NDC)[7] and National Adaptation Plan (NAP), as recommended jointly by WHO and the UNFCCC.

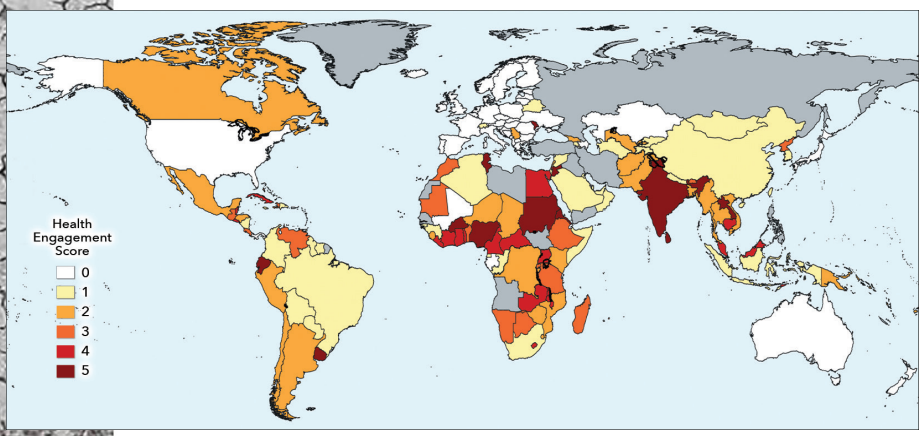

Figure 2. Global and African Health Engagement Score in NDC

Regionally, the Libreville Declaration between WHO and UNEP calls for intersectoral collaboration during NDC and NAP formulation to ensure synergies between health and other relevant sectors and thus increasing the co-benefits of adaptation and mitigation measures. The majorities of countries in Africa have formulated the NAPs and many countries mention health in the NAP[8] as shown by the high health engagement score in **Figure 2**; however, very few countries have formulated a public health adaptation plan in the NAPs despite endorsing the Libreville declaration.

The health impacts of climatic hazards seldom occur in isolation, the impact of one hazard invariably spills into multiple sectors: for example, flood can directly cause mortalities and injuries, but it can also indirectly lead to crop failure resulting in food insecurity or causing widespread contamination of water

[1] *A measure of disease burden combining both deaths and disease or injury in a single unit.*
[2] *Based on projection of 5 climate-sensitive health outcomes, namely cardiovascular diseases, diarrhoea, malaria, inland and coastal flooding, and malnutrition for the years 2000 to 2030*
[3] *Early warning System.*
[4] *Includes women, children, outdoor workers, migrant workers and the poor.*
[5] *Including WHO, UNEP, UNFCC and WMA.*
[6] *New Partnership for Africa's development.*
[7] *The NDC includes climate related policies and targets aimed at reducing GHGs and adapting to its adverse effects.*
[8] *The NAP addresses health impact assessment, mitigation, adaptation, and financial supports for health system strengthening.*

and food. Public health adaptation to climate change is therefore a joint commitment of the ministries of health, environment, and other relevant stakeholders since many of the mitigation and adaptation measures are outside the scope of the health ministries.

RECOMMENDATION 2

- Formulate or update national climate policy to reflect current & emerging issues of climate change & health.
- Promote intersectoral collab-oration for incorporating health in the NDC (HiAP) and SANA[9].

KEY MESSAGE 3

Climate change is approaching a tipping point necessitating Health Adaptation and Mitigation measures

Observations: The global evidence including those from the African continent on climate change and health is compelling and is reaching a tipping point beyond which recovery will be difficult if no adaptation and mitigation measures are instituted now. Extreme rainfall events, heat waves and droughts will have disastrous impacts across the sub-Saharan region and parts of Western, Eastern and Southern Africa. Temperature rise will directly and indirectly negatively affect food security due to persistent crop failure and livestock mortality in many parts of sub-Saharan Africa. Rising temperature and changes in precipitation will also bring more heat and water stress will pose serious threats to human health by causing a shift in the geographic distribution of migratory invasive pests, vector-borne and water-borne diseases as well as other climate-sensitive infectious diseases.

The impacts of adaptation and mitigation measures for selected climatic diseases[10] for the African continent for the year 2030 and beyond points to the fact that timely implementation of adaptation and mitigation measures will considerably save lives and livelihoods. Hence, there is an urgent need to implement adaptation and mitigation measures now: adaptation enables protection from the immediate adverse health impacts by taking short term remedial measures while mitigation aims at reducing the sources of GHGs by long term measures such as switching to green technologies. While green technologies provide new industries and employment, they also require substantial human and financial resources which are beyond the capacity of most African countries especially when they are just recovering from a harsh and devastating COVID-19 pandemic.

