

GET AFRICA NEWSLETTER ON ONE HEALTH AND BIOSECURITY

# NEWSLETTER

VOLUME 12 | MARCH 2023

**MAINSTREAMING CLIMATE  
ADAPTATION PLANNING  
AND ACTION INTO HEALTH  
SYSTEMS IN AFRICA**



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VOLUME 12 | MARCH 2023**



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## WELCOME ADDRESS BY GET COO

I welcome you to the 12th edition of the GET Newsletter of One Health and biosecurity and the first edition in year 2023. This first edition in the year 2023 is focused on Integrating Climate Adaptation Planning and Action into Health Systems in Africa.

Climate change is real, and its impacts are convincing, especially in developing countries. Significant research has been conducted on climate change and its impact on human health. The changing climate is evident by rising sea level, increasing temperatures, hydrological cycle modification and increased climate variability (droughts, hailstorms, floods and extreme heat, cold and wildfires). Many such extreme weather events significantly impact human health. Among the key health risks identifiable are air pollution, shifts in the geographical range and incidence of vector-borne diseases and foodborne illnesses, and increases in physical injuries, mental stress, and food insecurity and malnutrition. Climate events also impair critical health infrastructure, making it harder for people to access health care. Climate impacts are especially being felt by the most vulnerable, including people living in poverty, those who are ill or disabled, women, children, and the elderly.

Despite the clear relationship between health and changing climatic conditions, the progress on mainstreaming climate resilience into health systems has been slow, despite being urgently needed. Even though human health is a priority in 57 percent of countries' NDCs that have an adaptation component, and close to half of NDCs acknowledge the negative health impacts of climate change, only 0.5 percent of multilateral climate finance has been targeted for health in 2020. In a global review of over 100 countries, the United Nations (UN) found that fewer than one in five countries is spending enough to implement climate-related health commitments (UN 2019).



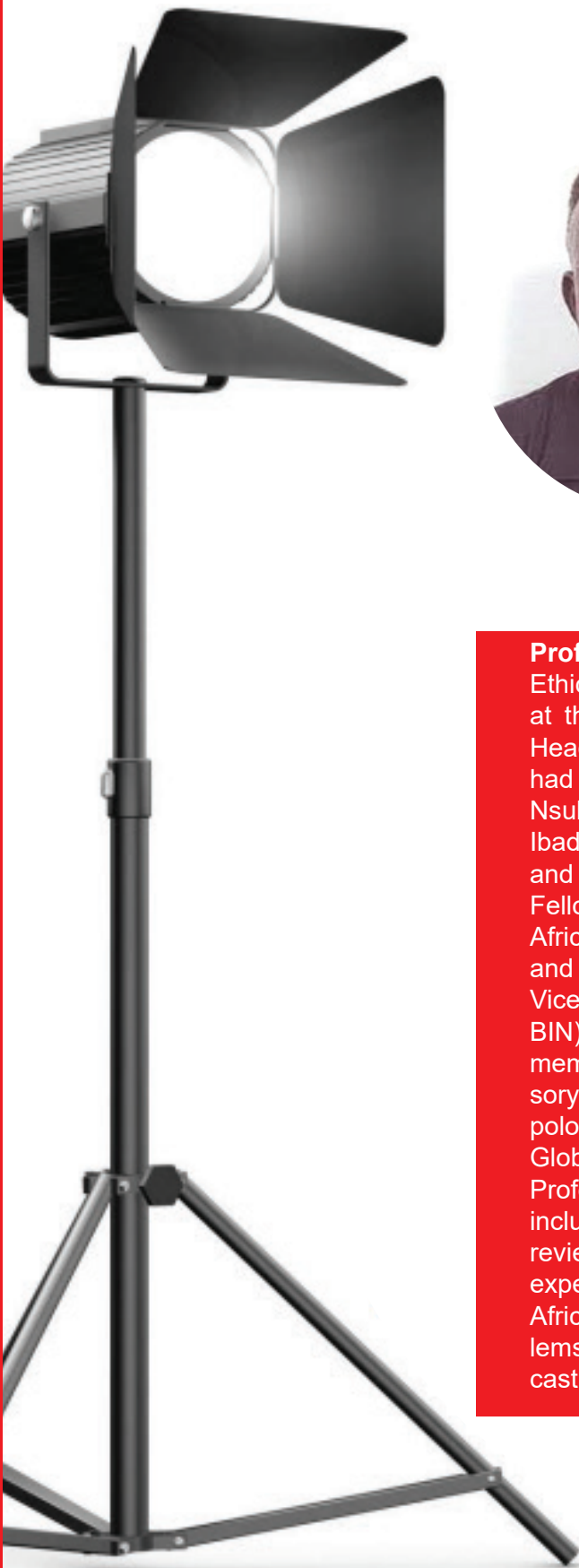
To reduce the impact of climate change and lower vulnerabilities, adaptation must be mainstreamed into health policies and plans. Mainstreaming is the process by which information on climate risks, hazards, and vulnerabilities is integrated into development policies, strategies, plans, and projects to make them climate resilient, which often leads to improved development outcomes. Mainstreaming adaptation can lead to “no-regrets” opportunities to improve health systems now, regardless of the severity of climate impacts, and help reduce vulnerabilities to future climate and non-climatic shocks. This will increase the likelihood of achieving development goals that are resilient to climate impacts and support the livelihoods of the most vulnerable groups of people.

The articles in this edition of the newsletter are focused on understanding climate change impact on human health and the need to mainstream climate change adaptation in health systems in Africa. The newsletter also highlights ongoing activities and projects in GET. I trust you will enjoy your reading and please send us your feedback.

