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airjournals@gmail.com; enquiry@airjournal.org

Risk Management and the Challenges of Climate Change

Chukwuani Victoria Nnenna
Department of Accountancy
Enugu State University of Technology
Nnennaviktoria@gmail.com

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ABSTRACT

Nigeria is plagued with many ecological problems of varying magnitude. The inhabitants of the northern part of the country battle with the menace of desertification, deforestation and drought while the inhabitants of the southern part of the country are being ravaged by flood and gully erosion. The change in the world's climate is a continuous one which occurs at an unprecedented rate in recent human history. The risks associated with these changes are real but highly uncertain. Societies that are vulnerable to risks associated with climate change suffer social and economic challenges, most especially when the resources that anchor the existence of the society are sensitive to climate change. The aim of this paper is to unravel the risk management and challenges of climate change in Nigeria. It reviews the incidence of climatic change in Nigeria, the vulnerability of Nigeria as a nation to climate change, and the consequences of climate change in Nigeria. The discovery showcased the human activities which triggered climatic change such as; industrial releases, deforestation, improper sewage disposals. On the same vein, the disasters brought about by climatic change include; flooding, drought, erosion. Furthermore, government/agencies in charge put in little or no effort in reducing the risk associated with climate change in Nigeria. The study concluded that bush burning, over grazing, gas flaring, CO2 are responsible for Nigeria climate change while creation of environmental/climate refugees, threats to the future of children, reduction in economic growth, increase in diseases, immediate setback on agriculture, loss of biodiversity are some of the challenges as a result of change in climate. Notwithstanding, afforestation programme, good policies, development of biotechnology, integrated climate risk management, and carbon-mop -up technology can salvage climatic change associated risks in Nigeria by the Nigerian Government.

Keywords: *Disaster; Climate change; Sustainability; Risk management*

Introduction

One of the most threatening environmental challenges facing mankind worldwide is climate change. This is as a result of its multi-faceted nature. The issue of climate change has become more threatening, not only to the sustainable development of socio-economic and agricultural activities of any nation, but to the totality of human existence. The Intergovernmental Panel on Climate Change (IPCC) defined climate change as statistically significant variations that persist for extended period, typically decades or longer. It included shifts in frequency and magnitude of sporadic weather events as well as the slow continuous rise in global mean surface temperature. This includes climate weather variations on all temporal and spatial scales, ranging from short-lived severe storms to decades of droughts and century shifts in temperature, rainfall and ice-cover (IPCC, 2007). Climate change can also be seen as a change directly or indirectly attributed to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time interval (Parry *et al.,* 2007).

The following sectors of Nigerian's economy is affected by variations in climate parameters; agriculture, health, water resources, energy etc. Anthropogenic (human) activities remain the major cause of climate change. With the increased industrialization in the developed countries, the introduction of large quantities of greenhouse gases (GHGs), including carbon (IV) oxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) into the atmosphere have appreciated. These GHGs are the primary causes of global warming. The global increases in CO_2 concentration are due primarily to fossil fuel use and land use change, while those of CH_4 and N_2O are primarily due to agriculture. It is an undisputable fact that the earth is getting warmer and human beings are mainly to be blamed (Spore, 2008). Changes in soil moisture, soil quality, crop resilience, timing/length of growing seasons, yield of crops and animals, atmospheric temperatures, weed insurgence, flooding, unprecedented droughts, sea level rises and many more are products of climate change. There were scenarios whereby rainfall in the humid regions of southern Nigeria increased. This was in turn accompanied by increased cloudiness as well as rainfall intensity particularly during severe storms. Similarly, the savannah areas of northern Nigeria were projected to experience less rainfall, which coupled with temperature increases, reduces soil moisture availability. The length of growing seasons and yield potential are invariably reduced by increased temperatures and accompanying decrease in water availability. Hence, the areas suitable for agriculture suffer depreciation thereby adversely affecting food security over the continent (Thornton *et al.* 2006). Natural and human induced global environmental change belongs to the class of risk with high probability of occurrence and damage potential but in such a remote future that for the time being no one is willing to perceive the threat. Although the probability of occurrence and the damage potential are well known and clear, there is always a time lag between trigger and consequence which create a fallacious impression of security. Most disasters (including flood, droughts, desertification, land degradation, subsidence, etc.) are not random events without underlying causes; they are sudden manifestations of slow but continuous degradation processes (UNEP-GRID-Arendal 2005). Discoveries have proved that continuous accumulation of heat-trapping "greenhouse" gases in the atmosphere contributes to changes in the global climate, and in the climates of regions around the world (Crosson, 1997). An analysis of temperature records shows that the earth has warmed an average of 0.60C over the past 100 years (Environment Canada 2008). Though the warming intensity varies from decade to decade, from region to region and from season to season, it is real and significant, the major causative agent remains greenhouse gases (Crosson, 1997). Predictably, several literatures project that in subsequent decades, higher temperatures and changing precipitation levels caused by climate change will be unfavourable for crop growth and yield in many regions and countries (Yesuf *et al.,* 2008). The question here is this; to what extent this will be the case in Nigeria particularly in the southeast rainforest zone where both temperature and precipitation approach extremes has not received much research interest. Disaster risk and climate change are two threats to human well-being that reinforce each other. Hence, they represent some of the greatest challenges to humankind in this century. Disaster risk is an intrinsic characteristic of human society, arising from the combination of natural and human factors and subject to exacerbation or reduction by human agency. While the adverse impacts of climate change on society may increase disaster risk, disasters themselves erode environmental and social resilience, and thus increase vulnerability to climate change (O'Brien et al. 2008). Risk management is the identification, assessment, and prioritization of risks followed by coordinated economical application of resources to minimize, monitor, and control the probability and impact of unfortunate events or to maximize the realization of opportunities.

