

POLICY PAPERS - NIGERIA

**UNDERSTANDING CLIMATE CHANGE:
MOVING FROM STRESS TO SUSTAINABLE
SOLUTIONS IN AFRICA**

Competitive Africa Rice Initiative (CARI)

GIZ & John Kufuor Foundation (JAKF)

prepared by

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INTRODUCTION.

As the reality of changing climate with resultant effects of global warming, drought, desert encroachment and continual loss of water bodies now dawn on this generation; with the future of most parts of the world from Africa, Europe, America, Middle-East, Asia and Australia most threatened, the need for innovative ideas on ecological approaches to adapt and mitigate the effects of climate change is apparent.

Whether it is the crops we grow, the livestock we raise, or the wild plants and animals that we harvest, every organism that humans rely on as food sources depends on a unique confluence of climatic and environmental conditions. This will determine whether it will merely survive, deteriorate, or flourish. Some of the essential climatic and environmental factors include access to water and nutrients, optimum temperature, the amount and periodicity of sunlight, and interactions with other organisms within the same ecosystem¹ However, the changing climate is gradually making these conditions unpredictable and unfavorable to plants, animals and man.

Evidence suggests that the warming of the past century already has resulted in marked ecological changes, including changes in growing seasons, species ranges, and patterns of seasonal breeding. The fate of many species in a rapidly warming world will likely depend on their ability to migrate away from increasingly less favorable climatic conditions to new areas that meet their physical, biological, and climatic needs² but what about useful plants who are stationary in their movement?

World Wide Funds' (WWF) scientists have estimated that most species on this planet (including plants) will have to "move" faster than 1,000 metres per year if they are to keep within the climate zone which they need for survival. This is because many species will not be able to redistribute themselves fast enough to keep up with the coming changes. These species, as far as we know given present knowledge, may well become extinct.

A wide variety of plants and animals are likely to be wiped out and made unavailable for the coming generations if proactive measures and policies that can effectively mitigate, adapt or

avert the worst effects of a changing climate. A decline in these plants and animals means a decline in the services these organisms provide, such as recycling of nutrients, purification of air and water, pollination, provision of food for mankind as well as draws for ecotourism and recreation³

Under a "business as usual" scenario, where the world gets warmer and no significant effort to abate or adapts to it is lacking, about 50 percent of plants and one-third of animals are likely to vanish from half of the places they are now found by 2080, said Rachel Warren, a researcher at the University of East Anglia in England. These losses could lead to local extinctions of species and this means a lot to the survival of coming generations in terms of food and environmental safety.

Presently, the threats by global warming shows no signs of abating especially in Sub Saharan African, and it seems very likely that in the future, the impact of these changes will increasingly diminish food security, delay socio-economic development of societies and widen the socio-economic gaps between the rich and the poor as more useful agricultural land and water resources are lost to climate change every year. Similarly, the present trends of climate change in Africa has not only deepening food crisis but also contributes to poor health conditions and geopolitical unrest. For instance, due to increase in aridity in northern Nigeria, Fulani herdsmen usually migrate to the south and western parts of the country seeking for green pastures and thus allowing their animals to graze on farms in the communities. This has been resulting into ethnic and communal clashes between the herdsmen and local communities leading to loss of lives and properties. Hence, the issue of climate change now requires swift action on how to mitigate and adapt to the ever increasing temperature by implementing policies to protect the lives of millions of people facing directly and indirectly affected by it.

Since 2006 average world price of rice has risen by 217%, wheat by 136%, corn by 125% and soybeans by 107%⁴ coupled with the disappearance of hundreds of plants and animals from the ecosystem. This is pandemic to world's food security and human survival. Hence, in order to guarantee food security, agriculture must adapt to yield reductions from drought, floods and rising temperatures, while at the same time addressing its contributions to global climate change³.