To download the previous volumes of GET newsletter, visit>> <https://www.getafrica.org/newsletter/>

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# SPOTLIGHT



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**Prof. Godfrey Tangwa** is a Senior Fellow in Governance & Ethics at the Nkafu Policy Institute. He is a professor emeritus at the University of Yaounde 1, Cameroon, where he was Head of the Department of Philosophy from 2004-2009. He had his academic formation at the Universities of Nigeria in Nsukka, Ife (now Obafemi Awolowo) in Ile-Ife, and Ibadan in Ibadan. He lectured at the University of Ife from 1978-1986 and moved to the University of Yaounde 1 in 1987. He is a Fellow of the Cameroon Academy of Sciences (CAS); the African Academy of Sciences (AAS) on whose Biospecimen and Data Governance Committee he serves as a member; Vice-Chairperson of the Cameroon Bioethics Initiative (CAM-BIN) which he founded in 2005; an executive committee member of the Pan-African Bioethics Initiative (PABIN); Advisory Board Member and Chairperson of the Cultural, Anthropological, Social and Economic (CASE) work group of the Global Emerging Pathogens Treatment Consortium (GET). Professor Tangwa has over 100 publications to his credit, including 10 books, 25 book chapters and over 70 peer-reviewed journal articles. He is recognized globally as an expert in Bioethics and African philosophy and his latest book, *African Perspectives on Some Contemporary Bioethics Problems* is published by Cambridge Scholars Publishing (Newcastle upon Tyne, UK: 2019).

# DROUGHT IMPACTS AND HEALTH IN THE CARIBBEAN

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## 1. INTRODUCTION

Among the many similarities between Africa and the Eastern Caribbean are the ongoing adverse consequences and elevated threats of future impacts of global warming and the attendant climate change, which threaten states in these two regions (Hasegawa, Wakatsuki, and Nelson 2022; Hope 2016; McLeman and Hunter 2010). This is especially true as developing regions, such as Africa and Small Island Developing States (SIDS), as are the Caribbean, are among the especially vulnerable to climate hazards (Coke 2023; Liu and Xu 2023; Martinez 2022; Lewis 2022; Robinson 2020). These states are among the quickest and most severely affected by such hazards (Pulwarty, Nurse, and Trotz 2010).

Drought is a climate-related threat common to both Africa and the Caribbean. It is among those hazards recurring with increasing frequency in the Caribbean (Joyette, Nurse, and Pulwarty 2022; Trotman et al. 2021; Hernández Ayala and Heslar 2019; Joyette 2018; Herrera et al. 2018; Herrera and Ault 2017; Trotman et al. 2017). Over the last decade, several incidences of significant and prolonged drying have had profound and widespread impacts on the region (Joyette 2018; Trotman et al. 2017; Herrera and Ault 2017). The social, environmental, physical, and water-related impacts all have spin-off impacts on health.

## 2. DROUGHT IMPACTS AND HEALTH

According to the World Health Organisation (2022), drought can have a serious impact on human health by threatening people's livelihoods and increasing the risk of disease and death. The literature has also shown drought to have consequences on mental health (Bryan et al. 2020; Sugg et al. 2020; Edwards, Gray, and Hunter 2015; Friel et al. 2014; OBrien et al. 2014; Stanke et al. 2013). In the Caribbean, the consequences of drought at the national level are among the unobtrusive but substantial issues – socio-economic hardships, including consequences to public health and health systems.

## 2.1. Social Impacts and Health



**Figure 1 - A female householder carrying water and several queued up to receive water from a utility water lorry (left) during the 2009-2010 drought in St. Vincent. Source: Central Water and Sewerage Authority (CWSA) 2017.**

With drought and its consequent water shortage, one of the near-immediate challenges is lifestyle adjustment to water use. During drought, the weight of this role becomes even more apparent, as women perform the majority of duties related to water, including seeking and fetching water for domestic use and storage (Joyette 2013). See Figure 1. These physically demanding tasks takes a toll on women, especially those of smaller stature, such that general fatigue and back and neck pains are frequent complaints during drought (Ibid). Many women, especially subsistence farmers, complain of mental exhaustion early during the event. This factor adds to the already challenged quality of individual and community health concerns.

Another common challenge during drought is that some households store unprotected water, which in turn provides breeding grounds for diseases transmitting mosquitoes (JNCC 2013). With the return of the rains, this situation provides a jumpstart to the increased breeding and transmission of mosquitoes-borne illnesses.

The pressing demand for water during drought can lead to high levels of stress, which may be manifested in anti-social behaviour (Mallen and Dingle 2019; Stanke et al. 2013; Rigby et al. 2011; Dean and Stain 2010). Several incidences of antisocial behaviour during the drought have been documented in the region. See (Joyette 2018; St. Lucia 2015a; Peters 2015; Joyette 2015). This inconsiderate behaviour is an emerging community health concern for small Caribbean states.

## 2.2. Environmental Impacts and Health

As it is a tradition in Africa, living on the land is still very much a large part of the Caribbean habit. Hunting and consuming wildlife is an enduring way of life, especially for those living in remote and forested regions. Drought results in reduced water (through low surface water – rivers, lakes, ponds etc.) which threatens the survival of non-drought-adapted endemic biodiversity on which inhabitants are dependent (Joyette 2018). Not only does drought affect their health through less nutritious diets but it also reduces their ability to acquire affordable herbal medicines for ailments such as bronchial, bladder and arthritic illnesses and headaches.

The impacts of drought on freshwater are significant as Caribbean countries rely almost exclusively on rainfall as the main source of water (Cashman 2014; Pulwarty, Nurse, and Trotz 2010). Some territories depend on groundwater (Pulwarty, Nurse, and Trotz

2010) and are faced with another challenge - contamination due to saline intrusion into freshwater aquifers (Pulwarty, Nurse, and Trotz 2010, 20), which is especially evident during drought. Consumption of saline water can have crucial impacts on health, including hypertension, an increased risk of (pre)eclampsia in pregnant women, and infant mortality (Shammi et al. 2019).

Another health threat during drought is water contamination from the use of chemicals used during drought. As crops fail and yields lower farmers, in catchment zones and adjacent to other natural water-courses and reservoirs and recreational and subsistence river-fishers utilize chemicals in attempts to increase crop or livestock and fishery yields (Providence and Latham 2016; St. Lucia 2015b). Also, among livestock farmers, there has been an increase in the use of antibiotics in livestock as regional farmers attempt to manage pest infestations and other infections in on-going drought (CMC 2016). These threats are compounded by the disposal of raw sewage in the streams by some households in the riparian zones (Providence and Latham 2016). The implications for public health are numerous.

## 2.3. Drought, Landslides, Wildfires and Health

In the Caribbean, landslides and wildfires are among the indirect impacts of drought taking place in the post-drought periods, producing substantial and sometimes catastrophic and lethal damage. Landslides are a common natural hazard (Trotman et al. 2017; Trotman and Farrell 2010; UWI

1999; De Graff et al. 1989). Figure 2 depicts examples of landslides in Dominica and St. Vincent. With the onset of post-drought rains, rapid and deep infiltration occurs, and with receptive soils, triggers landslides. These types of post-drought landslides have become typical in the Caribbean.