Objectives of the Study

1. To identify whether deforestation, industrial releases, improper sewage disposals are part of the major factors that are responsible for climate change in Nigeria.
2. To identify the various disaster risks such as flooding, drought, erosion, sea level rise and effects that climate change poses on Nigeria.
3. To proffer solutions alongside ways to manage the associated risks of climate change in Nigeria.

Theoretical Foundation

It is an undisputable fact that climate change is a global problem which in turn requires global solutions and is also one of the most important issues on the global political agenda, with a series of efforts to find solutions through international negotiations. Climate change has become a global issue in recent times manifesting in variations of different climate parameters including; cloud cover, precipitation, temperature ranges, sea levels and vapour pressure (Ministry of Environment of the Federal Republic of Nigeria [MoEFRN] 2003).

Nevertheless, approaches toward the management of climate change impacts should put into consideration the reduction of human vulnerability under changing levels of risk. A key challenge and opportunity therefore lies in building a bridge between current disaster risk management efforts aimed at reducing vulnerabilities to extreme events and efforts to promote climate change adaptation (Olorunfemi 2008; Few et al. 2006).

The age long web of climate change and current scientific uncertainties pose special challenges. Although strategies that address challenges recognize that there is no best solution, but climate change provides new incentives for the need to plan ahead and to anticipate extreme events and trends (Zevenbergen *et a*l., 2008). Within the context of extreme weather events especially flooding, this means that management strategies must meet the present needs while providing a path of adjustment for the future. As the planet warms, rainfall patterns shift, and extreme events such as droughts, floods, and forest fires become more frequent (Zoellick, 2009), which results in poor and unpredictable yields, thereby making farmers more vulnerable, particularly in Africa (UNFCCC 2007). Farmers (major constituent of the poor in Africa) face prospects of tragic crop failures, reduced agricultural productivity, increased hunger, malnutrition and diseases (Zoellick 2009). It has been predicted that crop yield in Nigeria may fall by 10-20% by 2050 or even up to 50% due to climate change (Jones and Thornton 2003), since Nigerian agriculture is predominantly rain-fed and hence fundamentally dependent on the vagaries of weather. The struggle to overcome poverty and advance economic growth is predominant among to the inhabitants of Nigeria, hence the need to savage this phenomenon; Climate change, which is attributable to the natural climate cycle and human activities and equally has adversely affected productivity in Nigeria (Ziervogel *et al.* 2006). From the look of the things, this phenomenon threatens to deepen vulnerabilities, erode hard-won gains and seriously undermine prospects for development. Thus, it is needful for concerted efforts toward tackling this menace.