Currently, fewer countries have the possibility to feed themselves and, hence, there will be greater reliance on foreign markets and trade. Some developing countries are particularly vulnerable to additional impacts of climate change on their ability to attain food security, due to their unfavorable positioning in international trade, compounded by poor development of domestic and regional markets. Being able to balance growing differences between food demand and on will mean paying greater attention to develop policies supporting trade, and putting in place the necessary infrastructure and institutions⁴. With the increasing trend in the international food trade, the effects of climate change on agriculture in individual countries cannot be

considered in isolation. Food trade has grown dramatically in recent decades and now provided significant increments of national food supplies to major importing nations and substantial income for major exporting nations. This emphasizes the close links between agriculture and climate, the international nature of food trade and food security, and the need to consider the impacts of climate change in a global context⁴

As most plants can't migrate very quickly, compared to animals and insects. They are restricted by how far their seed or pollen can travel. Thus, the climate will change too fast for plants to migrate if current trends continue. Human barriers (such as farm and urban areas) will also impede plant migrations. Many animals and insects need specific plants, or types of plants, as part of their habitat. So the loss of plant species will have a ripple effect, leading to more animal and plant extinctions².

Globally, by the year 2080, about 20% of coastal wetlands could be lost due to sea-level rise while there is little evidence to suggest that climate change will slow species losses, there is evidence it may increase species losses though the new species may be more of weeds and not necessarily supply food for mankind⁵. Impacts of climate change mitigation activities on biodiversity depend on the context, design, and implementation of these activities. Land-use, land-use change, and forestry activities (afforestation, reforestation, avoided deforestation, and improved forest, cropland, and grazing land management practices) and implementation of renewable energy sources (hydro-, wind-, and solar power and biofuels) may affect biodiversity depending upon site selection and management practices⁵

The Green light to the future

Yet if necessary innovative policies are implemented and enacted, the effects of climate change can still be ameliorated. Climate change adaptation activities can promote conservation and sustainable use of biodiversity and reduce the impact of changes in climate and climatic extremes on biodiversity.

It's not too late to do something to prevent the widespread loss of plants, animals and perhaps human lives, however, if emissions are slowed and ultimately begin being reduced by 2017, about 60 percent of the losses can be avoided, Warren said. If emissions peak in 2030 and are reduced after that, about 40 percent of the losses could be avoided. The losses are likely to be particularly severe in Sub Saharan Africa, Central and South America, Australia and Southeast Asia. These areas are more vulnerable to declines in rainfall and increasing temperatures and hence potential threats to human survival³

Sustainable Solutions to Addressing Climate Change in Nigeria

1. Policy Development, Implementation and Advocacy

There should be proper formulation, implementation and monitoring of policies that are encompassing in addressing climate change, its effects, adaptation and mitigation in most African countries. This should be aimed at integration, coordination and strengthening rural and agricultural climate change policies and operations. This policy will guide the government and other stakeholders on the best strategies to adopt based on the peculiarities of their individual countries and if this policy is well implemented and monitored, the outcome will reduce threats to food security and lives of plants, animals and man in the continent.

2. Capacity Building toward Climate Change

The place of grass root enlightenment in climate change initiatives is imperative to climate change capacity building. There is a need for demand driven bottom up structured programmes that include peer to peer learning, exchange programmes, workshops/conferences specialize training aimed at professionalizing adaptation and mitigation to climate change thus reduce the food insecurity, drought, famine, poverty and hunger that are presently evident in some parts of African continent. Partnership and Networking Programmes implemented with regional and international organizations for greater synergy and outreach in addressing the threats of climate change in Africa.

3. Intensification of awareness, adaptation and mitigations

It may be surprising that the words “*climate change and global warming*” are mostly terms as academic jargons among the elites while most average African rural dwellers have little understanding of the meaning and implications on their health, businesses and source of livelihood. Others that are aware of them may not really know how to adapt and mitigate it. This therefore calls for intensive creation of awareness on its effects and how to adapt and mitigation against it especially at grass root levels; among the rural communities who are directly affected by it. The power of the audio media in different languages will go along to reach this group of people with vital information on climate change.

4. Youths engagement on Campaign against Climate Change

For sustainable initiatives on climate change, youths in their respective communities need to be engaged and get involved in actions to solving harmful effects of climate change. When this set of people are really motivated, they can easily use their energy, passion and initiatives to promoting sustainable ideas and innovations that will not only make their communities adapt and mitigate against climate change but also ensures food and life security in their communities.