Though most “bush fires” in the region are accidental, started by weather conditions, a relatively small percentage is still a result of wanton mischief, subsistence slash and burn for land clearance and charcoal-making, and recreational fires for wildlife hunting. Ultimately, bushfires are unwelcome, and this is reflected legislation in the region. In addition to contributing to atmospheric GHG, wildfires have been a source of bronchial health issues. Asthma is a severe chronic illness and a significant public health challenge in the Caribbean (Sandy et al. 2009). In some instances, families have been left homeless, which further compounds public health issues.



**Figure 2 - Post-drought landslide in Dominica (l) and St. Vincent (r) after the return of the rains.**  
**Source: Farrell and Trotman (2010) and Kenton Chance (2016).**

### Adaptation in Health and Health Systems

Adaptation in health refers to actions which minimise the possible adverse consequences of climate change and reduce, with the lowest cost, the harmful effects on human health (WHO 2023). This means reducing the vulnerabilities of human systems to the real or anticipated effects of climate change by creating an adaptive system. While humans possess the ability to adapt to changing climate, their ability to do so is relatively slow (Berrang-Ford et al. 2021). Also, it is the speed with which current systems must do, so that poses the biggest obstacle.

Bearing in mind the worst impacts of climate change are anticipated to disproportionately affect Caribbean communities with the least adaptive capacity, adaptation policies and actions in health systems are especially fundamental for social (and health) equity and wellness. Health authorities in the Caribbean need to

become collaboratively engaged in identifying, planning for and controlling the health threats posed by climate change as a way of protecting the region's population health.

### Conclusion

Africa and the Caribbean are regions that are similarly vulnerable to climate-related hazards. Drought is a common and insidious climate-related threat that results in diverse consequences for socio-economic, water, and environment. The effects of drought on individual and public health are among the many concerns that will require health authorities' attention. Under a changing climate, with increased incidence of prolonged drying in these vulnerable developing regions, adaptation for health must be highly prioritised if the health and health systems are to be treated as the critical fundamentals.

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## Dr Antonio Joyette

**Dr Antonio Joyette** formerly led the St. Vincent and the Grenadines Meteorological Service for over 15 years. Over the years, his research has focused on societal impacts of, as well as local, national, and regional vulnerabilities to, weather- and climate-related hazards. He has presented his research in national, regional, and international fora and has authored and contributed to several peer-reviewed articles on those subjects. Antonio has collaborated on several related projects, including weather, climate and technology, instrumentation, climate vulnerability, impacts, and capacity assessments (CVICA). Antonio currently serves as an Associate Lecturer in Climate Change with the University of the West Indies' (UWI) MSc. Programme at CERMES and Certificate Programme with the Open Campus. He is also an independent researcher focused on CVICA and Climate Financing. Antonio holds a PhD. in Environmental Studies and an MSc. in Natural Resources Management (both specialising in Climate Change) from the UWI Cave Hill Campus. His other certifications are in Meteorology and Information Technology.

# HOW AND WHY COUNTRIES SHOULD MAINSTREAM CLIMATE ADAPTATION INTO THEIR HEALTH SYSTEMS

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The COVID-19 pandemic made it clear that health systems around the globe must be made more resilient to a range of potential shocks. Amongst these shocks is the climate crisis, which constitutes a grave threat to human lives and global public health, putting already-burdened healthcare systems — especially in low-income countries—under even greater stress.

Health risks linked to climate change are varied and many, and a growing body of literature is shedding more and more light on what these effects are and how they connect to climate (Rocque healthcare et al. 2021). These range widely from increased likelihood of transmitting vector-borne diseases such as dengue and malaria and water-borne illnesses to more indirect but no less important impacts like decreased air quality and productivity (WHO 2018; Ebi et al. 2019).

Importantly, the rising frequency, duration, and intensity of extreme weather events like droughts, violent storms, and floods) will excessively impact the economic and physical capacities of households and people already struggling with weakened health and chronic disease (especially respiratory diseases, cardiovascular and cerebrovascular). Slow-onset effects of climate change, like decreasing crop yields, increasing water stress, and poorer crop nutritional quality, are expected to worsen existing health problems (HRC 2018; IPCC 2014), which will only add to rising inequality.

Recognition of the linkages between the climate crisis and health systems is gradually increasing, and the urgency to address it is growing as well, as demonstrated by the rise in adaptation priority actions outlined in countries' commitments under the Paris Agreement, known as Nationally Determined Contri-

butions (NDCs). According to the latest report by the World Resources Institute (WRI), about 50 adaptation priority actions linked to human health were outlined in countries' first round of NDCs, in contrast to over 350 actions five years later in countries' new and updated NDCs (Fransen et al. 2022). Compared to other regions around the world, African countries included the largest number of health-priority actions.

Despite this new awareness, countries are still struggling to integrate or mainstream climate adaptation into their national health plans and to implement on-the-ground actions to reduce climate-change risks and lower vulnerabilities. Mainstreaming is the process by which information on climate risks, vulnerabilities and hazards is integrated into development policies, plans, programs, and projects, along with the identification and implementation of priority actions that can be taken to strengthen climate resilience, which mostly leads to better development outcomes (Mogelgaard et al. 2018; Gupta and van der Grijp 2010; Klein et al. 2007). Frameworks to guide countries in mainstreaming already exist and include the World Health Organization's toolkit, which is aimed at non-governmental organizations (NGOs), health ministries, and funding agencies seeking to embed adaptation in health services, and the UNFCCC's technical guidelines for developing Health-focused National Adaptation Plans, or H-NAPs (WHO 2021).

Challenges to mainstreaming climate adaptation include inadequate communication and insufficient understanding of the linkage between climate change and health, poor data access and availability, and limited funding (Tye and Waslander 2021). Accounting for persistent and historical socioeconomic inequalities of marginalized populations is another challenge (Viveros-Uehara 2021). More than half of

the Global South country members of the NDC Partnership—a global coalition that helps countries find the technical support they need to draft, implement, and enhance their national climate commitments—have requested support through the Partnership to strengthen their health systems' resilience against the effects of climate change (Tye and Waslander 2021).