The constant reportage of disasters (most especially flooding and erosion) occurring in Nigeria (mostly in several states like Lagos, Anambra etc) in the print and electronic media signals the enormous vulnerability of Nigerians to day-to-day natural and human-induced hazards. Recent Nigerian history is replete with various accidents and mishaps which reveal the lack of readiness of this West African's populous country to deal with emergencies. Nigeria's inadequate disaster management systems were even more harshly exposed when the nation endured a series of air crashes from 2005 to 2006 and beyond. Without any iota of doubt, Nigeria needs to radically reorganize its disaster response capability, and to prepare a specific plan to improve the response capacities of the local people, improve their livelihood in everyday life. Inhabitants' standard of living can be improved by the following ways; by strengthening and improving housing quality, gainful employment and access to income. The fact that the country is reportedly within an earthquake-prone zone has made the urgency of these tasks even more compelling (Muanya, 2010). The subject that Nigeria lacks the most basic standards of disaster risk prevention, management and reduction require considerable attention. As a result of her geography, climate, vegetation, soils, economic structure, population and settlement, energy demands and agricultural activities, Nigeria has been vulnerable to climate change impacts. The location and size of, and the characteristic relief in Nigeria gave rise to a variety of climates ranging from tropical maritime climate characterized by the rainforest along the coastal and southern section to the tropical hinterland climate associated with the Sahel in the north eastern section of the country. Ironically, climate change as a global problem is that developing countries who contribute the least to cause the problems are the most vulnerable to its impact. Their level of vulnerability is high since they are least endowed with resources and technology to combat the problem and their economies are based largely on natural resources-dependent sectors that are climate sensitive. It's quite unfortunate that Nigeria happens to be one of those countries. Mendelsohn *et al.,* (2000) and Mendelsohn *et al.*, (2006) argue that the primary reason that poor countries are so vulnerable is their location. Geographers pointed out that countries

with low latitudes are at the mercy of very high temperatures. Actually, every country is affected by climate change, but the degree with which it produces damage differs, depending on geographical circumstances, the capacity with which to withstand the impact and the nature of the economy. Thus, Nigeria's vulnerability to climate change springs up from both being located in the tropics, and from various socioeconomic, demographic, and policy trends limiting its capacity to adapt to change. NEST (2003), and Ayuba *et al.* (2007) indicate that continous deforestation and constant degradation of biodiversity in Nigeria is connected to global warming and climate change. They are of the opinion that the effects will blow out of proportion due to existing low level of coping capabilities in Nigeria and other parts of Africa.

Challenges of Climate Change in Nigeria

It is pertinent to note the following triggers of climate change in Nigeria;

i. Human Activities such as overgrazing bush burning, extraction of fuel wood, pesticide use, gas flaring etc.
ii. Presence of greenhouse gases such as CO2 and methane, tilling of the soil, volcanic eruptions and burning of fossil fuels.
iii. Geographical location of the country.

However, the challenges of climatic change in Nigeria are grouped into three as enlisted below:

i. Creation of environmental/climate refugees, threats to the future of children, and increase in diseases.
ii. Reduction in economic growth, immediate setback on agriculture, and loss of biodiversity.
iii. Flooding, erosion, drought, windstorm.

Creation of environmental/climate refugees, threats to the future of children, and increase in diseases-

With the increased growth in urban populations, environmental degradation, environmental decay, water/air/environmental pollution has become the order of the day in Nigeria. The movement of people from the rural setting to urban centers as a result of loss of livelihood which is cause by drought can cause an additional burden of widespread of disease. The movement of people increases urbanization and the socio-economic condition which is already exacerbated by high level of city population growth is also another stressed subject. As result of highly variable rainfall pattern caused by climate change, women are at the receiving since most states in our nation or society looks primarily to these women to feed their families. As a result of gender inequalities in rights over land resources, access to technology and information, women find it hard to manage current climate risk and adapt their livelihood to long term climate change in Nigeria. Areas/localities with poor drainage facilities in the nation leave several expectant women, infants and children with no previous immunity at the mercy of malaria and other infectious diseases. Though, the present administration is increasingly paying attention to mitigating the effect of climate change on gender equality though it focuses on gender main streaming and women's economic empowerment in programs like Sure P, You win Agricultural grand and loan program for women, but still more need to be done with regards to this.