RECOMMENDATION 3

- Mainstream immediate health adaptation measures by empowering local communities to protect themselves from harmful impacts of extreme weathers conditions.
- Encourage lifestyle change of the exposed communities, for examples planning, planting fire-resistant trees, and developing bio-crops varieties that are drought and pest resistant; consuming less meat-based protein, and switching from traditional biofuel energy source for cooking to electricity generated from renewable energy.
- Undertake mitigation measures to gradually phase out dependence on fossil fuels according to the country's resources in key sectors including transport, agriculture.
- Promote nature's-based solutions such as inclusion of green space for cooling heat island in urban settings.

KEY MESSAGE 4

Inadequate human capacity and expertise to tackle climate change and health

Observations: Existing policy without enabling infrastructure and human resources is of limited use in combating the adverse impacts of climate change. Africa has an acute shortage of human capital to manage the upsurge of climate-related diseases and conditions and consequently many conditions go undetected adding to the existing high disease burden and mortality rates. Hence, the health system must be made resilient to manage health under normal and disaster situations and be endowed with health care workers who are specifically trained to recognize, monitor, and manage climate-sensitive diseases. In addition, Africa needs a critical mass of climate scientists who are well versed in policy, program, and research who can play important roles in the field and lead the charge of climate science in the region.

RECOMMENDATION 4

- Build critical mass of human resources with expertise in climate change and health by training and educating the following categories:
  - Health care workers who can recognize, diagnose, manage climate-sensitive diseases.
  - Climate scientists to undertake research and forecast climate-sensitive diseases.
  - Graduate students, policymakers, and government officials in the basics of climate change, policy making, implementation, climate activity financing and emerging issues like NetZero carbon-

[9] *Situation Analysis and Needs Assessment.*
[10] *Namely heat, diarrhoea and malnutrition, vector-borne diseases and NCDs.*

policy to be able to negotiate at the national, regional, and global levels and be able to access various international funding sources.

KEY MESSAGE 5

Lack of sufficient evidence-base for initiating climate actions

Observations: Although the global evidence for climate change and health is compelling, policy makers demand and require the evidence derived from African studies. Sadly enough, there is a dearth of such information; much evidence is extrapolated from those carried in other parts of the world. In absence of country-specific evidence, policy makers may be reluctant to invest in climate change and health or may completely reject the causal association of climatic hazards linked to adverse health impacts in Africa.

RECOMMENDATION 5

- Generate evidence for climate actions by:
  - Strengthening national and regional knowledge database for accurate characterization of disease burden and for linking climatic exposure and mortality.
  - Undertaking collaborative research to demonstrate the co-benefits of mitigation and adaptation across relevant sectors.

KEY MESSAGE 6

Forge partnership to combat adverse health impacts of climate change in Africa

Observations: The agenda to avert the adverse health impacts of climate change calls for substantial financial investment that is beyond the capacity of most African nations. Since Africa is disproportionately impacted by climate change in relation to the relative amounts of GHGs it produces, it is morally incumbent on the rich industrialized nations that produce inordinately larger amounts of GHGs to provide additional financial support to Africa through multiple mechanisms, for example compensation for loss and damage in the form of climate justice. Climate change is a shared global problem, which lies outside the political reach of any one nation or state, and it requires a collective, global response through partnership and cooperation. Climate actions undertaken by NGOs and global institutions must push beyond demonstration projects to concrete support in infrastructure, knowledge, finance and in-country research by international institutes and academia. Unless this situation is remedied, the SDG Goal 13 on climate change action may not be achieved by 2030.

RECOMMENDATION 6

- Forge multi-disciplinary and transdisciplinary engagement at all levels, these include:
  - African leaders must advocate and negotiate financial and technical support in climate change and health in international fora, meetings and international projects implemented in Africa.
  - Galvanize regional support by linking climate action with specific relevant provisions of SDGs, the New Urban Agenda, WHO Urban Health Research Agenda, AU Agenda 2063, the EU-Africa Green Climate Cooperation, and other relevant regional networks including the New Partnership for Africa's development, (NEPAD), SADC, and AfCFTA etc.

This policy paper was developed by the Network of African Science Academies (NASAC) and is based on the NASAC's report[11] including the evidence from previous work in this field.

Signed for and on behalf of NASAC Board and member-academies,

PROF. MAHOUTON NORBERT HOUNKONNOU
President, NASAC

Lead Researcher: Deoraj Caussy (Mauritius) | **Reviewers:** NASAC Climate Change and Health Working Group

[11] *Protecting human health against climate change in Africa — NASAC Report*