Limited information on the costs of adaptation action exists but recognizing and assessing the many benefits of adaptation action for the health sector can help mobilize finance. For example, until now, only 0.5 per cent of multilateral climate finance has been targeted for health due in part to countries' difficulties calculating budget requirements for health actions (WHO 2018; WHO 2019).

Mainstreaming adaptation can lead to "no-regrets" opportunities to enhance health systems now, regardless of the seriousness of climate impacts, and help reduce vulnerabilities to climate and non-climate shocks (Watts et al. 2015; Lugten and Hariharan 2022). This will increase the likelihood of achieving development goals that are resilient to climate impacts and support the livelihoods of the most vulnerable groups of people (Ayers and Huq 2009). Examples are many of such actions benefiting the health system regardless of which types and how soon climate hazards materialize. These include strengthening surveillance and response to vector-borne infectious diseases, training more medical staff, and introducing efficiency mechanisms to provide higher-quality patient care.

The monetary benefits of preventing climate-related health impacts can be substantial, as illustrated by one study of the economic cost-benefit ratios for heat-wave early warning systems in three European cities (Hunt et al. 2016). Based on an economic model with certain assumptions, this study found monetary benefits over a period of 50 years in Madrid ranging between €2 and €4.7 billion in savings across future climate scenarios. Similarly, Prague's savings were calculated to range between €400 and €600 million, while preventive measures in London could lead to savings ranging from €54.6 to €154.2 billion (Hunt et al. 2016). This analysis demonstrates that the benefits of adapting to current and future climate impacts to save lives and reduce the burden on health systems can be very high and can outweigh the costs of doing so—and can therefore be considered no- or low-regrets options. Infrastructure improvements to health facilities like hospitals and clinics to enhance resilience are expensive but also cost-effective because they minimize or avoid costly emergency repairs and reduce service interruptions when climate

hazards, like hurricanes, materialize (HCWH 2011). Strengthening the overall health system and increasing access could also result in equity co-benefits by especially benefiting groups that are traditionally marginalized.

For these impressive benefits to be realized, countries must move from merely mainstreaming adaptation into their health systems to actually implementing such actions. Ghana, Benin, and Fiji are three countries that are taking steps to mainstream climate adaptation into health plans, policies, and pilot projects, setting the stage for broader implementation of solutions in these countries. All three are finding that strengthening health sector institutions, supply chains, infrastructure and staff training is necessary to both build a more resilient foundation for the health sector and be in a better position to tackle climate change impacts and other types of shocks. (To read more about each of these three cases and the different enabling factors present in the countries, please refer to the Tye and Waslander 2021 working paper included in the references and available on WRI's website.)

The experiences of Ghana, Fiji, and Benin have indicated five key recommendations for how countries—especially those with similar challenges and characteristics—can quickly mainstream adaptation into health plans, projects, and policies and start closing the implementation gap:

**First, policymakers can seize on the political momentum created by the global pandemic to strengthen their countries' abilities to respond to a range of stressors and shocks—including the linked challenges of infectious disease and climate change.** COVID-19 pandemic has shined a spotlight on the importance of robust and resilient healthcare systems that serve the needs of both the wealthy and people living in poverty. Strengthening the overall capacities and resources of health systems—e.g., increasing training of medical staff, building robust supply chains, retrofitting technology and equipment, and establishing protections against interruptions to health services—will increase adaptive capacity to deal with climate impacts while providing many other benefits. Increasing financial resources and human capacity is paramount to ensuring that effective measures are taken to better manage rapidly mounting climate-related risks to health.

**Second, governments should establish policy frameworks and collaboration mechanisms to provide needed guidance and support for mainstreaming climate adaptation in the health sector.** The national processes for formulating National

Adaptation Plans offer an excellent opportunity to advance mainstreaming. Mainstreaming climate adaptation in the health sector is important given the growing impact of shifts in vector-borne diseases, extreme weather patterns and events, and other climate-related risks to the health of human populations. A clear national mandate to mainstream climate adaptation into sectoral plans and strategies underlines the importance of making an integrated approach a priority going forward. A whole-of-government approach to climate adaptation is required, but this entails coordination at the highest levels of government. Providing incentives or a mandate to apply coordination mechanisms would help ensure that different ministries are sharing information and resources openly and efficiently and working together to mitigate the impact of climate risks.

**Third, funders, including governments, should encourage and finance health pilot projects and use lessons from these experiences to inform climate resilience planning in health sector plans and policies.** Pilot projects (as is the case in both Fiji and Benin) can pave the way for broader adaptation mainstreaming in the health sector and lead to cross-sectoral learning experiences. It is important to sustain the gains made through these pilots by integrating their outcomes into national and subnational projects, plans, and policies.

**Fourth, Ministries of Health and adaptation planners should jointly design and implement health plans, and policies that mainstream climate adaptation and demonstrate their feasibility through on-the-ground projects.** The National Adaptation Plan framework provides a process to make this happen. Greater collaboration between these two areas of expertise can strengthen policies and implementation plans. Effective climate adaptation in the health sector, which is often decentralized and must reflect the country and local context, requires strong links with primary healthcare facilities at the local level.

**Fifth, champions of climate and health issues inside and outside of the health sector should be supported so they can continue to raise awareness and rally resources for action.** The responsibility for adapting to climate change lies not just with the Ministries of Health, which should take a leadership role, but also with representatives from relevant NGOs, health professionals, academia, the private sector, and communities. A cross-cutting, cross-sectoral approach that draws upon political will and engages adaptation champions and key stakeholders, including subnational public and private actors, is needed to make health systems more resilient to climate change. These actors should be involved in planning and decision-making, for example, via inter-agency committees and coordinated efforts at local and regional levels. A combination of political will and cross-cutting coordination will be critical in driving implementation.

Local data may not always be sufficient nor available to prove causality with full certainty between climate risks and health, yet the linkage between health and climate change continues to grow in evidence and clarity. Climate impacts are already being felt in the health sector, and a lack of conclusive evidence does not justify ignoring potential risks (Watts et al. 2015). What is more, these impacts are expected to increase over time, further affecting mortality, morbidity, and productivity, creating additional burdens on already struggling health systems and widening inequalities.

Taking actions now to enhance the resilience of health systems in the face of current and future climate impacts protects countries' hard-won development gains and help put countries on a positive long-term trajectory. Effective adaptation can protect people's well-being and health, resulting in a more productive workforce and reducing the costs and risks of future climate impacts—especially in the face of uncertainty.