Reduction in economic growth, immediate setback on agriculture, and loss of biodiversity

Some of the impacts of climate in Nigerian have been seen to be direct while others were indirect. Nigeria hopes to be in the world's top 20 biggest economies by 2020, hence it is essential to strengthen the non-oil growth in Nigeria. However, global climate change is one of the largest threats to Nigeria's development and economy. Particular threats are posed to Nigeria's competitiveness in agriculture from changes to rainfall patterns in the north resulting in increased desertification and flooding, and to economic activity in Lagos; Nigeria's commercial hub, which has recently been identified among the 21 cities most likely to be affected by rising sea levels (IPCC, 2007). Other threats posed by climate change on Nigerian's economy include effects; on power generation and distribution due to the effects of river levels on major dams, on transport infrastructure vital for trading, and possibly on oil and gas production and investment. Despite the recognition of the serious threats posed by climate change to the Nigerian economy, the need to address this issue is not incorporated into national policy or regulation. At present addressing climate change is the responsibility of the Federal Ministry of the Environment, and focuses largely on individual projects. Such an approach is unlikely to enable appropriate and cost-effective adaptation to climate change for the country as a whole.

Flooding, erosion, drought, windstorm

The disruption of urban and rural population concentrations particularly along the coastline is pertinent due to sea-level rise, increased level of rainfall and related phenomena. Most dwelling places in Nigeria have poor drainage facilities which make dwelling places prone to flood and ill health. Less than one million people were affected by 2013 flood, few people lost their lives (Osayande, 2014). There was an increase in the number of people affected by the impact of climate change in 2013 due to the shortfalls of initiatives by the Nigerian metrological Agency 'ability to early rain prediction, workshops, meeting with stake holders. Vulnerable communities and safe ground in all vulnerable communities were not identified and temporary shelters were not provided. It is an indisputable fact that flooding, drought, erosion, sea level rise are increasing by the year and stands out as a major challenge as well as effect that climate change poses on the country **.** This simply means that some stable ecosystems such as the Sahel Savanna may become vulnerable because warming will reinforce existing patterns of water scarcity and increasing the risk of drought in Nigeria. As well, the country's aquatic ecosystems, wetlands and other habitats will create overwhelming problems for an already impoverished populace.

Furthermore, Preliminary studies on the vulnerability of various sectors of the Nigerian economy to Climate Change were conducted by NEST. The sectors evaluated were based on seven natural and human systems identified by the IPCC, and condensed into five. They are:

i. Human settlements and health.
ii. Water resources, wetlands, and freshwater ecosystems.
iii. Energy, industry, commerce, and financial services.
iv. Agriculture, food security, land degradation, forestry, and biodiversity.
v. Coastal zone and marine ecosystems.

It was determined by the study that some evidence of vulnerability to climate change was manifested virtually all of the sectors analyzed. None were unaffected, nor will remain unaffected in future by changes to climatic conditions. As a matter of fact, more recent assessment, although in regional and global scale, not only corroborate the patterns established by CN-CCCDP reports but captured more disturbing scenarios using more embracing and sophisticated approaches (Parry *et al.*, 2007). Indications are that the climate system is more sensitive than originally thought.

Government Policies and Efforts to Combat Climate Change in Nigeria

Agriculture has been identified as having difficulty in the adaptation and mitigation of climate change. However, the ability of the government to formulate good climate change policies and effectively implement the agricultural sector strategies of the policies are keys to the fight against climate change. One of the major policies of the Nigerian government in the fight against climate change is the National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN). This strategy envisions a Nigerian in which climate change adaptations an integrated component of sustainable development, reducing the vulnerability and enhancing the resilience and adaptive capacity of all economic sectors and of all people particularly women and children to the adverse impacts of climate change, while also capturing the opportunities that arise as a result of climate change. Some of NASPA-CCN strategies for the agricultural sector include:

i. Increased access to drought-resistant crops and livestock feeds.
ii. Adopt better soil management practices.
iii. Provide early warning/ meteorological forecast and related information.
iv. Increase planting of native vegetation cover and promotion of re-greening efforts.

Considering the huge adverse effects of climate change, Nigeria has no other option than to move from business-as-usual model of agriculture. Capturing the opportunites arising from climate change in terms of the new and sustainable jobs it will create through use of new and improved ways of doing things. Planting of native vegetation cover and promotion of re-greening efforts will provide employment for those producing nursery bags as well as those on the field who plant and nurture the trees.

Another major government policy with direct bearing on climate change is the national Policy on Environment. The goal of the National Policy on Environment is to ensure environmental protection and the conservation of natural resources for sustainable development. The strategies for the agricultural sector include:

i. Ensure that mandatory Environmental Impact Assessments is carried out for all major agricultural development projects.
ii. Encourage conservation of grazing reserves and enforce strict range resource management programmes.

iii. Regulate the production, use storage, transportation, sale and disposal of agricultural chemicals.
iv. Monitor pesticide and agro-chemical residue levels in air, soil, water and document the environmental fate of such chemicals.
v. Promote farming, using manures and other soil nutrients.