5. Promotion of Climate Smart Agriculture in African communities

Smart agriculture includes all form of agricultural practices either in crop production or livestock farming that ensures sustainably increase agricultural productivity and incomes in order to meet national food security and development goals. It is an agricultural practice that builds resilience and the capacity of agricultural and food systems to adapt to climate change. Smart agriculture also seeks opportunities to mitigate emissions of greenhouse gases and increase carbon

sequestration. Shifting world agriculture to a "climate-smart" approach will not only help prevent future food security crises but holds the promise of sparking economic and agricultural renewal in rural areas where hunger and poverty are most prevalent. There is therefore a need to fully engage in training of small scale farmers who produce most of the foods that we consume in Africa on cheap and affordable climate smart agriculture. This will not only increase food security but also environmental sustainability. Similarly, the establishment of a mosaic of interconnected terrestrial, freshwater, and marine multiple-use reserves designed to take into account projected changes in climate, and integrated land and water management activities that reduce non-climate pressures on biodiversity and hence make the systems less vulnerable to changes in climate. Some of these adaptation activities can also make people less vulnerable to climatic extremes. The effectiveness of adaptation and mitigation activities can be enhanced when they are integrated with broader strategies designed to make development paths more sustainable⁵.

6. Investment in Desert Agriculture

Desert agriculture is the farming of crops well-suited for arid conditions, such as sorghum, wheat, and groundnut, cowpea and so on while desert agro-forestry is the growing of crops with the environmental support of trees in desert or arid areas⁷. This is a system of farming that has been in existence for several years in countries such as Israel, Jordan, Australia and even among the Native Americans. Desert farming generally relies on irrigation, as it is the easiest way to make a desert bloom. It is now necessary for developing countries hit by global warming to look into, learn and incorporate this technology to mitigate effect of global warming. Country like Israel for instance is located on a desert and still has one of the best agricultural output in the world. One of the secrets is investment in desert agricultural technologies. What about Australia where some of her dried lands have been made productive through desert agricultural technologies? If human capacity building coupled with modern technologies in most of the climatically ravaged countries of the world is geared towards harnessing the available dried lands, the sky is likely to be the starting point of human exploits for the ripple effects on man, animals and the environment in African continent.

There are several rivers, streams, dams and lakes that can be properly harnessed to provide water to dry areas. Proper enlightenment, training and research should be explored to making drier region of any country in Africa to a profitable use. This will promote food security and human livelihoods as well as conserving the environment.

If Africa is to be self-sufficient and also able to feed the world; while conserving the environment, the world has to invest in desert agriculture. There is necessity to teach, train and develop human capacity towards desert agriculture. As the world's leaders dialogue on the mitigation and adaptation to climate change and global warming, all stakeholders also need to look into how to make the ever expanding dried regions of the world useful and profitable for mankind.

7. Promotion of Effective and Impactful Climate Change Academic Curriculum

Tertiary institutions of learning in Africa and the Caribbean should rise to the occasion in collaborating with other institutions and stakeholders who have the resources---in terms of human and materials to harness the drying parts of the world for the benefits of her inhabitants. A lot can thus be achieved if climate change and related topics are included in the academic curriculum across the continent. This should not only be a theoretical topic discussed in the classroom but also followed with practical approach through field works and innovation on climate change and environmental sustainability.

Conclusion

Though the topic is a debatable one but countries such as Malawi, Ethiopia, Zimbabwe, Somalia, northern Sudan and Northern part of Nigeria are already experiencing the ravaging effects of intense hot weather, loss of useful land and animals, low farm yields as well as deplorable human health conditions especially women and children who are usually the vulnerable due to prevailing heat and hot winds. This undoubtedly serves as threat to sustainable food security in our country.

As the Nigeria can no more shy away from the reality of climate change and its consequences, it is high time stakeholders be more proactive about it and put in place policies that will promote adaptation and mitigation against it so as to reduce loss of lives and provide secured future for the coming generation.

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ANNEXES



Source: [Rhett Butler \(2014\)](#)

Author's Biography

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