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# CLIMATE CHANGE AND HEALTH IN AFRICA: INTEGRATING ADAPTATION INTO HEALTH SYSTEMS

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One of the most serious issues of our time is climate change, which is already impacting people worldwide, especially in Africa. Extreme weather and climate change significantly impact human health, exacerbate existing problems, and introduce new ones.

For instance, heatwaves and droughts spread water-borne diseases like cholera and dysentery, while floods spread vector-borne diseases like malaria and dengue fever. If adequate steps are not made to adapt to and lessen these effects, the repercussions on human health will worsen as the frequency and intensity of such events rise.

In Africa, where there are already many health issues like infectious diseases, hunger, and inadequate access to high-quality healthcare, the effects of climate change on health are particularly substantial. The necessity for mainstreaming climate adaptation into health systems has grown more important due to the escalating frequency and severity of natural catastrophes, shortages of food and water, and the spread of disease-carrying vectors.

A multi-sectoral approach is necessary for the health sector's adaptation to climate change, in which health systems collaborate with other sectors to increase their resilience to the effects of climate change. In order to ensure that the health sector is ready and equipped to respond to the difficulties posed by a changing climate, climate adaptation must be mainstreamed within health systems.

The goal of mainstreaming climate adaptation into health systems is to build the capacity of health systems to anticipate, prepare for, and respond to the effects of climate change. Climate considerations are also integrated into the larger health system.

Understanding the effects of climate change on health and the health system is the first step towards mainstreaming climate adaptation into health systems. In order to do this, a vulnerability and risk assessment

must be conducted to identify the main health hazards brought on by climate change and to evaluate the effectiveness of the health system in mitigating those risks.

On the basis of this study, initiatives can be created to increase the health system's resistance to the effects of climate change.

## **Mainstreaming Climate Adaptation into Health Systems**

Mainstreaming climate adaptation into health systems involves several key activities.

**First**, it requires a comprehensive assessment of the impacts of climate change on health, including identifying the most vulnerable populations and the health risks they face.

**Second**, it involves the development of adaptation strategies and plans that address the identified health risks and vulnerabilities, including strengthening health infrastructure and developing early warning systems.

**Third**, it involves the integration of climate adaptation into health policies and programs at all levels, from national to community.

**Fourth**, it requires capacity building for health professionals and communities to respond to the impacts of climate change on health.

Finally, it involves monitoring and evaluating the effectiveness of the adaptation efforts and regular updates to adaptation strategies and plans.

**The next stage after developing a strategy is incorporating it into the current healthcare system.**

To do this, health and climate adaptation policies must be aligned, and budgeting and planning processes for the health sector must take climate adaptation into account.

To make sure that steps are being taken to achieve

the objective of creating a more climate-resilient health system, this also entails the construction of monitoring and evaluation mechanisms.

**The creation of early warning systems is a crucial way that climate adaptation can be integrated into health care systems.**

**These systems offer** crucial information on the probability of upcoming extreme weather events, enabling health systems to plan and react swiftly and effectively when such occurrences occur.

Early warning systems, for instance, can advise health systems about the possibility of droughts or floods, enabling them to pre-position vital medications, supplies, and personnel in vulnerable locations.

**The improvement of health infrastructure is a crucial area where climate adaptation can be integrated into health systems**

To make sure that health facilities can resist the effects of extreme weather events and continue to offer crucial health services in the case of a disaster, this involves improvements in buildings, water and sanitation systems, and electricity systems. To ensure that health services can still be given in the event of power outages or other disturbances; this also entails the construction of backup systems and contingency plans.

The World Health Organization (WHO) acknowledges the connection between climate change and health and emphasizes the need for a multi-sectoral strategy to address these concerns.

Climate change makes existing health issues worse, but the health sector can play a crucial part in reducing its effects and assisting with adaptation measures.

It is crucial to incorporate climate adaptation into health planning and implementation at all levels in order to address the problems posed by climate change effectively.

Health systems in Africa are frequently underdeveloped and ill-prepared to handle the effects of climate change. Weak health systems are a problem in many nations due to a lack of funding, inadequate facilities, and untrained staff.

These already overburdened health facilities will be under much more stress as a result of the effects of climate change on health. Therefore, in order to ensure that health services are better equipped to handle the effects of climate change, climate adaptation must be mainstreamed within health systems.

**Existing examples where climate adaptation has been mainstreamed into health systems**

#### **A. Health and Climate Change Adaptation Project in Ethiopia**

This project aims to mainstream climate change adaptation into the country's health sector by strengthening health systems and improving health professionals' capacity to respond to climate change's impacts on health.

The project includes:

- The development of a national climate change and health strategy
- The strengthening of health infrastructure and the development of early warning systems
- Capacity building for health professionals and communities.

The project is expected to significantly impact the Ethiopian population's health and serves as a model for other African countries looking to mainstream climate adaptation into their health systems.

#### **B. West African Health Organization (WAHO) Regional Adaptation Strategy for Climate Change and Health**

It aims to mainstream climate adaptation into health systems in West Africa.

The strategy focuses on:

- Building the capacity of health systems to respond to the impacts of climate change on health and also includes the development of early warning systems
- Strengthening of health infrastructure and the integration of climate adaptation into health policies and programs.
- Capacity building for health professionals and communities,
- Monitoring and evaluation of the effectiveness of the adaptation efforts.

### **In Conclusion**

Responding to the problems posed by climate change on health in Africa requires integrating climate adaptation into health systems. It necessitates a multi-sectoral strategy that incorporates climate adaptation into health planning and implementation at all scales, from the national to the local. Additionally, it calls for the development of community and professional health capacity and monitoring and assessing the success of adaptation activities.

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# CLIMATE CHANGE AND HEALTHCARE: HOW CAN THEY INTERACT?

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With the occurrence of COVID-19, the impact of climatic changes on human healthcare remains completely ignored. Although some countries have taken the initiative to set the best healthcare practices, developing nations still need to learn about adapting to healthcare based on climatic changes.

Global climate change impacts several geographical regions at different levels, affecting human health [1]. In a survey taken among national ministries of health in 2021, insufficient finance or budget was identified as the main barrier to implementing national health and climate change plans by approximately 70% of country respondents. Moreover, over half of the countries asked to interview cited unsatisfactory human resource capacity and COVID-19-related constraints as implementation barriers. From 2010 to 2021, 39 of the 95 countries that took part in the study had completed national health and climate change plans or strategies.