Agro-chemicals, pesticides, inorganic fertilizers are all major contributors to the production of greenhouse gases, hence regulation of their production and usage will go a long way in climate change mitigation and adaptation. If the government can effectively implement these agricultural sector strategies of the National Policy on Environment that have direct bearing on climate change, it would have already done a lot with respect to meeting some of its nationally determined contribution (NDC) to the fight against climate change. The National Agricultural Resilience Framework (NARF) was mentioned in Nigeria's intended Nationally Determined Contribution (NDC) document as a policy which is very important in the fight against climate change. Some of the objectives of NARF include:

i. Strengthening the overall policy/institutional framework for improved resilience and adaptation to climate variability and change in the agricultural sector.
ii. Evaluation and introduction into the agricultural sector of risk transfer and risk management strategies like improved seasonal and real-time weather forecast.
iii. Improving productivity through training community and grass root farmers on land and water management strategies like irrigation farming, water harvesting, erosion control.
iv. Reinforcing existing social safety nets through support systems that reduce vulnerability and improve livelihood conditions for the vulnerable especially women and children.

Efficient implementation of this agricultural resilience framework will give Nigeria the capacity to bear shocks like the 2012 flood disaster that cost Nigeria losses to the tune of billions of naira. The Muhammadu Buhari-led government has launched the Agricultural promotion policy (APP). The thrust of the APP relevant to climate changes includes:

i. Boosting public awareness through advertising of importance of climate smart agriculture. Also, institutional linkages and partnerships will be strengthened for ensuring climate smart agricultural governance, legislations and financial mechanisms.
ii. Environmental impact assessment will be carried out on major agricultural projects.
iii. The use of renewable energy will be promoted with the involvement of private sector.
iv. Broad public and stakeholder awareness on climate smart agriculture will be created.
v. Government will facilitate soil map to improve land use and management practices.
vi. Government will increase the adoption of global best practices on climate change, including the aspects of adaptation, mitigation and carbon credit. Just like all other government policies, the key challenge is not in the drafting of the policy but in the implementation.

Conclusion

With an estimated population of about 140 million people spread over a total area of 923,800 square kilometers, Nigeria is one of the most populous nations and one of the largest countries in Africa. This in turn positioned Nigeria as a high potential contributor to global warming and consequently, climate change. Her productive activities are mainly agricultural and to an extent industrial which contribute substantial amount of greenhouse gases into the atmosphere thereby accelerating climate change. Current estimates indicate that emissions from combined livestock population of over 44 million led to the emissions of over 1115g of methane (CH4). Also, rice production led to the emissions of 1090g CH4, while savannah burning generated 109g CH4, 3.4g N20, and 2890g CO (Federal Ministry of Environment 2010). These GHGs generated from several industrial processes in one way or the other finds its way into the atmosphere thereby increasing the threat of climate change in Nigeria. Provided these situations abound, so many activities in space are at one risk or the other. Present and future activities need to be planned and executed in space such that the future is not jeopardized. The issue of adapting the ways we live to climate change which includes planning for our urban and rural environment is being placed as an anchor by recent flood events around the world and particularly in Nigeria. Hence, the need for professionals in the building domain to carefully put into consideration; what they build and where they build it. Though the issue of climate change is becoming recognized by spatial planners with respect to flood risk, but its wider implications for biodiversity and water resources are necessary for integration into plans. However, a lack of engagement of the planning profession with climate change networks apparently exists. The growing trend of disasters in Nigeria has