There is an emergent need to avoid the harsh impacts of climatic changes by allowing mainstreaming sustainable development policies. This eco-friendly initiative is extremely cost-effective that will eventually accelerate the economic growth of the country[3]. But the question arises what those policies are exactly? The policies include harnessing the power of modern science and technology, usage of renewable energy, clean public transportation and energy, restoration of land and managing wastes[2]. These are the proven practices to beat the uncertainty in climatic changes.

While many countries are still struggling to integrate healthcare policies, South Africa has already prioritised the future goals to attain a secure sustainable future.

- Low Carbon Emission- South Africa has beautifully harnessed the power of technology that significantly reduced greenhouse gas emissions. This will ultimately nullify the negative effect created on people's lives.
- Sustainable Land Practices- To eliminate the cons of climate change, the nation has built resilience by indulging in best agronomic practices.
- Upliftment of Downtrodden Society- The poor people are mostly exposed to undesirable climatic changes. Many upskilling programs have been formulated with the motive of empowering the healthcare systems [4].

As per the Paris Climate Summit, there is an emergent need for African countries to take strict action on global warming issues by maintaining a temperature below 2 C. The climatic challenges can be fulfilled by providing access to energy at the global level by the year 2030 through off-grid and mini provisions. The supply of ample energy will boost the agriculture system in the country.

There is a need to make collaborations with the IT sector for the formulation of the innovative strategies needed to develop climate protection. The government and funded organisations, as well as energy, need to work collaboratively to develop clean energy systems for urban and rural areas. Scale economies and soaring urban revenue have the potential to expand opportunities for renewable energy and universal availability of basic services.

There is a need for cooperative effort from citizens, policymakers, and stakeholders to create a healthcare system that is both affordable, quality oriented and targeted to combat climatic changes effectively.

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# MAINSTREAMING CLIMATE CHANGE IN AFRICA'S HEALTH SYSTEMS: FILLING THE POTHOLES

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The developments in science and technology have shifted our lives exponentially to a modern civilization with mass economic impacts. This industrialization has impacted our health care, transportation, energy, job opportunities, and socialization, among others (O'Brien, 2012). Emission of greenhouse gases, overpopulation and deforestation are the major effects of industrialization negatively. They are also the main causes of global warming. Many scientists concluded that the pollution caused by greenhouse gases and the insecticides and pesticides, global warming and ozone depletion have all been laid at the door of industrialization. According to the World Bank 2021 report, substantial growth was recorded in Africa over the decades. Consequently, intensive efforts were made by the African leaders to enhance these opportunities to maximum output in the 25th Ordinary Session held by the Organization of African Unity (O.A.U) in 1989 (United Nations, 2022). However, as Newton's third law states, for every action in nature, there is an equal and opposite reaction; these intense human activities on industrialization have unsettled the world's environmental stability, thereby causing effects called climate change (Schaub, 2012).

Climate change is one of the most concerning issues globally. It has significant effects such as the health of people, agriculture: one of the major economic contributors, and well-being, particularly in Africa, where these effects are acutely felt. African countries are already threatened by water supply variability, tropical and infectious diseases, malnutrition, water-borne illnesses, limited agricultural techniques, and lack of funds (Schaub, 2012).

These threats are alarming to Africa's econometrics and the entire African health system; 150 people died while more than 300,000 were displaced due to

flooding in Kenya (World Bank, 2019). The breeding of new vectors intensifies the spread of deadly diseases like malaria, cholera, and typhus (Nhamo and Muchuru, 2019). Climate change has claimed over 150,000 lives and about 5.5 million disability-adjusted life years per year since 1970 globally, according to Nhamo and Muchuru (2019). In addition, World Health Organization (WHO) stated that Sub-Saharan Africa (SSA) will have the highest-burden mortality rate by 2030, with 38,000 deaths from the elderly due to heat, 60,000 because of malaria, 48,000 resulting from diarrhoea, and 95,000 due to child malnutrition.

Consequently, the climate effects such as exposure to ultraviolet (UV) radiation, air pollution, infectious agents, food and water quality, and soil toxicity by insecticides and pesticides, a certain degree of changes in our genomics called epigenetic changes were made. As a result of these changes, the development of genetic diseases was noted (Leite et al., 2020). With the increase in these environmental changes, more people are believed to be affected by serious health conditions (UN, 2023; Saleh, 2022).

There are global initiatives to mitigate the effects of climate change, but as Africa's wound is already deep, these effects have made it more profound. The mainstreaming of climate adaptation planning and action was developed by the United Nations Development and Planning (UNDP) under the United Nations (UN) 17 Sustainable Development Goals (SDGs) to engage the developing countries in Asia, Africa, Latin America, and Central Europe with funding and necessary assistance (United Nations, 2019). According to the recent analysis made by WHO, to address these risks, it is essential to mainstream climate adaptation planning and action in Africa's healthcare system by achieving the following objectives:

1. Vulnerability assessment of communities prone to climate effects and devising measures and strategies for preventing them.
2. Integration of climate risk assessments into health planning to avoid unforeseen damages and identify appropriate interventions and funding sources.
3. Resilient health systems by building crucial infrastructures in strategic locations, mentoring health workers, providing enabling working environments, and expanding access to essential health services, especially for children, women, disabled, and elderly people.
4. Development of health response stations for quick action to affected communities, which might include strategies for preparedness, response, and recovery.
5. Accelerating the engagement of communities by recruiting and training community people to help intervene and meet specific needs and priorities of communities.
6. Collaborating with other related agencies, partners, and non-governmental organizations (NGOs) in agriculture, water, energy, and transportation for effective and efficient health systems in Africa that can help in integrating the approaches to climate adaptation planning and action.

Further studies were conducted by Nhamo and Muchuru (2019) in 51 African countries which are signatories to the United Nations Framework Convention on Climate Change (UNFCCC). Out of the 51

countries accessed, 21 are English-speaking countries, with the most updated National Communication revealed 18 of them were either implementing or considering implementing the adaptive measures. The assessment was made based on the weather-based forecast; early warning systems; public education and awareness; putting appropriate policies; research, supervision, and monitoring; policy development; infectious disease control; and improving public health infrastructure and technology. In the same action, COVID-19 has shocked the global health system in the same way climate impacts are disrupting the system. Increasing human and financial resources, establishing policy frameworks, linking health officials and adaptation planners, and collaboration mechanisms to mainstream adaptation were recommendations made in addressing these climate effects, particularly on the African continent.