implications for national sustainability, since disasters, irrespective of the causal factors are associated with diverse externalities such as mortalities, loss of income, home, farmlands, social networks, livelihoods and infrastructure. The climate change and variability are likely to worsen the prospects for poverty eradication unless action is taken to become response-capable. This requires a focus on reducing vulnerability, achieving equitable growth and improving the governance and institutional context in which poor people live. From the look of things, the existing poverty reduction strategies are continuously challenged by climate change which often time deepens poverty. The country lacks capacity to anticipate and respond to climate change and variability related risk. Nigeria lacks adequate information on seasonal forecast of climate variability to enable preparedness to climate related disaster and thus early warning facilities are grossly underutilized. Strategies to reduce vulnerability should be rooted in vulnerability analysis and greater understanding of both household-level and macro response options that are available to decrease the exposure to climate risk. Increasing the response-capability of Nigeria will require information on seasonal forecast to enable the preparedness to climate variability as well as longer term climate prediction data to ensure that strategies to reduce vulnerability also reflect the underlying longer-term climate trends. Climate related risk, worsened by processes of global economic and climatic change poses a central unresolved development issues for several countries. Until such risks are managed and reduced, the achievement of the UN Millennium Goals will be a mirage. Current approaches towards managing disaster risk and adaptation to climate change fail for different reasons to address the issue. First and foremost, remains the predominant focus on the response to disaster events and failure to address the configuration of hazards, vulnerabilities and risks. Moreover, mono hazard approaches still prevail in contexts more and more typified by synergy and complexity and there is still a great deal to do in order to bring risk management and sustainable development concerns and practices together. The second probes the impact of future climate change on risk but ignorantly skips the establishment of connection with currently existing climate related risk events and patterns. At the same time, both approaches are separated both in concept and in terms of the institutional arrangements and programming mechanisms at the national and international levels. The quest for development to be protected and advanced in countries affected by climate risks, requires the promotion of an integrated approach to climate risk management, the establishment of successful approaches piloted by the disaster risk management community but mainstreamed into national strategies and programmes. Addressing and managing climate risk as it is manifested in extreme events and impacts in the here and now is the most appropriate way of strengthening capacities to deal with changing climate in the future.

Recommendations

Nigeria should focus more on economic activities that are tertiary in nature which generate little greenhouse gases; development should be limited in areas likely to be flooded; the citing of new facilities and the location of infrastructure should not be very close to the sea in order for them to be free from sea level rise; already threatened infrastructure /facilities should be relocated soonest; Nigeria should develop a technology that can capture at least 80% of carbon emitted by industries which are discharged into the atmosphere; the spaces in rural areas and urban centres should be earmarked or apportioned for rigorous and extensive tree planting; there should be a heightened public awareness on the danger associated with climate change; resettlements should be encouraged in certain areas of the country; Nigeria should develop a cleaner source of energy instead of it's over dependence on fossil fuel energy that generate greenhouse gases. While already existing energy production facilities should be physically protected with barriers; agencies responsible for the environment should enforce laws and regulations, particularly with respect to urban planning and development and adherence to industrial standards as well as erection of structures or utilities in ecologically sensitive areas; town and cities should be well planned and free of industrial and municipal wastes; there should be a decentralization of commercial activities in the Central Business District (CBD) as this causes heavy traffic congestion and high level of gas emissions/exhaust emissions; industries should be relocated to more favourable sites. While appropriate location for new industries be mapped out; drains should be constructed in and around coastal areas of Nigeria; there should be emplacement of storm surge barriers around airports; sites for airports, motor parks and other facilities should be appropriately chosen; and there should be a modification of rural and urban land use, a development of alternative habitat areas and the protection of threatened ecosystems. Specifically, many different stakeholders in the development planning process should be leading researches, for example, National, State and Local governments are likely to look at changes in flood risk; public water corporations, relevant government agencies, as well as government regulators, should be looking at the impacts of climate change on water resources; and government agencies along with non-governmental organizations should be researching impacts of climate change on ecology, land management and the environment. Climate change and impact researches will need to specify changes in temperatures and precipitation and specify the changes in spatial and temporal respect. This is

because spatial planning authorities need a basis for decisions taking into account climate changes, changes of the spatial structure and the possible reaction /involvement of the public to these changes. Provision of information about the spatial impact of natural hazards connected to climate change is pertinent. There is equally the need to develop procedures to integrate high level quantitative climate risk assessment into the spatial planning process as well as identification of options and the articulation of decision pathways to the appraisal process. There is an urgent need for adjustment policies which intensify efforts to lower the potential for loss from future climate change impacts through the installation of risk reduction process on local and regional level.

Nigeria can in fact follow the example of the UK's plan-led system. This involves preparing plans that set out what can be built and where. The plan-led system was updated by an Act of Parliament (the Planning and Compulsory Purchase Act) in December 2004. This PPS replaced Planning Policy Guidance Note 1, General Policies and Principles, published in February 1997. It is pertinent to note that very salient and robust issues were discussed which were of National attention.

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