In conclusion, mainstreaming climate adaptation planning and action into health systems in Africa is critical to reducing the health risks associated with climate change. By conducting climate vulnerability assessments, integrating risk assessments into health planning, developing a health system response plan, strengthening health systems, promoting community engagement, and collaborating across sectors, African countries can build more resilient health systems and protect the health of their populations.

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## Mr. Aliyu, Abdulkadir Albaba


**Mr. Aliyu, Abdulkadir Albaba** obtained his BSc in Biology from Usmanu Danfodiyo University Sokoto, Nigeria, and later proceeded to the University of Malaya, Malaysia, where he had his MSc in Biotechnology. He took several courses in renewable energy and environmental and waste management. He worked for Next Innovative Hub, Nigeria, a renewable energy, and environmental and waste management firm. Mr Albaba's current research focuses on bioenergy, bioresources, and environmental biotechnology.

# SAVE THE DATE: THE 9TH AFRICAN CONFERENCE ON ONE HEALTH AND BIOSECURITY

We are pleased to inform you that the 9th African Conference on One Health and Biosecurity themed **“Maximizing Benefits and Understanding Risks of Synthetic Biology and Other Emerging Biotechnologies in Africa”** will hold from 1st November to 3rd November 2023.

The Conference ‘Call for Abstracts’ is ongoing and further details on the conference will be shared with our larger community in due course.

For Sponsorship/Partnership,  
kindly contact Dr Ayodotun Bobadoye via [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)



**9th African  
Conference on One  
Health and Biosecurity**  
Theme:  
**Maximizing Benefits and Understanding Risks of Synthetic  
Biology and other Emerging Biotechnologies in Africa**  
Date: 1st -3rd November 2023| Lagos, Nigeria



## CALL FOR ABSTRACTS

### Conference Thematic Areas

- The potential of Synthetic Biology in revolutionizing modern medicine in Africa.
- Addressing the challenge of dual use research in Africa.
- Mitigating biological threats in Africa using emerging biotechnology.
- Maximizing Bioeconomy in Africa.
- Emerging Infectious Diseases as an accelerating phenomenon.
- Importance of Data in enhancing health security.
- The Cultural, Anthropological, Social and Economic Impact of Emerging Infectious Diseases (CASE).
- Other emerging issues with the following sub-themes:
  - a. Climate change and biosecurity threats in Africa
  - b. Harnessing the digital revolution and digital platforms to advance biosecurity in Africa

### Guidelines for Abstract Submission

- A 200-300 word electronic abstract must be submitted latest by the **30th of May, 2023**.
- Specify platform or poster presentation preference
- You will be notified of the fate of your submission by 30th of July 2023.

### Important Dates to Note:

- Abstract submission due: **May 30, 2023**.
- Abstract acceptance notifications: **July 30, 2023**.

### Conference Registration Fees:

The fee covers conference materials, coffee breaks, Lunch buffet, and full access to all conference special sessions.

### Download Full Abstract Document

<https://bit.ly/abstractcall2023>

### Conference Registration Fees:

#### In-person participants:

- \$250 (non-African delegates) • \$150 (African delegates)

#### Virtual participants:

- \$100 (African delegates) • \$150 (Non- African delegates)
- Delegates with accepted abstracts will have a 25% reduction in their registration fee.

Submit Abstract to: [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)

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# GET WEBINAR SERIES

GET organizes a monthly webinar to learn from and connect with global experts in the field of One Health and Biosecurity. The webinar gives the opportunity to broaden your skills, as well as the understanding of your field of interest relating to One Health & Biosecurity.

GET organized two (2) editions of the webinar in January and February 2023, themed *“The Role of NGOs in Implementation of International Biosecurity Treaties in Africa”* and *“Impact of the BWC Review Conference on Biosecurity in Africa”* respectively.

For more information on the webinar series, kindly contact us via [webinar@getafrica.org](mailto:webinar@getafrica.org)  
**FREE REGISTRATION + E-CERTIFICATES AVAILABLE TO ALL PARTICIPANTS!**



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## GET WEBINAR SERIES: JANUARY EDITION 2023

**Topic:** Impact of BWC Review Conference on Biosecurity in Africa

Wednesday, 25th January, 2023 12:00 pm (WAT) Zoom

**SPEAKERS:**

- Mr. O'Neil Hamilton** (Jamaica)  
Head, Special Non-proliferation and UNSCR 1540 Implementation Initiatives.
- Ms. Melanie Reddiar** (South Africa)  
Chief Director, Non-Proliferation, South African Council for the Non-Proliferation of Weapons of Mass Destruction.
- Dr. Jaurès Arnaud Noumedem** (Cote d'Ivoire)  
Biosafety and Biosecurity Technical Officer Africa CDC.
- Dr. Bobadoye Ayodotun** (Nigeria)  
Chief Operating Officer, GET Consortium.

**MODERATOR:**

Registration Link: <https://bit.ly/GETJanuaryWebinar>



**GET** Global Emerging Pathogens Treatment Consortium in conjunction with **African Center for Science and International Security** (AfricaCSIS) Citizens and Scientists for Security Solutions

## GET WEBINAR SERIES: FEBRUARY EDITION

Organized in conjunction with African Center for Science and International Security

**Topic:** The Role of NGOs in Implementation of International Biosecurity Treaties in Africa

DATE: Tues. 28 Feb, 2023 TIME: 12 PM (WAT)

**SPEAKERS:**

- Ms. Suzanna KHOSHABI** (USA)  
Associate Legal Officer at USAID
- Mr. Hubert Foy** (Senegal)  
Director, African Center for Science and International Security
- Dr. Erin Sorell** (USA)  
Associate Professor, Johns Hopkins Center for Health Security
- Dr. Babtunde Taiwo** (Nigeria)  
Senior Project Officer, GET Africa

**MODERATOR:**

Register Now <https://bit.ly/GETWebinarFebruary2023>

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# GET JOURNAL OF BIOSECURITY & ONE HEALTH

GET Journal of Biosecurity and One Health is an international scholarly peer-reviewed Open Access journal that aims to promote research in all the related fields of Biosecurity and One Health. The GET Journal of Biosecurity and One Health is devoted exclusively to the publication of high-quality research papers that covers multidisciplinary fields of Biosecurity and One Health. The journal aims to publish high quality varied article types such as Research, Reviews, Short Communications, Case Reports, Perspectives (Editorials), and Clinical Images.

The link to GET Journal Website is >>> [www.getafrica.org](http://www.getafrica.org)

## Call for Manuscripts

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# GET ONE HEALTH SCHOOL PROJECT (GHSP)-FREE DISTRIBUTION OF GET TEXTBOOKS TO SENIOR SECONDARY SCHOOLS STUDENTS

GET One Health School Project (GHSP) is a student-focused project initiated by GET in 2021 to introduce the concept of One Health to students in various schools across the globe.

The Global Emerging Pathogens Treatment Consortium (GET) launched its GET One Health School Project Book titled **'Understanding One Health for Students'** in 2022. On the 21st of February 2023, free copies of the GET One Health textbooks were distributed among secondary school students in Loyola College, Ibadan, as one of the components of the GET One Health School Project (GHSP) in Oyo State, Nigeria.

The GET One Health textbook covers several topics, including antimicrobial resistance, Climate Change, Biosecurity etc., to assist instructors in teaching all major areas of One Health and help the students learn the fundamental concept of **'ONE HEALTH'**.

Present at the event were teachers and students strategically selected from each school class of Loyola College and officially inaugurated to help implement the project in the school.

If you would like to **Sponsor** or **Partner** with GET on GHSP project, kindly contact Ifeoluwa Alabi (Project Officer) via [+2348130854379](tel:+2348130854379) or send an email to [ife@getafrica.org](mailto:ife@getafrica.org) cc: [bobadoyed@getafrica.org](mailto:bobadoyed@getafrica.org)



*Display of GET Book on One Health during the event*



***Ms. Ifeoluwa Alabi, GET project Officer addressing the students on the concept of One Health***



***The Ambassadors showcasing their free GHSP textbooks on One Health***



*The students well seated at the event*



*Loyola College GHSP Ambassadors  
in a group photograph*



***GET Staff and Loyola College Staff  
with some of the GHSP Ambassadors***



***The School Prefect talking about  
what he learnt and giving vote of thanks***

# GET PARTICIPATION AT SECUREHACK 1.0 EVENT

Dr. Ayodotun Bobadoye was invited by the founder of Eko Innovation Centre, & Curator, Art of Technology in Lagos (Mr. Victor Afolabi) to speak at the launch event of Secure Hack themed “**Hack Security Issues with Tech**” on the 11th of February 2023.

Dr Bobadoye spoke on the topic ‘**Cyber-enabled Biological Warfare: Preparing for the Unimaginable**’. You can watch the presentation via>>> <https://bit.ly/40Qtjxe>



*Dr Bobadoye giving a presentation at the Secure Hack 1.0 meeting*



*Dr Bobadoye (far right) with some participants at the Secure Hack 1.0 meeting*

# GET PARTICIPATION IN THE JOINT WORKSHOP ON ONE HEALTH IN KENYA

GET was invited to attend a joint policy workshop exploring One Health in Africa hosted by the Academy of Medical Sciences, one of the UK's National Academies, and the African Academy of Sciences (AAS). Dr Bobadoye represented GET at the meeting which took place in Kenya from 6-7 February 2023. The main objective of the workshop was to convene researchers, policy makers and wider stakeholders together with multi-sectoral expertise, to identify key research opportunities and barriers to enable the successful implementation of a One Health approach in the region.



*Dr Bobadoye Ayodotun at the  
Joint Workshop on One Health in Kenya*

# BIODEFENSE STRATEGY AND IMPLEMENTATION PLAN FOR NIGERIA

GET published a Technical paper themed “Developing an Integrated Biodefense Strategy and Implementation Plan for Nigeria”. The manual features:

- History of Common Emerging and re-emerging infectious causes in Nigeria
- Pandemic and National Security
- Nigeria Biodefense Strategy
- Emerging Sources of Biological Threats in Nigeria
- Biological Risk Management
- Strategic Goals and Objectives
- Implementation Framework for the National Biodefense Strategy

The publication is available on our website via <https://lnkd.in/dUZeivzy>



## Developing An Integrated Biodefense Strategy and Implementation Plan for Nigeria.

January 2023.

Produced by:  GET Global  
Emerging Pathogens  
Treatment Consortium

# SCHOLARSHIPS/ GRANTS OPPORTUNITIES

**Education for Sustainable Energy Development Scholarships 2023**

<https://www.advance-africa.com/Education-for-Sustainable-Energy-Development-Scholarships.html>

Application Deadline: April 7, 2023.

**University College London Global Masters Scholarships for Study in the United Kingdom**

<https://www.advance-africa.com/university-college-london-global-masters-scholarships-for-study-in-the-united-kingdom.html>

Application Deadline: April 27, 2023.

**Full LLM Scholarships - Queen Mary University, UK 2023/2024**

<https://www.advance-africa.com/Full-LLM-Scholarships.html>

Application Deadline: 31st July 2023.

**UNDP Call for Proposals in Kenya**

<https://www.advance-africa.com/undp-call-for-proposals-in-kenya.html>

Application Deadline: 30th Nov. 2023.

**Grants for Strengthening the Contraceptive R&D Ecosystem in Africa**

<https://www.advance-africa.com/grants-for-strengthening-the-contraceptive-rd-ecosystem-in-africa1.html>

Application Deadline: 16-Dec-23.

**Growth Africa Accelerator Grants for Entrepreneurs in Africa**

<https://www.advance-africa.com/GrowthAfrica-Accelerator-Grants-for-Entrepreneurs-in-Africa.html>

Application Deadline: Ongoing

**The National Endowment for Democracy Grants 2023**

<https://www.advance-africa.com/The-National-Endowment-for-Democracy-Grants.html>

Applications accepted all year round.

**African Women Development Fund Grants for Women 2023**

<https://www.advance-africa.com/African-Women-Development-Fund-Grants-for-Women.html>

Applications accepted all year round.

**COVID-19 Grants for Young People Worldwide 2023**

<https://www.advance-africa.com/Covid-19-Grants-for-Young-People-Worldwide.html>

Applications accepted all year round.

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